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Case Report

Pictures on Title

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THE LADY WITH THE LAMP

Florence Nightingale's lasting contribution has been her role in founding the modern nursing profession. She set an example of compassion, commitment to patient care and diligent and thoughtful hospital administration. During the Crimean war, Florence Nightingale gained the nickname "The Lady with the Lamp" from a phrase in a report in The Times: She is a "ministering angel" without any exaggeration in these hospitals, and as her slender form glides quietly along each corridor, every poor fellow's face softens with gratitude at the sight of her. When all the medical officers have retired for the night and silence and darkness have settled down upon those miles of prostrate sick, she may be observed alone, with a little lamp in her hand, making her solitary rounds.

Every nurse was drawn to nursing because of a desire to care, to serve, or to help. Nurse is just another word to describe a person strong enough to tolerate everything and soft enough to understand everyone. A nurse is one who opens the eyes of a newborn and gently closes the eyes of a dying man. It is indeed a high blessing to be first and last to witness the beginning and end of life. Nurses encompass an art, a humanistic orientation, a feeling for the value of the individual, and an intuitive sense of ethics, and of the appropriateness of action taken. In all cultures, the midwife's place is on the threshold of life, where intense human emotions, fear, hope, longing, triumph, and incredible physical power enable a new human being to emerge. Midwives have skilled hands and know how to sit on them. Midwifery was developed by people with common sense, people who were close to nature and people who observed other species of mammals and saw that there were lessons there to be learned. According to a Norwegian proverb, 'the greatest joy is to become a mother; the second greatest is to be a midwife'. If birth matters, midwives matter. In Europe, there are hospitals where the cesarean rate is less than 10%, and you'll find midwives in these hospitals, you'll see a lot less re-admissions with infections and complications, and you'll see a lot less injury to mothers. The word “midwife” means “with woman” and it gives a picture of partnership. Nurses and midwives provide a broad range of essential health services close to the community and in all levels of health facility. The world needs 18 million more health workers to achieve and sustain universal health coverage by 2030. Approximately half of that shortfall – 9 million health workers – is nurses and midwives. Globally, 70% of the health and social workforce are women, Nurses and midwives represent a large portion of this. Midwifery, where care includes proven interventions for maternal and newborn health as well as for family planning could avert over 80% of all maternal deaths, stillbirths and neonatal deaths.

April 7 of each year marks the celebration of World Health Day. From its inception at the First Health Assembly in 1948 and since taking effect in 1950, the celebration has aimed to create awareness of a specific health theme to highlight a priority area of concern for the World Health Organization. Over the past 50 years this has brought to light important health issues such as mental health, maternal and child care, and climate change. The 2020 World Health Day theme took place in the context of the COVID-19 global pandemic and was therefore launched as 'Support Nurses and Midwives'. This World Health day we honor the contribution of nurses and midwives, recognizing their vital role in keeping the world healthy. Nurses and other health workers are at the frontlines of COVID-19 response, putting their own health at risk to protect the broader community. Every one of us has to see a doctor many a time in our life. However, when this needs become acute, we need another person besides a doctor and that is a nurse. They are the main pillar of the whole edifice of healthcare in a society. Nurses are critical in responding to health needs in all settings and across the lifespan. In the 2020 International Year of the Nurse and Midwife, the World Health day is an opportunity to highlight the work of nursing and midwifery around the world, while celebrating this workforce as one of the most valuable resources of every country. This calls our attention to the fact that encouraging and supporting nurses is indispensable to making an optimal use of education, training and skills the nurses are imparted. And, this encouragement and support can be given to them only by solving the problems they are mired in, which include excessive workload, violence at workplace, low salaries, long working hours and other workplace risks. Owing to all these problems, the paucity of nursing staff are the most daunting problem today's world is faced with.

In this regard, the WHO has set two standards. According to a standard, there should be at least 50 nurses for a 10,000 population whereas the other sets this number to 4 nurses with one doctor. When we see, keeping in view these standards, the number of nurses in Pakistan, a crisis situation comes before us.

A brief analysis of the figures reported in the Population and Housing Census of Pakistan 2017, Economic Survey of Pakistan 2016-17, Punjab Development Statistics 2016, Development Statistics of Sindh 2016, Development Statistics of Khyber Pakhtunkhwa 2016 and Development Statistics of Balochistan 2016, as well as of the figures reported by Pakistan Medical and Dental Council reveals that, at present, the number of nurses in Pakistan should be 10,38,873, but we have only 99,208 of them which means we are facing a shortage of 9,39,645 nurses. And if we see the situation in terms of percentage, the paucity comes out to be 90.4 percent.

The first among the foremost reasons for this state of affairs in Pakistan is the limited number of nursing institutions. At present, there are only 128 nursing institutions, with a capacity of 9,468 students, which are offering general nursing diplomas accredited by Pakistan Nursing Council (PNC). Likewise, the number of those offering one-year post-basic specialist diplomas is only 39 whereas degree-awarding institutions are 62 having a capacity of 3333 students. In addition, the number of institution offering licensed practical nurse course is only 18 and they can provide training only to 505 people. Hence, the total number of PNC-accredited nursing education institutions is 247 having a capacity to train 13,306 students. And, in a country where population grew, on average, by 39,60,000 people every year between 1998 and 2017, and where only 9,468 male and female students enroll themselves for nursing education, and that too of a diploma level, every year what could be the possible ways to make up for the chronically-acute deficiency of nurses?

There are two possible solutions to this issue. First is to increase the number of institutes providing nursing education and also the number of seats they offer. Moreover, facilities and privileges should be provided to attract more and more students, besides efforts to enhance the prestige of this field. The other possible solution could be to attract nurses from other countries to work in Pakistan. That, too, doesn't seem feasible at present-when we cannot solve the problem of the indigenous nurses, then how on earth will we be able to solve those of the foreign ones? Keeping in view the ground realities, the only pragmatic solution is to create more and more educational opportunities for them besides restructuring the curriculum and building it on modern lines. In addition, providing more perks and privileges to those already in this field is also important. Such measures will be instrumental to not only meeting the local requirements of nursing staff but also to exporting this human resource to the international market. If we pay due attention to this sector, we will be able to earn huge foreign exchange because all countries, whether developed or the developing ones, need nurses.

Reference : W.H.O., Population and Housing Census of Pakistan 2017, Economic Survey of Pakistan 2016-17, Punjab Development Statistics 2016, Development Statistics of Sindh 2016, Development Statistics of Khyber Pakhtunkhwa 2016 and Development Statistics of Balochistan 2016, Pakistan Medical and Dental Council 2018.

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Florence Nightingale, c. 1860 (12 May 1820 – 13 August 1910) was a British social reformer and statistician, and the founder of modern nursing.

COMPARISON OF INFECTION RATES AMONG METACARPAL FRACTURE PATIENTS MANAGED USING K-WIRE WITH THOSE MANAGED USING MINIPLATE

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Abstract

Objective: To compare the postoperative infections rates among metacarpal fractures patients managed using K-wires with those patients who were managed using miniplates in the department of Orthopaedic surgery, Lahore General hospital, Lahore, Pakistan.

Methods: This experimental Study was carried out in Orthopedics department of Lahore General Hospital, Lahore. Non-probability convenient sampling technique was used. Sample size was 50 cases, we divided 25 cases in each group managed with K-wire (group A) and miniplate (group B) respectively. The demographic information including age, sex and address was noted. Patients in both groups were followed up upto 4 months postoperatively for post-operative infection. All the information was entered on a structured performa. The entire valuable data was entered in SPSS version 18.00. The variables analyzed included demographic including gender (male/female) and age (16-50 years). Qualitative and quantitative data including sex (male/ female), infection (yes or no), was noted. The two groups of the patients were compared with each other. Chi-square test was used for testing of the significance of qualitative variables. P-value were considered significant if ≤0.05. Repeated measurement ANOVA test was applied to see the difference of both quantitative variables in both groups.

Results: Out of the total of 50 patients suffering metacarpal fractures, 84% (n=42) were male and 16 (n=8) were female. Their mean age was 34.31 + 9.6 years. In patients managed with K-wires, none of the patients at post-operative day 1 had infection, but on their visit at 2nd post-op week; 5 (20%) patients had infection. After 4 post-op weeks, 4 (16%) patients had infection, after 6 post-op weeks, 3 (12%) patients had infection, after 8 post-op weeks, there were 2 (8%) patients who had infection, while from 10th post-op week to 4th post-op month, there was only 1 (4%) case having infection. Infection grade according to South Hampton Surgical Infection Scoring were Grade III and they were treated with appropriate antibiotics after culture and sensitivity. In patients managed with miniplate, none of the patients at post-operative day 1 had infection, but on their visit at 2nd, 4th and 6th post-op week; 1 (4%) patient presented with infection. while from 8th post-op week to 4th post-op month, none of the patients had infection. Infection grade according to South Hampton Surgical Infection Scoring were Grade III and they were treated with appropriate antibiotics after culture and sensitivity. The difference in the infection in both groups of the patients was insignificant (p-value = 0.312).

Conclusion: Metacarpal fractures are more prevalent in male gender among our people. Infections rate are minimal in metacarpal fracture patients. There is insignificant difference regarding post-procedural infections among metacarpal fracture patients managed using K-wires and those who were managed using Miniplate in the studied population.

Keywords: metacarpal fracture, Bone infections, Kirschner (K) wire, Miniplates

Metacarpal fractures (MF)[1] are prevalent type of fractures. These comprises about 18-44% of all the hand fractures.[2] Majority are managed using conservative methods successfully. However; some requires surgery.[3] Intra-articular fractures, soft tissue swelling, midshaft fractures with displaced

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portions, comminuted /spiral fractures, failure of close reduction and unstable fractures are the primary indications for the surgery.[4] During surgery, Kirschner (K) wire and miniplates are commonly used prosthesis.[5] Miniplates are made of titanium and have elasticity.[6] These can be cut to adopt the shape of the bone. Compared to miniplates, K-wires are less rigid, follow close reduction, and can slide through bone. However, these are associated with tethering of the soft tissue and pin tract infections.[7,8]

Infections rates are low in metacarpal fractures.[9] Open metacarpal fractures have infection rates of 2-11%[2] while closed metacarpal fractures have infection rates of about 0.5%.[1] Majority hand infections are treated with antibiotics. Rarely, osteomyelitis occurs in hand that may requires amputation.[10] Some literatures[11] are suggestive that miniplate utilizing in metacarpal fractures has advantage of low infection rates and shorter healing time compared with Kirschner wire internal fixation. Other researchers[12] found comparable complication rates with both modalities. The local studies are scarce on the comparisons of the post-operative infection rates in patients managed with these two techniques. Therefore, the objective of the present study was to compare the postoperative infections rates among metacarpal fractures patients managed using K-wires with those patients who were managed using miniplates in the department of Orthopaedic surgery, Lahore General hospital, Lahore, Pakistan.

METHODOLOGY

This experimental study was carried out in Orthopedics department of Lahore General Hospital, Lahore. Using prevalence of metacarpal fracture as 10% with d=6% precision and 95% confidence level the sample size was 50 cases. So, we divided 25 cases in each group. Non-probability convenient sampling with random allocation to study groups by random number table was used. Inclusion criterias include age 6-50 years, both genders and patients that come within 2 weeks of metacarpal fracture while exclusion criterias include fractures with bone loss, osteoporosis, comminution to the extent that accurate reconstruction with firm cortical apposition is impossible, and refractures. Miniplate fixation procedures were performed under general anaesthesia. Tourniquet was applied. After taking aseptic measures a dorsal incision was given over the metacarpal. Periosteum was incised and elevated to expose the fracture. Fracture was anatomically reduced; plate was placed, and fracture was fixed. Wound was washed and closed. During K-wire fixation procedure, after close reduction of metacarpals, k-wire was passed longitudinally from distal to proximal. Hand was splinted and x-ray was done to confirm the proper reduction. Fifty patients fulfilling inclusion criteria presenting in the department of Orthopedics, Lahore General Hospital, Lahore, were enrolled in the study. An informed consent was taken from patients. The demographic statistics including gender, age, and address was noted. All the patients received surgical treatment of the fracture with either percutaneous K - wire fixation or miniplate. The patients in group A received treatment with Kirshner wire and patients in group B received treatment with miniplate. The surgery was performed after indoor admission under general anesthesia. The patients were discharged next day after the procedure. Patients in both groups were followed up upto 4 months postoperatively for post-operative infection. All the information was entered on a structured performa. The entire valuable data was entered in SPSS version 18.00. The variables analyzed included demographic including gender (male/ female) and age (16-50 years). Qualitative and quantitative data including sex (male/ female), infection (yes or no), was noted. The two groups of the patients were compared with each other. Chi-square test was used for testing of the significance of qualitative variables. P-value were considered significant if ≤ 0.05. Repeated measurement ANOVA test was applied to see the difference of both quantitative variables in both groups.

RESULTS

Out of the total of 50 patients suffering metacarpal fractures, 84% (n=42) were male and 16 (n=8) were female (Picture 1). Their mean age was 34.31 + 9.6 years with a range of 18 to 50 years. In patients managed with K-wires, none of the patients at post-operative day 1 had infection, but on their visit at 2nd post-op week; 5 (20%) patients had infection. After 4 post-op weeks, there were 4 (16%) patients had infection, after 6 post-op weeks, 3 (12%) patients had infection, after 8 post-op weeks, there were 2 (8%) patients who had infection, while from 10th post-op week to 4th post-op month, there was only 1 (4%) case having infection. Infection grade according to South Hampton Surgical Infec-tion Scoring were Grade III and they were treated with appropriate antibiotics after culture and sensiti-vity (Table 1). In patients managed with miniplate, none of the patients at post-operative day 1 had infection, but on their visit at 2nd, 4th and 6th post-op week; 1 (4%) patient presented with infection. while from 8th post-op week to 4th post-op month, none of the patients had infection. Infection grade according to South Hampton Surgical Infection Scoring were Grade III and they were treated with appropriate antibiotics after culture and sensitivity (Table 2). At 1st post-procedural day, not a single patient showed infection symptoms and signs in both study groups. On 2nd post-operative week visit, six patients had infection, out of which 20% (n=5) belonged to group of the patients managed with K-wire while 4% (n-1) patients belonged to group managed with miniplate internal fixation. After 4 post-op weeks, there were 5 patients having infec-tion, out of whom, 4 (16%) cases were managed with k-wires and 1 (4%) was managed with miniplate. After 6 post-op weeks, there were 4 patients showing up with infection, out of these 3 (12%) cases were managed with k-wires and 1 (4%) was managed with miniplate. After 8 post-op weeks, there were 2 patients having infection, all of these cases were managed with k-wires (8%). While from 10th post-op week to 4th post-op month, there was only 1 case who had infection and that was a case managed with k-wires (4%). The difference was insignificant (p-value = 0.312) (Table 3).

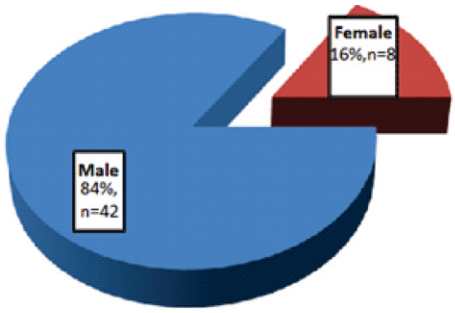

Fig. 1: *Gender of the Patients who Presented with Metacarpal Fractures (n=50)*

Table 1: *Distribution of Infection at different follow up Visits in Patients Managed with K-Wire (n=25)*

		Frequency	Percentage
Infection Present at	1st post op day	0	0
	2nd post op Week	5	20.0%
	4th post op Week	4	16.0%
	6th post op Week	3	12.0%
	8th post op Week	2	8.0%
	10th post op Week	1	4.0%
	3rd post op Month	1	4.0%
	4th post op Month	1	4.0%

Table 2: *Distribution of Infection at different follow up Visits in Patients Managed with Miniplates (n=25)*

		Frequency	Percentage
Infection Present at	1st post op day	0	0
	2nd post op Week	1	4.0%
	4th post op Week	1	4.0%
	6th post op Week	1	4.0%
	8th post op Week	0	0
	10th post op Week	0	0
	3rd post op Month	0	0
	4th post op Month	0	0

Table 3: *Comparison of Infection Present at different follow up Visits in Patients Managed with K-Wire Versus Patients Managed with Miniplates (n=25)*

Post-op Infection present at	Study Group		Chi-square	p-value
	K-wires	Mini plate		
1st day	0	0	N/A	N/A
After 2 weeks	5 (20%)	1 (4%)	3.030	0.082
After 4 weeks	4 (16%)	1 (4%)	2.000	.157
After 6 weeks	3 (12%)	1 (4%)	1.087	0.297
After 8 weeks	2 (8%)	0	2.083	0.149
After 10 weeks	1 (4%)	0	1.020	0.312
After 3 months	1 (4%)	0	1.020	0.312
After 4 months	1 (4%)	0	1.020	0.312

DISCUSSION

Hand trauma is increasing day by day and frequently involves phalangeal and metacarpal fractures and displacements. The conservative maneuvers are generally enough to manage these traumas. Sometimes, surgery is required especially for unstable fractures, open fractures, intraarticular fractures angulated and displaced fractures for regaining appearance and function. Metacarpal fractures have more incidence among working people in factories and industrial units, mainly among young adults and adolescents. In united states of America, upper limb trauma results approximately more than 16000000 days off work in a year and further 90000000 days of limited movements in a year among working population.[13] The most common opted modality for metacarpal traumas includes the closed reduction with subsequent immobilization or sometimes meticulous mobilization using a dorsal block splint.[14] If closed methods fail to get adequate or satisfactory results or fractures are multiple, displaced or associated with severe loss of soft tissue, surgical treatment is advised. Among surgical interventions, K-wire internal fixation is performed via closed reduction method while miniplate fixation requires open operative technique. We took fifty patients suffering metacarpal fractures in our study and half were managed with K-wire while another half with miniplate internal fixation surgery. In our data, among the patients who presented with metacarpal fractures, 84(n=42) were male, with a male to female ratio of 5.3:1. Hyder Ali, Atif Rafique and Mabroor Bhatti15 collected 225 patients of metacarpal fractures at Liaquat National Hospital, Karachi, Pakistan. Michael N. Nakashian et al[16] studied consective 4718 patients suffering metacarpal fractures and found incidence ratio among male to female of 5.08:1. Similarly, Robert Dichiera and his colleagues[17] found 94% male affected by metacarpal fractures as compared to only 6% females among a military population.

Gyanendra Shah et al from Napal also found more prevalence of metacarpal fractures among male gender in their people as well (76.7%).[18] The male gender is involved in hard work compared to females throughout the world and are indulged with machinary more therefore encounter hand injuries more, including metacarpal fractures. In our study, we followed 50 patients suffering metacarpal fractures for four months post-operative follows up for infection complication and did not found any significant difference in infection rates between 25 patients managed with K-wire internal fixation and 25 patients managed with miniplate fixation (p= 0.312). In 2009, Wutphiriya angkul et al[12] also concluded in their research study the similar findings. They found insignificant difference in the infection rates between the two modalities groups. On the other hand, some studies favor the superiority of one modality over other in term of post-operative infection rates. In 2019, a metanalysis was conducted by Dong Wang, Kai Sun and Wenxue Jiang.[19] They concluded that miniplate internal fixation has less post-operative risk of infections as compared to k-wire fixation closed surgery. Zulfiqar Ahmed et al[20] studied 75 patients suffering metacarpal fractures at Bahawal Victoria Hospital, Bahawalpur, Pakistan. They noted post-procedural infection among K-wire internal fixation group (10%, n=4) more than that among patients managed using miniplate internal fixation (2.9%, n=1); however, the association of the occurrence of infection with the type of internal fixation used was insignificant. We suggest further studies with large sample size are required to validate these findings in our population.

CONCLUSION

Metacarpal fractures are more prevalent in male gender among our people. Infections rate are minimal in metacarpal fracture patients. There is insignificant difference regarding post-procedural infections among metacarpal fracture patients managed using K-wires and those who were managed using Miniplate in the studied population.

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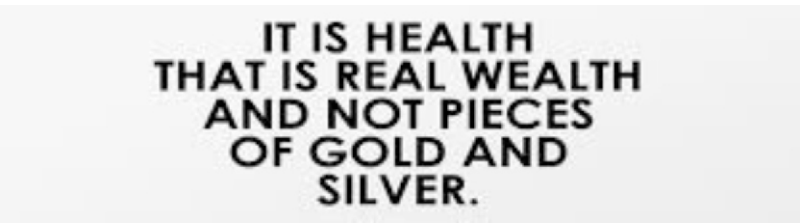

ENDOSCOPIC TYPES OF GASTRITIDES AND ASSOCIATIONS OF ACUTE NON-EROSIVE GASTRITIS

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Abstract

Objective: To determine the prevalence of different types of gastritides in our people. In addition, we will also find association of most common subtype of gastritis with age, weight, and gender of the patients who underwent upper GI endoscopies at Liver clinic, Lahore, Pakistan.

Methods: This retrospective cohort analysis was done on the data of patients who were diagnosed having gastritis endoscopically from 1st July 2011 to 30th June 2014 at Liver clinic, 250 Shadman Lahore. Multiple erosions, multiple small ulcers, sub-epithelial hemorrhages and reddish streaks were defined as erosive changes. Mucosal edema and erythema without erosive changes were named as acute non-erosive gastritis. Atrophic gastritis was defined by thin pale shiny mucosa with prominent vessels while cobblestone appearance due to mucosal nodularity was named as chronic nodular gastritis. The gender, type of gastritis, type of erosive changes, site of erosions in stomach were the qualitative variables, while age and weight of the patients were the quantitative variables. The entire data was evaluated on SPSS version 25. Chi-square test for independence and Independent sample T test were applied on qualitative and quantitative variables respectively to determine their significant association with presence of acute non-erosive gastritis. The p values were taken statistically significant if < 0.05.

Results: Out of the total of 958 patients, 50.4% had acute non-erosive gastritis, 38.9% reactive gastropathy, 6.1% chronic nodular gastritis, and 4.6% atrophic gastritis. Among 373 reactive gastropathy patients, dominant defining gastric lesion was multiple erosions in 19.6%patients, linear antral reddish streaks in 14.3%, multiple ulcers in 2%, and subepithelial hemorrhages in 1% patients. Distorted and burnt-out stomach due to corrosive ingestion was seen in 2% (n=19) patients. Acute non-erosive gastritis was more prevalent in male gender as compared to female (55.4% vs 44.6%), however association was statistically insignificant ($p = 0.69$). The patients suffering acute non-erosive gastritis were younger than patients suffering other types of gastritides (41.11 + 14.28 years vs 46.12 + 15.82 years, $p<0.01$). The mean weight of the patients suffering acute non-erosive gastritis was 70.99 + 16.53 kg while the mean weight of the patients suffering other types of gastritides was 70.88 + 17.37 Kg. There was no significant difference in the weight of two groups of the patients ($p = 0.914$).

Conclusion: Acute non-erosive gastritis was the commonest type of gastritis followed by reactive gastropathy, chronic nodular gastritis and chronic atrophic gastritis in the studied population. Reactive gastropathy was defined by finding erosions in gastric mucosa in majority patients. Linear antral reddish streaks, multiple ulcers and subepithelial hemorrhages were the suggestive features in other patients. Acute non-erosive gastritis was more common at younger age and among male gender, however it has no association with the weight of the patient.

Keywords: Gastritis, Acute non-erosive gastritis, Nodular gastritis, Atrophic gastritis

Gastritis is the world-wide prevalent inflammation of the stomach.[1] It has broad spectrum, however can be grouped into endoscopic gastritis and microscopic gastritis.[2] The incidence of microscopic gastritis in normally looking gastric mucosa during upper gastrointestinal endoscopy is 14%.[3]

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Hence, five gastric biopsies are directed to diagnose microscopic gastritis which is defined by inflammatory infiltrates during histological examination.[4] Gastritis can be acute or chronic.[5] Acute gastritiscan be mainly categorized into three subtypes: acute non-erosive gastritis, acute erosivegastritis and phlegmonous gastritis. Acute non-erosive gastritis[6] is identified by erythema and edema of gastric mucosa without erosive changes. It commonly occurs by helicobacter pylori (Hp) infection. Acute erosive gastritis[7] is also known as reactive gastropathy, which often presents with abnormal gastroscopic findings and normal histology. The multiple erosions, reddish streaks, subepithelial hemorrhages, and or multiple small ulcersare the endoscopic hallmarks[7] for the diagnosis of reactive gastropathy in addition to erythema and edemaof gastric mucosa. Severe infectious gastritis that is defined by thick edematous mucosa and green black exudate iscalled Phlegmonous gastritis.[8,9,10] Chronic gastritis[11] is subdivided into chronic nodular gastritis, chronic atrophic gastritis, granulomatous gastritis, and many more subtypes. Mucosal nodularity with cobblestone appearance of mucosa seen during gastyroscopy is suggestive for chronic nodular gastritis.[12] Chronic atrophic gastritis[13] is diagnosed endoscopically by finding thin pale shiny mucosa with prominent subepithelial vasculatures. Narrow distal stomach with cobble stone appearance, thick folds, and prepyloric ulcers may be due to granulomatous gastritis.[14] Which type is dominantly present in our population, local data is scarce. Therefore, the objective of this study was to determine the prevalence of different types of gastritides in our people. In addition, we will also find association of most common subtype of gastritis with age, weight, and gender of the patients who underwent upper GI endoscopies at Liver clinic, Lahore, Pakistan.

METHODOLOGY

This retrospective cohort analysis was done on the data of patients who were diagnosed having gastritis endoscopically from 1st July 2011 to 30th June 2014 at Liver clinic, 250 Shadman Lahore. Multiple erosions, multiple small ulcers, sub-epithelial hemorrhages and reddish streaks were defined as erosive changes. The gastric mucosal edema and erythema without erosive changes were grouped as acute non-erosive gastritis, where addition of erosive changes defined acute erosive gastritis. Green black exudates in addition to thick edematous folds were labelled as Phlegmonous gastritis. Atrophic gastritis was defined by thin pale shiny mucosa with prominent vessels while cobblestone appearance due to mucosal nodularity was named as chronic nodular gastritis. The gender, type of gastritis, type of erosive changes, site of erosions in stomach were the qualitative variables, while age and weight of the patients were the quantitative variables. The entiredata was evaluated on SPSS version 25. During descriptive interpretation of data, means and standard deviations were calculated for the presentation of quantitative variable, and frequencies and percentages were computed for qualitative variables. Chi-square test for independence and Independent sample T test were applied on qualitative and quantitative variables respectively to determine their significant association with presence of acute non-erosive gastritis. The p values were taken statistically significant if < 0.05. Moreover, odds ratio along with their 95% confidence interval (CI) were also computed for each association.

RESULTS

Out of the total of 958 patients, 50.4% (n=483) had acute non-erosive gastritis and 38.9% (n=373) had reactive gastropathy. None of the patient was found with phlegmonous gastritis. 6.1% (n=58) patients had chronic nodular gastritis, while 4.6% (n=44) patients had atrophic gastritis. (Picture 1). Among 373 patients suffering reactive gastropathy, dominant defining gastric lesion was multiple erosions in 19.6% (n=188) patients, linear antral reddish streaks in 14.3% (n=137) patients, multiple ulcers in 2% (n=19) patients, and subepithelial hemorrhages in 1% (n=10) patients. Distorted and

burnt-out stomach due to corrosive ingestion was seen in 2% (n=19) patients (Table 1).

Among patients suffering acute non-erosive gastritis, 531(55.4%) were male while 427 (44.6%) were female. 53.1% (282 out of 531) male had acute non-erosive gastritis while 47.1% (201 out of 427) female had acute non-erosive gastritis. Acute non-erosive gastritis was more prevalent in male gender,

Table 1: Endoscopic Types of Gastritides (n = 958)

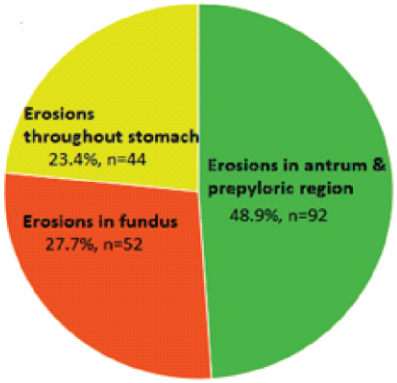
Gastritides	Frequency (Percent)
1. Acute non-erosive gastritis	483 (50.4%)
2. Acute erosive gastritis	373 (38.9%)
(i) Erosions	188 (19.6%)
(ii) Linear reddish streaks	137 (14.3%)
(iii) Multiple ulcers	19 (2%)
(iv) Subepithelial hemorrhages	10 (1%)
(v) Acid-burnt stomach	19 (2%)
3. Chronic nodular gastritis	58 (6.1%)
4. Chronic atrophic gastritis	44 (4.6%)

however association was statistically insignificant (p = 0.69). The mean age of the patients diagnosed having acute non-erosive gastritis was 41.11+ 14.28 years while the mean age of the patients diagnosed having other types of gastritides was 46.12 + 15.82 years. The patients suffering acute non-erosive gastritis were younger than patients suffering other types of gastritides (p<0.01). The mean weight of the patients suffering acute non-erosive gastritis was 70.99 + 16.53 kg while the mean weight of the patients suffering other types of gastritides was 70.88 + 17.37 Kg. There was no significant difference in the weight of two groups of the patients (p = 0.914) (Table 2).

Fig 1: *Distribution of erosions in stomach among reactive gastropathy patients (n=188/373)*

DISCUSSION

Gastritis is very common problem. It is responsible for 1.8 – 2.1 million visits to doctors each year



in USA.[15] In 1915, Sijrai Obayo[16] found the prevalence of endoscopic gastritis of 40.2% among those patients who underwent upper gastrointestinal endoscopy for different complaints in their endoscy suite. If untreated, gastritis may be complicated by peptic ulcer, bleeding, anemia, gastric carcinoma, lymphonma, and gastric outlet obstruction. H-pylori infection is attributed to cause acute non-erosive gastritis in majority cases.[17] The incidence of H-pylori associated gastritis rises with increasing age.[18] In our study, the mean age of the patients suffering acute non-erosive gastritis was 41.11 + 14.28 years which were younger than those suffering erosive & chronic gastritides (p<0.01). This finding points towards increasing disease burden at younger age and the solution of the problem demands addressing good hygiene to avoid H.pylori infection. In addition to H-pylori, other organisms affecting stomach include CMV, syphilis, mycobacterium, measles and fungi. Phlegmonous gastritis is seen in patients

Table 2: Associations of Acute Non-Erosive Gastritis with different Parameters (n = 483/958).

Parameters / Categories*	Acute non-erosive gastritis		p-value	Odd ratio with 95% Confidence interval
	Yes	No		
Gender				
Male	282 (53.1%)	249 (46.9%)	0.069	0.785 (0.608 – 1.014)
Female	201 (47.1%)	226 (52.9%)		
Mean Age (Years)	41.11±14.28	46.12± 15.82	<0.01	0.973 (- 6.916 - 3.096)
Mean Weight (Kilograms)	70.99± 16.53	70.88± 17.37	0.914	1.095 (-2.032 – 2.268)

*Chi-square test for independence was used for parameter no 1, &Independent sample T-test was usedfor parameter no 2&3

suffering leukemia, alcoholism, and AIDS etc, however, in our study, we did not encounter any case of phlegmonous gastritis. Acute erosive gastritis is caused by toxins, medicine, stress, bile reflux, radiation, and ischemia.[19] In our study, 38.9% (n=373) patients were suffering acute erosive gastritis. Toxins and medicines are the commonest cause of reactive gastropathy while bile reflux related erosive gastritis is prevalent in post-cholecystectomy patients and after biliary sphincterotomy. Our data gave a full description of endoscopic findings of reactive gastropathy where gastric mucosal erosinos were the commonest one (19.6%, n = 188). Tuberculosis, crohn's disease and sarcoidosis results granulomatous gastritis where granulomas are seen in gastric mucosa microscopically. We did not find any case of granulomatous gastritis in our population. This may be because crohn's disease and alcoholism are very infrequent in our people as compared to Western world.[20] Chronic nodular gastritis is defined by cobblestone appearance and is mainly caused by H.pylori infection. Crohn's disease, collagenous gastritis, lymphocytic gastritis and syphilic gastritis are other etiologies of nodular gastritis. In our study, 6.1% patients were found be suffering chronic nodular gastritis. Izumi Nishikawa[21] studied 678 H-pylori infected patients and found nodular gastritisin 17% (n=144) patients. Serkan Yalaki[22] noted that nodular gastritis is relatively more prevalent among children and female gender. R. Niknam et al[23] concluded that endoscopic nodular gastritis is associated with increased risk of premalignant lesions like atrophic gastritis, intestinal metaplasia and dysplasia. In our study, 4.6% (n=44) patients have endoscopic findings suggestive of chronic atrophic gastritis. In 40[23] patients study from Korea,[24] the prevalence of atrophic gastritis was found 40.7%. MN Wenk et al[25] determined that chance of atrophic gastritis increases with age and is strongly associated with H-pylori infection. Such studies with large sample size are required from our population as wel.

CONCLUSION

Acute non-erosive gastritis was the commonest type of gastritis followed by reactive gastropathy, chronic nodular gastritis and chronic atrophic gastritis in the studied population. Reactive gastropathy was defined by finding erosions in gastric mucosa in majority patients. Linear antral reddish streaks, multiple ulcers and subepithelial hemorrhages were the suggestive features in other patients. Acute non-erosive gastritis was more common at younger age and among male gender, however it has no association with the weight of the patient.

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DISTRIBUTION AND ASSOCIATIONS OF GASTRIC VASCULAR ECTASIAS AMONG PATIENTS SUFFERING FROM LIVER CIRRHOSIS

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Abstract

Objective: To determine the prevalence and distribution of gastric vascular ectasias (GVE) in our people. In addition to that, we will also find the associations of GVE with different qualitative and quantitative parameters of patients suffering liver cirrhosis who underwent upper gastrointestinal endoscopy (UGIE) at Liver Clinic, Lahore, Pakistan.

Methods: This retrospective analysis was carried out on chronic liver disease patients who underwent UGIE from July 2010 to June 2014, at Liver clinic, 250 Shadman Lahore. The discrete red aggregates, seen endoscopically, usually without a mosaic background were labelled as GVE. The gender, and presence of esophageal varices were the qualitative variables, while age and weight of the patients were the quantitative variables. The entire data was evaluated on SPSS version 25. Chi-square test for independence and Independent sample T test were applied on qualitative and quantitative variables respectively to determine their significant association with presence of gastric vascular ectasias. The p values were taken statistically significant if < 0.05. Moreover, odds ratio along with their 95% confidence interval (CI) were also computed for each association.

Results: Out of the total of 2430 liver cirrhotic patients, 9.26% had gastric vascular ectasias. 53.3% had linear antral reddish streaks suggestive of watermelon stomach, 16.7% had scattered gastric antral vascular ectasias (GAVE), and 36% had diffuse GVE. Presence of gastric vascular ectasias has no association with gender (p=0.465) and the weight (p = 0.189) of the cirrhotic patients. 9.5% (215 out of 2258) patients having esophageal varices also had gastric vascular ectasias, while 5.8% (10 out of 172) patients having no esophageal varices also had gastric vascular ectasias. Gastric vascular ectasias were more prevalent in cirrhotic patients having esophageal varices; however, association was statistically insignificant (p = 0.063).

Conclusion: Gastric vascular ectasias are prevalent findings during upper gastrointestinal endoscopy in liver cirrhosis patients. Recognition of the lesions is necessary because these respond well to coagulation therapy. Linear antral reddish streaks is the commonest presentation in liver cirrhosis patients; however discrete lesions are also seen, which may be distributed antrally or diffusely. Gastric vascular ectasias are dominantly present in patients who also possess esophageal varices. These have no associations with gender, age and the weight of the patients.

Keywords: Liver cirrhosis, Gastric vascular ectasias, Watermelon stomach, Portal hypertensive gastropathy

Gastric vascular ectasias (GVE)[1] are dilated mucosal capillaries associated with portal hypertension, end stage renal disease, and collagen vascular disease.[2] These are responsible of upper GI bleed in some patients.[3] Their prevalence in liver disease patients is about 2.3%.[4] These usually appear as red spots which if confined to the antrum of the stomach, known as gastric antral vascular ectasia

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(GAVE). If these red aggregates in the antrum are linear, the term watermelon stomach is used. When these red lesions are distributed diffusely, in both distal and proximal stomach, the term diffuse gastric vascular ectasia is preferred.[5] Watermelon stomach occurs particularly with scleroderma.[6] GVE are usually diagnosed endoscopically, sometimes mucosal biopsy is required.[3] Histologically, these appear as dilated mucosal capillaries containing focal zones of fibrin thrombi or ectasia in conjunction with proliferation of spindle cells.[7] If GVE are localized, platelet count is >45,000/mm^3, & INR is <1.4, ablation treatment, as with argon plasma coagulation (APC) is used.[8,9] There is increased risk of bleeding if coagulation profile is suboptimal. If gastric vascular ectasias are extensively and diffusely involving stomach, cryotherapy using CO_2 or liquid nitrogen may be used.[10] If endoscopic therapy fails, treatment with an oral estrogen-progesterone combination may be useful.[11] In occasional patient with preserved hepatic synthetic function who continues to bleed despite ablation therapy and an estrogen-progesterone treatment, a surgical antral resection may be carried out.[12] Definite treatment is liver transplantation that reverses the lesions.[13] The management of GVE is different from other causes of bleed. Hence, their recognition is necessary for their proper management. The objective of our study is to determine the prevalence and distribution of gastric vascular ectasias in our people. In addition to that, we will also find the associations of GVE with different qualitative and quantitative parameters of patients suffering liver cirrhosis who underwent upper gastrointestinal endoscopy (UGIE) at Liver Clinic, Lahore, Pakistan.

METHODOLOGY

This retrospective analysis was carried out on chronic liver disease patients who underwent UGIE from July 2010 to June 2014, at Liver clinic, 250 Shadman Lahore. The discrete red aggregates, seen endoscopically, usually without a mosaic background were labelled as GVE.[2] When the aggregates were found only in the antrum of the stomach, the term gastric antral vascular ectasia (GAVE) was used. The linear antral aggregates were named as watermelon stomach. When the red spots were distributed diffusely, in both the distal and the proximal stomach, the term diffuse gastric vascular ectasia was used.[3] The gender, and presence of esophageal varices were the qualitative variables, while age and weight of the patients were the quantitative variables. The entire data was evaluated on SPSS version 25. During descriptive interpretation of data, means and standard deviations were calculated for the presentation of quantitative variable, and frequencies and percentages were computed for qualitative variables. Chi-square test for independence and Independent sample T test were applied on qualitative and quantitative variables respectively to determine their significant association with presence of gastric vascular ectasias. The p values were taken statistically significant if < 0.05. Moreover, odds ratio along with their 95% confidence interval (CI) were also computed for each association.

RESULTS

Out of the total of 2430 liver cirrhotic patients, 9.26% were diagnosed having gastric vascular ectasias on gastroscopic examination. 53.3% (120 out of 225) patients had had linear antral reddish streaks suggestive of watermelon stomach, 16.7% (n=24) had scattered GAVE, and 36% (n=81) had diffuse GVE (Picture 1).

Among cirrhotic patients who underwent upper GI endoscopy, 1567(64.5%) were male while 863 (35.5%) were female. 8.9% (140 out of 1567) male had gastric vascular ectasias while 9.8% (85 out of 863) female had gastric vascular ectasias. Presence of gastric vascular ectasias has no association with gender of cirrhotic patients (p=0.465).

Among cirrhotic patients who underwent upper GI endoscopy, 2258 (92.9%) had esophageal varices while 172(7.1%) had no esophageal varices. 9.5% (215 out of 2258) patients having esophageal varices also had gastric vascular ectasias, while 5.8% (10 out

Table 1: Association of Presence of Gastric Vascular Ectasias with different Parameters (n = 225/2430).

Parameters /Categories*	Gastric vascular ectasias		p-value	Odd ratio with 95% Confidence interval
	present	Absent		
Gender				
Male	140 (8.9%)	1427 (91.1%))	0.465	0.898 (0.676 – 1.192)
Female	85 (9.8%)	778 (90.2%)		
Esophageal varices				
Yes	215 (9.5%)	2043 (90.5%)	0.063	1.705 (0.887 – 3.279)
No	10 (5.8%)	162 (94.2%)		
Mean Age (Years)	50.16 ± 9.71	51.12 ± 10.24	0.179	0.713 (-2.356 – 0.440)
Mean Weight (Kilograms)	71.40 ± 14.58	72.83 ± 15.69	0.189	1.091 (-3.572 – 0.706)

*Chi-square test for independence was used for parameter no 1&2, & Independent sample T-test was used for parameter no 3&4

of 172) patients having no esophageal varices also had gastric vascular ectasias. Gastric vascular ectasias were more prevalent in cirrhotic patients having esophageal varices; however association was statistically insignificant (p = 0.063).

The mean age of the patients diagnosed having gastric vascular ectasias was 50.16+9.71 years while the mean age of the patients having no gastric vascular ectasias was 51.12 + 10.24 years. There was no significant difference in the age of the two groups of the patients (p = 0.179). The mean weight of the patients diagnosed having gastric vascular ectasias was 71.40 + 14.58 kg while the mean weight of the patients without gastric vascular ectasias was 72.83 + 15.69 Kg. There was no significant difference in the weight of the two groups of the patients (p = 0.189) (Table 1).

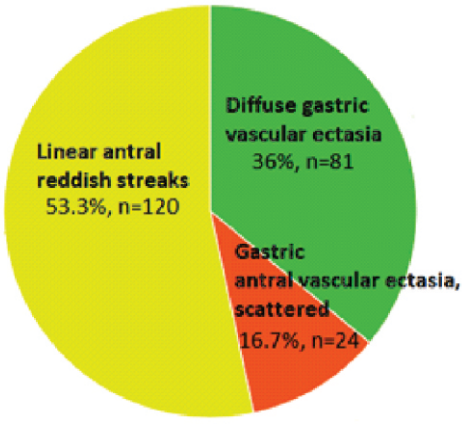

Fig. 1: *Types of Gastric Vascular Ectasias based on their Distribution in Stomach (n=225)*

DISCUSSION

Gastric vascular ectasias (GVE) require differentiation from subepithelial hemorrhages of portal hypertensive gastropathy (PHG) in liver cirrhosis.[14] Distinguishing PHG from GVE is sometimes difficult. A background mosaic pattern and proximal dispersal points the presence of portal hypertensive gastropathy. In severe form of PHG, superimposed red spots are usually more than 2mm.[15] GVE is infrequent finding in comparison to portal hypertensive gastropathy,[16] and found in the absence of a background mosaic pattern, and dominantly involving antrum, although spots may be found in the proximal part of the stomach. Biopsies of the lesions area recommended if the endoscopic diagnosis is inconclusive. Histologically, gastric vascular ectasias appear as dilated mucosal capillaries containing focal zones of fibrin thrombi or ectasia in conjunction with proliferation of spindle cells.[7] Elliot Smith[17] found that among all GVE patients, 64% were cirrhotics. Lorenzo Fuccio and colleagues[18] said that prevalence of GVE in liver cirrhosis is upto 30%. Toyonaga and Lwao[19] concluded that prevalence of portal hypertensive gastropathy is about 53%. EM Ward[20] observed 2.5% prevalence of gastric vascular ectasias in end stage liver disease patients. In our data, we observed that prevalence of GVE of 9.26%. Hence, GVE is infrequent in comparison to portal hypertensive gastropathy. Our study also told about the types of endoscopic presentations of GVE, where linear antral reddish streaks were the commonest

type (53.3%, n=120). Shawn Tsuda[21] explained that gastric antral vascular ectasias are more common among females as compared to male gender. The age when lesions were diagnosed was more for female than male. However, in our study of liver cirrhosis patients, presence of GVE has no statistical link with age (p=0.179), weight (p=0.189) and gender (p= 0.465) of the patients. On the other hand, we found that presence of gastric vascular ectasias was more common in the patients having esophageal varices (9.5% vs 5.8%). It means that gastric vascular ectasias are related with the severity of liver disease. We know that TIPS does not reduce the risk of bleeding in patients with gastric vascular ectasias[22]; therefore, TIPS placement is not recommended as therapy for gastric vascular ectasias. By contrast, gastric vascular ectasias is reversed with liver transplantation, even in the presence of portal hypertension, suggesting that gastric vascular ectasias is related to liver failure, rather than to portal hypertension.[23]

CONCLUSION

Gastric vascular ectasias are prevalent findings during upper gastrointestinal endoscopy in liver cirrhosis patients. Recognition of the lesions is necessary because these respond well to coagulation therapy. Linear antral reddish streaks is the commonest presentation in liver cirrhosis patients; however discrete lesions are also seen, which may be distributed antrally or diffusely. Gastric vascular ectasias are dominantly present in patients who also possess esophageal varices. These have no associations with gender, age and the weight of the patients.

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INTERNAL HEMORRHOIDS AND SIGMOIDOSCOPY-ASSISTED RUBBER BAND LIGATION

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Abstract

Objective: To determine the effectiveness of sigmoidoscope-assisted rubber band ligation (SRBL) for grade II and III internal hemorrhoids in patients who underwent sigmoidoscopy at Liver Clinic, Lahore, Pakistan. Moreover, we will also try to find the association of effectiveness of SRBL with age, gender and grade of international hemorrhoids.

Material & Methods: In this retrospective analysis, patients were categorized into two groups: group 1 who had no bleeding after 4 weeks of band ligation (effective SRBL group) and group 2 who continued to bleed after 4 weeks of band ligation (ineffective SRBL group). The gender, age groups, grade of internal hemorrhoids, and effectiveness of SRBL were the qualitative variables, while age of the patients was the only quantitative variable. The whole data was evaluated on SPSS version 25. Chi-square test for independence and Independent sample T test were applied on qualitative and quantitative variables respectively to determine their significant association with effectiveness of SRBL. The p values were taken statistically significant if < 0.05. Moreover, odds ratio along with their 95% confidence interval (CI) were also calculated for each association.

Results: Out of the total of 997 patients who underwent sigmoidoscopy, 478 (47.9%) had internal hemorrhoids. 197 patients were offered SRBL which was effective in 81.2% and ineffective in 18.8% patients. The mean age of the patients with effective SRBL was 46.59 + 13.35 years while mean age of the patients with ineffective SRBL was 47.27 + 13.60 years. The statistical association of effectiveness of SRBL with age was insignificant (p=0.782). SRBL was effective in 81.88% males (in 113 out of 138) and 79.66% female (47 out of 59) and there was no statistically significant association between gender and effectiveness of SRBL (p=0.696). SRBL was effective in 80.6% (in 112 out of 139) patients suffering grade II internal hemorrhoids and 82.8% (in 48 out of 58) patients suffering grade III internal hemorrhoids. Similarly, there was an insignificant association of grade of internal hemorrhoids with effectiveness of SRBL (p=0.842).

Conclusion: Internal hemorrhoids is a prevalent finding during sigmoidoscopic examination in our people. Sigmoidoscopic rubber band ligation (SRBL) has excellent results in patients suffering grade II and III internal hemorrhoids. It is a walk-in type procedure which does not necessitate hospitalization and can be performed without sedation. SRBL is equally effective in patients suffering grade II as well as grade III internal hemorrhoids, in both genders and in all age group patients.

Hemorrhoids are an anorectal disorder due to dilated vasculature.[1] They may be external or internal if they are below or above dentate line respectively.[2] Internal hemorrhoids have 4.4% estimated prevalence in general population.[3] They are categorized into 4 grades.[4] Internal hemorrhoids that do not prolapse distal to the dentate line, reduce spontaneously, requires manual reduction and cannot be reduced are named as grade I, II, III, and IV respectively.[5] Patients suffering grade I and II inter-

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nal hemorrhoids are usually treated with venous tone stabilizers like diosmin in addition to stool softeners or laxatives. If medical treatment fails or internal hemorrhoids are of grade II and III, non-surgical modalities are advised first while surgery is offered if internal hemorrhoids are of grade IV or there are large external hemorrhoids.[6] Non-surgical modalities for grade II and III include Rubber band ligation (RBL), Sclerotherapy, Cryotherapy or Infrared photocoagulation.[7,8] RBL is performed with the help of suction ligator, Barron ligator or sigmoidoscopy.[9] International data suggests that success rate of RBL varies from 69% to 97%.[10] On the other hand, hemorrhoidectomy also has a success rate of more than 85 % on 10 years follow up.[11] The benefits of sigmoidoscopic rubber band ligation (SRBL), being non-surgical modality include its easiness for both patient and performer. It is a walk-in type procedure which does not need sedation. Anal stenosis may happen in 5% to 10% patients after hemorrhoidectomy and may necessitate anal dilation.[11]

Anal stenosis may follow SRBL, however occurs in a smaller number of patients. National data is scarce on SRBL of international hemorrhoids. This made the author keen to perform such analysis, therefore the objective of our study was to determine the effectiveness of sigmoidoscope-assisted rubber band ligation (SRBL) for grade II and III internal hemorrhoids in patients who underwent sigmoidoscopy at Liver Clinic, Lahore, Pakistan. Moreover, we will also try to find association of effectiveness of SRBL with age, gender and grade of international hemorrhoids.

METHODOLOGY

This a retrospective analysis was carried out at Liver clinic, 250 Shadman Lahore. All the patients who were diagnosed as having internal hemorrhoids on sigmoidoscopy from February 2010 to July 2017 were included. Hemorrhoids above and below dentate line were named as internal hemorrhoids and external hemorrhoids respectively.[2] We graded internal hemorrhoids from I to IV,[4] where accidentally found asymptomatic grade I and II were advised no treatment, symptomatic grade 1 were offered only medical management, and grade II symptomatic and grade III were ligated with RBL using sigmoidoscope.[9] Grade IV internal hemorrhoids or large symptomatic external hemorrhoids were referred for hemorrhoidectomy or hemorrhoidal artery ligation (HAL).[6] Minor bleeding occurs 10 to 14 days after banding due to sloughing of bands applied, so bleeding after 4 weeks was considered as failure of the procedure. Hence, patients were categorized into two groups: group 1 who had no bleeding after 4 weeks of band ligation (effective SRBL group) and group 2 who continued to bleed after 4 weeks of band ligation (ineffective SRBL group). The gender, age groups, grade of internal hemorrhoids, and effectiveness of SRBL were the qualitative variables, while age of the patients was the only quantitative variable. The whole data was evaluated on SPSS version 25. During descriptive analysis, means and standard deviations were computed for the presentation of quantitative variables, and frequencies and percentages were calculated for qualitative variables. Chi-square test for independence and Independent sample T test were applied on qualitative and quantitative variables respectively to determine their significant association with effectiveness of SRBL. The p values were taken statistically significant if < 0.05. Moreover, odds ratio along with their 95% confidence interval (CI) were also calculated for each association.[12]

RESULTS

Out of the total of 997 patients who underwent sigmoidoscopy, 478 (47.9%) had internal hemorrhoids. 197 patients were offered SRBL which was effective beyond 4 weeks in 160 (81.2%) patients and ineffective in 37 (18.8%) patients who continued to bleed after four weeks of procedure (Picture 1).

The mean age of the patients with effective SRBL was 46.59 + 13.35 years while mean age of the patients with ineffective SRBL was 47.27 + 13.60 years. SRBL was equally effective in all age group

patients and the statistical association of effectiveness of SRBL with age was insignificant (p=0.782). (Table 1)

Among patients who underwent SRBL for internal hemorrhoids, 138 (70.1%) were male while 59 (29.9%) were females. The SRBL was effective in 81.88% males (in 113 out of 138) and 79.66% female (47 out of 59). SRBL was highly effective in both genders and there was no statistically significant association between gender and effectiveness of SRBL (p=0.696). Among internal hemorrhoid patients who underwent SRBL, 139 (70.6%) had grade II internal hemorrhoids while 58 (29.4%) had grade III internal hemorrhoids. SRBL was effective in 80.6% (in 112 out of 139) patients suffering grade II internal hemorrhoids and 82.8% (in 48 out of 58) patients suffering grade III internal hemorrhoids. SRBL was effective in both grade II and grade III internal hemorrhoids and there was insignificant association of grade of internal hemorrhoids with effectiveness of SRBL (p=0.842). (Table 2)

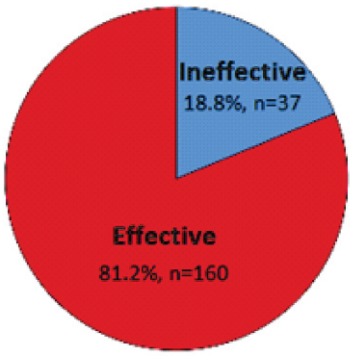

Fig. 1: *Effectiveness of Sigmoidoscopic Rubber Band Ligation in Patients with Grade 2/3 Internal Hemorrhoids (n=197)*

Table 1: *Comparison of Mean Age of Patients with Effectiveness of Sigmoidoscopic Band Ligation of Internal Hemorrhoids (n = 197) **

Quantitative variables	Effective Band ligation		Mean difference	p-value
	Yes (mean+SD)	No (mean+SD)		
Age of patients (years)	46.59 ± 13.35	47.27 ± 13.60	0.677	0.782

*Independent sample T-test was used

Table 2: *Correlation of Effectiveness of Sigmoidoscopic Band Ligation with Gender & Grade of Internal Hemorrhoids (n = 197) **

Parameters / Categories	Effective Band ligation		p-value	Odd ratio with 95% Confidence interval
	Yes	No		
Gender:				
Male	113 (70.6%)	25 (67.6%)	0.696	1.154 (0.536-2.487)
Female	47 (29.4%)	12 (32.4%)		
Grade of hemorrhoids:				
Grade 2	112 (70.0%)	27 (73%)	0.842	1.157 (0.520-2.576)
Grade 3	48 (30.0%)	10 (27%)		

*Chi-square test for independence was used

DISCUSSION

Internal hemorrhoids are frequently observed in patients undergoing sigmoidoscopy of colonoscopy. In our patients, 47.9% had internal hemorrhoids. Internationally, their prevalence has been estimated of 4.4%.[3] In 2012, Stefan Riss and his colleagues found that the prevalence of hemorrhoids was 38.9% among all those patients who underwent sigmoidoscopy. Rubber band ligation (RBL) is a non-surgical modality to treat grade II and grade III internal hemorrhoids with an estimated success rate upto 75 %.[11] We performed RBL in 197 patients using Saeed six shooter multiband ligator[14] fitted on the tip of the sigmoidoscope. The sigmoidoscope provides better visualization as compared to proctoscope; this was the reason that we achieved better results. In our data, band ligation of internal hemorrhoids was effective in 80.2% patients in term of bleeding control still beyond four weeks of the procedure. Sigmoidoscopy also has advantage of excluding coexisting rectal varices.[15] Similarly, sigmoidoscopy provides better differentiation of internal hemorrhoids from external hemorrhoids, because band capturing the part of external hemorrhoid is very painful.[16] On the other hand, external hemorrhoids should also be differentiated from anal warts and skin tags. Anal skin tags are not external hemorrhoids, but residual excess tissue formed as a result of prior thrombosis of external hemorrhoids or from perianal Crohn's disease,[17] while anal warts are produced by herpes simplex virus (HSV).[11]

The international data suggests that incidence of hemorrhoids increases with age and approximately 50% population over age 50 years have some degree of hemorrhoids.[18,19] In our study, we observed that sigmoidoscopy- assisted rubber band ligation of internal hemorrhoids was equally effective for all age group patients. Mustafa Cellalettin Haksal and colleagues[20] concluded that hemorrhoidectomy is

also equally effective and safe in both elderly and younger patients. Literature shows that there is no significant difference in the occurrence of internal hemorrhoids between male and female genders.[21] We computed in our data that effectiveness of Sigmoidoscope-assisted rubber band ligation is also nearly equal in both male & female gender (81.88% vs 79.66%, p=0.696). In a study from India, Vinayak Nikam et al[22] concluded that rubber band ligation using proctoscope at surgical department was more effective for Grade II than for Grade III hemorrhoids (85% vs 21%). In our study, where band ligation was sigmoidoscope- assisted, it was equally and highly effective for both grade II and grade III internal hemorrhoids (80.6% vs 82.8%, p=0.842). Our data yielded valuable results. Further studies with large sample size are required to validate these findings.

CONCLUSION

Internal hemorrhoids is a prevalent finding during sigmoidoscopic examination in our people. Sigmoidoscopic rubber band ligation (SRBL) has excellent results in patients suffering grade II and III internal hemorrhoids. It is a walk-in type procedure which does not necessitate hospitalization and can be performed without sedation. SRBL is equally effective in patients suffering grade II as well as grade III internal hemorrhoids, in both genders and in all age group patients.

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CLINICAL AUDIT FOR ADEQUACY OF CLINICAL INFORMATION ON CT REQUEST FORMS

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Abstract

Introduction: Radiation exposure for medical reasons forms a big percentage of the overall radiation exposure. Computer Tomography (CT) is one of the biggest sources of radiation and its request form is an important portal in the treatment strategy. However, it is an obligation on behalf of clinical physicians to justify the CT request. Moreover, proper filling of the CT request form also helps the radiologist in making an exact diagnosis and formulate the differentials.

Objective: To observe the adequacy of completion of CT request forms in the form of clinical history provided, abbreviations used, pathological correlation and list of provisional diagnosis.

Methods: The audit was performed for the first week of December starting from 2nd Dec to 6th Dec, 2019 performed on Siemens CT machine in new CT console. This included 100 patients and data were collected on a form relating to the four parameters already described for different regions of the body. The data were collected by fourth year Post Graduate trainees and the results were compiled by the senior author. The statistical analysis was done on SPSS Windows Package Version 20.

Results: Our results showed that only 39 forms were adequately filled and the rest 61 forms lacked the useful information. Out of these 49 (80 %) lacked the proper clinical history. Pathological information and previous record was missing in 51 (84 %) forms. No provisional diagnosis was given in 34 (56%) forms and improper abbreviations were used in four (7%) forms.

Conclusion: There is a lot more to be done for further improvement in the completion of CT forms. Poor clinical history, use of vague abbreviations and inadequate list of differentials leads to poor reporting and thus deteriorates the care of the patient. A little more focused approach can further help improve the clinical care and management of the patient.

The whole of radiological examination works on the principle of as low as reasonably practicable (ALARP). Justification forms a major part of radiological practice as advised by International Commission of Radiological Protection (ICRP). Justification requires to evaluate the clinical request on the basis of benefit versus risk.[1] Before a radiological examination is conducted, it is the ethical duty of both the referrer and practitioner to justify the radiological examination. Moreover, it is also the duty of the referrer to give complete history regarding the patient which not only justifies the radiological exposure but also helps the radiologist in assessment of the procedure and thus in making an accurate diagnosis or the list of differentials which affects the overall treatment strategy of the patient.[2]

The radiation exposure from medical exposure is almost three times of the nuclear power sources. CT is one of the biggest sources of radiation exposure in medical field. Much of the exposure comes from unnecessary scans which account for 20-77% of scans.[3] As medical imaging is becoming more frequently available it is of paramount importance that the radiological request forms are properly filled in both from medical and legal points of view. The unnecessary radiation exposure from medical sources can be significantly reduced if it becomes mandatory for the clinician to justify the examination. CT request forms are an important portal of transformation of medical information between the

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radiologist and the physician. The clinician should properly fill in this form by providing complete history, specific queries and any previous records in detailed form which would reduce the number of unjustified scans.

Radiologists require a precise data of information along with pathological tests and provisional diagnosis to help them focus on the problem. This saves the time spent in looking for unnecessary findings and accommodates more patients in the busy setup. Also, according to the Ionizing Radiation Regulations 2000, there should be a proper excuse for the patient to receive such high radiation dose and legally the radiologist should be able to fulfill the criteria of justification and optimization. The CT request form has been categorized in certain columns according to the information required in general. We decided to perform an audit regarding adequacy of clinical history along with other ancillary findings provided to the radiology department in one week. It would help us evaluate flaws in our request forms and look for further improvements. This may also help in formulating a preset of abbreviations under local guidance which could help in day to day management.

OBJECTIVE

To observe the adequacy of completion of CT request forms in the form of clinical history provided, abbreviations used, pathological correlation and list of provisional diagnosis.

METHODOLOGY

The audit was performed for the first week of December starting from 2nd Dec to 6th Dec, 2019 performed on Siemens CT machine in new CT console. This included 100 patients. The data were collected on a form relating to four parameters already described for different regions of the body. The data were collected by fourth year Post Graduate trainees and the results were compiled by the senior author. The statistical analysis was done on SPSS Windows Package Version 20.

RESULTS

Our results showed that only 39 forms were adequately filled in whereas 61 forms lacked the useful information (Fig. 1). Out of these 49 (80 %) lacked the proper clinical history. Pathological information and previous record was missing in 51 (84 %) forms. Provisional diagnosis was not given in 34(56%) forms and improper abbreviations were used in four (7%) forms (Fig. 2).

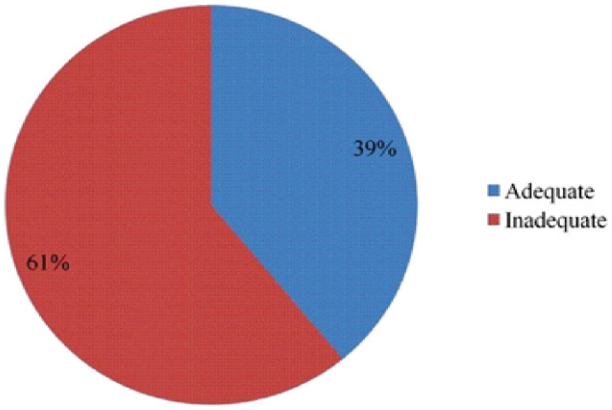

Fig. 1: *Total CT Contrast Performed in the 1ST Week of December (02-12-2019 to 07-12-2019)*

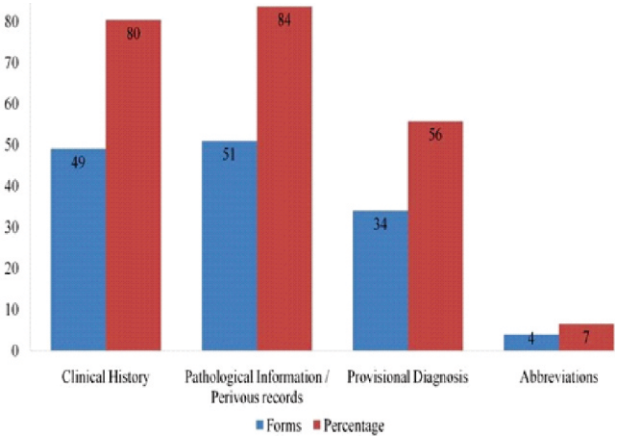

Fig. 2: *Inadequate Forms*

DISCUSSION

Our results showed that out of 100 forms only 39 forms were completely filled in whereas 61 forms were incomplete and inadequate. Full data of the patient is not only required for reporting but also for keeping record for further research regarding demographics, sexual predilection or disease trend in a specific population. To identify the patient, we need

the complete name, surname as well as the date as two patients might bear the same name.[3,4] A previous study performed in Sudan showed that around 90% of forms that came for CT had the dates mentioned which greatly reduced their report disposal discrepancy rate.[5] CT request forms should also reveal the ward's name, bed number and complete address of the patient. It should also have the name and the contact number of attending physician. This greatly improves the accurate deli-very of the report and helps the radiologist in further evaluation if he /she wants to further dig into the history. A previous reference study performed in Nigeria showed that this had impeccable impact on proper and accurate delivery of reports. Our study primarily did not focus on it, but almost 90% of the forms neither had the complete address of the patient nor the details of the attending physician.[6,7]

A proper medical and surgical history is of great importance for a radiologist along with any previous record in helping him evaluate a CT and making a radiological diagnosis. This further helps in the justification of the CT and radiation exposure.[3,10] Clinical history of the patient was provided in 79.5 % and 90 % cases respectively in two studies.[8,9] In our study, it was a poor result as 80% of forms lacked the detailed history of the patient. The pathological information and previous data were absent in about 84 % of forms in comparison to a study performed in 2016 at James Cook Hospital, Australia that showed 96% of request forms provided complete investigation details.[9]

The list of provisional diagnosis with special queries was provided in just 44 % of forms. The same study at James Cook Hospital showed a promising result of 98%.[9] This represents a great lack of communication between the radiology department and the clinicians and steps should be taken to further narrow down this gap. The usage of improper abbreviations, illegible handwriting and unconventional forms can further hinder this communication. This can result in misinterpretation of the information as well as wrong or repeat examinations. Although our study had just seven percent of such forms, they were present in just one percent of forms in our reference study[3] while they were present in 7.2 % in another study.[8]

Our study clearly showed that our request forms were severely deprivent in the appropriate history and related information. This needs to be taken very seriously on behalf of clinicians as this can change the overall scenario for the patient regarding his further management planning. It would also help in decreasing the load of radiological department preventing the unnecessary examinations and safeguarding the patient from undue radiation exposure.[11,12]

CONCLUSION

Much more is required to be done for further improvement in the completion of CT forms. Poor clinical history, use of vague abbreviations and inadequate list of differentials leads to poor reporting and thus deteriorates the care of patient. A little more focused approach can further help improve the clinical care and management of the patient. To improve the situation, the Clinicians may be apprised of the situation and Model CT forms be provided in all clinical sections of the Hospital to be filled in.

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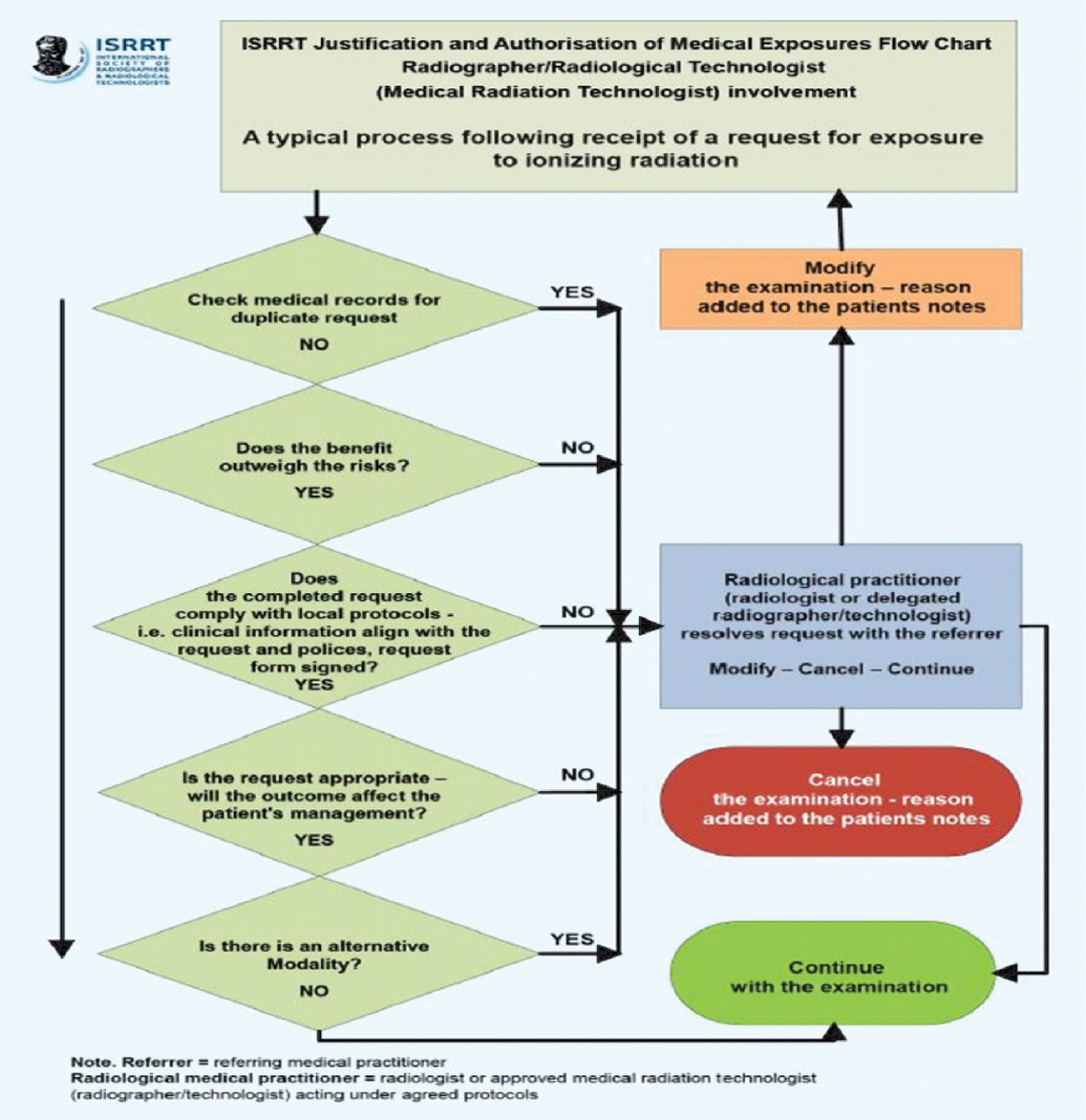
JUSTIFICATION PROTOCOL FOR RADIATION EXPOSURE



EVALUATION OF PATIENTS FOR INCIDENCE OF CHRONIC COMPLICATIONS OF TYPE 2 DIABETES MELLITUS IN NEWLY DIAGNOSED PATIENTS IN LAHORE

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Abstract

Aim: To evaluate the newly diagnosed Type 2 Diabetes Mellitus patients for its complications at first presentation.

Study Type: A prospective, cross-sectional and observational study.

Methods and Results: A prospective, cross-sectional and observational study was carried out.Both male and female consecutive patients presenting to Akhtar Saeed Trust Hospital and Farooq Hospital Lahore from May 2018 to April 2019 and were diagnosed to have Type 2 DM were included in the study. All the patients underwent an extensive medical examination for the assessment of microvascular and macrovascular complications. A pre-designed Pro forma was used to document the information with the help of skilled medical professionals. A total of 473 patients of newly diagnosed Type 2 DM was included in the study. There were 221 males and 252 females. The mean age of patients was 42±7 years. Out of 437 patients of newly diagnosed Type 2 DM, 21.56% had diabetic retinopathy, 12.47% had diabetic nephropathy, 23.46% had diabetic peripheral neuropathy, 28.75% had coronary artery disease,1.69% had peripheral vascular disease, 3.38% had diabetic foot disease, 9.30% had Stroke/Transient Ischemic attack and 33.40% had hyperlipidemia.

Conclusion: The results of the study conclude that considerable number of patients of newly diagnosed Type 2 DM have complications of the disease at the time of diagnosis.

Keywords: Diabetes Mellitus, retinopathy, nephropathy, peripheral neuropathy, coronary artery disease, peripheral vascular disease, hyperlipidemia.

Type 2Diabetes mellitus (DM) is very common all over the world. According to the WHO report of 2018, worldwide the number of people with diabetes has risen four fold from 108 million in 1980 to 422 million in 2014.[1] The global prevalence of diabetes among adults has almost doubled from 4.7% in 1980 to 8.5% in 2014.[2] According to the data provided by WHO, the prevalence of diabetes mellitus in Pakistan is 9.8%, with 10% males and 9.8% females.[3] Medicines for diabetes, basic technologies and procedures to deal with the complications of disease are generally not available in the public health sector in Pakistan. Because of the lack of basic awareness of the disease, it may take many years for the disease to be diagnosed in some patients. Many patients with DM would be asymptomatic for many years and would not seek medical advice. In the meanwhile, they would have developed complications of diabetes mellitus before being diagnosed. Late diagnosis would have led to uncontrolled DM of many years leading to bot microvascular and macrovascular complications. Our hypothesis was that, this phenomenon may be more prevalent in developing countries because of the lack of aware-

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ness and non-availability of basic medical facilities to the general public. In this study, we wanted to evaluate the prevalence of complications of diabetes mellitus in newly diagnosed patients of Pakistan. Pakistan is a developing country with low literacy rate and poor socioeconomic conditions. That scenario leads to late presentation and diagnosis of patients in case of many diseases including Type 2 DM. Common symptoms of DM like excessive thirst, excessive appetite and weight loss are ignored by patients. Sometimes, the patients only visit the physician after they have developed some obvious complications of the disease and seek the medical advice for that.

METHODOLOGY

A prospective, cross-sectional and observational study was carried out. Both male and female consecutive patients presenting to Akhtar Saeed Trust Hospital and Farooq Hospital Lahore from May 2018 to April 2019 and were diagnosed to have Type 2 DM were included in the study. Total number of patients included in the study was 473 of adult group of population. American Diabetes Association criteria for the diagnosis of Type 2 Diabetes mellitus (DM) was used[4] which included a fasting blood glucose level of 126 mg/dl or higher, or a 2-hour plasma glucose level of 200 mg/dl or higher during a 75 gm oral glucose tolerance test, or a random plasma glucose of 200 mg/dl or higher in a patient with symptoms of hyperglycemia. Known patients of Type 2 DM were not included in the study. Venous blood samples were collected from all patients and analyzed for blood sugar level, serum creatinine, BUN, liver function tests, serum albumin, glycated hemoglobin (HbA1c)and lipid profile. Urine analysis was performed for microalbuminuria and macroalbuminuria.All newly diagnosed patients of Type 2 DM underwent an extensive medical examination for the assessment of microvascular and macrovascular complications.

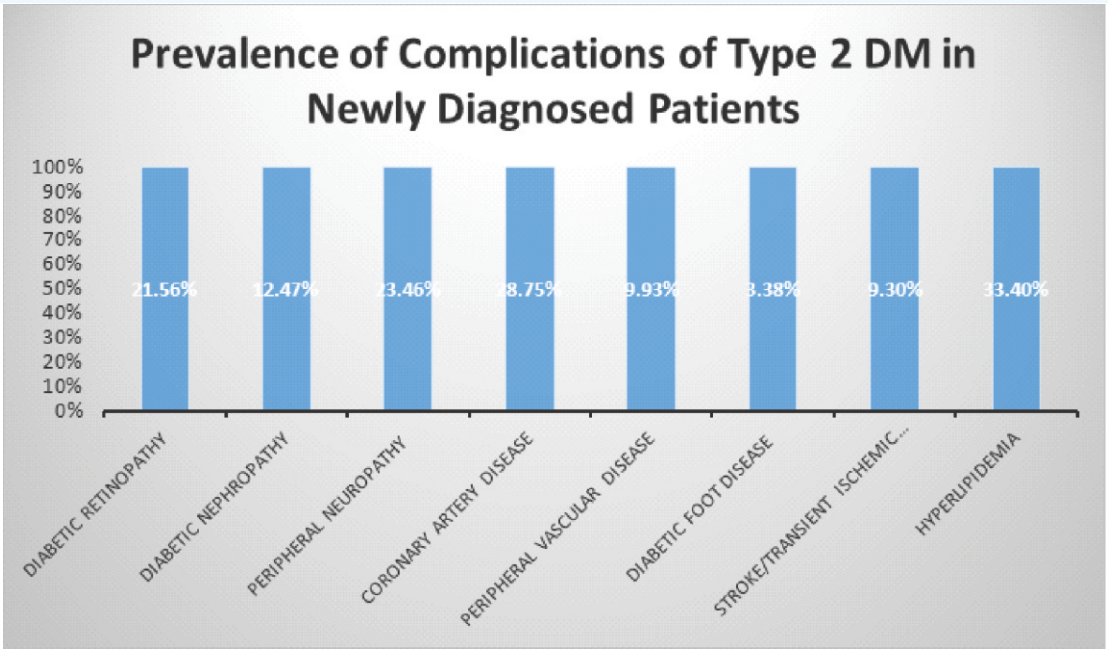
Diabetic retinopathy was diagnosed by fundus examination after full dilatation of pupil. Peripheral diabetic neuropathy was diagnosed on the basis of history and neurological examination for touch, pain, vibration sense and reflexes. Other causes of neuropathy were ruled out on the basis of history and investigations. Urine was collected for 24 hours for albumin estimation to diagnose diabetic nephropathy. Coronary artery disease (CAD) was diagnosed on the basis of history of chest pain with typical radiation, electrocardiography (ECG) changes associated with chest pain and Exercise Tolerance Test. Peripheral vascular disease was diagnosed on the basis of history and examination of limb arteries. Doppler ultrasound was further performed to confirm the disease. Diabetic foot disease presented as infected foot ulcers and was found to be associated with complications like diabetic peripheral neuropathy and peripheral vascular disease. Stroke/ Transient Ischemic attacks were diagnosed on the basis of history, neurological examination and confirmed by imaging. Hyperlipidemia was diagnosed by checking fasting lipid profile. A pre-designed Pro forma was used to document the information with the help of skilled medical professionals. Data was analyzed by using SPSS version 20.

RESULTS

A total of 473 patients of newly diagnosed Type 2 DM was included in the study. There were 221 males and 252 females. The mean age of patients was 42±7 years. Out of 437 patients of newly diagnosed Type 2 DM, 102/473 (21.56%) had diabetic retinopathy, out of which 47 (46.08%) were males and 55(63.92%) were females. 59/473(12.47%) had diabetic nephropathy, out of which 23(38.98%) were males and 36(61.02%) were females, 111/473 (23.46 %) had diabetic peripheral neuropathy, out of which 53(47.75%) were males and 58(52.25%) were males, 136/473 (28.75%) had coronary artery disease, out of which 81(59.56%) were males and 55(40.44%) were females, 47/473 (9.93%) had peripheral vascular disease, out of which 26(55.32 %) were males and 21(44.68%) were females, 16/473 (3.38%) had diabetic foot disease, out of

Table 1: Chronic Complications in Patients of Newly Diagnosed Type 2 DM

Chronic complications	Males	Females	Total	Percentage
Diabetic retinopathy	47/102 (46.08%)	55/102 (63.92%)	102/473	21.56%
Diabetic nephropathy	23/59 (38.98%)	36/59 (61.02%)	59/473	12.47%
Diabetic peripheral neuropathy	53/111 (47.75%)	58/111 (52.25%)	111/473	23.46%
Coronary artery disease	81/136 (59.56%)	55/136 (40.44%)	136/473	28.75 %
Peripheral vascular disease	26/47 (55.32%)	21/47 (44.68%)	47/473	9.93%
Diabetic foot disease	09/16 (56.25%)	07/16 (43.75%)	16/473	3.38%
Stroke/TIA	25/44 (56.82%)	19/44 (43.18%)	44/473	9.30%
Hyperlipidemia	87/158 (55.06%)	71/158 (44.94%)	158/473	33.40%



which 09(56.25%) were males and 07(43.75%) were females, 44/473 (9.30%) had Stroke/ Transient Ischemic attack (TIA), out of which 25(56.82%) were males and 19(43.18%) were females and 158/473 (33.40%) had hyperlipidemia, out of which 87(55.06%) were males and 71(44.94%) were females as shown in table 1.

DISCUSSION

A prospective cross-sectional and observational study consisting of a total of 473 newly diagnosed Type 2 DM patients was conducted. There were 221 males and 252 females. The mean age of patients was 42±7 years.

Out of 437 patients of newly diagnosed Type 2 DM, 102/473 (21.56%) had diabetic retinopathy. Deepaet al6conducted a similar study in India which showed almost identical results for the prevalence of retinopathy i.e. 20%.

A few other similar studies in India,[13,20] Pakistan[9,11] and China[7] also reported almost similar results to our study regarding prevalence of retinopathy inpatients of newly diagnosed Type 2 DM. The reason may be similar demographics and identical medical systems of the above mentioned countries. Ali et al[12] in Lahore, Pakistan and Kansakar et al[15] in Nepal showed prevalence of diabetic retinopathy 31.4% and 27.27% respectively. The results showed higher prevalence than our study, the reason may be that in both the studies, the sample population was from poor socioeconomic groups of the society who seek medical advice late. While some other similar studies, Bansal et al[8] in India and Khalil et al[18] in Egypt showed prevalence of retinopathy 9.5% and 10.4% respectively which was lower than our study. Moreover, Heydari et al[17] Iran and Wani et al[10]

showed retinopathy to be 6% in newly diagnosed patients of Type 2 DM. Shaheen et al[5] in India showed further lower prevalence of retinopathy at 2%. The difference results in these different studies may be due to different demographics, different study techniques or different genetic make-up of various populations across the globe. Annemieke et al[14] in Netherlands showed retinopathy to be 7.6% and Drivsholm et al16in Denmark showed retinopathy to be 4% in females and 5.4% in males in newly diagnosed diabetic patients. These both countries are rich economically with high literacy rate and provide the best medical facilities to their people. That may be the reason that they showed lowest prevalence of retinopathy amongst all the above mentioned countries.

Out of 437 patients of newly diagnosed Type 2 DM, 59/473 (12.47%) had diabetic nephropathy. Similar studies in China,[7] Iran,[17] India[20] and Egypt[18] had comparable results of prevalence of nephropathy i.e. 10.7%, 10%, 7% and 10.4% respectively which are almost similar to the results of our study. As compared to our study, a few other studies in India like Deepa et al,[6] Wani et al,[10] Maniarasu et al[19] and Kansakar et al[15] in Nepal showed markedly higher prevalence of nephropathy i.e. 37%, 50%, 30.7% and 27.27% respectively. A few other studies in India like Shaheenet al[5], Bansal et al,[8] Kumar et al[13] showed markedly lower prevalence of nephropathy i.e. 4%, 2.8% and 5.6% respectively. The reason for these differences regarding prevalence of nephropathy may be due to different demographics, different methods of study and differences in the availability of medical facilities to various groups of population.

Out of 437 patients of newly diagnosed Type 2 DM, 111/473 (23.46%) had diabetic peripheral neuropathy. Many similar studies carried out in India,[5,6,13,19,20] China,[7] and Denmark[16] repoted almost similar results of diabetic peripheral neuropathy to our study. A few other studies like Waniet al[10] in India, Heydari et al[17] in Iran, and Sheshah et al[21] in Saudi Arabia showed very high prevalence of peripheral neuropathy i.e. 33%, 52% and 89% respectively. The reason may be different methods employed during the execution of these studies or different demographics. A few other studies like Bansal et al[8] in India 8.2%, Kansakar et al[15] in Nepal and Khalil et al[18] in Egypt showed considerably lower prevalence of peripheral neuropathy i.e. 8.2%, 10.74% and 3.3% respectively in newly diagnosed patients of Type 2 DM. The reason may be better medical facilities and higher awareness of the disease in these localities.

Out of 437 patients of newly diagnosed Type 2 DM, 136/473 (28.75%) had coronary artery disease. A few similar studies in India[6] and China[7] showed prevalence of coronary artery disease to be 26% and 30.1% respectively which are very similar to the results of our study. A few other studies like Kumar et al[13] in India, Drivsholm et al[16] in Denmark, Maniarasu et al[19] in India and Nandan et al[20] in India showed considerably lower prevalence of coronary artery disease as compared to our study i.e. 9.15%, 9.95%, 7.8% and 9% respectively. Out of these studies, Drivsholmet al[16] was carried out in Denmark which has better medical facilities and higher level of education with better awareness of disease. The lower prevalence in some other studies carried out in India may be due to variations in other risk factors of coronary artery disease.

Out of 437 patients of newly diagnosed Type 2 DM, 47/473 (9.93%) had peripheral vascular disease. Deepa et al[6] in India and Drivsholm et al[16] in Denmark showed prevalence of peripheral vascular disease to be 11% and 13.1% respectively which are similar and validate the results of our study. Khalil et al[18] in Egypt showed that peripheral arterial disease was detected in 45.5% of known patients and 9.8% of newly diagnosed patients of Type 2 DM. These results confirm that peripheral vascular disease is more common in known patients as compared to newly diagnosed patients of Type 2 DM.

Out of 437 patients of newly diagnosed Type 2 DM, 16/473 (3.38%) had diabetic foot disease, Liu et al[7] in China showed it to be 8%. These results

confirm that the prevalence of diabetic foot disease is lower than the other complications in patients of newly diagnosed Type 2 DM.

Out of 437 patients of newly diagnosed Type 2 DM, 44/473 (9.30%) had Stroke/Transient Ischemic attack. Deepa et al[6] in India and Liu et al[7] in China showed it to be 8% and 6.8% respectively. These results are almost similar to the results of our study. Maniarasuet al,[19] another study which was also carried out in India showed the prevalence to be 0.5% which was considerably lower than the results of our study. Further studies need to be carried out to confirm the results.

Out of 437 patients of newly diagnosed Type 2 DM, 158/473 (33.40%) had hyperlipidemia. Shaheenet al[5] in India showed prevalence of hyperlipidemia to be 37.3% which is almost similar to our study. While a few studies in India like Kumar et al[13] (54.6%), Nandan et al[20] (75%), Maniarasu et al[19] (85.7%), and Heydari et al[17] in Iran (73.5%) showed very high prevalence of hyperlipidemia in newly diagnosed Type 2 DM patients. The differences in results may be due to different demographics and different genetic make-up of patients.

CONCLUSION

The results of the study conclude that considerable number of patients of newly diagnosed Type 2 DM have complications of the disease at diagnosis. All the newly diagnosed patients should be thoroughly evaluated for both macrovascular and microvascular complications of diabetes mellitus. Population awareness programmes should be started for the early diagnosis of the disease leading to better glycemic control. That would ultimately lead to reduced disability and mortality because of the complications of the disease.

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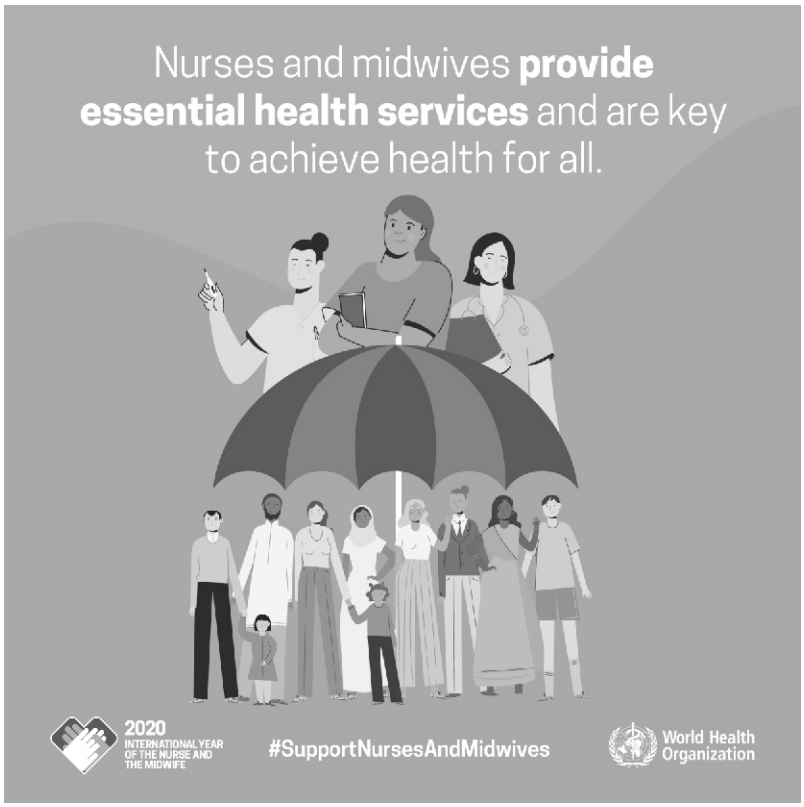

P53 BIOMARKER EXPRESSION IN DIFFERENT GRADES OF PROSTATIC ADENOCARCINOMA

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Abstract

Aim: The objective of study is to determine the expression of p53 immunostain in the patients suffering from prostatic adenocarcinoma in our population.

Study Design: Descriptive cross- sectional study

Study was conducted for a duration of six months in Pathology department of Combined Military Hospital, Lahore.

Methods: Non-probability, consecutive sampling was done. This study involved tissue samples from 50 male patients aged between 35-80 years who were diagnosed histologically of having prostatic adenocarcinoma on prostate chips. Gleason grading was performed and p53 status was determined. A written informed consent was taken from each patient.

Results: The age of the patients ranged from 45 years to 80 years with a mean of 68.1±10.7 years. Majority (n=40, 80.0%) of the patients were aged 55 years and above. Gleason grade ranged from 2 to 10. There were 7 (14.0%) well differentiated, 30 (60.0%) moderately differentiated and 13 (26.0%) poorly differentiated tumors. Positive p53 expression was observed in 36 (72.0%) patients. There was no statistically significant difference in the frequency of positive p53 expression across various age groups, however it increased significantly with increasing Gleason grade.

Conclusion: A positive p53 expression was noted in a substantial proportion of patients with prostatic adenocarcinoma and was associated with poor histologic tumor grade which might suggest prognostic role of p53 expression and its usefulness in management planning of such patients.

Key words: Prostatic Adenocarcinoma, Gleason Grade, p53 expression.

All over the world, prostate cancer is a major health issue[1] and overall it is ranked as the second most common malignancy in men.[2] In 2014, there were estimated 233,000 cases and 29500 deaths in United States from prostate cancer.[3] In Pakistan, it is ranked as third most commonly diagnosed cancer among males.[4]

Prognosis of prostate cancer depends on clinical and biological factors. Grading of the prostate cancer is an important prognostic factor.[5] For this, Modified Gleason's grading based on tumour cells differentiation is employed. Molecular markers will also act in active surveillance and follow up of the patients in this regard.[6]

Amongst biological markers p53 is an important one[5]. p53 is most commonly mutated gene in human malignancies.[7,8] It is a tumour suppressor gene and key regulator of cells cycle.[9] p53 synthesized by the mutated gene can be measured by immunohistochemistry due to longer half-life.[8] IHC staining for p53 is a rapid, inexpensive, commercially available technique that has potential as a prognostic tool. The high prevalence of positive staining is clearly seen in progressive, hormonally refractive disease.[10] Negative immunostaining is likely to have good prognosis on follow up of the patient.[9] In a study carried out in India, an overall 76% p53 expression was seen in prostatic adenocar-

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cinoma patients where 25% were well differentiated, 74.19% moderately differentiated and 93.33% were poorly differentiated tumours [1].

Rationale of this study is to document frequency of p53 expression in different grades of Gleason's grade of prostate adenocarcinoma as negative p53 expression will have good prognostic implication. The results of this study will also be helpful for local researchers to design more advanced studies among targeted population.

METHODOLOGY

A total of 50 cases were recruited. Study was conducted after getting formal approval from ethical committee of the institution. Paraffin blocks of prostate cancer biopsies were taken. Freshly cut three to five microns thick sections stained with hematoxylin and eosin (H & E) were examined microscopically by a team of two histopathologists and tumor's grade using Gleason's grading system was documented. Thereafter, another 6 microns thick sections of all the blocks were then stained for p53 marker.

RESULTS

The age of the patients ranged from 45 years to 80 years with a mean of 68.1±10.7 years. Majority (n=40, 80.0%) of the patients were aged 55 years and above. Gleason grade ranged from 2 to 10 with a mean of 6.4±2.0. There were 7 (14.0%) well differentiated, 30 (60.0%) moderately differentiated and 13 (26.0%) poorly differentiated tumors as shown in Table1.

Positive p53 expression was observed in 36 (72.0%) patients out of 50 with positive nuclear staining. No nuclear immunostaining was considered negative and labeled as zero. All scores above zero were labeled as positive. There was no statistically significant difference in the frequency of positive p53 expression across various age groups.

When stratification of positive p53 immunostain cases was done in different grades of prostatic adenocarcinoma, there was a significant increase in positive p53 cases with increasing Gleason grade; 2-4 vs. 5-7 vs. 8-10 (28.6% vs. 73.3% vs. 92.3%; p-value = 0.010) as shown in Table 2.

Table 1: *Baseline Characteristics of Study Sample*

Characteristics	Participants (n= 50)
Age (years)	68.1 ± 10.7
• **<55 years**	10 (20.0%)
• **⩾55 years**	40 (80.0%)
Gleason Grade	6.4 ± 2.0
• **Well Differentiated**	7 (14.0%)
• **Moderately Differentiated**	30 (60.0%)
• **Poorly Differentiated**	13 (26.0%)

DISCUSSION

Malignant neoplasms of the prostate usually originate in the glandular tissue[1]. While these cancers, mainly adenocarcinomas, are often indolent[3], there is a subset of men who are diagnosed with highly malignant prostate cancers associated with poor prognosis.[4]

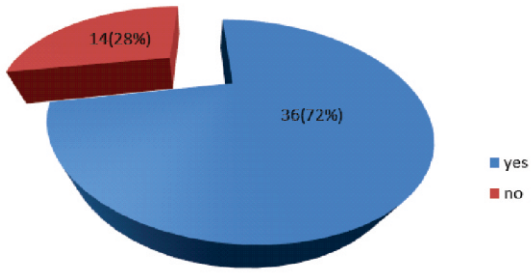

Fig 1: *Frequency of p53 Expression in Study Sample of Prostatic Adenocarcinoma (n=50)*

Biomarkers are important tools in individualized medicine. Biomarkers in cancer (can) have several valuable applications: improve diagnosis, improve staging, indicate disease prognosis (e.g.,

Table 2: *Stratification of p53 Expression Across Various Subgroups*

Characteristics	n	p53 Expression n (%)	P value
Age			
• <55 years	10	7 (70.0%)	0.875
• ⩾55 years	40	29 (72.5%)	
Gleason Grade			
• Well Differentiated	7	2 (28.6%)	0.010*
• Moderately Differentiated	30	22 (73.3%)	
• Poorly Differentiated	13	12 (92.3%)	

indolent vs. clinical significant prostate cancer), monitor response to treatment, select patients for different treatment options, surrogate endpoint in trials, therapeutic target.[12]

Amongst biological markers of prostatic cancer, p53 is an important one.[5] p53 is most commonly mutated gene in human malignancies.[7,9] In patients with prostatic cancer, p53 expression has been linked with poor histologic grade and case outcome.[1] However, the reported frequency of p53 expression in patients with prostate cancer varied in existing literature while there was no such local published material which necessitated the present study to deliver local baseline statistical data in this regard.

CONCLUSION

Positive p53 expression was noted in a substantial proportion of patients with prostatic adenocarcinoma and was associated with poor histologic tumor grade. The study suggests that abnormal p53 expression correlates with high histological grade, high stage and clinical disease progression thus indicating a prognostic role of p53 expression and its usefulness in management planning of such patients.

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TO HAVE MEANINGFUL WORK IS A TREMENDOUS HAPPINESS

COMPARISON OF TRANEXAMIC ACID VERSUS SALINE IN PATIENTS UNDERGOING FUNCTIONAL ENDOSCOPIC SINUS SURGERY FOR NASAL POLYPS

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Abstract

Background: Nasal polyps are noncancerous growths within the nose or sinuses. Treatment is typically with steroids, often in the form of a nasal spray. As polyps grow larger, they eventually prolapse into the nasal cavity resulting in symptoms. Functional endoscopic sinus surgery (FESS) is a standard procedure for most of nose and paranasal sinuses diseases. FESS may begin with uncinectomy.

Objective: To compare the outcome with injectable tranexamic acid versus saline solution for patients undergoing functional endoscopic sinus surgery for nasal polyps

Methods: It was randomized control trial conducted at Department of ENT, Services Hospital Lahore for 6months. 100 patients were enrolled. Patients were divided into two groups. During surgery, blood score of each patient assessed and noted by using Endoscopic surgical field grading system. Total blood loss was also noted. Data was entered and analyzed on SPSS version 20.

Results: In this study male to female ratio of the patients was 2.4:1. The mean value of blood score of the TXA group of the patients was 2.46±0.503 whereas its mean value in saline group was 4.06±0.89. Similarly the significant difference was found between the study groups with total blood loss i.e. p-value=0.001.

Conclusion: Injectable tranexamic acid is significantly better in terms of total blood loss and blood score than saline solution group for patients undergoing FESS for nasal polyps

Keywords: Nasal Polyps, Tranexamic Acid, Blood loss, Endoscopic Sinus Surgery

Functional endoscopic sinus surgery is a standard procedure for most of nose and paranasal sinuses diseases. Sinuses are bony air cavities which surround the nose. When they are blocked, they become infected and cause discomfort. Sinus surgery is intended to restore drainage pathway and ventilation of sinuses and factors like type of pathogens, their virulence and allergies are not taken into account. The theory is to conserve mucosa and with the restoration of patency of sinuses, the diseased sinus mucosa can return to normal.[1] Common indications for FESS include chronic sinusitis unresponsive to medical therapy, nasal polyps, sinus mucoceles, resection of some tumors, Cerebrospinal fluid leakage closure, choanal atresia repair and epistaxis control. Nasal polyps are benign edematous mucosal masses that can cause nasal obstruction, discharge and altered sense of smell.[2]

Their exact etiology is unknown but are linked to chronic inflammatory conditions of nose and paranasal sinuses. They are diagnosed on clinical examination, radiological evidence on CT scan and histological tissue diagnosis. FESS involves insertion of thin fiber-optic endoscope into nose for direct visualization of openings of sinuses. The magnified view of surgical field in FESS makes minor bleeding cause significant impairment in visualization.[3] Various substances like topical vasoconstrictors, adrenergic blockers, frowler's position and preoperative steroids have been used to secure a dry operating field but these are not meaningfully effective and have some serious side effects.[4]

The success of FESS depends on minimizing

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edema and intraoperative bleeding so that view of surgical field is clear. Intravenous tranexamic acid has been in interest recently to assess its role minimizing bleeding during sinus surgery. A study conducted in Egypt shows that intravenous tranexamic acid given preoperatively effectively reduces bleeding during FESS and improves visualization of surgical field and increases satisfaction of surgeon.[5,6] Tranexamic acid act by competitively inhibiting activation of plasminogen and reduce conversion of plasminogen to plasmin, an enzyme that degrades fibrin clots, fibrinogen and other plasma proteins including procoagulent factors 5 and 7. Important side effects of the drug are visual abnormalities, nausea, vomiting and diarrhea. Effective role of tranexamic acid before surgery has been assessed in a local study done for orthopedic surgery.[7]

Few other studies also recommend use of tranexamic acid before FESS in improving quality of FESS.However, few studies show that that intravenous tranexamic does not result in clinically meaningful reduction in intraoperative bleeding.[8-10] One randomized study showed that with injectable tranexamic acid, mean blood loss was 102±19ml which was significantly less than saline (153±23ml) for patients undergoing FESS for nasal polyps ($p<0.0001$).[11] The exact cause is unclear. They may be related to chronic inflammation of the lining of the sinuses. They occur more commonly among people who have allergies, cystic fibrosis, aspirin sensitivity, or certain infections. The polyp itself represents an overgrowth of the mucous membranes. Diagnosis may occur by looking up the nose. A CT scan may be used to determine the number of polyps and help plan surgery.[12] Nasal polyps resulting from chronic rhinosinusitis affect approximately 4.3% of the population. Nasal polyps occur more frequently in men than women and are more common as people get older, increasing drastically after the age of 40.13 of people with chronic rhinosinusitis, 10% to 54% also have allergies. An estimated 40% to 80% of people with sensitivity to aspirin will develop nasal polyposis. In people with cystic fibrosis, nasal polyps are noted in 37% to 48%.[13]

The rationale of this study is to compare the outcome with injectable tranexamic acid versus saline solution for patients undergoing FESS for nasal polyps. Literature has showed that tranexamic acid can be helpful in reducing intraoperative blood loss and has better blood score. The results of this study will help us to get local magnitudes which will be helpful for us to implement the administration of tranexamic acid injection before nasal surgery to prevent excessive blood loss and get low grade of blood score for successful surgery without complications.

OBJECTIVE

To compare the mean blood loss and bleeding score with injectable tranexamic acid versus saline solution for patients undergoing functional endoscopic sinus surgery for nasal polyps.

METHODOLOGY

Study Design: Randomized Controlled Trial

Setting: Department of ENT – I, Services Hospital Lahore

Duration of Study: Six months after approval of synopsis

Sampling Size: Sample size of 100 cases; 50 cases in each group was calculated with 95 confidence level, 80% power of test and taking expected magnitude of mean blood loss i.e. 115±173ml with tranexamic acid and 200±112ml with saline for endoscopic surgery for nasal polyps.[10]

Sampling Technique: Non-probability consecutive sampling

Sampling Selection

Inclusion Criteria: Patient of age 18-50years, either gender presenting with bilateral nasal polyps (newly diagnosed cases with nasal obstruction, nasal discharge, decreased sense of smell, and bilateral edematous mucosal mases on x-ray nose)

Exclusion Criteria: Patients with history of bleeding disorders (Hemophilia, Von Will brand disease etcetera), hypertension, diabetes, renal disease or

who took NSAIDs within one week of surgery, color blindness, recurrent nasal polyps after surgery were excluded.

Data Collection Procedure: Informed written consent was obtained. Demographic information was also noted. Then patients were randomly divided into two groups through lottery method. Group Areceived intravenous injection tranexamic just before surgery and Group B recieved saline solution just before surgery. Then patients underwent surgery under general anesthesia. During surgery, blood score of each patient was assessed and noted by using Endoscopic surgical field grading system by the researcher himself. Then, during whole surgery, blood was collected in drain. After surgery, total blood loss was measured in measuring beaker and by socked swabs. Total blood loss was noted. Bleeding scoreassessed in terms of graded sponges (soaked out-day out) 1mg+ socked=1ml of Blood during surgery as Endoscopic surgical field grading system.

Data Analysis: Data was analyzed by using SPSS v. 20. Both groups were compared for mean blood loss and mean blood score by using independent sample t-test. P-value ≤0.05 was taken as significant.

RESULTS

The mean age of patients with TXA group was 30.40±8.96 years and in saline group was 34.82± 10.38 years. There were 38 males and 12 females in TXA groupwhile 33 males and 17 females in saline group. The mean duration of nasal polyps in TXA group was 6.52±2.99 months and in saline group was 7.04±3.16 months. Table 1

Table 1: Demographics of Patients

	Study Groups	
	TXA	Saline
n	50	50
Age	30.40±8.96	34.82±10.38
Gender (M/F)	38 / 12	33 / 17
Duration of nasal polyps	6.52±2.99	7.04±3.16

The mean blood score of patients in TXA group was 2.46±0.503 whereas in saline group was 4.06± 0.89, p-value<0.001.The mean total blood loss of patients in TXA group was 120.98±12.28 ml whereas in saline group was 185.54±38.38 ml, p-value <0.001. Table 2

Table 2: Comparison Blood Score with Study Groups

	Group		p-value
	TXA	Saline	
n	50	50	
Blood score	2.46±0.503	4.06±0.89	<0.0001
Total blood loss	120.98±12.28	185.54±38.38	<0.0001

DISCUSSION

Bleeding is a common concern during FESS that can increase the risk of damage to adjacent vital elements by reducing the surgeon's field of view. Bleeding during FESS can interfere with surgeon visibility, and then the surgeon will have to use suction frequently and this will increase the risk of further manipulation of field, more bleeding, and longer surgery duration. Tranexamic acid is a synthetic derivative of lysine amino acid that inhibits lysine-binding sites on plasminogen molecules, thus blocking fibrinolysis. The anti-fibrinolytic function of tranexamic acid is associated with D-dimer level reduction.[14] In this study the mean value of blood score of the TXA group of the patients was 2.46± 0.503 whereas its mean value in saline group was 4.06 ± 0.89 (p-value=0.001). Similarly the TXA group showed significantly reduced blood loss than to saline group. In our study the mean value of total blood loss of the TXA group of the patients was 120.98±12.28 ml whereas its mean value in saline group was 185.54±38.38 ml (p-value=0.001).

A study by Ahmed Shehata et al[15] demonstrated in their results that use of local (TA) was associated with significant decrease in estimated blood loss 214.2 ml more than local hot saline which was 216.75 and both are much better than the normal saline which was 272.66. Also (TA) and hot saline showed decrease in the duration of surgery, improve the surgical field quality and blinded surgeon satisfaction as compared with the control group. One more study showed that with injectable tranexamic acid, mean blood loss was 214.2±0.77ml while with saline was 272.66±1.78ml for patients undergoing

FESS for nasal polyps (p<0.0001). The mean blood score was also less with tranexamic acid (1.92±0.64) as compared to saline (2.64±0.7). The difference was significant (p=0.0003).[15] But another study showed that with injectable tranexamic acid, mean blood loss was 115±173ml while with saline was 200± 112ml for patients undergoing FESS for nasal polyps (p=0.40). The mean blood score was also less with tranexamic acid (5.8±1.9) as compared to saline (5.8±2.0). The difference was significant (p=0.89).[10]

There is strong evidence that tranexamic acid reduces blood loss in surgery.[16] It can be applied both locally and intravenously and it has been used in patients with hereditary bleeding disorders and haemorrhage, to increase survival in patients with acute traumatic injury[17] and to lessen menorrhagia.[18] Patients who received oral tranexamic acid experienced considerably less bleeding during surgery and afterward. No patients in the tranexamic acid group required additional nasal packs, unlike the saline group in five patients required this intervention.[19]

One randomized study showed that with injectable tranexamic acid, mean blood loss was 102± 19ml which was significantly less than saline (153± 23ml) for patients undergoing FESS for nasal polyps (p<0.0001).[11] In 2009, Moise et al. explored the effect of tranexamic acid on overall blood loss in patients undergoing endoscopic sinus surgery. The total volume of intraoperative and postoperative blood loss was decreased to about half in the group receiving 10 mg/kg tranexamic acid in 10 mL saline solution compared with the group receiving 10 mL of saline solution alone (P=0.0001). Blood loss was three times less after pack removal in the tranexamic acid group.[20]

In another study by Abbasi et al. conducted in 2012 in Iran, 70 patients who were candidates for FESS were randomly placed into two groups of 35. One group received tranexamic acid at a dose of 5 mg/ kg and the other group received 15 mg/ kg tranexamic acid diluted with saline up to a total volume of 100 mL through intravenous infusion over 10 minutes. The results revealed significant differences between the two groups in terms of surgical field quality and surgeon satisfaction (P<0.05). Moreover, the difference between two groups regarding amount of bleeding was statistically significant (P=0.03).[21]

On the other a study by Mohammad Hossein Baradaranfar et al[22] documented in their study that blood loss was 254.13 mL in the saline group and 235.6 mL in the tranexamic group (P=0.31). No statistically significant differences between the two groups were found in terms of other investigated variables, such as surgical field quality based on Boezzart's scale (P=0.30), surgeon satisfaction based on a Likert scale (P=0.54), or duration of surgery (P=0.22). Another study showed that with injectable tranexamic acid, mean blood loss was 115±173ml while with saline was 200±112ml for patients undergoing FESS for nasal polyps (p=0.40). The mean blood score was also less with tranexamic acid (5.8±1.9) as compared to saline (5.8±2.0). The difference was significant (p=0.89).[10]

CONCLUSION

The study shows that injectable tranexamic acid is significantly better in terms of total blood loss and blood score than saline solution group for patients undergoing FESS for nasal polyps

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EXPRESSION OF EPIDERMAL GROWTH FACTOR RECEPTOR IN URINARY BLADDER CARCINOMA

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Abstract

Objective: Determining the frequency of immunohistochemical expression of Epidermal Growth Factor Receptor in urinary bladder carcinoma.

Study Design: Descriptive, Cross-sectional.

Setting: Department of Histopathology, Combined Military Hospital, Lahore.

Duration: From 25-11-2016to 24-11-2017

Methods: The study involved 54 cases of bladder carcinoma diagnosed on routine histopathology irrespective of patient age, gender, grade, laminapropria invasion and Detrusor muscle invasion of the tumor. These were stained for EGFR by immunohistochemical procedure.

Results: Age range in this study was found to vary from 40 to 90 years with mean age of68.26 ± 10.86 years. Out ofthe total 54 patients, 44(81.48%) were male and 10(18.52%) were female making male to female ratio of 4.4:1.Frequency of immunohistochemical expression of EGFR in bladder carcinoma was seen in 45(83.33%) of the cases.

Conclusion: The study concluded that the frequency of immunohistochemical expression of EGFRis fairly high in our patient population of bladder carcinoma and so can be used as a therapeutic platform.

Keywords: Urothelial bladder Carcinoma, Epidermal Growth Factor Receptor, Immunohistochemistry.

Bladdercarcinoma is the leading cause of cancer related deaths amongst the urinary system malignancies.[1] In United States, urinary bladder is the fourth most common cancer whereas it ranks ninth worldwide.[2] In Pakistan, the actual figures regarding the incidence and cancer related deaths are unknown however, it is among the common malignancies.[3,4] There is a well established relationship with cigarette smoking and numerous genetic alterations. Many genes related to several signaling pathways, undergo mutations over a long period of time.[5]

Epidermal growth factor receptor (EGFR) has emerged as a critical tumorigenic factor in the development and progression of bladder cancer. It is a tyrosine kinase receptor which mediates and controls cell signaling by extra-cellular growth factor and intracellular signal transduction pathways, thus regulates vital cell functions like proliferation, angiogenesis and apoptosis. Any dysregulation in the pathways results in abnormal cell proliferation and neovascularization. EGFR is frequently over expressed in bladder cancer and hence it can be used as an important target in the treatment of bladder cancer.[5] Various studies have supported the over expression of EFGR in bladder carcinomas.[6]

Two specific EGFR tyrosine kinase inhibitors (TKIs), Gefitinib and Erlotinib, have been developed and are already in use for the treatment of advanced lung carcinoma (non-small cell). These two drugs disrupt EGFR signaling by inhibiting phosphorylation and activation of EGFR and down regulating the signaling network.[7] These two drugs are currently under phase II clinical trials as to whether they can be used alone or in combination with other chemotherapeutic agents forthe treatment of urothelialcarcinomas.[8]

The rationale of this study is to determine the

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expression of EGFR in urothelial carcinoma in our patient population. Incase of a positive immunohistochemical expression, a targeted therapy against EGFR can be suggested.

METHODOLOGY

The study was conducted in Pathology Department of Combined Military Hospital, Lahore from 25th November 2016 to 24th November 2017.54 cases were selected by Non-Probability, consecutive sampling technique.

All specimens of Urothelial carcinoma diagnosed on light microscopy were included in this study irrespective of patient's age, gender, grade of the tumor, lamina propria and Detrusor muscle invasion. Poorly fixed specimens and specimens with scant tumor tissue were excluded from the study. Staining for EGFR was done by immunohistochemical technique and scored according to intensity of stain and percentage of stained cells (Table I)

The data was analysed using Statistical Package for Social Sciences version 20.0. Frequencies and percentages were used to describe the results. Post-stratification chi-square test was applied taking p value ≤.05 as significant.

Table 1: *EGFR Scoring According to Intensity and Percentage*

Intensity of membrane staining	Percent of stained cells	Score	Result
Negative	0%	0	Negative
Barely perceptible	< 10%	1+	Negative
Moderate	>10%	2+	Positive
Strong	> 10%	3+	Positive

RESULTS

Of the 54 patients included in the study, 44 (81.48%) were male and 10 (18.52%) were female (Figure I). Age ranged from 40 to 90 years with mean age of 68.26. Age distribution and EGFR expression in different age groups is shown in the table II. Distribution of patients according to histologic grade is shown in Figure II.

Frequency of immunohistochemical expression of Epidermal Growth Factor Receptor (EGFR) was seen in 35 (64.8%) of cases as shown in Figure III.

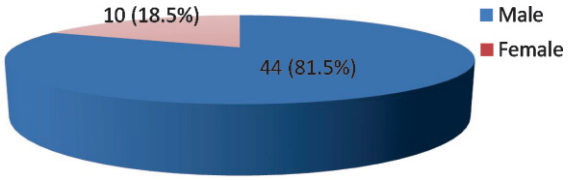

Figure I: *Distribution of Patients According to Gender (n=54)*

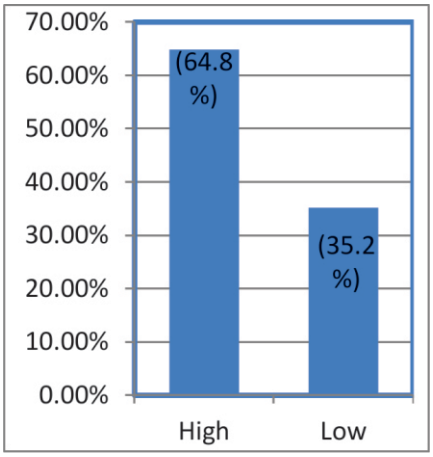

Figure II: *Distribution of Patients According to Grade of Tumor (n=54)*

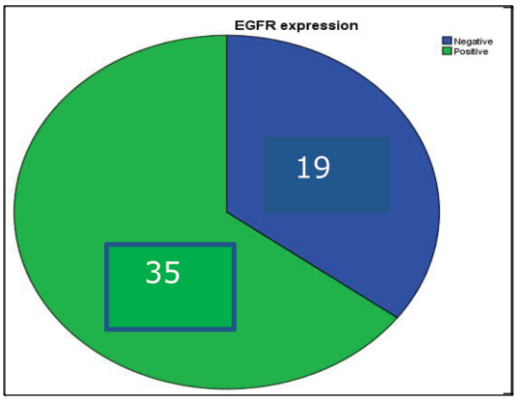

Figure III: *Frequency of Immunohistochemical Expression of EGFR in Urothelial Carcinoma (n=54)*

Table 2: *Table II: Stratification of Immunohisto-Chemical Expression of EFGR with Respect to Grade of Tumor*

Grade of tumour	Immunohistochemical expression of EGFR		p-value
	Positive	Negative	
High	21	14	**0.315**
Low	14	05	

DISCUSSION

Bladder cancer (BC) is the 4th most common cancer in men and the 12th most common cancer in women, and ranks 9th in all cancer related deaths.[9] Approximately 70% of cases are non-muscle invasive bladder cancer at presentation and are treated by transurethral resection of bladder tumor (TURBT) followed by intravesical treatment with BCG (Bacillus Calmette-Guerin) / mitomycinC10. Unfortunately more than 50% of cases recur after initial treatment and progress to muscle invasive disease. For these cases several other therapeutic modalities including surgery, radiotherapy, chemotherapy, targeted therapy and even photoimmuno therapy are used usually in combination.[11] Contrary to what happens in chemotherapeutic drugs, which simply interfere with rapidly dividing cells whether they are normal or tumoral targeted therapy drugs are more effective, less harmful to normal cells and show better-tolerated side effects. The Cancer Genome Atlas (TCGA) project shows that bladder carcinoma has the third highest mutation rate among all the studied cancers. EGFR overexpression is seen in upto 74% of bladder cancer tissue specimens, with a relatively low expression seen in normal urothelium[12,13] so, it can be used for an effective targeted therapy in cases of bladder carcinoma.

In current study, EGFR over expression was determined in our patient population of bladder carcinoma. This study involved 54 diagnosed cases of bladder carcinoma irrespective of patient age, gender, grade, laminapropria and Detrusor muscle involvement. The age range was between 40 to 90 years with mean age of 68.26 ± 10.86 years. 44 out of the 54 cases(81.48%)weremales and 10 (18.52%) were females with male to female ratio of 4.4:1. A much higher male predominance (24 vs. 6) was observed byNaik DS.[14]

After stratification of the data, the only significant association of EGFR expression was found to be with age, as 8 patients (14.8%) were less than 60 years of age while 46 patients (85.2%) were older than 60(p=0.026). However, there was no significant difference in positive EGFR status in terms of gender; male vs female (81.5% vs. 18.5%; p=0.265), tumor grade; high vs low (64.8% vs. 35.2%; p= 0.315) or Detrusor muscle invasion; present vs. absent (59.3% vs. 40.7%; p=0.313). Some other studies have also concluded that expression of EGFR in transitional cell carcinoma of urinary bladder has no significant relationship with other prognostic factors of this tumor.[1]

In the current study, EGFR expression was found in 35 (64.8%) cases of bladder cancer in locoregional population. Similar studies carried out in Ireland in 2014 and Iran in 2016 have reported over-expression of EGFR in 71% and 86.9% of cases respectively.[6]

EGFR is over expressed in upto74% of bladder cancer tissue specimens but has a relatively low expression in normal urothelium.[12] It is localized to the basal layer of urothelial cells in normal urothelium but is present in both the luminal and basal layers of in bladder cancer. This amplification and luminal localization of EGFR in urothelial tumors make intravesical therapy a potential treatment option in bladder cancer.

EGFR expression is found to be associated with improved patient survival when they receive targeted chemotherapy.[15]

CONCLUSION

Over expression of EGFR in bladder carcinoma as detected by immunohistochemical staining is fairly high in our patient population of bladder carcinoma and shows a direct relationship with age. So, we recommend that immunohistochemical expression of EGFR in urothelial carcinoma of bladder should be used routinely to determine the patients that can be benefite by the targeted therapy against EFGR.

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FREQUENCY OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE AMONG PATIENTS OF ACUTE CORONARY SYNDROME PRESENTING TO A TERTIARY CARE HOSPITAL

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Abstract

Introduction: Acute coronary syndrome has evolved as an epidemic and a major public health issue throughout the world. Pakistan is considered to be one of the countries with the largest population of people with risk factors related to coronary artery syndrome. Therefore, the number of people with coronary artery disease is growing in Pakistan as a result of urbanization, physical inactivity and obesity. Chronic obstructive pulmonary disease (COPD) is a respiratory disease that is characterized by airflow obstruction that is persistent, progressive in nature and not fully reversible. It has been suggested that the risk of Coronary artery disease (CAD) is augmented in those smokers who have developed COPD.

Objective: The objective of this study was to determine the frequency of Helicobacter Pylori infection in patients with dyspepsia presenting to a tertiary care hospital of Lahore.

Methods: About 251 patients with acute coronary syndrome presenting to the medical unit Jinnah hospital Lahore and fulfilling the inclusion criteria were approached and an informed consent was taken before enrolling in the study. Information regarding their demographic data was noted in the proforma. All patients underwent spirometry using standard protocol and procedure and presence of chronic obstructive pulmonary disease (as per operational definition) was noted in the proforma as well. Confidentiality of the data was ensured.

Results: From 251 patients, it was observed that the minimum age was found 25 years and maximum age was 60 years with mean and standard deviation of the age was 41.80 ± 10.64 years. The minimum duration of disease was 5 years and maximum was 10 years with mean and standard deviation of the duration of disease was 7.35 ± 1.75 years.

Male patients were 53% while female patients were 47%. Chronic Obstructive pulmonary disease (COPD) was present in 40.2% patients while it was absent in 59.8% patients.

By using chi-square test it was observed that there was no significant association between age group and presence of Chronic Obstructive pulmonary disease (COPD) having p-value = 0.342. Significant association was not found between gender and presence of Chronic Obstructive pulmonary disease (COPD) with p-value 0.248. There was no significant association between Duration of disease and presence of Chronic Obstructive pulmonary disease (COPD) having p-value = 0.665. Significant association was not found between smoking and presence of Chronic Obstructive pulmonary disease (COPD) with p-value 0.265. By using chi-square test it was observed that there was no significant association between BMI group and presence of Chronic Obstructive pulmonary disease (COPD) having p-value = 0.885.

Conclusion: Chronic obstructive pulmonary disease was found in 40.2% patients with acute coronary syndrome presenting to a tertiary care hospital of Lahore. Effect modifiers like age, gender, duration of disease, smoking status and BMI did not show significant association with presence of COPD..

Key words: Chronic Obstructive Pulmonary Disease, Acute Coronary Syndrome, ST Elevation, Unstable Angiana.

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Chronic obstructive pulmonary disease (COPD) is a common respiratory condition involving the airways and characterized by airflow limitation.[1,2] It affects more than 5 percent of the population and is associated with high morbidity and mortality.[3] Consequence of its high prevalence and chronicity, COPD causes high resource utilization with frequent clinician office visits, frequent hospitalizations due to acute exacerbations, and the need for chronic therapy[1]. Correct diagnosis of COPD is important because appropriate management can decrease symptoms , reduce the frequency and severity of exacerbations, improve health status, improve exercise capacity, and prolong survival.[4] The Global Initiative for Chronic Obstructive Lung Disease (GOLD) and WHO defines COPD as[5] "Chronic obstructive pulmonary disease (COPD), a common preventable and treatable disease, is characterized by airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lung to noxious particles or gases. Exacerbations and comorbidities contribute to the overall severity in individual patients."

Unstable angina (UA), acute non-ST elevation myocardial infarction (NSTEMI), and acute ST elevation myocardial infarction (STEMI) are the three presentations of acute coronary syndromes. ACS has evolved as an epidemic and a major public health issue throughout the world. Pakistan is considered to be one of the countries with the largest population of people with risk factors related to coronary artery syndrome. Therefore, the number of people with coronary artery disease is growing in Pakistan as a result of urbanization, physical inactivity and obesity. It has been suggested that the risk of Coronary artery disease (CAD) is augmented in those smokers who have developed COPD.

OBJECTIVE

The objective of this study was to determine the frequency of Frequency of Chronic Obstructive Pulmonary Disease Among Patients Of Acute Coronary Syndrome presenting to a tertiary care hospital of Lahore.

Study Design: Cross Sectional Study.

Setting: Study was conducted in medical ward of Jinnah Hospital Lahore.

Study Duration: Present research was conducted from 19.06.2018 to 18.12.2018.

METHODOLOGY

About 251 patients with acute coronary syndrome presenting to the medical unit Jinnah hospital Lahore and fulfilling the inclusion criteria were approached and an informed consent was taken before enrolling in the study. Information regarding their demographic data was noted in the proforma. All patients underwent spirometry using standard protocol and procedure and presence of chronic obstructive pulmonary disease (as per operational definition) was noted in the proforma as well. Confidentiality of the data was ensured.

RESULTS

From 251 patients, it was observed that the minimum age was found 25 years and maximum age was 60 years with mean and standard deviation of the age was 41.80 ± 10.64 years. The minimum duration of disease was 5 years and maximum was 10 years with mean and standard deviation of the duration of disease was 7.35 ± 1.75 years. Male patients were 53% while female patients were 47%. Chronic Obstructive pulmonary disease (COPD) was present in 40.2% patients while it was absent in 59.8% patients.

By using chi-square test it was observed that there was no significant association between age group and presence of Chronic Obstructive pulmonary disease (COPD) having p-value=0.342. Significant association was not found between gender and presence of Chronic Obstructive pulmonary disease (COPD) with p-value 0.248. There was no significant association between Duration of disease and presence of Chronic Obstructive pulmonary disease (COPD) having p-value=0.665. Significant associa-

tion was not found between smoking and presence of Chronic Obstructive pulmonary disease (COPD) with p-value 0.265. By using chi-square test it was observed that there was no significant association between BMI group and presence of Chronic Obstructive pulmonary disease (COPD) having p-value = 0.885.

DISCUSSION

The objective of the present research was to determine the frequency of COPD among patients of ACS presenting to tertiary care hospital. In this regard the present cross sectional study was conducted in medical outpatient department of Jinnah Hospital Lahore in which it was found that from 251 patients, Chronic Obstructive pulmonary disease (COPD) was present in 40.2% patients while it was absent in 59.8% patients. In a previous study overall, when the lowest quintile of lung function, as measured by FEV1 is compared with the highest quintile, the risk of cardiovascular mortality increases by approximately 75% in both men and women. Having symptoms of chronic bronchitis alone increases the risk of coronary deaths by 50%. Reduced ratio of FEV1 to FVC by itself is a modest independent risk factor for coronary events, increasing the risk by 30%. However, if patients have ventricular arrhythmias, the risk of coronary events is increased twofold, suggesting that the cardiotoxic effects of obstructive airways disease are amplified in those who have underlying cardiac rhythm disturbances. In general, for every 10% decrease in FEV1, all-cause mortality increases by 14%, cardiovascular mortality increases by 28%, and nonfatal coronary event increases by almost 20%.[6]

Existing literature showed that the most accredited hypothesis asserts that the main common risk factors, that is, cigarette smoke and ageing, elicit a chronic low-grade systemic inflammatory response, which affects both cardiovascular endothelial cells and airways/lung parenchyma. The development of CAD in patients with COPD potentiates the morbidity of COPD, leading to increased hospitalizations, mortality and health costs. Moreover, correct diagnosis is challenging and therapies are not clearly defined.[7]

However, in our it was observed that there was no significant association between age group and gender and presence of Chronic Obstructive pulmonary disease (COPD). Significant association was not found between smoking and presence of Chronic Obstructive pulmonary disease (COPD) with p-value 0.265 and similarly was no significant association between BMI group and COPD.

In a previous study, out of 151 patients, 57 (37.7%) were found to have COPD. Among them, 39 (68.42%) were male and 18 (31.57%) were female. Among male patients with COPD, 82.05% (n=32) were smokers and 17.94% (n=7) were nonsmokers while in females with COPD no one was smoker. COPD is an under-diagnosed progressive disease in patients with high risk patients with coronary artery disease.[8]

Spirometry was undertaken for 376 men with mean age of 56.02±10.55 years, and 72.6% were active cigarettes smokers with a mean pack-year of 55.89 ±34.25. A CAD diagnosis was confirmed in 300 (79.8%) men. Spirometric criteria for COPD were met in 76 (15.7%) patients, of whom 91.5% were not previously diagnosed. COPD-related symptoms were common: chronic cough (44.4%), dyspnea (66.2%), and wheezes (27.9%). COPD was more common in patients with (18.0%) compared to patients without (6.6%) CAD (P=0.014). Multivariate logistic regression showed that the risk of COPD was higher in patients with CAD (OR 3.16, 95% CI, 1.10–9.09, P=0.033) and in those with chronic bronchitis (OR 13.07, 95% CI, 6.69–25.52, P<0.001). There was a high prevalence of COPD among male patients with CAD and most were underdiagnosed despite having respiratory symptoms. Male smokers with CAD and respiratory symptoms should be evaluated for airflow limitation and the presence of COPD.[9]

CONCLUSION

Chronic obstructive pulmonary disease was found in 40.2% patients with acute coronary syndrome presenting to a tertiary care hospital of Lahore. Effect modifiers like age, gender, duration of disease, smoking status and BMI did not show significant association with presence of COPD.

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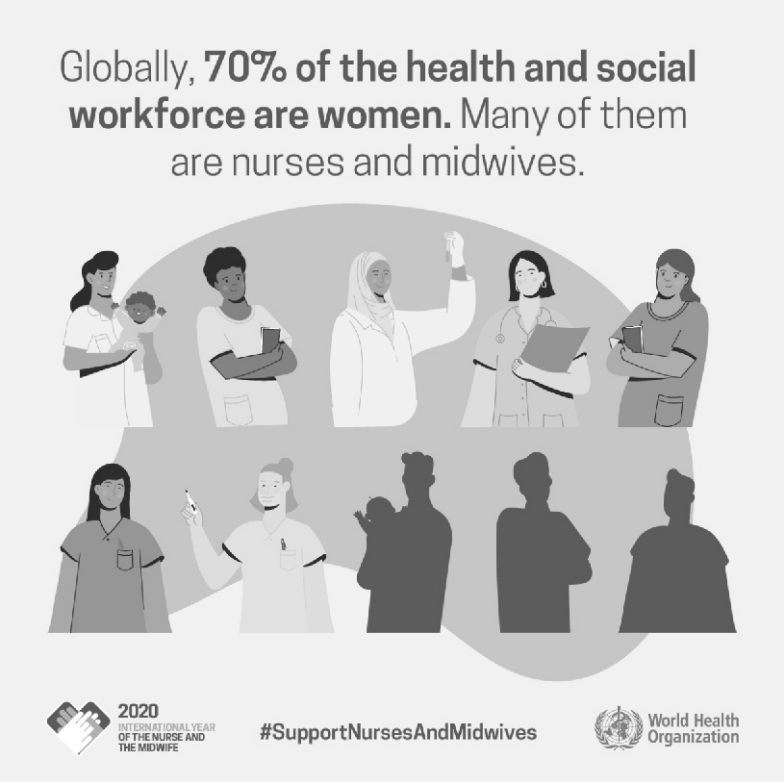

BACTERIOLOGICAL PROFILE AND ANTIMICROBIAL SUSCEPTIBILITY PATTERN OF PATIENTS SUFFERING FROM BLOOD STREAM INFECTIONS, A MULTICENTRE EXPERIENCE.

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Abstract

Objective: To determine the common blood stream infections producing bacteria and their antibiotic susceptibility profile from various departments of the two hospitals.

Place and duration of Study: This descriptive cross-sectional study was conducted atFarooq Hospital and Life Hospital, Lahore from 1stMarch 2019 to 20thJanuary 2020.

Methods: The blood culture samples received from various wards of the two hospitals were processed through conventional blood culture technique and isolates were identified as per standard guidelines. Kirby Bauer disc diffusion method was performed for antimicrobial susceptibility testing and results were interpreted according to guidelines of the Clinical and Laboratory Standards Institute. SPSS 24 was used for data analysis.

Results: Out of 500 blood culture samples received, 167 (33.4%) were found to be culture positive. Among them,134 (80%) were Gram negative rods and 33 (20%) Gram-positive cocci. Of the 167 pathogens identified, isolation of Salmonella typhi was 94(56.3%) followed by Staphylococcus aureus 18(11%) and Coagulase-negative Staphylococci 15 (9%). Majority of isolates showed low sensitivity to ampicillin & ciprofloxacin, better sensitivity to carbapenems with maximum sensitivity to azithromycin, linezolid and tigecycline.

Conclusion: The rising multidrug-resistant strains of especially Enterobacteriaceae from blood stream infections in our study suggests limiting of therapeutic options in future. It is imperative for the clinicians to follow the available updated local surveillance data on antimicrobial resistance to combat commonly isolated bacterial pathogens from blood cultures. Hence, it will assist in formulating an effective antimicrobial stewardship program in hospitals.

Keywords: Blood stream infections, Multidrug resistant, Carbapenemresistant organism

Bloodstream infections (BSIs) and accompanying organ dysfunctions are a major cause of morbidity and mortality worldwide.[1] The SENTRY Antimicrobial Surveillance Program predicted twenty years trend (1997-2016) by monitoring BSIs from patients in medical centers from America, Europe and Asia pacific regions. The daunting trend in this study shows an upsurge in the prevalence of multidrug-resistant (MDR) Enterobacteriaceae which was 6.2% in 1997–2000 and rose up to 15.8% in 2013–16.[2] Multiple risk factors including severity of illness at the time of admission, prolonged hospital stay, requirement for mechanical ventilation, renal replacement therapy, recent surgery and immuno-

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suppression are they key reasons for blood stream infections. However, it has been identified that the considerable utilisation of indwelling catheters in Intensive Care Units (ICU), are most commonly associated with the acquisition of a BSI.[3]

In an underdeveloped country like Pakistan, huge burden of infectious diseases translate into increase cost on healthcare systems.[4] In current years, there has been a rise in the incidence of bacteremia caused by the members of Enterobacteriaceae. Bacterial strains which were once sensitive and easily treatable are now being supplanted by multidrug resistant (MDR) strains of Klebsiella, Pseudomonas, Acinetobacter and Citrobacterspecies. The same holds true for Gram-positive isolates such as methicillin resistance in Staphylococcus aureus (MRSA) and vancomyc in resistance in Enterococciare now frequently encountered in clinical practice.[5] Similary, Multidrug resistant (MDR) and Extensively drug resistant (XDR) resistant strains are commonly found in case of Salmonella typhi (S. typhi). The MDR S. typhi is resistant to first line (chloramphenicol, ampicillin, trimethoprim-sulfamethoxazole) with or without resistance to second line (floroquinolones) antibiotics. Whereas, XDR S. typhi is resistant to first line, second line antibiotics, and third-generation cephalosporins.[6] Apart from various mechanisms of antimicrobial drug resistance, certain other factors also play a crucial role. Antibiotics started without prior knowledge of local antimicrobial resistant pattern has bad implications as preceeding studies have identified a notable association between administration of inappropriate antimicrobial therapy and mortality. The usual time duration to treat BSI with antibiotics is minimum 10-14 days. This duration of treatment has been shown to be a risk factor ensuing the development antibiotic resistant bacterial infection. Similarly, false interpretation of blood cultures can also be detrimental to the patient's existing infection ultimately ending up in more difficult-to-treat infections.[7]

The prevalence of antimicrobial resistance in patients with BSI is on the rise, though it differs with geographical and regional location. Hence it is imperative to report antimicrobial resistant pattern of local bacterial pathogens prevalent in that area based on blood culture results. This will help clinicians not only to remain updated with efficacy of commonly prescribed antibiotics but also in judicious selection of empirical antimicrobial therapy.[8]

Pakistan is a resource constrained country and insufficient data makes blood stream infections as one of the challenges in clinical practice. The aim of the present study was to determine the pattern of BSIs and their antibiotic susceptibility patterns to help formulate the local treatment guidelines.

The objective of the study was to determine the common blood stream infections producing bacteria and their antibiotic susceptibility profile. It also highlights the demographic overview of the patients suffering from blood stream infections from various wards of the two hospitals.

METHODOLOGY

This descriptive cross sectional study was performed at two hospitals of Lahore; Farooq hospital (West Wood branch)& Life hospital from 1st March 2019 to 20th Jan 2020. All ethical considerations and obligations were duly addressed and the study was conducted after approval from ethical committee.

Non probability convenient sampling was done for blood culture samples received from the outdoor and indoor patients of all ages, from all the departments of the two hospitals. Isolation of positive peripheral-blood culture with signs of sepsis was labelled as laboratory-confirmed blood stream infection, included in the study. Coagulase-negative Staphylococci(CoNS) isolated from a single blood culture was considered as a contaminant in the absence of indwelling catheter use, clinical signs of sepsis and the time of positivity of culture. Blood culture samples of patients on antibiotics were excluded from the study.

Adult (50ml broth) and paediatric (25ml broth) blood culture bottles (Medilines, Pakistan) containing sodium polyanethole sulfonate & tryptic soy

broth were inoculated with sample according to proper aseptic technique and were incubated at 37°C aerobically. The visible turbidity was noted and periodic subcultures were done on Blood agar (Oxoid, UK) and MacConkey agar (Oxoid, UK) on day 2,3 and day 7 respectively. The bacteria were identified by colony morphology, Gram-staining, conventional biochemical identification tests and by using Analytical Profile Index (API)10S (BioMerieux, France).[9] Kirby–Bauer disc diffusion methodwas performed by making 0.5 McFarland of identified bacteria and aseptically swabbedon Mueller–Hinton culture medium. The antibiotic discs (Oxoid, UK) were then placed with aseptic technique on Mueller–Hinton platesincluded ampicillin (10 µg), trimethoprim-sulfamethoxazole (10 µg), chloramphenicol (300 µg), ciprofloxacin (5 µg), levofloxacin (5 µg), doxycycline (30 µg), tetracycline (30 µg), linezolid (30 µg), fusidic acid (10 µg), azithromycin (15 µg), gentamicin (10 µg), amikacin (30 µg), amoxicillin-clavulanic acid (30/10 µg), ceftazidime (30 µg), ceftriaxone (30 µg), cefepime (30 µg), imipenem (10 µg), meropenem (10 µg), piperacillin-tazobactam (110 µg), aztreonam (30 µg), tigecycline (15 µg). MRSA &methicillin resistant Coagulase negative Staphylococcus (MR-CoNs) were identified by using cefoxitin (30 µg) disc diffusion method. Escherichia (E.) coli ATCC 25922 Pseudomonas (P.) aeruginosa ATCC27853 and Staphylococcusaureus ATCC 25923 were used as control strains. All plates were incubated for 16-18 hours at 35+2°C and then zonesof inhibition were measured and interpreted in terms of susceptible, resistant or intermediate.[10]

The SPSS software version 24 was used for data analysis in all steps. Mean and standard deviation were calculated for numerical variables, frequency and percentages for categorical variables.

RESULTS

Of the 500 blood culture samples sent to two hospital's laboratories, 167 (33.4%) were found to be positive. Among 167 positive cases, 60% were male and 40% were female. In positive blood culture cases, the mean age was 4±18 years old. In case of newborns, total 15 (100%) cases of positive bacterial growth were received from Nursery. Overall, maximum number blood cultures were positive from OPD with age range between 2 months to 80 years as shown in Figure 1.

The frequency of bacteria isolated from blood cultures of patients is shown in Table 1. Out of 167 cases, maximum isolates were of Salmonella typhi and least isolated bacteria were both Citrobacter-freundii & Serratiamarcescens.

Table 2 depicts resistance of Gram negative bacterial isolates from blood culture. Maximum resistance (100%) was noted in case of K. pneumoniae, S. marcescens to ampicillin, ciprofloxacin and imipenem.

Table 3 reveals thatout of total 33 Gram positive cocci, 12 (36.4%) isolates were methicillin sensitive Staphylococcusaureus (MSSA) and 6 (18.2%) were methicillin resistant Staphylococcus aureus(MRSA) and 15 (45.4%) were methicillin resistant coagulase negative Staphylococcus (MR-CoNs) isolates. The resistance was low for amikacin 2(17%) followed by gentamicin 3(25%), fusidic acid 4(33%); ciprofloxacin and levofloxacin both 7(58%) in case of MSSA.

DISCUSSION

Multidrug resistant bacteria producing blood stream infections can lead to more death and complications in hospitalized patients is a pressing issue globally. There was a significant difference in studies conducted among isolation of BSI producing pathogens regarding demographic variables when compared to our study.[4,11,12,13,14]

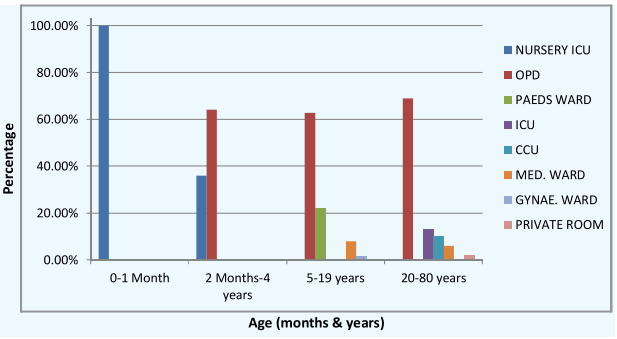

Figure 1: *Age and Ward wise Distribution of Patients with Positive Growth on Blood Culture*

In our study, Gram negative rods were highest in number when compared to Gram positive bacteria isolated from blood cultures. Among Gram negative rods, there was predominant isolation of S.typhi (56.3%) from blood cultures as compared to other members of Enterobacteriaceae followed by E.coli and Salmonella paratyphi A (6.5%).The reason for increase in number of S.typhi isolation from blood culture may be due to an outbreak which occurred during summers in Lahore. A study conducted in Karachi and Gujrat (India)almost revealed similar results where maximum isolates from blood culture were of S. typhi.[7,15] Of Gram-positive isolates, 11% were Staphylococcus aureus & only 9% constituted CoNS. These results are comparable to the study

Table 1: *Distribution of Bacteria in Positive Blood Culture Cases:*

Bacteria from blood cultures	Frequency	Percentage
Salmonella typhi	94	56.3%
Staphylococcus aureus	18	11%
CoNs	15	9%
Pseudomonas aeruginosa	13	8%
Salmonella paratyphi A	11	6.5%
E. coli	9	5%
Acinetobacterbaumanii	2	1.2%
Klebsiellapneumoniae	3	1.8%
Citrobacterfreundii	1	0.6%
Serratiamarcescens	1	0.6%
Total N	167	100%

conducted in different hospitals of Lahore.[16,17,18] However, considerable geographical variation was found in prevalence of different bacteria from blood cultures as reported by studies conducted in Iran, China, Africa and America.[4,11,19,20] High resistance for all Gram negative bacterial isolates was noted for ampicillin, ciprofloxacin and cefepime. A study conducted in Sindh Institute of Urology and Transplantation (SIUT), Karachi revea-led almost similar results.[21] Alternatively, lower resistance for these antimicrobials is provided by a study conducted in Rasht, Iran.[12] E. coli, K. pneu-moniae, C.freundii & S.marcescens were comple-tely resistant to ciprofloxacin (100%) which is an alarming trend. However, Saeed et al., in his study

Table 3: *Antimicrobial Resistance Pattern of Gram Positive Cocci from Blood Cultures*

Antimicrobials	MSSA N=12	MRSA N=6	MR-CoNS N=15
Ampicillin	10 (83%)	6 (100%)	15 (100%)
Trimethoprim-sulfamethoxazole	-*	6 (100%)	15 (100%)
Chloramphenicol	7 (58%)	6 (100%)	-
Ciprofloxacin	7(58%)	6 (100%)	12 (80%)
Azithromycin	9 (75%)	-	-
Gentamicin	3 (25%)	-	10 (67%)
Levofloxacin	7(58%)	6 (100%)	1 (7%)
Amikacin	2(17%)	6 (100%)	-
Amox-clavulanic acid	10 (83%)	6 (100%)	1 (7%)
Tetracycline	5(42%)	4 (67%)	12 (80%)
Fusidic acid	4 (33%)	4 (67%)	2 (13%)
Tigecycline	0(0%)	0(0%)	0(0%)
Linezolid	0(0%)	0(0%)	0 (0%)

Table 2: *Antimicrobial Resistance Pattern of Gram NegativeRods from Blood Cultures*

Antimicrobials	S. typhi N=94	S. paratyphi A N=11	P. aeruginosa N=13	Acineto-bacter N=2	E. coli N=9	K. pneumoniae N=3	C. freundii N=1	S. marcescens N=1
Ampicillin	78 (83%)	4 (36%)	-*	-	9(100%)	3 (100%)	1 (100%)	-
Trim-sulfamethoxazole	72 (76.6%)	0 (0%)	-	-	-	-	-	-
Chloramphenicol	74 (79%)	1(9%)	-	-	-	-	-	1 (100%)
Ciprofloxacin	73 (78%)	2 (18%)	9(69%)	-	9(100%)	3 (100%)	1(100%)	1 (100%)
Ceftriaxone	65 (69%)	3(27%)	-	2(100%)	8 (89%)	2 (68%)	-	1 (100%)
Azithromycin	0(0%)	-	-	-	-	-	-	-
Imipenem	0(0%)	-	2(15%)	1(50%)	0 (0%)	3 (100%)	1 (100%)	1 (100%)
Meropenem	0(0%)	-	1(8%)	1(50%)	0 (0%)	2 (67%)	1 (100%)	1 (100%)
Gentamicin	-	-	3(23%)	1 (50%)	9(100%)	2 (67%)	1(100%)	1 (100%)
Levofloxacin	-	-	1 (8%)	1(50%)	6 (67%)	2 (67%)	0(0%)	-
Amikacin	-	-	3(23%)	1(50%)	3(33%)	1 (33%)	1 (100%)	1(100%)
Cefepime	-	-	10(77%)	0(100%)	9(100%)	2 (67%)	1(100%)	1 (100%)
Cefotaxime	-	-	-	0(100%)	-	-	-	-
Ceftazidime	-	-	8(61.5%)	-	-	-	-	-
Doxycycline	-	-	-	1(50%)	-	-	-	-
Amox-clavulanic acid	-	-	-	-	9(100%)	2 (67%)	0 (0%)	-
Piperacillin-tazobactam	-	-	6(46%)	1(50%)	3 (33%)	2 (67%)	0 (0%)	0 (0%)
Aztreonam	-	-	9(69%)	-	-	-	0 (0%)	0 (0%)
Tigecycline	-	-	-	-	0(0%)	-	-	-

Total N=167 *Not tested

showed lower resistance to ciprofloxacin in case of E. coli (66.66%) and Klebsiellapneumoniae (71.42 %) from surgical patients as compared to our study.[13] In general, this resistance trend of ciprofloxacin is still high due it's over the counter availability and most commonly used antibiotic in hospitals of Pakistan.[22] The resistance of Pseudomonas aeruginosa and Acinetobacter baumanni to carbapenems was 8-15% and 50% respectively in our study. Alike results were found in study conducted in Taiwan where only 14-15% were carbapenem resistant Pseudomonas spe-cies. On the other hand, a study from Lahore detected 6.5% resistance for both Pseudomonas and Acineto-bacter species. Two studies conducted in Karachi revealed 6-8% carbapenems resistance in Pseudo-monas.[14] However, overall the resistance rate is low for carbapenems in our study, still serving as an antibiotic of last resort in treating multidrug resistant infections.[23] A high rate of MDR and XDR microorganisms has been reported in this present study. MDR and XDR strains have been observed in the current study leaving azithromycin and carbapenems as the only alternatives to treat typhoid infection. Study conduc-ted from Southern Pakistan shows parallel trend.[24,25] A.baumannii, S.marcescens, C.freundiiare intrinsi-cally resistant to most beta lactam drugs making it a therapeutic challenge.10Serratia in particular has the potential of transmission within and between hospi-tals. It's acquired antimicrobial resistance for diffe-rent beta-lactams, ciprofloxacin, and tetracyclines on numerous occasions can result in difficulty to treat S.marcescens infections in future.[26] Pseudo-monas is intrinsically resistant to most antibiotics; most active agents are carbapenems which corres-ponds to our study. The crossresistance between fluoroq-uinolones and other antibiotic agents, such as piperacillin-tazobactam, ceftazidime, and tobramy-cin is a frequent problem.[27] Carbapenem resistance in Klebsiellapneumoniaeis also not an uncommon phenomenon as evident by majority of strains in the current study.[28] Among Gram positive cocci, linezolid and tige-cycline were completely sensitive (100%) against MRSA isolates in the present study. Various speci-mens received from Karachi, Interior Sindh, Punjab, Khyber Pakhtunkhwa to Agha khan University hospital, Karachi during a period of 2013-2014 still renders tigecycline, vancomycin and linezolid as susceptible agents against MRSA infections.[29] Vancoymcin (glycopeptide group) is used as a treat-ment of choice for MRSA infections but emergence of resistance in vancomycin has resulted in the development of newlinezolid antibiotic (oxazolid in one group). Vancomycin needs intravenous adminis-tration and has undesirable side effects. Whereas, linezolid is an excellent oral option with still rare resistance for Gram positive cocci and studies indicate both antimicrobials have similar in vitro efficacy against MRSA infections.[30,31] Apart from resistance of MRSA isolates to beta lactam drugs, all of the isolates were resistant to ciprofloxacin (100%) and levofloxacin (100%). Strains of MRSA were resistant to fluoroquinolones (92.5%) in one study conducted in India.[32] Minimum inhibitory concentrations (MICs) of colistin for various Enterobactericeace was not performed. Vancomycin MICs should also have been performed to get clear picture of vancomycin intermediate S.aureus (VISA) and vancomycin resistant S. aureus(VRSA) strains.

CONCLUSION

The rising multidrug-resistant strains of espe-cially Enterobacteriaceae from blood stream infec-tions in our study suggests limiting of therapeutic options in future. It is imperative for the clinicians to follow the available updated local surveillance data on antimicrobial resistance to combat commonly isolated bacterial pathogens from blood cultures. Hence, it will assist in formulating an effective antimicrobial stewardship program in hospitals.

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ASSOCIATION OF HYPERTENSION WITH INTRAUTERINE GROWTH RESTRICTION

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Abstract

Background: Adequacy of fetal growth is a very important concern and has lifelong implications. IUGR is defined as an estimated fetal weight at one point in time at or below 10th percentile for gestational age. WHO defines that maternal hypertension is considered when blood pressure is 140/90 mmHg. Hypertension leads to disrupted and insufficient blood supply to the fetus leading to altered fetal growth contributing to intrauterine growth restriction.

Objective: The objective of this study was to demonstrate relationship between hypertension and risk of Intrauterine growth restriction.

Material and method: It was a cross sectional comparative study, conducted in Federal Post Graduate medical institute, after taking permission from Ethical review board, from January 2015 to January 2016, with a sample size of 60 pregnant women. They were divided equally among pregnant women with adequate for gestational age pregnancies and pregnant women with intrauterine growth restricted pregnancies confirmed by ultrasonography at 28-35 weeks of gestation, with 30 women in each group.

Results: There was no significant association of systolic blood pressure and diastolic blood pressure with intrauterine growth restriction (p-value= 0.166 and p value = 0.321 respectively).

Conclusion: It is concluded hypertension is not significantly associated with intrauterine growth restriction.

The optimum growth of the fetus during intrauterine life has lifelong implications.[1] The importance of birth weight can be judged by the fact that at least one third reductions in cases of LBW is designated as one of the seven fundamental goals of "A world fit for children" programme of United Nations.[2] In obstetrical world intrauterine growth restriction (IUGR) occupies second slot as a cause of small for gestation neonates, first being premature birth, both of which results in neonatal morbidities and mortality.[3] An estimated fetal weight (EFW) at one point in time at or below 10th percentile for gestational age is labeled as IUGR.[4] Umbilical artery Doppler scan is a very important tool for differentiating intrauterine growth restriction, constitutionally small fetus and normal pregnancy.[5]

The consequences of IUGR overburdens the public health resources. Later in life, intrauterine growth restricted children are more susceptible to suffer from hyperlipidemia, type 2 diabetes mellitus, nonalcoholic fatty liver disease,[6] neurodevelopment delays in adult life,[7] gastrointestinal abnormalities e.g. reduction in size of pancreas.[8] The available data on IUGR is mostly collected from the West which masks the prevalence of IUGR in south Asian population. The incidence of IUGR in developed countries is about 3% which is far less than in developing countries. The accurate rate of occurrence of

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IUG R in Pakistan is still vague because of malpractices of deliveries at home and not weighing babies at time of birth hence making data collection cumbersome and results in underestimation of the problem. In developing countries, prevention of LBW must be dealt on priority basis because in developing countries IUGR is the major culprit of LBW. In subcontinent 54% of the LBW infants fall under the category of IUGR.[9] About 52% of the still birth cases and 10% of perinatal death rate are consequence of IUGR. Moreover about 72% of idiopathic fetal mortality is shown to be related to IUGR.[10] About 23.8% of the newborns suffer from IUGR. Annually approximately thirty million babies get affected by IUGR and out of them about 75% are Asians. Unfortunately, in Pakistan there is 10-25% incidence of IUGR which should be addressed promptly.[11]

Hypertension is considered as major contributing factor in development of intrauterine growth restriction. Maternal hypertension is considered when blood pressure is 140/90 mmHg or increases of minimum 30 mmHg in systolic pressure or 15mmHg in diastolic pressure over the baseline first trimester recording of blood pressure. Hypertension during pregnancy is widely categorized as preeclampsia, eclampsia and pregnancy induced hypertension.[(12)] Maternal hypertension is supposed to be related to significant changes in placental perfusion and ultimately chronic hypoxia.[13] Restricted blood flow to the fetus can contribute to restricted growth of the developing fetus.[14] Adequate placental perfusion is a key factor for provision of oxygen and other important nutrients from mother to fetus, lack of which can lead to IUGR.[15] This reduced blood supply to the fetus not only leads to IUGR but also has a direct relation with development of hyperten-sion in children because fetus tries to adapt the restricted supply of oxygen and nutrients by metabo-lic programming.[16]

METHODOLOGY

It was a comparative and cross-sectional study, conducted in the Department of Physiology, Federal Postgraduate Medical Institute, Lahore and Obstetrics and Gynecology department, Shaikh Zayed hospital, Lahore after taking permission from the respective head of departments and Ethical review board. The study span was one year.

A target population of 60 pregnant women was chosen was distributed into 2 groups, as follows:

Group A: 30 Pregnant women (between 28-35 weeks of gestation) with adequate for age uncomp-licated normal pregnancy

Group B: 30 pregnant women (between 28-35 weeks of gestation) with intrauterine growth restric-ted pregnancy Convenient sampling was done.

Pregnant women were selected from the outpatient department and obstetric ward of Shaikh Zayed medical complex meeting the inclusion criteria. Written informed consent was taken from all the participants. Then every individual was assessed by taking history and using specially designed questionnaire. Blood pressure of the patients was measured through auscultatory method recorded with the help of aneroid sphygmomanometer.

The data was entered into and analyzed by SPSS (Statistical Package for Social Sciences) version 17.0. As data was not normally distributed, Mann Whitney U test was performed to compare the mean systolic blood pressure and diastolic pressure of both groups. Chi square test was done to access association between history of intrauterine growth restriction in study groups.

Table 1: *Showing comparison of Systolic Blood Pressure between both groups*

	Systolic Blood Pressure				
	Mean ± SD	**Median (Inter-Quartile Range)**	**Min**	**Max**	**p-value**
Group A	108.3 ± 8.8	110 (100.0 - 120.0)	90	120	0.166
Group B	108.8 ± 7.4	110 (100.0 - 111.2)	100	120	

RESULTS

Following results were obtained:

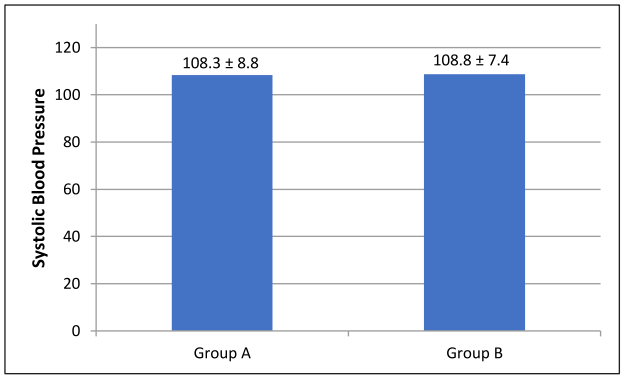

Figure 1: *Showing Comparison of Systolic Blood Pressure between both Groups*

Table 2: *Showing Comparison of Diastolic Blood Pressure between both Groups*

	Diastolic Blood Pressure				
	Mean ± SD	Median (Inter-Quartile Range)	Min	Max	p-value
Group A	68.3 ± 7.6	70 (60.0 - 71.2)	60	80	0.321
Group B	66.3 ± 6.1	70 (100.0 - 70.0)	60	80	

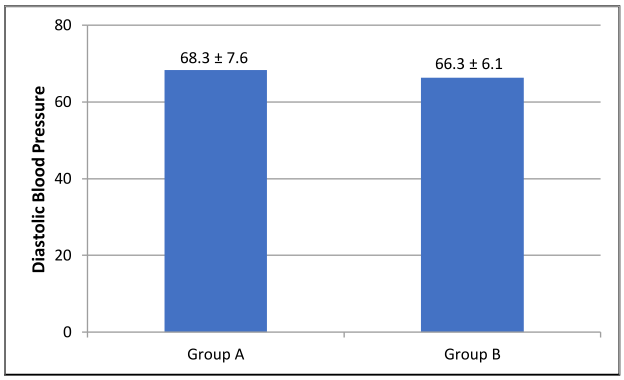

Table 3: *Showing Frequency of History of Intrauterine Growth Restriction in both Groups*

	History of Intrauterine Growth Restriction		
	No n (%)	Yes n (%)	Total
Group A	27 (90.0%)	3 (10.0%)	30 (100%)
Group B	26 (86.7%)	4 (13.3%)	30 (100%)
p-value	> 0.999		

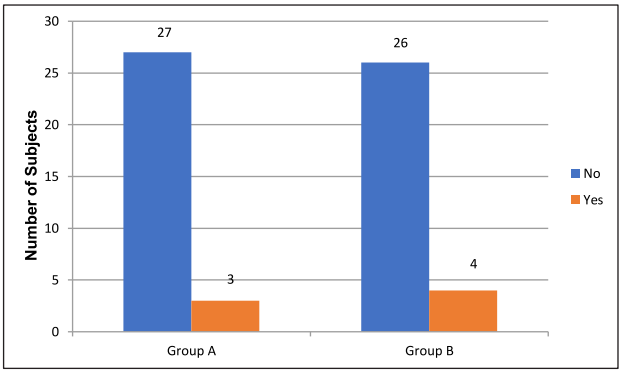

Figure 2: *Showing Comparison of Diastolic Blood Pressure between both Groups*

Figure 3: *Showing Frequency of History of Intrauterine Growth Restriction in both Groups*

DISCUSSION

In this study we evaluated the effect of blood pressure in pregnant women between the age of 20-40 years with evidence of intrauterine growth restriction by physical examination and ultrasound at 28-35 weeks of gestation with age and duration of pregnancy matched group of pregnant women with evidence of adequate for gestational age fetuses confirmed by both physical examination and ultrasound.

The mean systolic blood pressure of group A was 108.3 ± 8.8 and mean systolic blood pressure of group B was 108.8 ± 7.4. The mean diastolic blood pressure of group A was 68.3 ± 7.6 and mean diastolic blood pressure of group B was 66.3 ± 6.1. As data was not normally distributed, Mann Whitney U test was performed to compare the blood pressure of both groups. It was found that there was no statistically significant difference in mean systolic blood pressure between both groups (p-value = 0.836) and diastolic blood pressure between both groups (p-value = 0.321)

This result differs from multiple studies showing significant association of maternal hypertension and IUGR.[17,18] In another study conducted on South Asian population, Muhammad et al suggested association of preeclampsia and eclampsia with low birth weight.[19] The results of our study are also not in

accordance to study conducted by Ayaz et al revealing that hypertension is positively related with IUGR.[20]

However, our results are positively in line with another study conducted by Khan et al. According to this study IUGR is not significantly and strongly associated with maternal hypertension.[1]

Out of total 60 pregnant females, 7 (11.6%) had history of intrauterine growth restriction. In group A, 3(10.0%) and in group B, 4(13.3%) females had history of intrauterine growth restriction. Chi square test also revealed that there was no significant association between history of intrauterine growth restriction and study groups. (p-value < 0.999)

In a recent study Albu et al. suggested history of IUGR as a risk factor for intrauterine growth restriction in subsequent pregnancies.[21]

CONCLUSION

Though various neoteric and contemporary researches are operational on IUGR, this study will also contribute in finding the link between hypertension and IUGR.As hypertension is quite prevalent in Pakistan, this study can be very helpful to study the association of hypertension with IUGR. In this study, it is concluded that hypertension is not significantly associated with IUGR.

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SUCCESS RATE OF B-LYNCH SUTURE IN POST-PARTUM HEMORRHAGE DUE TO PLACENTA PREVIA

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Abstract

Objectives: To determine the frequency of success of B-Lynch in post-partum hemorrhage due to placenta previa having caesarian section.

Methods: A descriptive case series was carried at department of obstetrics and gynecology unit 3, Jinnah Hospital Lahore over a period of six months. A total of 90 patients were included in this study.

Results: Mean age of the patients was 28.82+_4.30, Mean BMI was 26.93+_3.23 (kg/m2). Bleeding stopped in 75 patients (83.3%), further intervention was required in 15 patients (16.7%). The 29 patients (32.2%) were primi-gravida and 61 patients (67.8%) were multi-gravida. B-Lynch suture was found to be successful in 75 patients (83.3%). Seventy seven patients (85.6%) were having 0-2 previous caesarian-section and 13 patients (14.4%) had 3-4 previous caesarian sections. Malnutrition was found in only 2 patients (2.2%).

Conclusions: B-Lynch suture is safe, highly effective and successful in 83.3% of cases in our study.

Key Words: Post-partum hemorrhage, B-Lynch suture, Placenta previa, Caesarean-section.

According to World Health 0rganisation (WHO) primary postpartum is defined when there is loss of blood more than 500 milliliters after normal delivery and more than 1000 milliliters after caesarean section.[1] The American college of obs./gyne define postpartum hemorrhage clinically when haemocrit drop of 10% haemoglobin that requires transfusion.[2]

Globally Postpartum haemorrhage (PPH) is sometimes life threatening and a leading cause of maternal morbidity and mortality.[3,4,5] The incidence of placenta previa is 4/1000 patients and it is associated with significant PPH.[6] Elective caesarean section is link up with decreased PPH risk that lead to maternal morbidity.[7] Traditionally different ways to deal PPH are bimanual compression, massage, and uterotonics drugs, uterine tamponade with packing or balloons, internal iliac ligation and rarely arterial embolization. The failure of all measure lead to surgical intervention - hysterectomy that leads to multiple issue related to psychology and future fertility.[8] A systematic review reviled the success of B-Lynch 92%, Arterial embolization 91%, tamponade with balloon 84%, internal iliac ligation 85%.[9] This study would review the data in which B-Lynch suture was used in placenta previa patients undergoing elective caesarean sections.

METHODOLOGY

A descriptive case series was conducted at Obstetric and Gynecology unit 3 department of Jinnah Hospital, Lahore over a period of six months from 06-09-2015 to 05-03-2016. Non-probability consecutive sampling technique was used. After approval from the ethical committee, 90 patients fulfilling the inclusion and exclusion criteria were included in this study. Informed consent and demographic details (name, age, parity, and gestational age) was obtained from the patients. All patients underwent lower segment caesarean section and B-Lynch suture was applied prophylactically. Patients were followed up 12 hours in labour room and one day in post-natal ward. All the data was collected on proforma attached, entered and analyzed using SPSS version 20.

RESULTS

A total of 90 patients were included in this study. Patients ranged between 20-40 years of age,

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mean age was 28.82 ± 4.30 (Table- I). Mean BMI was 26.93 ± 3.23 (kg/m^2). Twenty nine patients (32.2%) were primigravida and 61 patients (67.8%) were multigravida. Malnutrition was found in only 2 patients (2.2%). Further intervention was required in 15 patients (16.7%) (Table-II). The B-Lynch suture was successful in 75 patients (83.3%) (Table-III). Seventy seven patients (85.6%) were having 0-2 previous caesarean sections and 13 patients (14.4%) had 3-4 caesarean sections (Table-IV).

Table 1: *Distribution of Patients by Age*

Age (Years)	Number	Percentage
20 – 30	62	68.9
31 – 40	28	31.1
Total	90	100.0
Mean +_SD	28.82+_4.30	

Table 2: *Success of B-Lynch Suture*

Success	Number	Percentage
Yes	75	83.3
No	15	16.7
Total	90	100.0

Table 3: *Further Intervention Required (Hysterectomy)*

Intervention	Number	Percentage
Yes	15	16.7
No	75	83.3
Total	90	100.0

Table 4: *Number of Previous C- Section*

Previous C/S	Number	Percentage
0 – 2	77	85.6
3 – 4	13	14.4
Total	90	100.0

DISCUSSION

Primary PPH is a grievous obstetrical emergency and could be life threatening in 5% of deliveries.[10] Surgical method of controlling uterine haemorrhage is by applying B-Lynch compression suture in order to reduce the need of obstetrical hysterectomy. The B-Lynch surgical technique for control of torrential primary PPH was reported by Christopher B-Lynch et al in 1997 first time along with 5 cases where it was used successfully.[11] It involves the "over-sewing of the uterus with a continuous suture ongoing compression". The fruitfulness of this technique are easy to apply, life- saving, reduces the chance of hysterectomy and most important is to preserves future fertility.[12] In 2000 three different authors shared their experience regarding B-Lynch uses in controlling PPH secondary to uterine atony, Vangsgaad (one case), Ferguson et al (two cases), Dacus et al (four cases).[13,14,15] Dacus et al decided that more experiences are required in B-Lynch before it can be accepted as gold standard. Pal et al reported with six cases that B-Lynchis not effective in controlling PPH due to uterine atony following caesarean section.[16]

In our study the average of the patients was 28.82 ± 4.30 this is tallying with the age group reported in study by Ghodake.[17] The success rate of the B-Lynch suture in this study was 83.3% this is similar with other studies.[11,18,19]

The lower success rate 72.0% had been reported in a study from UK conducted by Ouabha.[20] Higher success rate 97.8% had been reported by Haq in a study from Lahore, Pakistan[21] and 97.3% from India by Neelam.[22] The surgical interventions required in our study was 16.7% and it had been observed that previous caesarean section and adherent placenta play an important, the result is comparable with other study.[23]

In the current study the B-Lynch suture proved effective in controlling haemorrhage due to placenta previa patients undergoing caesarean. Post-operative recovery was good in all patients.

CONCLUSION

B-Lynch suture technique is an effective and first-line treatment of controlling PPH. In our experience this is a simple, safe, highly fruitful and easy method to stop bleeding in torrential haemorrhage.

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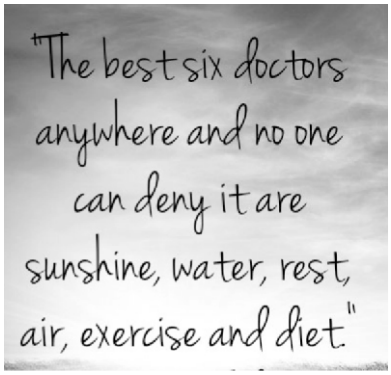

ACADEMIC INTEGRITY: MEDICAL STUDENTS

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Abstract

Objective: To determine the prevalence of lapses in professionalism regarding academic integrity among ungraduated medical students.

Methods: A quantitative cross sectional study was carried out in Allama Iqbal Medical College between first and final year MBBS students over a period of one year from March 2016 to Feb 2017. A total 200 students were included 100 from each class in the study. A validated and customized 47 items questionnaire was given to all (200) students.

Results: The response rate was 100%, all the students completed the Performa and returned back. Eighty percent of the first year students were between 18-20 years. Eighty percent of the final year students were 23-24 years figure I, II. Out of 200 students 58.5% were females and 41.5% were males. Prevalence of lapses in professionalism regarding academic integrity among medical students was found to be 2.5% - 86%.

Conclusions: Significant issues observed related to academic integrity in this study. Dundee poly professionalism inventory–I is a useful tool to diagnose lapses in professionalism related to academic integrity at undergraduate level.

Key Words: Academic Integrity, Medical Students, Cheating, Plagiarism, Unprofessional Behavior

Academic Integrity is said to be the heart of every medical institution, it consist of certain principles and values that reflects mission / vision of the institution.[1] Academic Integrity in all medical students is very important because it guarantees that students will definitely take responsibility to acquire knowledge and skills in classrooms and skill-labs. It will also ensure that quality of learning experiences will help them in managing the patients.[2] Academic Integrity encourages the students to become honest, fair, responsible and trusty. There is a great change in medical education over the last decade. Now it has been acknowledge that traditional teaching methodology that encourages the student rote learning of facts, and meant to access the knowledge, is not enough to equip the undergraduate medical students with special professional ethics and characteristics that should be present in future doctors.[3] These characteristics include altruism, empathy, fairness, honest, respect, responsible, trusty, good communication skills, competent in their respective fields, professionalism, behavior, and attitude. According to General Medical Council report honesty and trustworthiness are important attributes of a medical doctor.[4] In order to inculcate these characteristics to undergraduate medical students, curricular revision and implementation is required.

Academic integrity is said to be the cornerstone of ethical and professional development in medical educations. The term "academic integrity" is worldwide used as proxy for his/her colleague notably in relation to cheating and plagiarism.[5] It has been assumed and suggested that if medical students are dishonest at an undergraduate level they will continue to do dishonesty in future.[6] Globally academic dishonesty is quite common in most of the medical colleges including Pakistan[7]. There is a wide range of variations in the numbers of students reporting of academic misconduct by themselves in various surveys carried out in medical colleges of different

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countries.[8] Academic dishonesty can affect undergraduate medical students adversely. These students are deficient in the required respected competencies to become safe and sound doctors.[9] A lot of problems have been reported mainly related to academic dishonesty and professionalism by Pakistani medical students both within the country and in abroad due to their migration.[10] Cheating behavior in medical students may result incompetent, inefficient, future doctors who then treat patients.[11] Plagiarism means the "use of other person's ideas, words, phrases, facts, graphics, charts, tables, graphs, audio visuals or other intellectual products without appropriately citing the original source". There are reports of plagiarism among many Pakistani medical students.[12] Plagiarism in any form is considered to be a breach in professionalism related to academic integrity of medical students. Unprofessional professional behavior is a behavior that interferes with work or creates a hostile environment, towards colleagues, peers, teachers, patients and their families. Unprofessional behavior also includes fraud, threatening, drug / alcohol abuse, cheating with patients, and colleagues. It is quite common, as reports of un-professional behaviors has been observed among most of Pakistani Medical Students.[13] The purpose of the study is to find out specific issues regarding academic integrity so that strategies to rectify the issues can be planned and implemented in a structured way to prevent academic dishonesty and produce seven stars future doctors.

METHODOLOGY

A quantitative cross sectional study was carried out in Allama Iqbal Medical College between first and final year MBBS students over a period of one year from March 2016 to Feb 2017. Non probability convenience sampling technique was used, a total of 200 students were included 100 from each class. The data of the study was collected by handing over an adapted, validated and customized 47 items Dundee poly professionalism inventory-1 questionnaire to all (200) students in the classroom after informed consent, and taking permission from the institutional ethical committee. The purpose of the study, importance of the professional academic integrity and how to fill the performa was explained to all the students. The students were instructed especially, to use honesty during filling the questionnaire. A three points scale, yes/no/not sure was used to record the students response for the assessment of each item of the questionnaire and then filled were collected after 20-30 minutes. All the data was entered and then analyzed using SPSS version 23.

RESULTS

A total of 200 students 100 from first and final year each were included in the study. The response rate was 100%, all the students completed the Performa and returned back. Regarding age distribution 80% of first and final students were 18-20 and 25-26 years respectively (figure I, II). Out of 200 students 117 (58.5%) were females and 83 (41.5%) were males (figure III). The objective of the study was achieved by descriptive statistic after entering the data taken from Dundee poly professionalism inventory-I and taking yes responses again each variable. The Prevalence of lapses in professionalism regarding academic integrity among medical students both from first and final year was found to be 2.5 - 86%.

DISCUSSION

Academic Integrity is the key component of professionalism. It is considered as a core value and certain behaviors e.g. honesty, truth, respect, responsibility and good communication skills must be present in the medical students. Globally academic lapses are quite common in medical colleges and various studies are supporting that prevalence's are increasing day by day.[7,14] In this study the prevalence of self-reported lapses in professionalism related to academic integrity was observed to be 2% - 86%. The students admitted doing all 47 behaviors mentioned in Dundee Poly Professional Inventory-1. This wide variation in prevalence of individual

behaviors is also seen in similar surveys carried out globally by Babelli, Hafeez, Sattar,[15,16,17] The clerkship at the medical institution is the foundation stone for ethical and moral values of future doctors. Globally various studies published major lapses committed by the students during their study period in medical college.[18,19] In our study majority of students had claimed that more dishonesty is done by their peers as compared to themselves. This is consistent with other studies.[20,21] The Lapses in the academic integrity are said to be a universal concern reported by different researchers.[13, 15, 17, 21] The common lapses of academic integrity reported by Scheers and Dayton are different aspects of cheating, plagiarism, and unprofessional behaviors e.g. giving proxy for attendance, cheating in exams, getting technical help in exams, falsifying or altering data, false entries in logbook, copying and pasting without proper citing, the results of our study are supporting these lapses of academic integrity.[22]

The prevalence of self-reported lapses in professionalism related to academic integrity in medical students of underdeveloped countries was higher as compared to developed countries.[23] Chandratilake conducted a multiregional survey including Medical Practitioners of UK, North America, Asia and Europe intimated that differences in lapses could be explained due to social, economic and cultural background.[23] The increased self- reported prevalence of lapses regarding academic integrity in medical students of underdeveloped countries could be explained due to same reasons. The response rate of students in our study was 100% but different response rate was observed in different studies e.g Shukr, reported response rate 92%, Babu, reported 85.9% and Abdulghani, reported 58.5%.[18,20,24]

Cheating has plagued our medical students, cheating attitude mostly reflects the personal habit, moral values, institutional culture and this also act as rampant towards lapses in academic integrity[25]. In our study 78.5% students are involved in various types cheating commonest are signing attendance sheet, completing work for another student, copying answers or use of mobile phones during exams, this is consistent with other studies.[16,17,20,25]

Plagiarism is also considered to be the major lapse in academic integrity in most of institutions globally and its prevalence is also increasing in Pakistani institutions,[26,27]. In this study plagiarism is observed 67.5%, The commonest plagiarism behavior found in our study was "Intentionally paraphrasing text in an assignment, or copying text directly, without acknowledging the source",

Maxine, (2004) reported that unprofessional behavior in medical institution is mostly link up with unprofessional attitude in clinical practice. Frank, (2006), Maida, (2003), Rautio, (2005) reported that different types of abuses (verbal, physical and sexual), harassments, drugs, mistreatment affect the medical students and future doctors. Frank reported 42% and Madia reported 91% of unprofessional behaviors in their studies. Harassment and different forms of abusing is faced by large number of medical students also in Pakistan and it could be associated with long term mental problems like depression and suicide in doctors reported by Larsson G., (2003), Ahmer S.,(2008). The most common unprofessional behavior found in our study was "Missing lectures frequently". Majority 82.5% of our students claimed that they had missed their lectures, 59.0% reported that their fellows were doing this and only 16.5% claimed that they would do in future. Shukr and Roff, (2014) reported that 28.1% their students had done this act, majority 87.5% of their fellows were doing and only 16.9%

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DIFFERENT ASPECTS OF LIFESTYLE BETWEEN MALE BOARDERS AND DAY SCHOLARS AND THEIR EFFECT ON ACADEMIC PERFORMANCE.

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Abstract

Background: Different factors play role during the life of a student which affect the way he lives and the way he performs during his academic years. This research was conducted to get insight of various aspects of lifestyle of medical students and to see how they affect their academic performance.

Objective: The study objectives were to compare different aspects of lifestyle of boarders and day scholars and to find out class wise association between lifestyle aspects of boarders and day scholars and their academic performances.

Methods:

Study Design: Cross sectional study design.

Study Setting and duration: Study was conducted at Allama Iqbal Medical College and Boys Hostels of Allama Iqbal Medical College and was completed in 3 months.

Inclusion criteria: All male students of MBBS were included.

Data Collection and analysis: Data was collected by administering a self-made questionnaire and data was analyzed using SPSS Version 17 and association between different variables was checked using chi square test.

Results: Sleep habits were similar among both boarders and day scholars ranging from good to average and no association was significant between good and bad sleeping habits with excellent and average academic performances respectively. Class wise comparison showed no significant difference between sleep score of boarders and day scholars except 4th year. Habits of Eating, Studying, Physical Activity and Smoking were poor among boarders as compared to day scholars who had good habits. No association existed between eating habits and physical activity with academic performance however association existed between good study score and excellent academic performance among all students. Similarly smoking was associated with poor academic performance in majority of the students.

Conclusions: The conclusion of our study was that there was poor life style regarding Eating Habits, Study, Physical activity and Smoking among boarders and there was an association between good study score and excellent academic performance among all the students and poor academic performance was associated with smoking.

Key words: Life Style, Boarders, Male Medical Students, Academic performance.

University students have distinct and unique social, physical and emotional characteristics especially those who have joined hostels for the first time. They have to manage their own affairs independently without any guidance. These students are more likely to develop poor eating habits, lack of sleep, smoking or drug abuse[1]. Students at hostel show unhealthy dietary and sleeping behavior, decreased physical activity. Male students are more prone towards smoking which leads to poor academic performance[1]. On the contrary, regular meal pattern, intake of healthy food items and

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healthy physical activity is associated with high academic achievement.[2] There is definitely a positive association between eating habits and academic performance.[3] Good academic performance is also related to eating breakfast[4]. There is high association between food intake and educational performance and boarders usually miss their breakfast or other meals which badly affects their academic performance.[5] There is a direct relationship between the study habits and grades; and day scholars have better study habits than students living in hostels.[6] Some studies have shown that there is equal academic performance among day scholars and boarders and increase in study hours increases the academic performance keeping other factors constant.[7] Studies conducted in India showed pro attitude towards smoking, use of tobacco products and alcohol among boarders than day scholars.[8,9] Students who smoke show poor grades than nonsmokers[10] and they have lower self-perceived academic performance.[11] A study in Khyber Pakhtunkhwa showed that substance use is more among male boarders as compared to day scholars.[12] Boarders have significantly lesser physical activity compared to the day scholars in the transport and recreational domain.[13] According to a study done in Australia, positive relation was found out between physical activity and academic achievement.[14] In a study by Singh and Sharma in India, day scholars were more regular in their sleep routines as compared to boarders who usually sleep late and also get up very late.[15] Studies conducted by Gaultney JF stated that students having sleep disorders or decreased sleeping hours showed poor academic performance.[16] Another study conducted in Saudi Arabia also showed that sleep disorders are associated with bad grades among medical students.[17] According to study conducted by a university in America, longer sleep duration before the night of examination leads to higher grades.[18]

OBJECTIVES

The present study was undertaken by keeping in view the following objectives

- To compare different aspects of lifestyle of boarders and day scholars.
- To find out class wise association between lifestyle aspects of boarders and day scholars and their academic performances.

OPERATIONAL DEFINITION

Lifestyle aspects were judged on the basis of sleep habits, eating habits, study habits, physical activity and cigarette smoking. Questions were asked regarding each habit with 4 options and options were assigned numeric value of 4, 3, 2 and 1 respectively. Then the numeric values for responses for each habit were added and graded. Sleep Score (S.S) was graded as Good (S.S >12), Average (S.S 8-12) and Poor (S.S <8). Eating Score (E.S) was graded as Good (E.S >9), Average (E.S 6-9) and Poor (E.S <6). Study Score (St.S) was graded as Good (St.S >12), Average (St.S 8-12) and Poor (St.S <8). Physical Activity Score (P.S) was graded as Good (P.S >6), Average (P.S 4-6) and Poor (P.S <4). Cigarette Smoking was graded as 1 for no smoking and 0 for Smoking.

Numerical value was assigned as 4, 3, 2, and 1 respectively for response regarding questions for marks obtained in each Prof and Percentage obtained in test. Getting a distinction was given 1 and Supply was given value of -1. Then the numeric value for each score was added to get academic score. Academic Score was assessed with different scales for each class. 1st year academic score was scaled on 1-4 and graded as Excellent (3-4), Good (2), and Average (1). 2nd year academic score was scaled on 2-13 and graded as Excellent (>6), Good (6-4) and Average (<4). 3rd year academic score was scaled on 2-13 and graded as Excellent (>9), Good (6-9) and Average (<6). 4th year academic score was scaled on 3-17 and graded as Excellent (>12), Good (8-12) and Average (<8). 5th year academic score was scaled on 4-21 and graded as Excellent (>15), Good (10-15) and Average (<10).

METHODOLOGY

Study Design: Cross sectional study design.

Study Setting: Study was conducted at Allama Iqbal Medical College and Boys Hostels of Allama Iqbal Medical College.

Duration of Study: Duration of study was 3 months.

Sample Size: Total of 150 male students was selected from five years of MBBS. 30 students were selected from each class out of which 15 were boarders and 15 were day scholars.

SAMPLING TECHNIQUE

Non probability / purposive sampling

Inclusion Criteria:

All male students of MBBS were included

Exclusion Criteria:

All female students of MBBS were excluded

Data Collection Procedure: Data was collected by administering self-made questionnaire containing questions related to various aspects of lifestyle including sleep, food, study, physical activi-ty and smoking.

Data Analysis Procedure: Data was analyzed using SPSS version 17. Comparison of different lifestyle aspects between boarders and day scholars were cross tabulated and significance was checked using chi square test. Cross tabulation was done between different aspects of lifestyle and academic score and significant association was checked by chi square test.

RESULTS

Sleep Habits:

Majority of boarders (76%) and day scholars (65.3%) had average sleep score while only 3% of the total sample population had poor sleep score (Table1) and there was no significant difference between boarders and day scholars (p-value 0.344). Class wise comparison showed no significant difference between boarders and day scholars except 4th year (p value 0.024) where no boarder has good sleep score as compared to 5 day scholars (Table 2).

Sleep Score And Association With Academic Performance:

According to class wise data analysis no statistical significant association was found out between sleep score and academic score except 4th year (p-value 0.00) however majority of subjects with

Table 1: Comparison of Sleep Score of Total Boarders and Day Scholars.

	SLEEP SCORE				
	Poor (score <8)	**Average (score 8-12)**	**Good (score >12)**	**Total**	**Chi square Significance**
Residence					
Boarders	1 (1.3%)	57 (76.0%)	17 (22.7%)	75 (100%)	0.344
Day scholar	2 (2.7%)	49 (65.3%)	24 (33.0%)	75 (100%)	
Total	3 (2%)	106 (70.7%)	41 (27.3%)	150 (100%)	

Table 2: Class Wise Comparison of Sleep Score of Boarders and Day Scholars.

Class	**Residence**	**SLEEP SCORE**				**Chi square significance**
		Poor (score <8)	**Average(score 8-12)**	**Good (score >12)**	**Total**	
1st year	Boarders	1	12	2	15	0.052
	Day scholars	0	7	8	15	
2nd year	Boarders	0	10	5	15	0.690
	Day scholars	0	11	4	15	
3rd year	Boarders	0	11	4	15	0.690
	Day scholars	0	10	5	15	
4th year	Boarders	0	15	0	15	**0.024**
	Day scholars	1	9	5	15	
5th year	Boarders	0	9	6	15	0.180
	Day scholars	1	12	2	15	

average sleep score had good to excellent academic score (Table 3).

EATING HABITS:

There was significant difference between

Table 3: Class Wise Analysis of Association between Sleep Score and Academic Performance

Class	Residence	ACADEMIC SCORE				
		Sleep Score	Excellent	Good	Average	Chi square significance
1st Year	Boarders	Poor	1	0	0	0.398
		Average	6	5	1	
		Good	1	0	1	
	Day scholars	Poor	3	3	1	0.566
		Average	3	2	3	
		Good	0	0	0	
2nd Year	Boarders	Poor	0	0	0	0.439
		Average	0	6	4	
		Good	0	4	1	
	Day scholars	Poor	0	0	0	0.711
		Average	1	6	4	
		Good	0	3	1	
3rd Year	Boarders	Poor	0	0	0	0.506
		Average	1	8	2	
		Good	0	4	0	
	Day scholars	Poor	0	0	0	0.368
		Average	2	7	1	
		Good	1	2	2	
4th Year	Boarders	Poor	0	0	0	**0.00**
		Average	2	9	4	
		Good	0	0	0	
	Day scholars	Poor	0	1	0	0.165
		Average	1	4	4	
		Good	3	2	0	
5th Year	Boarders	Poor	0	0	0	0.398
		Average	0	4	5	
		Good	0	4	2	
	Day scholars	Poor	0	0	1	0.529
		Average	0	7	5	
		Good	0	1	1	

Table 4: Comparison of Eating Score of Boarders and Day Scholars.

	EATING SCORE				Chi square Significance
	Poor (score <6)	Average (score 6-9)	Good (score >9)	Total	
Residence					
Boarders	9 (12.0%)	23 (30.7%)	43 (57.3%)	75 (100%)	**0.005**
Day scholar	1 (1.3%)	15 (20.0%)	59 (78.7%)	75 (100%)	
Total	10 (6.7%)	38 (25.3%)	102 (68.0%)	150 (100%)	

Table 5: Class Wise Comparison of Eating Score of Boarders and Day Scholars

Class	Residence	EATING SCORE				Chi square significance
		Poor (score <6)	Average (score 6-9)	Good (score >9)	Total	
1st year	Boarders	2	6	7	15	
	Days scholars	0	3	12	15	0.116
2nd year	Boarders	1	3	11	15	
	Days scholars	0	5	10	15	0.461
3rd year	Boarders	2	6	7	15	
	Days scholars	1	0	14	15	**0.013**
4th year	Boarders	2	5	8	15	
	Days scholars	0	4	11	15	0.275
5th year	Boarders	2	3	10	15	
	Days scholars	0	3	12	15	0.336

eating scores of boarders and day scholars (p-value 0.005) and (78.7%) of day scholars had good eating score as compared to (57.3%) boarders. Percentage of boarders with poor eating score (12.0%) was much greater than day scholars(1.3%) (Table 4). Class wise comparison (Table 5) showed statistical significance (p-value 0.013) among 3rd year where 14 out of 15 day scholars have good eating score as compared to 7 out of 15 boarders. Other classes showed similar trends of eating scores among boarders and day scholars.

EATING SCORE AND ASSOCIATION WITH ACADEMIC PERFORMANCE

Class wise data analysis showed that no statistical significant association was established between eating score and academic score but it can be seen that good to excellent academic score is associated with good to average eating score with only few exceptions where poor eating score is associated with Good to Excellent academic score (table 6).

STUDY HABITS

Majority of boarders had poor study score (46.7%) whereas majority of day scholars had good study scores (44.0%) but no statistical significance was found out between study score of boarders and day scholars (Table 7). Class wise comparison between boarders and day scholars showed significant difference of study score between 2nd year boarders

Table 6: *Class Wise Analysis of Association between Eating Score and Academic Performance*

Class	Residence	ACADEMIC SCORE				Chi square significance
		Eating Score	Excellent	Good	Average	
1st Year	Boarders	Poor	2	0	0	0.708
		Average	3	2	1	
		Good	3	3	1	
	Day scholars	Poor	0	0	0	0.949
		Average	1	1	1	
		Good	5	4	3	
2nd Year	Boarders	Poor	0	1	0	0.256
		Average	0	3	0	
		Good	0	6	5	
	Day scholars	Poor	0	0	0	0.741
		Average	0	3	2	
		Good	1	6	3	
3rd Year	Boarders	Poor	0	1	1	0.354
		Average	0	5	1	
		Good	1	6	0	
	Day scholars	Poor	1	0	0	0.117
		Average	0	0	0	
		Good	2	9	3	
4th Year	Boarders	Poor	0	1	1	0.535
		Average	0	3	2	
		Good	2	5	1	
	Day scholars	Poor	0	0	0	0.434
		Average	1	1	2	
		Good	3	6	2	
5th Year	Boarders	Poor	0	2	0	0.320
		Average	0	1	2	
		Good	0	5	5	
	Day scholars	Poor	0	0	0	0.438
		Average	0	1	2	
		Good	0	7	5	

Table 7: *Comparison of Study Score of Total Boarders and Day Scholars*

	STUDY SCORE				Chi square Significance
	Poor (score <8)	Average (score 8-12)	Good (score >12)	Total	
Residence					0.095
Boarders	35 (46.7%)	18 (24.0%)	22 (29.3%)	75 (100%)	
Day scholar	23 (30.7%)	19 (25.3%)	33 (44.0%)	75 (100%)	
Total	58 (38.7%)	37 (24.7%)	55 (36.7%)	150 (100%)	

and day scholars (p value 0.01) where 7 out of 15 day scholars had good study score as compared to 0 boarder(table 8).

STUDY SCORE AND ASSOCIATION WITH ACADEMIC PERFORMANCE

Majority of 3rd year boarders with good academic score had average study scores (p value 0.034) and similar association was observed in 4th year day scholars (p value 0.031). Association between good study score and excellent academic score was more prevalent among day scholars but it was statistically insignificant (table 9).

Table 8: *Class Wise Comparison of Study Score of Boarders and Day Scholars*

Class	Residence	STUDY SCORE				Chi square significance
		Poor (score <8)	Average (score 8-12)	Good (score >12)	Total	
1st year	Boarders	5	5	5	15	
	Day scholars	3	4	8	15	0.52
2nd year	Boarders	5	10	0	15	
	Day scholars	3	5	7	15	**0.01**
3rd year	Boarders	4	8	3	15	
	Day scholars	3	9	3	15	0.904
4th year	Boarders	3	10	2	15	
	Day scholars	2	10	3	15	0.819
5th year	Boarders	1	11	3	15	
	Day scholars	6	8	1	15	0.08

Table 9: *Class wise analysis of association between study score and academic performance.*

Class			ACADEMIC SCORE			Chi square significance
	Residence	Study Score	Excellent	Good	Average	
1st Year	Boarders	Poor	4	1	0	
		Average	2	2	1	0.663
		Good	2	2	1	
	Day scholars	Poor	1	1	1	
		Average	1	2	1	0.907
		Good	4	2	2	
2nd Year	Boarders	Poor	0	4	1	
		Average	0	6	4	0.439
		Good	0	0	0	
	Day scholars	Poor	0	2	1	
		Average	0	2	3	0.481
		Good	1	5	1	
3rd Year	Boarders	Poor	0	2	2	
		Average	0	8	0	**0.034**
		Good	1	2	0	
	Day scholars	Poor	0	2	1	
		Average	1	7	1	0.116
		Good	2	0	1	
4th Year	Boarders	Poor	1	1	1	
		Average	0	8	2	0.131
		Good	1	0	1	
	Day scholars	Poor	0	1	1	
		Average	1	6	3	**0.031**
		Good	3	0	0	
5th Year	Boarders	Poor	0	0	1	
		Average	0	5	6	0.133
		Good	0	3	0	
	Day scholars	Poor	0	3	3	
		Average	0	4	4	0.626
		Good	0	1	0	

Table 10: *Comparison of Physical Activity Score of Total Boarders and Day Scholars*

	PHYSICAL ACTIVITY SCORE				
	Poor (score <4)	**Average (score 4-6)**	**Good (score >6)**	**Total**	**Chi square Significance**
Residence					
Boarders	35 (46.7%)	18 (24.0%)	22 (29.3%)	75 (100%)	0.095
Day scholar	23 (30.7%)	19 (25.3%)	33 (44.0%)	75 (100%)	
Total	58 (38.7%)	37 (24.7%)	55 (36.7%)	150 (100%)	

Table 11: *Class Wise Comparison of Physical Activity Score of Boarders and Day Scholars*

Class	**Residence**	**PHYSICAL ACTIVITY SCORE**				**Chi square significance**
		Poor(score <4)	**Average(score 4-6)**	**Good (score >6)**	**Total**	
1st year	Boarders	2	5	8	15	
	Day scholars	4	2	9	15	0.366
2nd year	Boarders	4	5	6	15	
	Day scholars	3	3	9	15	0.537
3rd year	Boarders	11	2	2	15	
	Day scholars	6	1	8	15	0.067
4th year	Boarders	5	4	6	15	
	Days scholars	5	6	4	15	0.67
5th year	Boarders	13	2	0	15	
	Day scholars	5	7	3	15	**0.007**

Table 12: *Class Wise Analysis of Association between Physical Activity Score and Academic Performance*

Class			**ACADEMIC SCORE**			**Chi square significance**
	Residence	**P.A Score**	**Excellent**	**Good**	**Average**	
1st Year	Boarders	Poor	0	2	0	
		Average	3	1	1	0.312
		Good	5	2	1	
	Day scholars	Poor	0	2	2	
		Average	1	1	0	0.349
		Good	5	2	2	
2nd Year	Boarders	Poor	0	1	3	
		Average	0	3	2	**0.044**
		Good	0	6	0	
	Day scholars	Poor	0	3	0	
		Average	0	1	2	0.426
		Good	1	5	3	
3rd Year	Boarders	Poor	0	9	2	
		Average	0	2	0	0.109
		Good	1	1	0	
	Day scholars	Poor	1	4	1	
		Average	1	0	0	0.349
		Good	1	5	2	
4th Year	Boarders	Poor	0	3	2	
		Average	2	2	0	0.130
		Good	0	4	2	
	Day scholars	Poor	1	2	2	
		Average	1	3	2	0.610
		Good	2	2	0	
5th Year	Boarders	Poor	0	7	6	
		Average	0	1	1	0.919
		Good	0	0	0	
	Day scholars	Poor	0	1	4	
		Average	0	5	2	0.186
		Good	0	2	1	

PHYSICAL ACTIVITY

Majority of boarders (46.7%) had poor score on physical activity as compared to day scholars whose majority (44.0%) had good score on physical activity (Table 10) but this was not statistically significant. Class wise comparison between boarders and day scholars of 5th year showed statistical significance (p value 0.007) that 13 out 15 boarders had poor score as compared to 5 out of 15 day scholars. Good score was seen among day scholars but none of the boarder had good score. Majority of 3rd year boarders had poor score as compared to majority of day scholars with good score but this was not statistically significant (Table 11).

PHYSICAL ACTIVITY (PA) SCORE AND ASSOCIATION WITH ACADEMIC PERFORMANCE

There was no significant association between physical activity score and academic performance except 2nd year boarders (p value 0.044). Majority of 1st year boarders and day scholars with excellent academic score had good PA score. Poor PA score was associated with average academic score among boarders and day scholars of 5th year but this association was statistically insignificant (tab 12).

CIGARETTE SMOKING

Smoking of 1 or more than 1 cigarette was more common among boarders (41.3%) than day scholars (18.3%) and this was statistically significant (p value 0.002) (Table 13). Class wise comparison showed statistical significance between boarders and day scholars of 2nd year (p value 0.001) as 11 out of 15 boarders of 2nd year smoked cigarettes as compared to 2 out of 15 day scholars (Table 14)

Table 13: *Comparison of Cigarette Smoking of Total Boarders and Day Scholars.*

	CIGARETTE SMOKING			Chi square Significance
	1 or more than 1 cigarette	0 cigarette	Total	
Residence				
Boarders	31 (41.3%)	44 (58.7%)	75 (100%)	**0.002**
Day scholars	14 (18.3%)	61 (81.3%)	75 (100%)	
Total	45 (30.0%)	105 (70%)	150(100%)	

Table 14: *Class Wise Comparison of Cigarette Smoking of Boarders and Day Scholars*

Class	CIGARETTE SMOKING				Chi square significance
	Residence	1 or more than 1 cigarette	0 cigarette	Total	
1st year	Boarders	4	11	15	1.0
	Days scholars	4	11	15	
2nd year	Boarders	11	4	15	**0.001**
	Days scholars	2	13	15	
3rd year	Boarders	3	12	15	0.624
	Days scholars	2	13	15	
4th year	Boarders	5	10	15	0.409
	Days scholars	3	12	15	
5th year	Boarders	8	7	15	0.058
	Days scholars	3	12	15	

CIGARETTE SMOKING AND ASSOCIATION WITH ACADEMIC PERFORMANCE

Class wise data analysis showed that there was no statistical significance between smoking and good grades in all the classes except in third year day scholars where smoking was associated with good academic score (p 0.01) (Table 15).

DISCUSSION

In our study majority of boarders and day scholars had average sleep score with sufficient sleep hours associated with good to excellent academic performance. There was one exception where 4th year day scholars had good sleep score as compared to boarders. This data is contrary to the studies conducted by Abolfotouh where boarders had poor sleep habits which was associated with poor academic performance and Singh. R where better sleep schedule, early risers and early going to bed was associated with better academic achievement among day scholars than boarders and the reason behind good academic score among boarders in our study was that boarders are careful about their studies and manage their time properly between sleep and study.[1,15] Our study showed that average sleep score including sufficient sleep hours before going to college was associated with good to excellent academic performance in all the students including day scholars and boarders which was similar to the studies conducted by Gaultney. JF and

Table 15: Class Wise Analysis of Association between Cigarette Smoking and Academic Performance

Class			ACADEMIC SCORE			Chi square significance
	Residence	Cigarette smoking	Excellent	Good	Average	
1st Year	Boarders	0 cigarette	2	1	1	
		1 or more than 1 cigarette	6	4	1	0.711
	Day scholars	0 cigarette	2	1	1	
		1 or more than 1 cigarette	4	4	3	0.880
2nd Year	Boarders	0 cigarette	0	7	4	
		1 or more than 1 cigarette	0	3	1	0.680
	Day scholars	0 cigarette	0	0	2	
		1 or more than 1 cigarette	1	9	3	0.099
3rd Year	Boarders	0 cigarette	0	2	1	
		1 or more than 1 cigarette	1	10	1	0.482
	Day scholars	0 cigarette	2	0	0	
		1 or more than 1 cigarette	1	9	3	**0.010**
4th Year	Boarders	0 cigarette	0	3	2	
		1 or more than 1 cigarette	2	6	2	0.472
	Day scholars	0 cigarette	1	1	1	
		1 or more than 1 cigarette	3	6	3	0.875
5th Year	Boarders	0 cigarette	0	4	4	
		1 or more than 1 cigarette	0	4	3	0.782
	Day scholars	0 cigarette	0	1	2	
		1 or more than 1 cigarette	0	7	5	0.438

Abdulghani. HM.[16,17] The findings were contrary to the study conducted by Zeek. ML where association between sleep hours during typical school week and academic performance was not significant but association between less than 6 hours of sleep before final examination was related to poor academic performance. This contradiction might arise because the criteria for measuring academic performance was very generalized in our study.[18] However it was observed that the academic performance of 4th year boarders had no relation with their average sleep score as few students with average sleep score had excellent academic performance.

Poor dietary habits were seen among boarders according to research by Abolfotouh which was similar to our research findings where boarders had poor eating score as compared to day scholars[1]. In our research, good eating score (including regular breakfast and 3 meals a day) was associated with good academic performance among all the students including day scholars and boarders except in 3rd year boarders where most of the students had average or poor eating score and these findings were similar to research conducted by Stea. TH, Taras. H and Florence. MD where there were increased odds of high academic performance among students and school going children who regularly consumed their breakfast and took 4 meals a day[2,4] and among fifth graders whose high diet quality was associated with better academic performance.[3] Research conducted by Arshad.N showed that majority of boarders in university skipped their breakfast and many of them skipped at least one meal which led to poor academic score and these results were similar to our research results where poor eating score was not associated with good academic performance.[5]

In our research, majority of day scholars had good study score (>12) as compared to boarders whose majority had poor study score (<4) and this finding was significant among boarders of 2nd year when compared with day scholars and students with average to good study score showed good academic performance except in third year boarders where good academic performance was related with poor and average study score. These findings were similar to results of Khurshid. F's research and Ali. R's research that among university students, day scholars had higher score on academic achievement as

compared to boarders and there was positive association between high score of study habits and high academic achievement and increase in study hours caused significant increase in academic performance keeping other factors constant.[6,7]

According to research by Khera. R, decreased physical activity was shown among boarders as compared to day scholars which was similar to our research findings where boarders had poor physical activity score which was statistically significant among 5th year boarders[13]. Research by Abolfotouh showed less physical activity among boarders which was associated with poor academic performance similar to our research where boarders having poor physical activity score showed average academic score which was statistically significant among 2nd year boarders.[1] Stea. TH research showed Increase physical activity association to increased odds of high academic achievement and researches of Abolfotouh and Dwyre. T also associated physical activity with good to excellent academic performance which was similar to our finding where good to average physical activity was associated with good to excellent academic achievement.[2,1,14]

In our research, there was more trend of smoking in boarders as compared to day scholars and these findings were similar to the researches conducted by Arthi. R, Kumari. R and Kulsoom. EU in which pro attitude towards smoking was seen more among boarders than day scholars and the reasons might be peer pressure and lack of parental monitoring in hostels.[8,9,12] On the contrary, Abolfotouh et al (2007) reported about a study where most of the boarders were non smokers.[1]

In most of the researches conducted in past smoking was associated with poor academic performance among students.[1,2,10,11] These findings were similar to our research. The data also showed that the trend of smoking increased as the students went into higher classes. It was astonishing to observe that smoking among 3rd year day scholars was associated with good to excellent academic performance and this can be explained in terms of a number of reasons like different types of bias, respondent being not completely truthful and very generalized criteria to evaluate smoking.

CONCLUSION

- There was poor life style regarding Eating Habits, Study, Physical activity and Smoking among boarders.
- There was an association between good study score and excellent academic performance among students and this association was more significant among day scholars.
- Poor academic performance was associated with smoking among day scholars as well as boarders except 3rd year day scholars.

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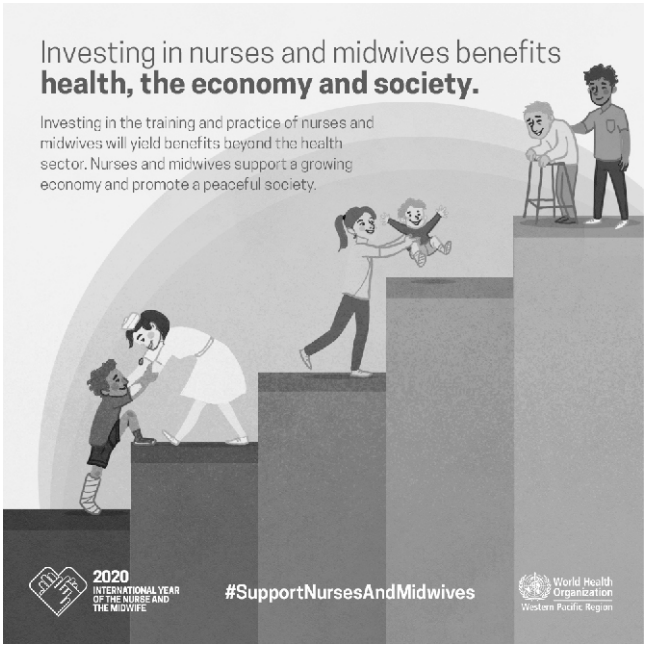

FREQUENCY OF RAISED CRP IN ACUTE HEART FAILURE

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Abstract

C-reactive protein (CRP) is a biochemical marker for cardiovascular and cerebrovascular diseases. It is also proven that it has role in long-term development of heart failure and mortality in patients with cardiovascular disease.

Objective: To analyze the CRP levels in patients presenting with acute heart failure and determine the frequency of patients with raised CRP levels.

Material and Methods: This cross-sectional study was conducted at Punjab Institute of Cardiology for a period of six months after approval from the ethical committee of institute. Three hundred and forty five patients presenting with acute heart failure were taken. After Informed consent blood samples were taken for levels of CRP. Entire data was analyzed in SPSS Ver. 23.0.

Results: The mean age of patients was 45.5 1± 10.64 years. There were 192 (55.7%) males and 153(44-3%) females. The mean duration of heart failure was 6.46 ± 3.53 hours. The mean CRP in these cases was 6.27 ± 4.70 mg/L. There were 153(44.3%) patients who had raised CRP while 192(55.7%) patients had normal CRP levels.

Conclusion: Increased CRP levels were seen in high number of cases and this may be established as significant risk factor for in hospital mortality. Particular attention should be given for prior management in presence of raised CRP.

Keywords: Acute Heart Failure, biomarker, C-reactive protein

Patients with acute heart failure (AHF) usually present with breathlessness, elevated jugular venous pressure, ankle swelling, and fatigue.[1] According to the studies, its outcome is very poor with ninety days re-hospitalization and that the one year mortality ratio is up to 10-30%.[2] According to American Heart Association around 58,309 deaths occurred due this disease in 2013 and that it consumes around one to two percent of the healthcare expenditures making it a principal cause of mortality and morbidity. In Asian countries especially developing countries due to urbanization and industrialization the lifestyle of the people have changed dramatically leading to increased ratio of diabetes and cardiovascular diseases.[3,4]

Inflammation has a significant role in the pathophysiology of heart failure along with myocardial stretch, injury and hormonal activation.[5] According to WHO, biomarker is defined as the substance or mechanism, that can be measured and help in predicting a particular disease. Recent studies are focusing on the fact that inflammation biomarkers can be confirmatory in diagnosis of heart failure cases as these are low cost and have minimal risks. Further, it can help the clinicians in risk stratification and planning certain managements.[5,6]

Being an acute phase reactant C-reactive

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protein (CRP) is one of the most important inflammatory biomarkers. According to studies, it is a sensitive and accurately reflects the acute phase response in certain cardiovascular diseases including heart failure.[7,8] In the current clinical practices, CRP is widely used for diagnosis and management of these cases. Recent studies on acute heart failure reflect that in 34% of the cases,[9] CRP is raised i.e. >6 mg/L and that in certain conditions its level can increase 10,000 fold i.e. 50 µg/L to 500 mg/L.[7]

The main reason of this study is to determine relation of raised CRP levels in patients presenting with acute heart failure. It will also be helpful in determining the frequency of patients in which CRP levels are raised and compare this increase with different factors in local population. This study will help clinicians in diagnosis and management of heart failure cases.

METHODOLOGY

This cross-sectional study was conducted at Punjab Institute of Cardiology for a period of eight months i.e. November 4th 2017 to June 4th 2018 after approval from the hospital ethical committee. Three hundred and forty five patients were taken through non-probability consecutive sampling. Patients of either gender having age 18-60 years and presenting with acute heart failure within 12 hours were included in this study. Patients with history of any recent infection, known or suspected neoplastic disease, recent (less than 3 months) major trauma or recent surgery, inflammatory disorders such as arthritis or known cases of bronchial asthma and COPD were excluded from this study. Informed consent was taken from patients or attendants. The patients were enrolled in emergency department of Punjab institute of cardiology. The basic demographic information such as age, gender and contact details were taken. After receiving the patients blood samples were taken to evaluate CRP levels. All the data was collected on a predefined Performa.

The data was analyzed in SPSS Ver. 23.0. Quantitative variables such as age, CRP levels, BMI and duration of acute heart failure was expressed as mean and standard deviation. Qualitative variables such as gender and raised CRP were expressed as frequencies and percentages. The data was stratified for age, gender, BMI and duration of acute heart failure (< 6 hours and 6-12 hours). Chi-square test was applied. A p value of ≤0.05 was set as significant.

RESULTS

Present study composed of 345 subjects out of which 192 (55.7%) were male and 153 (44.3%) female patients. Over all patients mean age was 45.51±10.64) years with minimum age of 18 years and the maximum age of 60 years. The mean duration of heart failure was 6.46 ± 3.53 hours with minimum duration of one hour and maximum duration of twelve hours. The mean CRP in these patients was 6.27±4.70 mg/L with minimum level of 0.1 mg/L and the maximum value of 28 mg/L. There were 153 (44.3%) patients who had raised CRP while 192 (55.7%) cases had normal CRP levels. The

Table 1: *Distribution of Raised CRP Cases According to Age Groups, Gender, Duration of Heart Failure and BMI.*

Variable		Raised CRP		Total	
		Yes	No		
Age Groups (years)	18-40	48 (31.4%)	70 (36.5%)	118 (34.2%)	chi-square = 0.97 p-value = 0.323
	41-60	105 (68.6%)	122 (63.5%)	227 (65.8%)	
Gender	Male	79 (51.6%)	113 (58.9%)	192 (55.7%)	chi-square = 1.79 p-value = 0.180
	Female	74 (48.4%)	79 (41.1%)	153 (44.3%)	
Duration of Heart Failure	< 6 months	66 (43.1%)	78 (40.6%)	144 (41.7%)	chi-square = 0.22 p-value = 0.638
	6-12 months	87 (56.9%)	114 (59.4%)	201 (58.3%)	
BMI	Obese	66 (43.1%)	102 (53.1%)	168 (48.7%)	chi-square = 3.4 p-value = 0.065
	Non-Obese	87 (56.9%)	90 (46.9%)	177 (51.3%)	

data was distributed according to the age groups, gender, duration of heart failure and BMI (Table-I)

DISCUSSION

C-reactive protein is an inflammatory biomarker of hepatic origin.[10] According to different studies, patients with heart failure may show different signs that are observed in different inflammatory conditions i.e. pro-inflammatory cytokines might be a causative factor in pathogenesis. This theory urged the researches to investigate its role in acute heart failure. Different pathologies including low cardiac output, ventricular dysfunction, and venous congestion can lead to the increment of interleukin-6 production hence leading to the raised CRP levels [7,9].

The etiology of increase in CRP levels in patients diagnosed as acute heart failure is not known. According to the studies, under hypoxic stress interleukin-6 is produced in different cells i.e. endothelial cells, monocytes as well as in cardiac myositis and this interleukin-6 then leads to the production of CRP in liver cells that leads to raised CRP levels in the body.[8,11]

In the current study the mean CRP level was 6.27±4.70 mg/L and 153 (44.3%) patients had raised CRP levels. These results are in accordance with Kausadikar SR et al., which reported that 34% of the patients presenting in the emergency department with heart failure had raised CRP levels.[9] In another study by Stumpf et al., 92% of the patients with heart failure has raised CRP level. The mean CRP level at the time of admission was 15.1 ±27.7 mg/L.[12] Anand etal,reported in their study that the mean CRP levels in the patients presenting with acute heart failure were found to be 3.23 mg/L and it was significantly raised in female patients (23.4%) i.e. the patient with raised CRP was more likely to be a female.[13] However in our study, the proportion of raised CRP level is more in males (51.6%) than in the females (48.4%).

When compared to the age groups, raised CRP levels were found in patients having ages between 41 to 60 years. These results are in accordance with the study by Stumpf et al. In our study no significant correlation was seen between duration of heart failure, gender or BMI with raised CRP levels.

There are certain limitations to our study. We measured the CRP levels immediately after the admission of patients in the department and didn't measure the subsequent levels i.e. after one hour, two hours or six hours. The number of patients was low and that the study was single-centered. A multi-centered study considering these limitations should be conducted.

CONCLUSION

Raised CRP levels were noted in higher number of patients and that it can be considered as an important diagnostic parameter in patients having symptoms of acute heart failure. Particular attention should be given in the management of patients in case of raised CRP.

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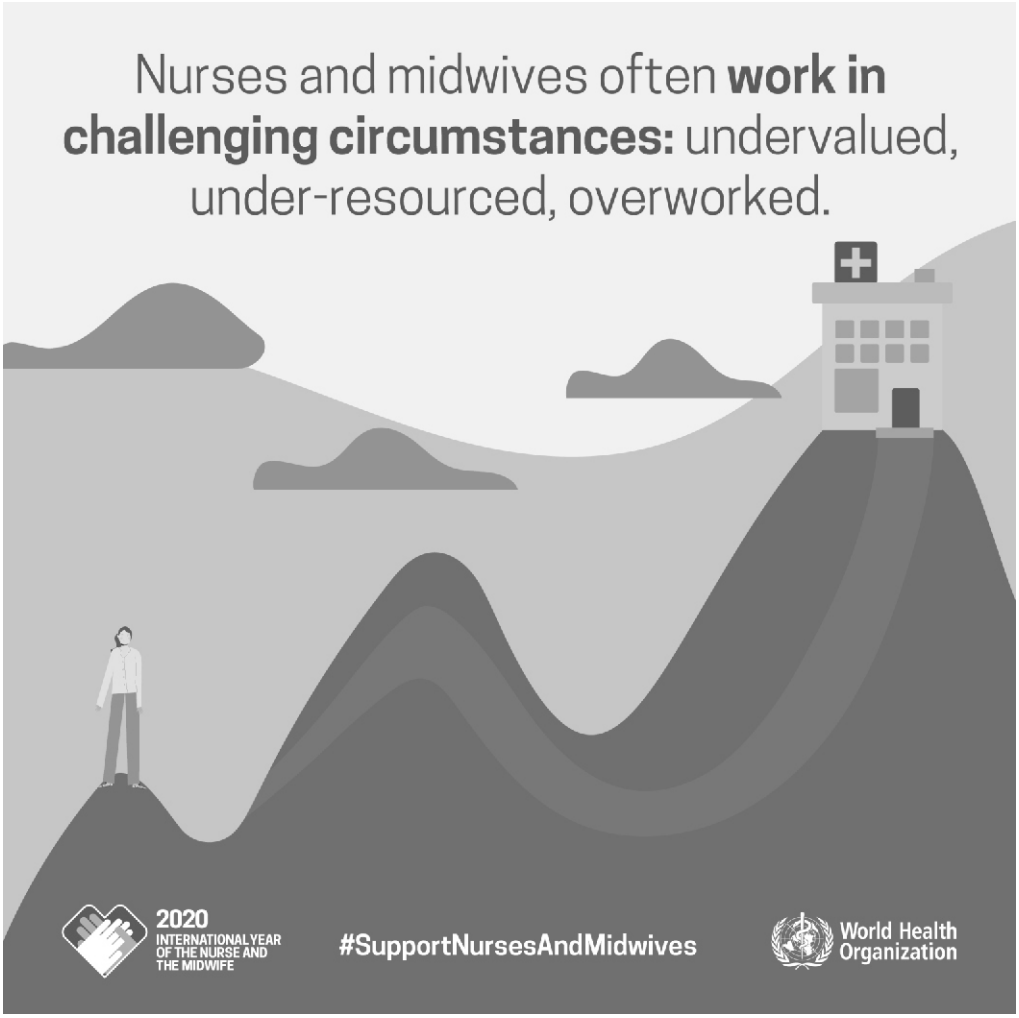

PATIENT EXPECTATIONS AND SATISFACTION WITH HEALTH CARE PROFESSIONALS IN A TERTIARY CARE PUBLIC HOSPITAL

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Abstract

Background: Often in a developing country, like Pakistan, doctors tend to forget that the patient is not a passive receiver of health care, rather the patient expectations are perhaps an important component of patient satisfaction which in turn shapes the quality of healthcare.

Aim: This study aims to determine the expectations of people coming in a tertiary care hospital like Mayo Hospital. This study hopes to provide valuable suggestions in policy making to strengthen the health system and improve patient satisfaction.

Methods: This is a mixed methods research conducted in Mayo Hospital Lahore over a period of 4 months. The sample size for quantitative part was 100 questionnaires, while for qualitative part 9 interviews were conducted. The study population consisted of adults between 20 and 60 years of age of both genders with sound mind and who have had experience with health care professionals.

Results: This study reveals that in some areas patient expectations are being met but mostly patients are dissatisfied. This dissatisfaction can be attributed to multiple causes and these causes can be classified under five major categories of themes: ethics, communication, professionalism, knowledge of the doctor and management issues.

Conclusion: Patient satisfaction pertaining to a doctor's professionalism and knowledge is highly dependent on the patient's age, profession and educational status. However we cannot overlook the fact that the doctors, especially in outpatient department are overburdened and this may cause dissatisfaction among the patients. The policy makers therefore, can play a role in the betterment of the system by ensuring the provision of health care services to raise the level of patient satisfaction.

Keywords: Patient expectations, Patient satisfaction, Public hospitals

Pakistan is a developing country where health care providers often tend to forget that the patient is not a passive receiver of health care, rather the patient expectations are an important component of patient satisfaction which in turn determines the quality of healthcare. [1]

Patient expectations can fall in three categories: background, interaction, and action.[2] However, these expectations can be both reasonable and unreasonable. Reasonable include people having an equitable access to healthcare, timely management, and that they receive compassionate behavior from the health care professionals. However it is unreasonable for the patient to believe that their wellbeing is only in hands of the doctor while they tend to forget they are equally responsible.[3]

Patient satisfaction depends on two major factors, the expectation of the patient and their actual experience. If experience is according to expectation, then the patient feels satisfied.[4] Measuring satisfaction should incorporate dimensions of technical, interpersonal, social, and moral aspects of care.'[5]

A qualitative cross sectional study identified that patients are looking for empathy, confidentiality, and knowledge about their condition. A good doctor tries his utmost to meet these expectations.[6] Whereas another cross sectional survey of public

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opinion found out that the communication skills and expertise of the doctor are equally important.[7] In another quantitative study conducted, it was found that age and satisfaction are directly proportional.[2,8]

People who are more than 70 years of age have a greater likelihood of being satisfied with the health care they receive than people 18-29 years of age (P<0.001).[8] When it comes to children, it was found that parents are more satisfied on receiving an antibiotic even when there is no obvious need for it. (76 vs 58.9; P<.05).[9]

A population survey showed that people who visit GPs have greater expectations and are more likely to be satisfied owing to the fact that GPs practicing place is better than the hospital and the GP has a friendlier attitude.[10] A qualitative ethnographic study concluded that a lack of teaching and training in medical ethics is the major reason that patients feel dissatisfied.[11]

There is a significant difference between preconsultation expectation and postconsultation expectation. Postconsultation expectation, perceived health status, and perceived control on health were factors identified as increasing patient satisfaction. In addition, the presence of any disappointments or worries, previous experience in health care, and extent of influence on the consultation had a negative influence on satisfaction.[12]

Early involvement and shared decision-making in discharge planning are valued by patients. Incorporating checking of patients' understanding of diagnoses, management, discharge instructions, and follow-up plans into ward round routines may benefit patient satisfaction.[13]

Although studies have been conducted in Pakistan to obtain information about the gap between expectation and health care received, very few have been conducted in Punjab, and even fewer explored this area in detail. This study aims to determine the expectations of people coming in a tertiary care hospital like Mayo Hospital. This study hopes to provide valuable suggestions in policy making to strengthen the health system and improve patient satisfaction.

METHODOLOGY

This is a mixed methods study conducted at Mayo Hospital Lahore over a period of 4 months. The sample size for quantitative part was 100 questionnaires, while for qualitative part 9 interviews were conducted. The inclusion criteria consisted of adults above 20 and below 60 years of age of both genders and sound mind who have had experience with health professionals. The exclusion criteria consisted of adults below 20 and above 60 years of age and terminally ill, unresponsive, non-cooperative and patients in emergency. The sampling technique is Quota sampling for quantitative study and Purposive Sampling for qualitative study.

Statistical Analysis:

Quantitative variables are expressed as frequencies and analyzed as percentages.

For qualitative variables, Pearson chi square test is used to observe the association between the theme groups. While p value ≤ 0.05 is considered statistically significant.

RESULTS

A total of 33 codes were derived from the qualitative data analysis (Table - 1). Then these were grouped together under 5 different themes (Professionalism, Ethics, Management, Communication and Knowledge) which are the indicators of patient expectation and satisfaction.

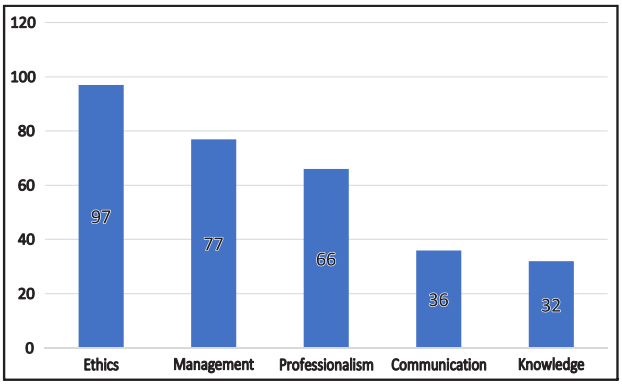
Ethics included Behavior (B), Empathy (E), Authoritativeness (Au), Privacy (P), Confidentiality (F), Introduction (I), Consent (C), Patient Inconvenience (PI) and Financial Status (FS). Management included Counselling (CU), Treatment Options (Rx), Explanation (Exp), Medicine (Med), Follow Up (FU) and Attentiveness (At). Professionalism included Availability (Av), Punctuality (Pu), Negligence (Neg), Personalized Care (PC), Hygiene (hand washing and wearing gloves) (Hyg), Insufficient Time (IT), Dressing (D) and Examination (Ex). Communication included Long Waiting Time (LWT), Repeated Visits (RV), Informed about the waiting Time (IWT), Lack of cleanliness (CL),

Referral (R) and Lack of co-ordination (LC) while Knowledge included Diagnosis (Di), Cognition (Cog), Conflict of Interest (CO), Treatment (T).

The most recurring code of the study was doctors 'behavior' which was repeated 22 times. This falls under the theme 'ethics'. This was followed by 'explanation of disease and subsequent medical procedure' which was inferred 20 times. This falls under the theme 'communication'. The third most repeated code was 'patient inconvenience' which recurred 17 times followed by 'counselling', 16 times. These codes are sub grouped under 'ethics' and 'communication' respectively. The fifth most repeated code is 'availability of the doctor' (15 times) under the theme of 'professionalism'.

Thus, this gives us the most important themes derived from the study in descending order ethics (97 times), management (77 times), professionalism (66 times), communication (36 times), and knowledge (32 times), (Graph – 1).

The five theme groups were analyzed by Pearson chi square test to observe the association between them which shows a p value of ≤ 0.001 which is statistically significant (Table 1).



Graph 1: *Themes Derived from Codes of Elements*

Table 1: *Themes Derived from Codes of Elements*

Sr. No.	Themes	Elements	Number of times used	Total	p - value
1	Ethics	Behaviour (B)	22	97	< 0.001
2		Empathy (E)	13		
3		Authoritativeness (Au)	2		
4		Privacy (P)	5		
5		Introduction (I)	8		
6		Consent (C)	12		
7		Patient Inconvenience (PI)	17		
8		Financial Status (FS)	7		
9		Confidentiality (F)	11		
10	Management	Counselling (CU)	16	77	
11		Treatment Options (Rx)	6		
12		Explanation (Exp)	20		
13		Medicine (Med)	12		
14		Follow up (FU)	5		
15		Attentiveness (At)	18		
16	Professionalism	Availability (Av)	15	66	
17		Punctuality (Pu)	9		
18		Negligence (Neg)	5		
19		Personalized Care (PC)	4		
20		Hygiene (Hyg)	8		
21		Insufficient Time (IT)	10		
22		Dressing (D)	6		
23		Examination (Ex)	9		
24	Communication	Long Waiting Time (LWT)	10	36	
25		Repeated Visits (RV)	6		
26		Informed about the waiting Time (IWT)	7		
27		Lack of cleanliness (CL)	7		
28		Referral (R)	1		
29		Lack of co-ordination (LC)	5		
30	Knowledge	Diagnosis (Di)	7	32	
31		Cognition (Cog)	14		
32		Conflict of Opinion (CO)	5		
33		Treatment (T)	6		

RESULTS

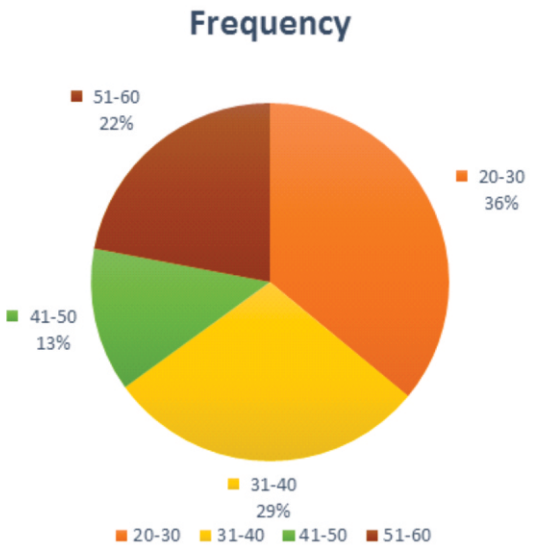
The questionnaire aimed to measure, on the basis of post visit experiences, the degree of satisfaction of our patients. The questionnaire was pilot tested on a small number of patients, edited, and subsequently field tested on 100 patients in the OPDs and Indoor Departments in Mayo Hospital, Lahore, after their consultation in hospital OPD or during their stay in the indoor. A positive answer (whether yes, no or any other factor) to the question, was considered as indicator of satisfaction with the health care whereas a negative answer (whether yes, no or any other factor) to the question is indicative of dissatisfaction and greater expectations from the health providers.

Age Distribution

Our research was based on patients 36% of whom were between 20 to 30 years old, 29% between 31 to 40, 13% were between 41 to 50 and 22% of the patients were 51 to 60 years old (Table 2, Graph 2)

Table 2: *Age Distribution in the Sample Population*

Age	Frequency	Percent
20-30	36	36.0
31-40	29	29.0
41-50	13	13.0
51-60	22	22.0
Total	100	100.0



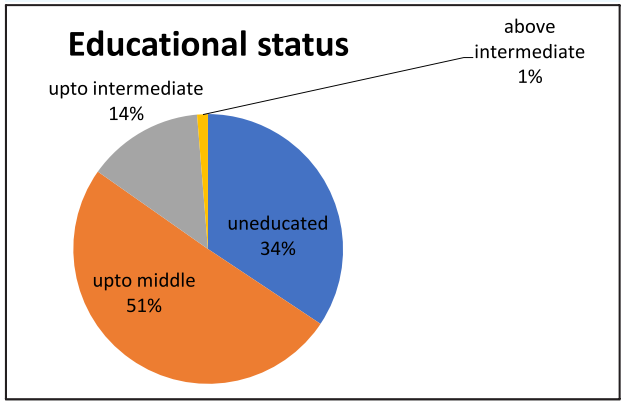
Graph 2: *Age distribution in the sample population*

Educational Status

34% of the patient population were uneducated, 51% had an education up to middle school, 14% had an education up to intermediate and only 1% had an education above intermediate (Table 3, Graph 3).

Table 3: *Educational Status of the Sample Population*

Educational status	Frequency	Percentage
Uneducated	34	34
Upto middle	51	51
Upto intermediate	14	14
Above intermediate	1	1



Graph 3: *Educational Status of the Sample Population*

Professional Status

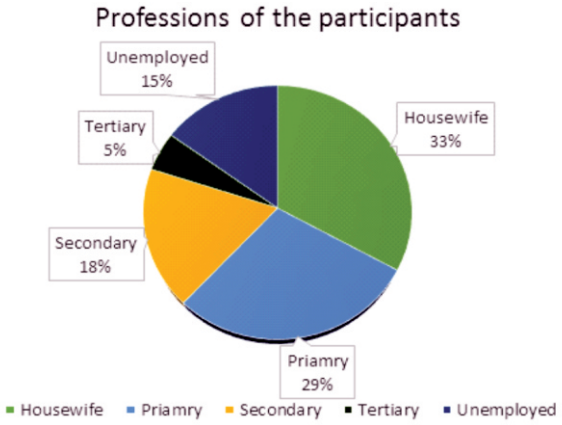
The profession distribution of our patient population showed that 33% of the patient population were housewives, 29% were related to the primary sector, 18% were related to the secondary sector, 5% belonged to the tertiary sector and 15% were unemployed (Table 4, Graph 4)

- 37% of the subjects belonged to rural areas whereas 67% were urban dwellers.
- 57% of the subjects were male and 43% were females.

Table 4: *Profession distribution of the sample population*

Profession	Frequency	Percent
Housewife	33	33.0
Primary	29	29.0
Secondary	18	18.0
Tertiary	5	5.0
Unemployed	15	15.0
Total	100	100.0

- 78% were married and 22% were single.



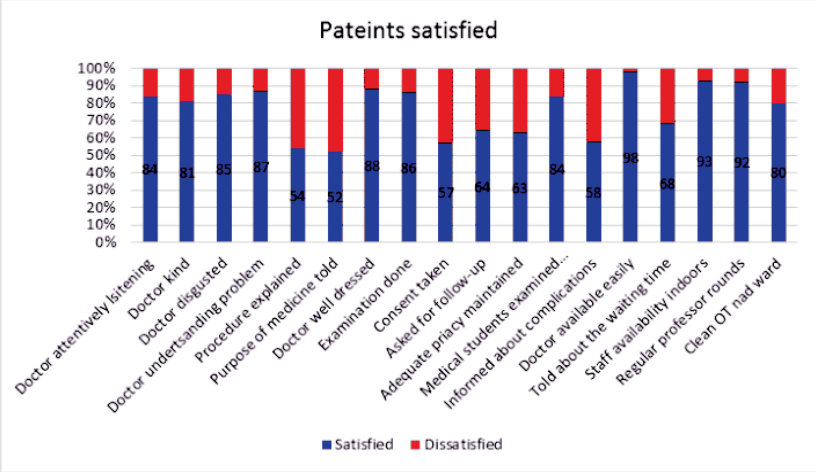
Graph 4: *Profession Distribution of the Sample Population*

Patient Satisfaction

The positive aspects of the health care system revealed by our study include that 84% of the patient population said that the doctor was listening attentively, 81% stated that the doctor was kind. 87% of the patients said that the doctor understood their problem, 88% said that the doctor was well dressed, 86% said that the doctor examined them, 64% said the doctor advised follow-up, 63% said that ade-quate privacy was maintained, 84% were mentioned that medical students examined them. 98% mentio-ned that the doctor was easily available, 68% of the patients said that they were told about the waiting time before getting admitted, 93% said that the staff was available indoors, 92% said that there were regular professor

Table 5: *Results of the Quantitative Variables of the Study*

No.	Questions	Satisfied (%)	Dissatisfied (%)
1	Was doctor attentively listening?	84	16
2	Was doctor kind?	81	19
3	Was financial status taken into account?	49	51
4	Was duration of treatment discussed?	44	56
5	Was doctor disgusted?	85	15
6	Was doctor understanding problem?	87	13
7	Was procedure explained?	54	46
8	Was purpose of medicine told?	52	48
9	Were side effects of medicine told?	25	75
10	Was the doctor well dressed?	88	12
11	Did the doctor examine you?	86	14
12	Did the doctor introduced himself?	37	63
13	Did the doctor take consent?	57	43
14	Did the doctor asked for Follow-up?	64	36
15	Was doctor's hygiene good?	49	51
16	Was adequate privacy maintained?	63	37
17	Did medical students examine you?	84	16
18	Were you informed about any complications?	58	42
19	Were you told any danger signs to look for?	45	55
20	Was doctor available easily?	98	2
21	Were you told about the waiting time before admitted?	68	32
22	Were you informed about waiting time to see the doctor?	39	61
23	Staff availability indoors?	93	7
24	Regular Professor's round?	92	8
25	Clean Operation Theatre and Ward?	80	20



Graph 5: *Patient's Satisfaction in the Sample Population*

rounds and eighty percent said that the wards and the operation theatre were clean. 57% of the doctors took consent from their patient before beginning a physical examination/treatment. 54% of the doctors explained the procedure of examination to the patient before performing it. 58% of the patients were told about the probable complications of their disease and 52% were told about the purpose of their prescribed medicine (Table5, Graph 5)

Patient Dissatisfaction

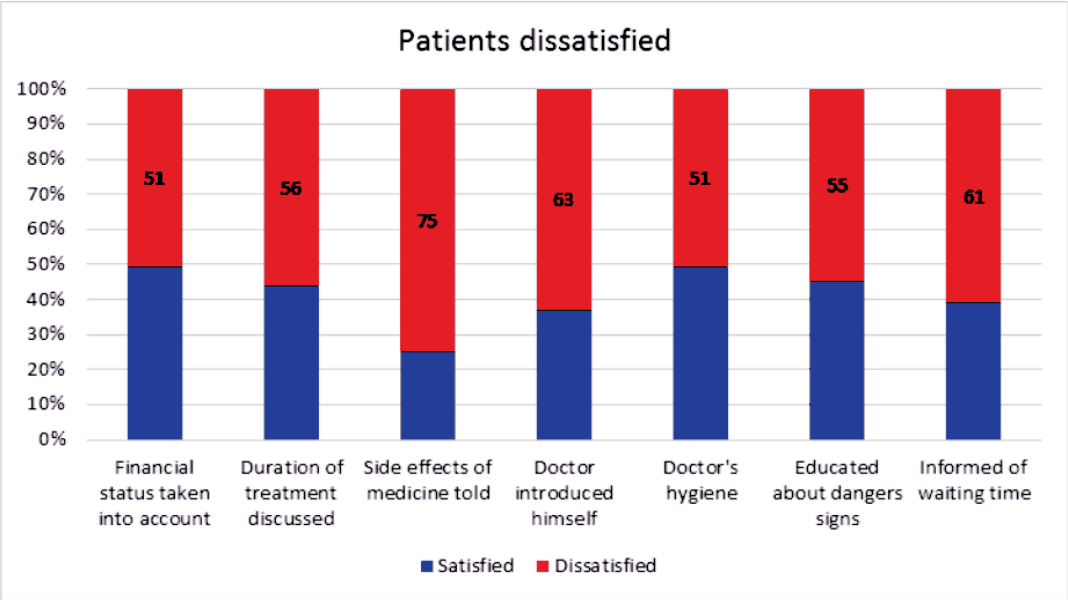
The negative aspects of the health care system revealed by our study include that 61% of patients were never or rarely told about the waiting time outside the doctor's office. Similarly, 63% of the doctors never or rarely introduced themselves to the patient keeping the patient unaware of the identity of the treating physician. 55% were not told about to look for any disease specific danger signs while being away from Health Facility. 75% were never told about the side effects of their medicines, 51% patients said that their financial status was not taken into account while prescribing medicine or ordering investigations. 56% were dissatisfied with the fact that the duration of their treatment whether Indoor or Outdoor was not discussed. Regarding the hygienic measures taken by the health professional, 51% were of the opinion that the doctor did not wear any gloves or wash hands before the examination (Table 5, Graph 6).

DISCUSSION

This study reveals that in some areas patient expectations are being met but mostly patients are dissatisfied. This dissatisfaction can be attributed to multiple causes and these causes can be classified under five major categories/themes as described above.

The foremost of these is the improper practice of medical ethics by the doctors. It has been seen that under most circumstances the behavior of the doctors towards the patients is the key determinant of patient satisfaction in our setting that is a tertiary care Hospital. Few of the patients are of the view that the doctors are empathetic and kind but most patients complained that doctors behave rudely and get annoyed when asked too many questions.

In the healthcare industry, for every 100 patients that experienced deficient service, about 70 would be unlikely to patronize the same organization again. In addition, for the same 100 patients who have experienced deficient service, about 75 will go on to tell on average nine family members and friends about their experiences. Through word of mouth from these 75 dissatisfied patients, there will eventually be about 465 persons who might have been potential



Graph 6: *Patient's Dissatisfaction in the Sample Population*

patients but will probably not patronize the organization at all based on what the dissatisfied patients have told them.[14]

Introduction and consent are two practices that are taught to medical students from the very beginning. It is disappointing that majority of the senior doctors themselves don't follow it, setting a poor example for their juniors. Majority of the patients said that doctors don't care about patient's convenience and keep referring them from one place to another. Doctors don't even ask the patients if they can afford the prescribed investigations or treatment which leads to poor compliance.

Perceived service costs, physician consultation, physical environment, and information to patient were found to be the most important determinants of outpatient satisfaction. Improving the quality of consultation, providing information to the patients during examination and consultation, creating value for patients by reducing costs or improving service quality, and enhancing the physical environment quality of the clinic can be regarded as effective strategies for the management of teaching hospitals toward increasing outpatient satisfaction. [15]

Another significant theme pertaining to patient dissatisfaction is lack of proper communication between doctors and patients. Doctors mostly don't feel the need to explain to the patients the details of their illness, the procedure for examination and investigations, the cause or side effects of medicines or the duration of treatment. This is probably because most of the patients presenting at the hospital are unaware and uneducated and doctors don't think that they can understand all these aspects. It may also be because the doctors are overburdened especially in Our Patient Departments.

Yet another major determinant observed was professionalism displayed by the doctors. The doctors are mostly available but they are not punctual. A few patients complained of negligence on the part of the doctors. A patient in chest ward said that the medicines he was taking since five months caused his body to swell up. The doctors came later and admitted their mistake. Doctors don't take responsibility for their patients and there is no concept of personalized care. They don't give sufficient time to the patients and do not observe the level of hygiene that is expected of them. A major expectation of the patients is that the doctors should give sufficient time to them so that they can explain their condition in detail. The doctor should answer all their queries comprehensively.

Doctors need to understand that the majority of patients like to contribute their opinion and get involved in decision making even though they want doctors to make decisions. Patients wish for doctors to decide should not be misinterpreted as patient's dislike to express opinion or being involved in decision-making. Patients expect doctor empathy, understanding and paraphrasing. Emphasis on social niceties should be supported and patient empowerment should be promoted.[16]

Hospital management lays a pivotal role in easing out the patients. It is seen that hospital management is quite poor in its discipline and infrastructure. In OPD patients wait for one to two hours to get themselves checked due to massive patient load. Mostly they are not even informed about how long they will have to wait. Majority of the patients complain that they were admitted to ward after five to six visits. Repeated visits were also due to patients not finding the concerned doctor during the follow up. Almost all the patients were dissatisfied with the level of cleanliness particularly in the toilets. A major issue highlighted is lack of coordination. Patients experience this mismanagement on a day to day basis.

It is of ultimate importance, for all hospital authorities to recognize the processes involved which contribute to a satisfactory experience for the patients. This involves a number of factors such as health care provider's competence, its interaction with the patients, the behavior of the medical and other staff, facilities offered by the hospital and overall hygiene and environment of the hospital.[17]

Knowledge of the doctor was not found to be a

major determinant of patient satisfaction. Probably because of patient unawareness in this regard. They blindly trust the opinions of their doctors and mostly do not seek second opinions for diagnosis and treatment. The patients believe that their doctors are always right and know better. Therefore they almost never question their judgment unless there is an apparent conflict of opinion between doctors.

CONCLUSION

Patient dissatisfaction is highly dependent on the patient's age, profession and educational status. The junior doctors follow the footsteps of their seniors and learn and practice what they observe. This highlights the immense responsibility upon the senior health care professionals. However we cannot overlook the fact that the doctors, especially in out-patient department are overburdened and this may negatively affect their relationship with the patients. The policy makers therefore, can play a role in the betterment of the system by making sure that medical ethics are a part of the curriculum. Complain boxes and online surveys should be conducted regularly. The number of doctors should also be increased and the provision of health care services should be ensured to raise the level of patient satisfaction.

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DAY CASE SURGERY UNDER DILUTED LOCAL ANESTHESIA

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Abstract

Aim: Day case surgery is now more popular as compared to the past & being practiced in multiple hospitals. This prospective study was performed to assess the use of diluted local anesthetic agents for this purpose.

Methods: All patients in this study were operated as day case using diluted local anesthetic agents from June 2017 to December 2017 at North Surgery Department, Avicenna Medical& Dental College, Lahore

Results: Sixty patients were operated during this time period. Their ages were between 5 to 70 years with median age of 32.5 years. Thirty-eight male and twenty-two female with a ratio of 1.7:1 was included in the study. Thirty-four patients were operated as minor procedures (56.6%) and twenty-six patients as intermediate procedures (43.3%). All the operations were performed under diluted local anesthetic agents. Post-operative pain was the commonest problem which was managed with variety of analgesics. No mortality occurred and no patient required overnight stay in the ward. Majority of the patients (95%) were satisfied with their management with negligible complications.

Conclusion: Day case surgery under diluted local anesthetic agents is very practical, safe and well tolerated in selected patients. This practice would not only avoid general anesthesia along with its possible complications but reduces unnecessary hospital stay, procedure time and cost in due course.

Key words: Day case surgery, diluted local anesthesia

During last few years and all over the world, the day case surgery with a wider range of patients is considered appropriate for most of the surgical diseases. Elective day case surgeries are being carried out in UK, USA & Canada in routine.[1] National Health Service will require 75% of elective surgeries as day case in near future.[2] As the minimally invasive surgery is more popular with higher learning curve so most of these cases can be performed as day case.[2,3] In the developing countries of the world, this trend is also rising rapidly. Most health institutions are practicing it and patients are being satisfied.[4–9] Even secondary health facility centers with improved surgical and anesthetic skills are doing it.[10–12] Instead of authenticity of local anesthetic drugs with shorter hospital stay, the ward admission policy for even minor surgical procedures is still being implemented.[13] This prospective study was conducted to experience the day case surgery using local anesthetic agents in diluted form as compared to other methods like general & regional anesthesia, being practiced in past. In comparison, the local anesthesia is safe, quick &cost effective.

METHODOLOGY

Sixty patients were operated as day cases in the north surgery departmentat Avicenna Medical & Dental College, Lahore, Pakistan from June 2017 to May 2018.The patients had been operated for minor and intermediate surgical diseases, being managed on outdoor basis. All patients were operated under diluted local anesthesia, prepared in aratio of 1:0.5:1

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(Injection xylocaine 2%, 200mg/10ml, Injection Bupivacaine, 25mg/5ml, Injection Adrenaline 1:100000) & infiltrated at the site to be operated, according to the weight of the patient&length of the procedure. Adrenaline was avoided in Zadek's operation for ingrowing toe nail. All local anesthetic agents were infiltrated sub dermally, in the line of incision& on painful points in addition as well to complete the field block.

Inclusion Criteria

Patients with minor and intermediate surgical diseases within American Society of Anesthesiologists (ASA) category 1 and II were included in the study.

Exclusion Criteria

Patients below 5 years, those needed major surgical operations, ASA category III, IV, and V& who preferred admission (for sociocultural reasons) for their operations were excluded from the study. Incision & drainage of abscess and suturing of laceration were also excluded. Patients suitable for outdoor procedures were selected by the surgical team for day case surgery. Patients were counseled for the procedure & told to come early morning with an adult responsible attendant. Post-operative assessment was done by the operating team & stable patients were planned to be discharged. This procedure was done after 1-3 hours of each surgery. Patients and attendants were asked to contact the surgical team on phone or come to surgical emergency directly in case of explained post-operative problems. Fourth postoperative day was decided for follow up to change the dressing & check wound infection. Stitches were removed on 8th post-operative day.

The data collected was age, sex, diagnosis, type of operation, operating surgeon, operative time, type & quantity of anesthetic agent, postoperative complications, (immediately and during follow up visits) and patient's satisfaction level. Data analysis was performed using SPSS version 16.0. Total follow up time was 3 months.

RESULTS

During this study period, sixty patients were operated. Their ages ranged from 5 years to 70 years whose median was 32.5. The age distribution of the patients is shown in Table 1. Males were 34 (56.6%) while the females were 26 (43.3%). In two patients, herniorrhaphy for inguinoscrotal hernia was done while one had orchiectomy. Patients with ASA I and II included in the study were 46 (76.6%) and 11 (18.3%) respectively. The spectrum of the surgical procedures is shown in Table 2. Various biopsy types were 36.66% and herniotomy & herniorrhaphy as 23.33%. Two emergency orchiectomies (3.33%) and elective orchidopexy (6.66%) were performed for acute testicular torsion and undescended testes respectively. The mean operative time in this study was 35.65± 12.45 mins.

Main complaint of the patients was post-operative pain immediate after surgery and during follow up visits which decreased gradually within time. Table 3 shows assessment of the severity of pain using visual analogue score (VAS). Only two patients (3.33%) had severe pain immediately after surgery and three patients (5%) had mild pain on 8th post-operative day.

Table 4 shows postoperative complications which occurred in 6 patients only(10%). One patient had episode of mild bleeding (1.66%) and wound infection occurred in three patients (5%). However, superficial surgical site infection (SSI) was managed with removal of stitches, dressings and oral antibiotics on outdoor basis. No re- admission or mortality was recorded.

Table 1: *Age Distribution of Patients*

AGE (years)	NUMBER	PERCENTAGE
5-10	15	25
11-20	11	18.34
21-30	14	23.34
31-40	10	16.66
41-50	6	10
51-60	3	5
61-70	1	1.66

Table 2: Spectrum Of Surgical Diseases

PROCEDURE	FREQUENCY	PERCENTAGE
Biopsy		
-excisional	15	36.56
-incisional	2	
-trucut	5	
Herniotomy	8	13.33
Herniorrhaphy	6	10
Mayo repair	5	8.23
Hydrocelectomy	3	5
Orchiectomy	2	3.33
Orchidopexy	7	11.56
Varicocelectomy	3	5
Zadek's operation	4	6.66

DISCUSSION

In our study, excision biopsy was the commonest procedure (31.33%) out of the total twenty-two biopsy patients (36.56%). In one research, Agbakwuru[6] and Fadiora et al.[14] reported excision biopsy as the commonest procedure in29.8% and 40.5% respectively. Herniotomy and herniorrhaphy were 17.5% and 15% respectively. In children, between the ages of 1 year and 15 years, eighteen procedures (25%) were performed under general anesthesia using ketamine. Exclusion criteria of this study was infants. This study showed the shortage of the surgical workforce in low-income and resource-poor institutes.[15,16] However, in another study, Abdur-Rahman[9] and Stiff et al.[10] concluded their results that even pediatric day case surgery was feasible for selected cases. It remained safe & well tolerated by infants. In this study, performance was suitable even in non-specialist centers with good team approach.

Table 3: Postoperative Pain Frequency

SCORE	IMMEDIATE	DAY 1	DAY 4	DAY 8
No pain	34	44	53	57
Mild	18	12	6	3
Moderate	6	4	1	-
Severe	2	-	-	-

Table 4: Postoperative Complications

COMPLICATIONS	NUMBER	PERCENTAGE
None	54	90%
Bleeding	1	1.66%
Wound hematoma	2	3.33%
Wound infection	3	5%

Two emergency orchiectomies (3.33%) were performed in our study. This interprets that acute conditions like appendicitis & cholecystitis in emergency can be effectively operated as a semi-elective process.[17,18] In the presence of adequate surgical staff, the range of procedures is almost comparable with national and international studies.[19] The proce-dure time ranged from10 to 60 mins with mean of 35.65±12.45 mins. This confirmed the general guidelines favoring this approach.[19] All procedures were performed using local anesthetic agents diluted in ratio of 1:0.5:1 (Injection xylocaine 2%, 200mg/10ml, Injection Bupivacaine, 25mg/5ml, Injection Adrenaline 1:100000). They were infiltrated at the site of operation according to weight of the patient &length of the procedure.

Pain was the main postoperative problem encountered in this study but this gradually subsided within time after using prescribed analgesics. Only two patients complained severe pain that was relieved by injection diclofenac sodium before being discharged. This outcome is comparable with different studies that showed postoperative pain as most reported problem and reason for hospital stay.[6,8,14,20,21]

Six patients developed postoperative complications (10%) of which three patients had wound infection (5%). In our study, the low complication rate, no readmission & no emergency post-operative visits within 30 days of surgery, absence of mortality was due to expert and efficient teamwork and accurate patient selection for minor & intermediate procedures. More than 80% of the surgeries were performed by the consultants. Our experience of day case surgery is encouraging and suggests that it safe& acceptable under diluted local anesthetic agents.

The majority of patients (75%) were residing within 10 km radius of the hospital so distance did not cause any problem. All patients were facilitated by their relatives and other caretakers and this accounted for their high satisfaction rate (95%). It was also cost effective when compared to in-door

patients. There was no communication barrier between the patients & hospital. Fourty-two patients (70%) had mobile phones & remaining patients used mobile phones of their parents & guardians. However, only three patients (5%) called for minor complaints which were managed without need of their visit to the hospital.

Day case surgery is still short of the ideal despite its popularity because of the hospital-based integrity. Only a few hospitals have a dedicated unit for day case surgery.[22,23] An ideal day case surgery unit is usually a self-contained site with separate admission suites, wards, theatre, recovery area and administrative facilities. This can either stand alone or within the hospital. It is recommended because of its efficient service policy & good outcome. A dedicated day case unit is achieved only by providing excellent health services.

CONCLUSION

After appropriate patient selection and good pre-operative preparation, the day case surgery with the help of diluted local anesthetic agents is feasible with good outcome. Our experience in day case surgery with constrains in human & material resources is encouraging with high patient satisfaction. It reduces unnecessary hospital admissions and cost of the procedure as well.

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ECONOMIC IMPACT OF ATT ON PATIENTS AND THEIR FAMILIES - A Cross-Sectional Study in Gulab Devi Hospital Lahore

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Abstract

Background: In order to inform the development of different strategies needed to deal with the alarming economic impact on TB patients, a study was conducted to assess the economic impact of TB on patients and their families belonging from the urban, peri urban and rural areas in Gulab Devi hospital, Lahore, Pakistan.

Methods: A cross-sectional study was done in Gulab Devi Hospital during June 2017. 166 Sputum positive primary TB patients undergoing treatment were included in the study under time-based convenience sampling. Using a self-constructed questionnaire, an interview was conducted of each patient which took about 15 to 20 minutes each. Various demographic factors were determined. The direct and indirect medical costs and income loss was determined. Income per capita and total medical costs were calculated. Data analysis was done on IBM SPSS v23.

Results: The mean total medical cost ranged from Rs.0 to 66,600 with an average of Rs.6371 ± SD rupees. The mean direct medical cost was calculated to be Rs.1095 ± SD that accounted for 18% ± SD of the total medical cost (TMC) and mean indirect medical cost was calculated to be Rs.5250 that accounted for 82% of the TMC. The mean total medical cost is 26% of the mean total family income. TMC was found to be higher in the rural patients as compared to the urban patients ($p<0.05$). 53% people lost their job because of TB, so had an income loss but those who did not leave their job didn't. Commonly reported coping mechanisms (33.2% people) were money borrowing, selling of assets and leasing of assets. The average income per capita of our subjects was 4765 rupees and 3983 rupees monthly respectively for urban and rural areas, which is almost equal to the national poverty line of 3627 and 3153 rupees monthly income per capita respectively in urban and rural areas. So a mean total month ly medical cost of 6371 rupees due to TB put an extra burden on their budget.

Conclusion: Total medical cost in the TB patients was found to be catastrophic particularly the indirect medical cost. Income loss was reported to be the major contributor to the economic impact. In addition to minimizing the DMC and IMC, there is also a need to develop strategies that could provide financial support to the TB patients.

Keywords: Tuberculosis, TB, Financial burden, Economic Impact, Medical Cost

An estimated 100 million people fall below poverty line because of the economic impact of the disease.[2] Tuberculosis (TB), which mostly affects the poorest of the poor, is an example of a disease that can substantially contribute to the disease poverty trap.[2-4]

Pakistan aims to provide TB diagnosis and treatment free of charge within the public health services. Access to free TB has expanded substantially over the past two decades through national efforts and global financial support.[5] Still the TB patients face a number of barriers in seeking diagnosis and treatment including financial costs related to charges for health services, transportation, acco-

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mmodation, nutrition, lost income and productivity.[6] These barriers could delay in seeking health care resulting in more advance disease and continued transmission in TB.[6,7] Direct out of pocket costs for public or private services and indirect opportunity costs can trigger a spiral into deeper poverty for TB patients and their families.[8]

SDGS WHO has developed a post 2015 Global TB program which aims at providing universal social support and financial support to the ill patients[(2)]. One of the tentative goals for this strategy is "no TB family facing catastrophic costs due to TB", to be reached by 2035.[9] TB is a leading cause of death in Pakistan. Based on the incidence cases 2007, WHO ranked Pakistan 7 in the high burden countries.[10] Incidence of TB in Pakistan is 181/ 100,000 population.[11] According to the WHO report 2016, Pakistan is ranked 4th globally in the TB highest burden countries.[12] The recent increase in the Tb is due to the incomplete prior treatment of tuberculosis patients.[13] Female gender and Ethnic groups at higher risk of developing Tb included Sindhis and Pashtoons.[13] Other factors responsible for rise in TB include poverty, low awareness, less compliance and suboptimal healthcare infrastructure.[11,14] This research highlights the major problem faced by the TB patients that is a high economic impact that leads to the non-compliance of the patients which is directly related to the rise in TB so this vicious cycle that develops goes on and on. By assessing the total economic impact on the TB patients we can come forth with different policies to lessen this stress that will ultimately result in a good compliance and at the same time, it will prove helpful in controlling this unrestrainable crises of TB in the long run.

In Pakistan about 62% of the population live in rural areas. The main occupation in the rural areas is agriculture while in the urban areas most people are laborers or self-employed. Transport facilities are much poor in rural areas as compared to urban areas as well as the major health centers which are mostly located in the urban areas. The prevalence of TB in Pakistan rural areas is more as compared to the urban areas.[15]

METHODOLOGY

A cross-sectional study was done in Gulab devi hospital to assess the economic impact in Tb patients. Sputum positive primary pulmonary Tb patients 166 (109 males, 57 females) undergoing treatment in Gulab devi hospital for at least one month were included in the study. Patients of either sex, age group of 15 to onward belonging to any socioeconomic group were included in the study. Patients suffering from the immune suppressive diseases such as AIDS and those suffering from the systemic disorders having symptoms similar to TB were excluded from the study.

Duration of study was 1 month under time based convenience sampling technique. Informed consent was taken verbally. Patients Identity was kept Confidential & only demographic characteristics like age, gender, marital status, education, occupation & address were recorded. Using a self-formulated Questionnaire, an interview was conducted of each patient which took about 15 to 20 minutes. The following information was collected from the sputum positive pulmonary tuberculosis patients: demographic factors, particulars of employment, income of patients and families, expenditure incurred during illness, total family members, income per capita, expenditure per capita and coping mechanisms used by the patients

Medicine costs, hospitalization costs and investigation costs were calculated as direct medical costs endured by the patients. Travelling costs, food costs, attendant income loss and attendant travelling costs were classified as the indirect medical costs. Income loss and income before and after TB was calculated. Loss of income was not calculated for the unemployed patients as they were already dependent on their families before the diagnosis of Tb.

Total cost was calculated by the sum of direct and indirect medical costs and for the income loss patients, loss of income was also added to the total

costs. All costs were calculated in terms of Pakistani rupees.

All the data was entered in the SPSS (Statistical Pack for Social Sciences) Version 20.0

RESULT

A total of 166 patients were included in the study in which 51 patients lived in urban areas, 46 in peri urban and 69 in the rural areas with 109 males and 57 females. The demographic table shows that the 70% males and 67% females belong to the economically productive age group (15 to 45 years). 77% and 61% of males and females had a family size ranging from 4 to 9. 46% of males and 53% of females were found to be illiterate. In the economic tables it can be seen that 61% of the patients (both males and females) had some sort of occupation while the remaining 39% of patients were dependent on their families.

Total medical cost (TMC) ranged from Rs.200 to 66600, with a mean of Rs.6389±sd. Direct medical cost (DMC) ranged from Rs.0 to 10600 with a mean of Rs.1101. Indirect medical cost (IMC) ranged from Rs.0 to 20000 with mean of Rs.4915

Table 1:

	No. of patients							
	Rural 69		Urban 51		Peri-Urban 46		Total	Total
Demographic and social characteristics	**Male N 43**	**Female N (26)**	**Male N 40**	**Female N 11**	**Male N 26**	**Female N 20**	**Male %**	**Female %**
Age (years)								
15-25	5(%)	0	12	1	4	0	19	2
26-35	4	3	9	5	5	5	17	22
35-45	17	10	10	5	10	9	34	44
>45	17	13	9	0	7	6	30	33
TOTAL								
Marital Status								
Married	39	25	24	10	22	19	79	95
Non-Married	4	1	16	1	4	1	21	5
Family Size								
1-3	6	6	4	2	2	2	11	18
4-6	15	8	15	1	8	10	39	33
7-9	16	9	16	2	9	5	38	28
>9	6	3	5	6	7	3	12	21
Education								
illiterate	22	20	15	4	13	7	46	54
primary	6	5	7	3	4	11	16	33
secondary	11	0	6	3	4	2	19	8
higher	4	1	12	1	5	0	19	5

Table 2:

	No. of patients							
	Rural		Urban		Peri-Urban		Total	Total
Economic characteristics	**Male n**	**Female N**	**Male n**	**Female n**	**Male N**	**Female N**	**Male %**	**Female %**
Occupation								
Jobless	20	8	12	3	11	11	39	39
Job	5	1	13	4	8	2	24	12
Labor	11	1	10	4	2	2	21	12
Business	7	16	5	0	5	5	16	37
Family income (rupees)								
0-20,000	14	12	13	3	4	7	28	39
20,000-40,000	23	13	17	3	18	12	53	49
40,000-60,000	6	1	8	3	3	1	16	9
>60,000	0	0	2	2	1	0	3	3

(table 3).The proportion of IMC to TMC ranged from 0% to 100% with mean of 82% (table 4).The proportion of DMC to TMC ranged from 0 to 100 % with the mean of 18%. The proportion of drug cost to DMC ranged from 0% to 100% with a mean of 18%.The proportion of investigations to DMC ranged from 0 to 100% with a mean of 15%. The proportion of hospitalization cost to DMC ranged from 0 to 100% with a mean of 54%.The proportion of attendant's travelling cost to IMC ranged from 0 to 55% with a mean of 8%. The proportion of attendant's income loss to IMC ranged from 0 to 75% with a mean of 14%.The proportion of TMC to family income of the patient ranged from 0 to 103% with a mean of 26%.The proportion of TMC to patient's income ranged from 0 to 125% with a mean of 50%.

Direct medical cost accounted for 18% of the total medical cost (figure 1). The reason for the low DMC is because the study was conducted in a government hospital where the major contributor to the DMC is the hospitalization cost that accounted for 65% of the total medical cost. TB medicine and investigation is free of cost but the patients have to bear the expenses of medicines and investigations of complications of TB that were approximately found to be 20 and 15% of the total DMC (figure 2). IMC was significantly greater than DMC ($p<0.05$).

IMC accounted for 82% of the total medical cost in which the major contributor was the food cost 65% (figure 2). IMC was found to be comparatively high in the patients from the rural areas as compared to the patients from the urban areas because of the patient 15% and attendants 10% transport costs.

Table 4:

Descriptive Statistics					
	N	Min.	Max.	Mean	Std. Deviation
direct medical cost	166	.00	10600.00	1101.2048	1462.26217
indirect medical cost	166	.00	20000.00	4915.0602	3210.69458
TMC	166	200.00	66600.00	6389.7590	5952.40089
Valid N (listwise)	166				

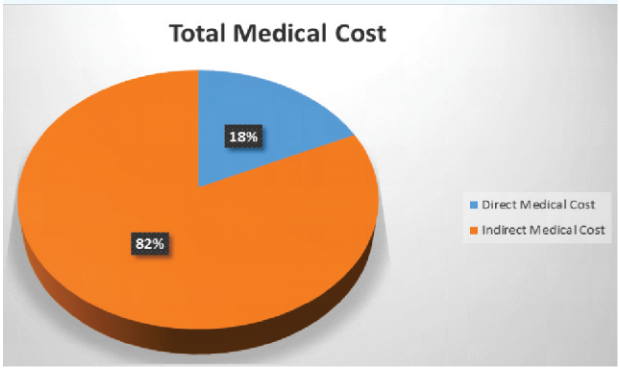

Figure: 1

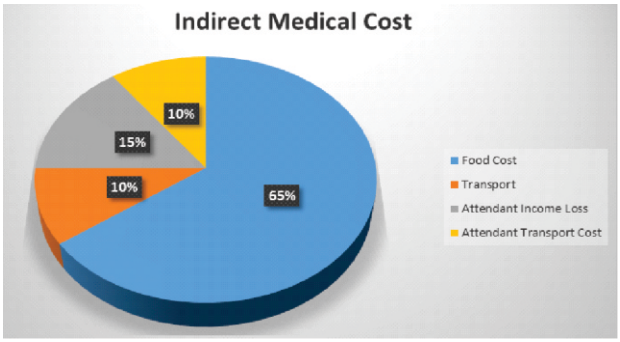

Figure: 2

Table 3:

Statistics											
		Proportion DMC / TMC	Proportion attendant income cost/IMC	Proportion attendant travel cost/IMC	Proportion transportion / IMC	Proportion hospitalization /DMC	Proportion investigation/DMC	Proportion TMC/ INCOME	Proportion medicine/ DMC	Proportion food/IMC	Proportion IMC/ TMC
N	Valid	166	166	166	166	166	166	166	166	166	166
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		17.8189	13.8314	8.4268	9.5125	63.40	15.90	26.5490	20.00	64.4295	81.6510
Median		13.0435	.0000	5.6080	.0000	60.0000	.0000	22.6970	.0000	67.4242	86.9209
Std. Deviation		16.26641	20.73863	11.06357	19.23335	42.77443	29.44100	19.81698	31.74939	28.86975	17.46539
Range		100.00	75.00	54.55	100.00	100.00	100.00	103.00	100.00	100.00	100.00
Minimum		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Maximum		100.00	75.00	54.55	100.00	100.00	100.00	103.00	100.00	100.00	100.00

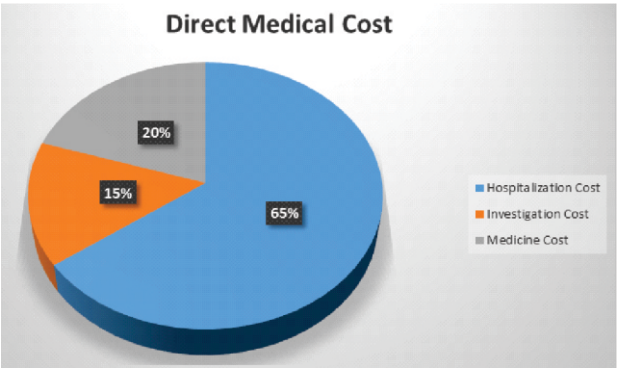

Figure: 3

111 people (66.8%) didn't have any coping mechanism, 38 people (22.8%) borrowed money, 14 people (8.4%) sold their assets and 3 people (1.8%) leased their assets. There was a significant difference between people who had coping mechanisms and those who didn't ($p<0.05$, CI=95%). The most common monitory measure to cope with Tb in the patients was found to be money borrowing (22.8%). Only a fraction (10.2%) of patients with the major complications of the TB had to sell and lease their assets in order to meet their expenses.

In 79 patients (47.5%) the income loss was found to be insignificant. 37 of the patients bear the high income loss ranging from Rs.15,000 to 20,000 while 28% have an income loss between Rs.10,000 to15,000. 26patients (22.2%) have an income loss of Rs.10,000 to 15,000 and 3 people (1.8%) have an income loss greater than Rs.20,000.

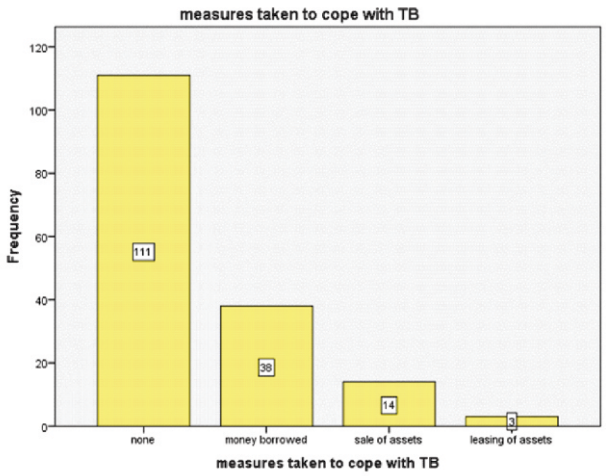

Figure 4

53% (30.3% urban, 31.4% peri-urban and 38.2% rural) of the total subjects in our study had an average income loss 10562 rupees along with the 6552 rupees of TMC burden so they had an economic impact of a total Rs.17114 while the other 47% had a burden of about Rs.6372 due to the DMC and IMC only. It clearly depicts that the income loss is a major contributor in the economic impact on the TB patients.

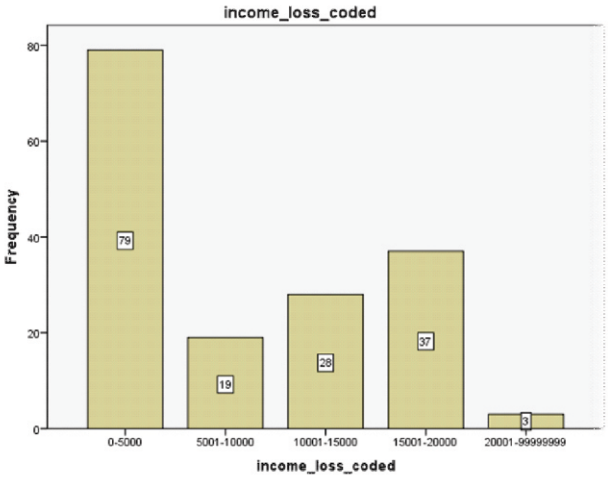

Figure: 5

In table 5 the mean direct cost for urban, peri-urban and rural patients were calculated to be 1011, 971 and 1253 rupees and median Rs.600. The mean indirect costs were 4456, 4939 and 6490 rupees and median (Rs.3500, 4400 and 5000) respectively for the 3 regions. Total costs were calculated as Rs.5468, 5910 and 6490 and median (Rs.4100, 5000 and 5600) respectively for the 3 regions. Thus the most socioeconomic impact was faced by the patients from the rural areas as max. total costs were incurred by them.

In figure 4 direct costs are compared with the indirect costs among the 166 patients from the rural, urban and peri urban area. Indirect costs were Rs.4456, Rs.4939 and Rs.5237 respectively in the urban, peri-urban and rural patients and direct medical costs were calculated to be Rs.1011, Rs971 and Rs.1253 respectively in the patients from the following 3 regions. While indirect costs were higher in the patients from the 3 areas, both costs were higher among the rural patients.

In figure 5 total medical cost has been compared with the income per capita of the urban, peri urban and rural patients. The mean income per capita of the three regions is 4765, 4065 and 3983 rupees respectively while the mean TMC total medical cost

Table 5:

Region		Direct costs Rupees	Indirect costs Rupees	Total costs Rupees
Urban	Mean Median Range	1011 600 0 -8000	4456 3500 0-20000	5468 4100 0-2800
Peri-urban	Mean Median Range	971 600 0-6000	4939 4400 1000-10000	5910 5000 1000-16000
Rural	Mean Median Range	1253 600 0-10600	5237 5000 0-20000	6490 5600 0-30600

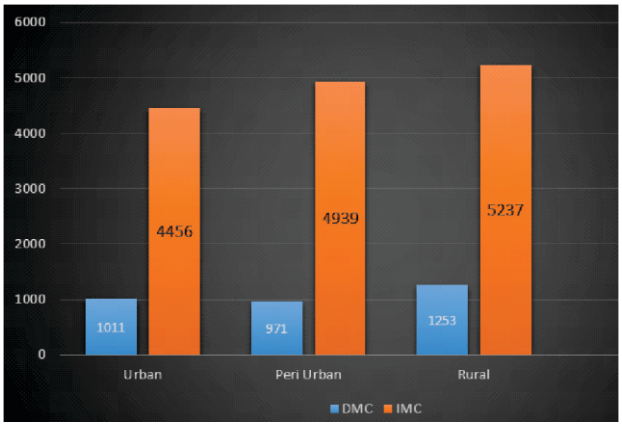

Figure: 6

is 5468, 5910 and 6490 rupees, from which it is clearly evident that the income per capita is lowest in the rural patients and the total medical cost confronted by them is the highest among the 3 of them. It clearly depicts that the economic impact or socioeconomic impact of TB in the rural patients is towering.

Total mean family income is 28451 rupees with the mean family incomes of the urban, peri urban and rural patients were calculated to be 33036, 27752 and 24565 rupees respectively. The proportion of TMC to mean family income in urban, peri urban and rural patients were calculated to be 14.42, 14.64 and 16.21. Thus the highest burden of TMC was

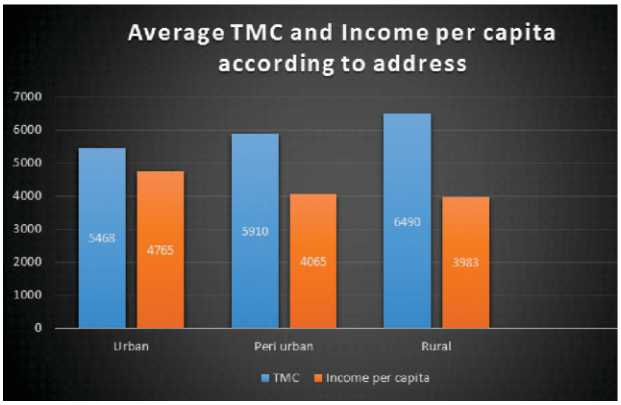

Figure 7

found to be on the total family income of the rural patients as compared to the families of urban and peri urban areas.

There is a significant association between total medical cost and the address of the patient on Chi-Square test ($p<0.05$).

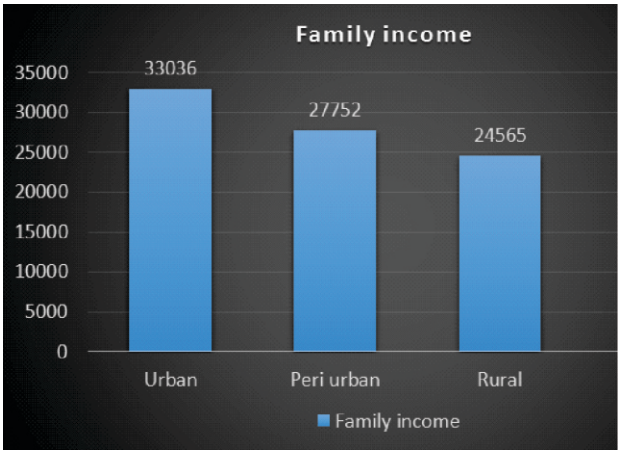

Figure: 8

In our study Tb was found to be prevalent in the illiterate of our society (46% males and 53%). It was mostly because of the lack of awareness about the TB treatment and its spread. There is a significant association between education and TMC on Chi-Square test ($p<0.05$).

DISCUSSION

This study demonstrates the economic burden of seeking TB care is very high for patients and their families. TB is one of the most prevalent diseases in Pakistan and its treatment comes with a high risk of financial ruin for many patients. Economic impact-

Table : 6

Address – TMC Association								
			TMC					Total
			0-3000	3001-6000	6001-9000	9001-12000	12001-999999	
Address	urban	Count	15	22	4	6	4	51
		% within address	29.4%	43.1%	7.8%	11.8%	7.8%	100.0%
	peri urban	Count	6	20	16	4	0	46
		% within address	13.0%	43.5%	34.8%	8.7%	0.0%	100.0%
	rural	Count	12	23	17	11	6	69
		% within address	17.4%	33.3%	24.6%	15.9%	8.7%	100.0%
Total		Count	33	65	37	21	10	166
		% within address	19.9%	39.2%	22.3%	12.7%	6.0%	100.0%

Table : 7

Education – TMC Association								
			TMC					Total
			0-3000	3001-6000	6001-9000	9001-12000	12001-999999	
Education	illiterate	Count	21	37	16	5	2	81
		% within education	25.9%	45.7%	19.8%	6.2%	2.5%	100.0%
	primary	Count	1	13	10	9	3	36
		% within education	2.8%	36.1%	27.8%	25.0%	8.3%	100.0%
	secondary	Count	2	8	8	5	3	26
		% within education	7.7%	30.8%	30.8%	19.2%	11.5%	100.0%
	higher	Count	9	7	3	2	2	23
		% within education	39.1%	30.4%	13.0%	8.7%	8.7%	100.0%
Total		Count	33	65	37	21	10	166
		% within education	19.9%	39.2%	22.3%	12.7%	6.0%	100.0%

varies in the patients of rural, peri urban and urban areas.

The present study has documented all the costs incurred by the TB patients undergoing treatment. Similar studies had been conducted in India and Bangladesh in our region where the financial losses in the TB patients had been calculated.[16,17] In Pakistan no such extensive study has been done (limited reliable published) related to the economic impact on Tb patients except one study in which only the treatment cost and income loss were calculated leaving the indirect medical costs while most of the other studies, done on Tb are related to its awareness and prevalence.[18]

Economic impact was assessed by calculating the DMC which included the medicine, investigation and hospitalization costs. Indirect medical cost which included travelling costs, food costs, attendants income loss and attendants travelling costs was found to be more burden in TB patients as compared to the DMC because most of the medical care except for the comorbidities, was free of cost for the TB patient as the study was conducted in the government hospital. The major economic impact proved to be the income loss. It is well known that adults aged 15 to 59 years are the most economically productive individuals; they are also the individuals on whom the other family members are dependent thus TB in these patients impede the development of society.[17,19] In our study about 70% of the patients were aged between 15 to 45 years which clearly depicts that TB has most of its impact on the productive adults.

In this study the sampling was done to include patients from either sex (male 65% and females 35%) undergoing treatment of TB in ghulab devi hospital.(similar to other studies)

The total mean direct cost observed in our studies was calculated to be Rs.1095±sd. Despite the free treatment of TB in Gulab Devi hospital patients still have to pay for the hospitalization cost and for

the medicines and investigations of the comorbidities of TB. Most of the patients suffering from TB had multiple complications for which they had to buy medicine out of their own pocket. Total mean DMC was found to be lower as compared to the 1500 to 2000 rupees of total mean DMC incurred by the patients in India and south Punjab of Pakistan.[16,18]

Indirect medical costs (costs incurred in travel, food and attendant's expenditures) were the expenditures incurred by the patients that imposed a great deal of burden on them. Mean indirect medical cost was calculated to be Rs.5250 which is about 5 times in comparison to the DMC. Although the special diet (mutton) was provided to the patient 3 times a day, still they had to buy fruits and other eatables on their own that accounted for 65% of the IMC. In addition to food many patients had to bear high transport cost (15% of the IMC) especially those patients who had to visit the hospital on and off for their treatment. Attendant's income loss and travel cost also contributed to about 20% of the IMC. The IMC was found greater than the mean IMC of US14$ incurred by the patients in Zambia (20). Non-medical expenditures were also found to be greater in our study as compared to the patients in India.[16]

DMC and IMC both were found to be higher in the rural patients as compared to the urban patient as they had to travel to the urban areas to get treated because of the unavailability of a proper TB care center in the rural areas.

Income loss is a major setback for the TB patients especially for those patients who are the sole bread earners of the families. In our study 53 % of the patients interviewed and questioned bear heavy income loss (mean Rs.10562) due to TB which significantly reduced the total family income and they were dependent on their family members. Other 48% of the patients who didn't have the income loss bear only a loss of mean 6732 rupees as compared to the 17112 rupees of heavy money loss.

Mean total medical was calculated to be 6371 rupees which consist of 18% of the DMC and 82% of the IMC. Mean TMC was also high in rural patients compared to the urban patients (table 2). Mean total medical cost was also more than the Rs.2700 of TMC incurred by the TB patients in India. Mean of the total family income was 28450 rupees with mean income higher in urban areas as compared to rural areas and burden of TMC on the mean total family income was calculated to be approximately 26% and burden of TMC on mean patients individual income was about 50% which has led the patients in to money borrowing (23%) and selling and leasing of assets (11%).

According to a survey the poverty line in Pakistan is drawn at 3627 and 3153 rupees (income per capita)[1] respectively in both the urban and rural areas while the patients inducted in our study had an income per capita of 4765 rupees and 3983 rupees respectively for both the urban and rural areas. So most of our patient were already at the borderline of the poverty and were already hand to mouth. So a mean total medical cost of 6371 rupees due to TB plus the income loss put an immense economic impact on them.

CONCLUSION

TB is a serious health issue is Pakistan. According to 2017-18 health budget policy of Pakistan (link given below), 124 million rupees[21] has been allocated for the National TB control program which is a good initiative but sadly it is not enough due to the increasing TB expenditures. Government needs to build TB control centers in rural areas so that the rural patient can be facilitated and the alarming patient burden in the urban hospitals can decline. In addition to minimizing the DMC and IMC, government also need to come up with a plan to provide financial support to the TB patients.

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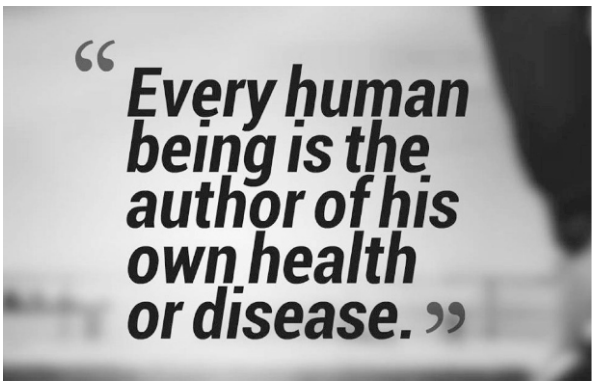

INCIDENCE OF RECURRENCE AFTER INTRAVESICAL BCG INSTILLATION IN NON-MUSCLE INVASIVE BLADDER TUMOUR

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Abstract

Aim: To assess the effectiveness of BCGin recurrence prevention in non-muscle invasive bladder tumours.

Settings: Avicenna medical college and hospital Lahore

Design: Retrospective case series

Method: Retrospective data and analysis of 42 patients(35 males,7 females) that presented to the Urology department from May 2017 to April 2019 with non-muscle invasive bladder tumour.

All patients included in the study appeared on first presentation and had solitary growth or solitary Carcinoma in situ. After TURBT and histo-pathological confirmation of non-muscle invasive disease, all patients were subjected to six weekly cycles of intravesical instillation of BCG. Recurrence was then noted at 3 monthly follow up through check cystoscopy,if recurrence was noted in any patient,that patient was excluded from the study. Next on 6 monthly follow up a check cystoscopy was performed in patients who were disease negative on their 1st 3 monthly check cystoscopy.

Data was collected to evaluate incidence of recurrence at 3 or 6 months and incidence of patients who remained disease negative at 3 or 6 months. Recurrence may be on same site or any other site in bladder.

Results: Recurrence was observed in 5 patients at 3 monthly follow up and check cystoscopy. This accounts for 12% of total patients. Rest of the patients who were disease negative at 3 months were subjected to 6 monthly check cystoscopy and 3 of them presented with recurrence. This accounts for 7% of total patients. In total 19% of patients developed recurrence upto 6 months of follow up.

Conclusion; Intravesical instillation of BCG significantly reduces recurrence in 6 month follow up in patients who had non muscle invasive bladder growth.

Key words: bladder tumour, BCG, Intravesical instillation, TURBT, cystoscopy

In United States bladder cancer is the fifth most common malignancy.[1] 95% bladder malignancies are transitional cell carcinoma. On first presentation 70% patients have non-muscle invasive disease. Transurethral resection of bladder tumour followed by induction course of Bacillus Calmette Guerin (BCG) weekly for 6 weeks is considered the standard treatment for non muscle invasive Transitional Cell Carcinoma as per American Urological Association[2] and European Association of Urology guidelines.[3]The use of BCG as adjuvant therapy is recommended by various studies which showed that BCG instillation after TURBT in non muscle invasive disease prevents recurrence and progression as compared to TURBT alone[4,5] and intravesical chemotherapy.[6,7]

Intravesical instillation of BCG instillation for the treatment of non-muscle invasive bladder tumour

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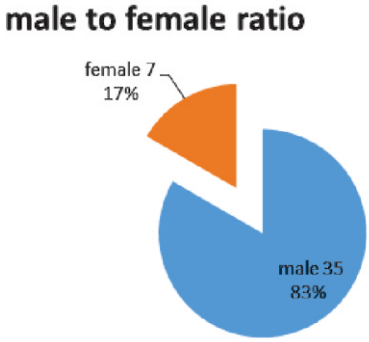
is the most successful use of immunotherapy till date and represents the standard treatment protocol for non-muscle invasive bladder tumour followed by TURBT.[8]

METHODOLOGY

From May 2017 to April 2019,total 42 patients presented with non muscle invasive transitional cell carcinoma of urinary bladder. Of these 42 Patients, 35 were male and 7 were female.

All patients with bladder growth were admitted and all necessary pre operative investigations were performed. All patients underwent trans urethral resection of bladder tumour. Superficial and deep biopsies were sent for histopathological examination. The patients whose biopsies showed non muscle invasive disease, first presentation and solitary papillary growth or solitary carcinoma in situ were included in the study. The patients included in study were briefed about the study and informed consent was taken.

After checking that no contra indication of



BCG instillation exists in any patient, they were subjected to six cycles of weekly intravesical instillation of BCG. After completion of 6 cycles of BCG, they were called for 1st 3 monthly follow up check cystoscopy to note any recurrence whether at previous site of resection or any other new site. The number of patients who had recurrence were noted and excluded from next 6 monthly check cystoscopy. Patients who were disease negative at 3 monthly cystoscopy were subjected to 6 monthly check cystoscopy. Number of patients who developed recurrence at 6 monthly check cystoscopy were noted.

Data was collected and assessed as number of patients developing recurrence at 3 and 6 months and patients who remained disease free at the end of study that is 6 months after the resection of growth.

RESULTS

Of total 42 patients included in the study, 5 patients developed recurrence which accounts for 12% of total patients. Of these 5 patients, 3 developed recurrence at same site of previous resection and 2 developed a growth at new site.

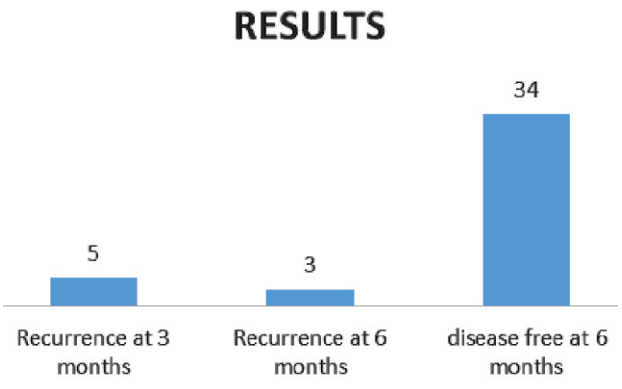
Patients who were disease free at 3 monthly check cystoscopy were subjected to 6 monthly check cystoscopy. Of these 3 patients developed recurrence. It accounts for 7% of total number of patients. One developed recurrence at previous site of resection and 2 developed at new site.

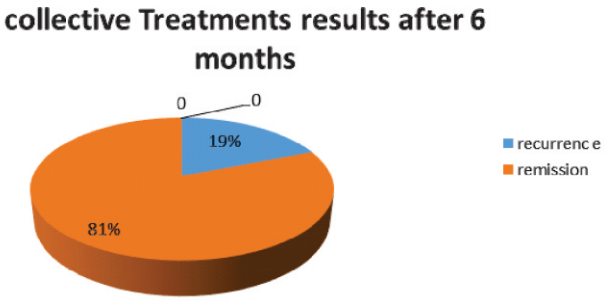
Collectively 19% of patients developed recurrence. 81% patients remained disease free till the end of the study.

DISCUSSION

Non muscle invasive bladder cancer has very high potential of recurrence and progression, this high potential has led the investigators to search for an intravesical therapy that could prevent recurrence and progression. Intravesical BCG is being used for this purpose for last four decades.

Intravesical BCG is the only therapy that shows promising results in prevention of the progression of the disease that is from non muscle invasive to muscle invasive disease.





Despite its widespread use it still fails in almost 40% of patients when followed for 5 years. Many of such patients with disease progression may ultimately require more aggressive options like cystectomy or bladder sparing options like chemo-radiation.[8]

BCG is usually given as standard dose of 80mg diluted in 50ml of normal saline in each cycle, once the bladder is completely empty this dose is infused in bladder with a urethral catheter. It should stay in the bladder for at least 2 hours. BCG is usually instilled in bladder 2 to 4 weeks after the resection to avoid systemic toxicity.[9] Meanwhile before instillation of first dose a urine complete examination is required to rule out any microscopic hematuria.

The antitumour activity of BCG is very complex. It activates the immune system to clear the foreign pathogen which is instilled in the bladder. End result is activation of immune cells targeted against attenuated mycobacterium tuberculosis which target the tumour cells as well.[10-11]

Adequate immune response is observed in most patients after 4 cycles of BCG instillation but patients who are not previously immunized against mycobacterium tuberculosis needs 6 cycles of BCG instillation to achieve adequate immune response.[12] That's why it is usually recommended that induction should be given for 6 weeks. After the induction course, it is advocated in many studies that additional maintenance therapy with BCG may reduce the recurrence.

Shelley and colleagues in a study proved that resection followed by BCG immunotherapy is superior to resection alone in preventing recurrence.[13]

Several other meta analysis have shown the superiority of BCG after resection as compared to resection alone or resection followed by intravesical chemotherapy in recurrence prevention.[14,15] BCG immunotherapy also has impact on disease progression. Sylvester and colleagues showed that BCG prevents disease progression and this impact is more pronounced in carcinoma in situ.[16]

CONCLUSION

Resection followed by intravesical BCG remains the gold standard treatment for non-muscle invasive bladder tumour. It prevents recurrence and progression of the disease.

LIMITATIONS OF STUDY

This study has some limitations.

1- It is a retroppective descriptive case series. During process of retrospective retrieving of data by chart review may result in collecting "inaccurately charted information" from the medical record.

2- Misinterpretation of meaning in the written documentation can also be a possible source of error.

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NOTHING CAN BE COMAPARABLE TO GOOD HEALTH

LATERAL ANAL SPHINCTEROTOMY AS TREATMENT OF CHOICE FOR CHRONIC ANAL FISSURE

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Abstract

Objective: Lateral anal sphincterotomy (LAS) should be treatment of choice for chronic anal fissure (CAF) because of early painrelief, symptom control and very few complications

Methods: A hospital-based retrospective, observational study of patients with CAF were carried out for period of 2 years from Jan 2015 to Feb 2017 in Department of General Surgery, Unit 1 of Avicenna Medical and Dental College, Lahore, Pakistan.

A series of 44 patients who underwent this operation during this period were analyzed. The data was taken from the medical record. The patients were selected consecutively according to their admission date. The primary outcome measures were pain and symptom control, and the secondary outcome were continence and patient satisfaction. Patients were initially followed after 1 week & 1 month and later after 1 year

Results: The study included 44 patients, males 34 (77.3%) & females 10 (22.7%) with age (ranging from 17 to 70 years). All patients had history of chronic anal fissures. Constipation was reported in 10 patients (27.2%), bleeding in 14 patients (31%), and pain in (86.3%) patients. The median duration of the disease was 20 months (ranging from 2 to 30 months). Patient satisfaction (95.4%) was high and complete healing was seen at 4 weeks with only 2 cases (2.2%) of recurrence. (Table 1)

Our results showed greater patient satisfaction and symptom control including pain. 2 patients had problem with flatus incontinence & soiling. In both cases symptoms were minimal and settled at 8th week of follow up. One patient had small per rectal bleeding at day 2 but settled on its own.One female patient developed recurrence of pain on defecation after 3 months which was thought to be due to incomplete division of internal sphincter. This was treated with sitz bath, laxatives and GTN ointment 0.2% and her symptoms settled after 6 weeks of treatment. She remained recurrence free at 1 year follow up.

Conclusion: Lateral anal sphincterotomy is the procedure of choice for chronic anal fissure because of early symptomatic relief and pain control. High patient satisfaction was achieved with low recurrence rate

Keywords: Chronic anal fissure, lateral anal sphincterotomy, patient satisfaction

Chronic anal fissure (CAF) is a non-healing anal ulcer for more than 6 - 8 weeks.[1] It occurs in anal mucosa under dentate line. They mostly occur on ventral side midline but can lie dorsally. Sex distribution is equally.

If they lie in other positions or are multiple, tuberculosis, HIV or inflammatory bowel disease and hematological malignancies should be considered.[5,6] Symptoms aremainly of pain around or inside anus when passing stools which can last up to an hour. Pain is usually thought to be ischemic. There may be history of accompanying blood which is separate from stools. It affects quality of life. On examination chronic anal fissure has features of

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chronicity like undermined edges, hypertrophied anal papilla, visible internal sphincter and external anal tag.[2-4] Lateral anal sphincterotomy remains the surgical treatment of choice for chronic anal fissure[11] and is much favorable option with complete healing rates approaching up to 97 to 100% with early symptom relief and pain.[7] Because long-term fecal continence and quality of life are preserved in the vast majority of patients following LAS[8-10] this operative management can safely be offered as first-line therapy for CAF.

In our study we evaluate the efficacy of lateral anal sphincterotomy in chronic anal fissure if offered as primary treatment.

METHODOLOGY

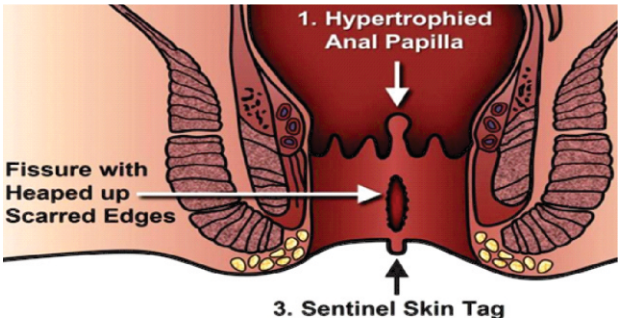
A hospital-based retrospective, observational study of patients with CAF were carried out for period of 2 years from Jan 2015 to Feb 2017 in Department of General Surgery, Unit 1 of Avicenna Medical and Dental College, Lahore, Pakistan.

A series of 44 patients who underwent this operation during this period were analyzed. The data was taken from the medical record. The patients were selected consecutively according to their admission date.

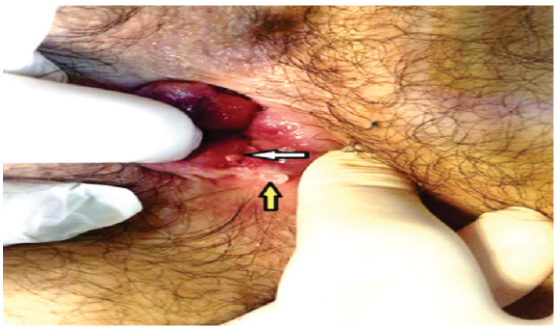
The primary outcome measures were pain and symptom control, and the secondary outcome were continence and patient satisfaction. Patients were initially followed after 1 week& 1 month and later after 1 year.

Inclusion Criteria

Both sex & age > 18 years. Symptoms of pain during or after passing stools for more than 8 weeks of duration. On clinical examination one of the signs of chronicity like indurated edges, visible internal sphincter in ulcer base or an external anal tag was present. All patients had also undergone some form of conservative or medical treatment like laxatives, local anesthetic gel, GTN ointment 0.2% or taken herbal medicines. All patients were examined and operated by senior clinician above registrar grade and called for 3 follow up visits.



Hypertrophied anal Papilla (White Arrow) External anal Tag (Yellow Arrow)



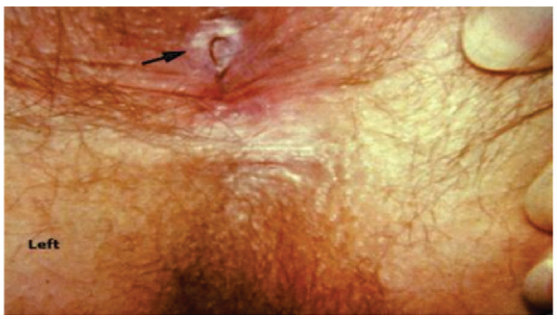
Posterior Midline Chronic anal Fissure: undermined Edges and Fibrosis

Exclusion Criteria

Pregnant or breast-feedingwomen, previous anorectal surgery, perianal abscess or fistula, patients with suspected other pathologies like tuberculosis. Those who did not came for any follow up visit were also excluded.

Procedure

We used open technique for lateral anal sphincterotomy at our unit. All cases were done under spinal orgeneral anaesthesia in lithotomy position. Prophylactic antibiotics or glycerin suppositories were not given. LAS was done under direct vision in



lower part to the length of fissure up to but not above dentate line after carefully blunt dissection with

scissor. Gentle finger pressure over anal mucosa is applied over sphincterotomy site to break residual internal sphincterfibers.[21] Mucosal wound in anus was left open. All patients were discharged on laxative and analgesia for one week.

RESULTS

The study included 44 patients, males 34 (77.3%) & females 10 (22.7%) with age (ranging from 17 to 70 years). All patients had history of chronic anal fissures. Constipation was reported in 10 patients (27.2%), bleeding in 14 patients (31%), and pain in (86.3%) patients. The median duration of the disease was 20 months (ranging from 2 to 30 months). Patient satisfaction (95.4%) was high and complete healing was seen at 4 weeks with only 2 cases (2.2%) of recurrence. (Table 1)

Our results showed greater patient satisfaction and symptom control including pain. 2 patients had problem with flatus incontinence & soiling. In both cases symptoms were minimal and settled at 8th week of follow up. One patient had small per rectal bleeding at day 2 but settled on its own.

One female patient developed recurrence of pain on defecation after 3 months which was thought to be due to incomplete division of internal sphincter. This was treated with sitz bath, laxatives and GTN ointment 0.2% and her symptoms settled after 6 weeks of treatment. She remained recurrence free at 1 year follow up.

DISCUSSION

CAF are difficult to treat by non-surgical methods and surgery seems to be the best option.

LAS helps in healing of ulcer by relaxing tone of anal sphincter.[20] which than improve blood supply to fissure area. Since it is thought to be ischaemic in origin, improving blood flow help in its healing.

Non operative options like dietary high fiber diet, local applications of ointments for vasodilatation, chemical sphincterotomy with botulinum also benefit CAF patients but they all have a higher rate of recurrence. Several surgical techniques, like excision of fissure, anal dilation, posterior or lateral anal sphincterotomy and advancement anal mucosa flap have been performed for management of CAF.[(1)]

Table 1: Outcome after 1 year follow up

Complications & outcomes	Number (%)
Symptom control within 1 week	44(100%)
Patients satisfaction	42(95.4%)
Perianal pain after 1 week	Nil
Bleeding	1(2.2%)
Continence issue	2 (4.5%) Liquid faeces and flatus
Abscess formation	Nil
Recurrence after 3 months	1(2.2%)

However, in comparison, LAS remains the most successful treatment for management of patients with CAF[16,17] with better healings and recurrence rates.[21] and hence has been accepted as the gold standard treatment for CAF.[18,19] It must also be said that LAS is not without risk and search or better outcome procedure should continue to treat CAF.

CONCLUSION

Lateral anal sphincterotomy is the procedure of choice for chronic anal fissure because of early symptomatic relief and pain control. High patient satisfaction was achieved with low recurrence rate.

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YOU CAN'T TAKE

GOOD HEALTH

FOR GRANTED

OPEN HAEMORRHOIDECTOMY WITH & WITHOUT LATERAL INTERNAL SPHINCTEROTOMY

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Abstract

Background: Post-operative pain is one of the major complications after open haemorrhidectomy. This study was conducted to assess severity of post-operative pain in two groups of patients after classical open haemorrhoidectomy, with and without lateral anal internal sphincterotomy.

Patients & Methods: Patients with ages between 18-65 years with third- and fourth-degreehemorrhoids were included in this randomized control trial study. Total 48 patients were selected and divided in two groups. Group A with 24 patients who underwent open haemorrhidectomy by Milligan Morgan technique without lateral internal sphincterotomy. Group B having another 24 patients who under went haemorrhidectomy with lateral internal sphincterotomy. Male to female ratio was 70:30.Patients in group B experienced less postoperative pain as compared to Group A patients. At the end of study after one week, 22 patients were pain free in group B and 8 patients in group A.

Conclusion: Haemorrhidectomy combined with lateral internal analsphincterotomy, is associated with less postoperative pain

Key Words: Lateral Internal Sphincterotomy, haemorrhidectomy and Postoperative Pain.

Hemorrhoids are the common cause of bleeding per rectum leading to chronic anemia. The effected person become very weak and seeks the treatment. In our setup Males are affected more as compared to females. Chronic constipation due to improper and refined diet are the common cause for development of hemorrhoids. There are four grades of hemorrhoids which are based on the severity of the disease. Patients with third- and fourth-degree hemorrhoids mainly need surgery.

However post-operative pain is the nightmare after open haemorrhoidectomy. Some time it is so severe that people are scared of surgical intervention. This severe pain is mainly due to spasm of internal anal sphincter which require some type of management. Eisenhammer was the first man to describe the idea that post haemorrhoidectomy pain happens due to spasm of the internal anal sphincter.[1] He was convinced and then recommended its division through one of the haemorrhoidectomy wounds. Before this, the aim was achieved by anal dilatation just before haemorrhoidectomy. Now, the anal dilatation has been replaced by lateral anal sphincterotomy.

Sometimes it causes the patients to cry when they go to pass first stool. In view of this pain, family members and attendants of the patient are uncomfortable, terrified and request the doctor to do management for alleviation of the pain associated with defecation. Future patients who listen to these uncomfortable moments are suffered from fear of surgery. Instantly they become reluctant for surgical option. As far possible, they prefer to defer the treatment. On the other hand, lateral internal anal sphinc-

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terotomy certainly reduces the post-operative pain and makes the patients comfortable. Few controlled trials also support this combination surgery, which reduce the post-operative pain and enhances the wound healing.[2,3] Important impact of this procedure is that It reduces the ultimate spasm of the sphincter and consequently facilitates to decrease the pain after haemorrhoidectomy.

METHODOLOGY

The study was conducted at Avicenna Medical College and Hospital, Lahore from July 2017 to July 2018. Patients in the age group 18-65 years, irrespective of gender with third- and fourth-degree hemorrhoids were included. They were divided into two groups on the basis of even and odd OPD registration numbers. Patients with any concomitant perianal pathology such as perianal fistula and rectal prolapse were excluded. Those having uncontrolled diabetes mellitus, hypertension, chronic liver disease, coagulopathies and cardiac illness were also excluded. Group A patients with even OPD number underwent open Haemorrhoidectomy alone and Group B patients underwent open haemorrhoidectomy with lateral internal anal sphincterotomy. Postoperative pain was assessed after 24 hours, 48 hours & one week. Intensity of pain was assessed by Visual Analogue Scale (VAS).These were divided into three groups based on severity of the pain as 0-10 score; 1- 3= mild pain, 4- 6=moderate pain & 7- 10= severe pain.

RESULTS

Total 48 patients were included in the study. Twenty-four patients in group A underwent open haemorrhoidectomy alone. Other 24 patients in group B underwent open haemorrhoidectomy with lateral anal sphincterotomy. Majority were males (70%). There was increased pain incidence during the first 24 hours in 20 patients in group A and 6 patients in group B (Table 1). At the end of 48 hours, one patient in group A was pain free, and 19 patients in group B were without pain (Table 2). Pain intensity changed from moderate to mild after 48 hours. On second post-operative day, 23 patients experienced pain in group A whereas only 5 patients had mild degree pain in group B. Similarly, after 7 days, 16 patients continued to have pain in group A and only 2 patients had persistent pain in group B. By the end of one week, 8 patients in group A had no pain while 22 in group B were free of pain (Table 3). At the end of study 8 patients in group A and 22 patients in group B were completely pain free.

Most of the patients (58 %) were between the ages 31-45 years. They reported with third and fourth degree haemorrhoids. Minimum number of patients were between 46-65 years. Male to female ratio remained 70:30 in this study.

DISCUSSION

Patients having bleeding per rectum irrespective of ano-rectal pathology are generally considered as a case of haemorrhoids. On the basis of severity of the disease, it has four grades. First and second grade disease is considered as early haemorrhoids and third and fourth degree are considered as advanced disease. Haemorrhoidectomy is indicated in third and fourth grade of haemorrhoids

Beside many other complications, pain is the major concern for the patient and the surgeon. Pain is

Table 1: *Frequency of Pain in24 Hours*

Groups	No Pain	Mild Pain	Moderate Pain	Severe Pain	Total
Group A: Open haemorrhoidectomy	4	2	6	12	24
Group B: Haemorrhoidectomy with LIS	18	3	2	1	24
Total	22	5	8	13	48

Table 2: *Frequency of Pain in 48 Hours*

Groups	No Pain	Mild Pain	Moderate Pain	Severe Pain	Total
Group A: open haemorrhoidectomy	1	3	12	8	24
Group B: Haemorrhoidectomy with LIS	19	3	2	0	24
Total	20	6	14	8	48

Table 3: Frequency of pain after 1 week

Groups	No pain	Moderate pain	Severe pain	Total
Group open haemorrhoidectomy	8	10	6	24
Haemorrhoidectomy with LIS	22	2	0	24
Total	30	12	6	48

Table 4: Sex wise Distribution

Group	Male	Female
A	33	15
B	35	13

Table 5: Age wise Distribution

Age (years)	18-30	31-45	46-65
No of patients	15	28	5
Percentage (%)	31	58	11

almost a constant feature after haemorrhoidectomy performed in old traditional method. So many patients defer seeking care for prolapsed, bleeding and uncomfortable haemorrhoids. Although there is no sex discrimination noted regarding the treatment but men are most likely to seek early treatment as compared to females. In eastern society sometimes it become cumbersome for females to beex posed for examination before the male doctors. Therefore, the problem is lingered on for many years. Post-operative pain and shyness may also be the reason so females report in less numbers for treatment.[4] Male predominance was also noted in this study. (Table -4)

The haemorrhoids are noted in adults with increasing age, with its peak incidence between 45-65 years.[4,5]

There are many procedures to treat this ailment but none proved up to the mark to reduce the pain up till now.

Initially lateral anal sphincterotomy was recommended for treatment of pain in anal fissures presenting with severe pain. Thereafter, this procedure has been incorporated gradually in combination with haemorrhoidectomy.

There are various methods to reduce the spasm of internal sphincter. Lateral internal sphincterotomy is considered the most appropriate. It leads to decreased pain after other anal procedures as well. This observation was also made in other studies with significant reduction of pain in number of patients.[1,3,4] The incidence of pain reduced to 10.45% as compared to 28.8% in whom open haemorrhoidectomy alone was done.[3] Two treatment modalities were compared in this study. That was open haemorrhoidectomy versus haemorrhoidectomy with lateral internal sphincterotomy in terms of frequency of postoperative pain.

Present study revealed that 50% patients had severe pain in group A whereas 4 % patients in group B were having severe pain during the first 24 hours of surgery. During next 48 hours 33.33% patients in group A whereas none had severe pain in group B. Similarly, after one week more than 40% patients in group A were still having pain (Table 1, 2 and 3). Outcome of this study is consistent with findings made by the other studies.

In our study males remained dominant, with a male to female ratio of 70% to 30% (Table 4). Majority of patients (58%) belonged to fourth decade of life. About 11% patients were in 46-65 years of age group (Table 5). Almost similar observations were made in the study of Murie et al[(5)]. Male preponderance in our study was likely due to the social taboos in our setup. This led to men seeking an advice regarding haemorrhoids much more readily than women.

Kanellos found that there were even more patients who experienced excruciating pain in the non-internal sphincterotomy group than in the internal sphincterotomy group.[6] Amorroti evaluated the usefulness of left internal lateral sphincterotomy was a safe procedure and reduced post-haemorrhoidectomy pain. It was further revealed in a study made by Nienhuijs and Ozer and Ascanelli, that conventional haemorrhoidectomy without lateral anal sphincterotomy is associated with increased postoperative pain. They considered that lateral internal sphincterotomy done simultaneously with haemorrhoidectomy is the simplest and most effective method of reducing postoperative pain.[7,8,9]

Galizia also found out in a study that addition of lateral internal sphincterotomy to haemorrhoidectomy significantly improved post–operative pain.[10] Findings made by all these studies are consistent with the observations made in our study and consequently endorsed the findings noted in this study.

CONCLUSION

It is inferred from above discussion that pain is the main limiting factor in haemorrhoidectomy for smooth post-operative recovery. Therefore haemorrhoidectomy combined with lateral internal sphincterotomy is better than simple haemorrhoidectomy without lateral internal sphincterotomy.

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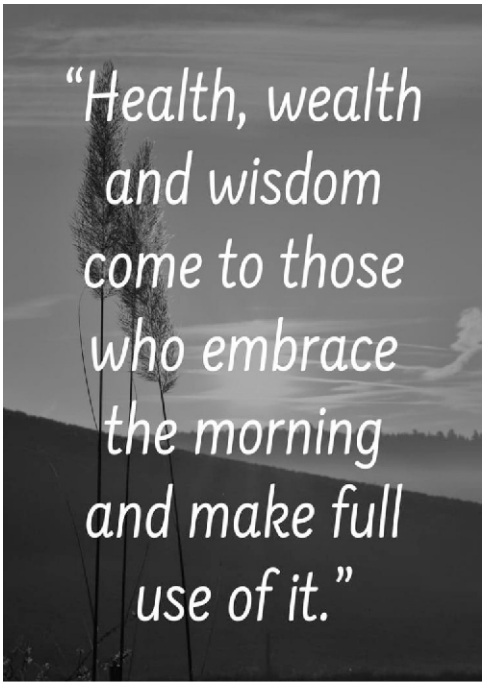

TREATMENT OF PSEUDOMONAS INFECTION WITH 5 % ACETIC ACID DRESSINGS BEFORE SKIN GRAFTING

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Abstract

Background: Pseudomonas infection is a major threat to skin grafting especially in previously infected wounds. Traditionally wounds are prepared for skin grafting by culture sensitivity and then using various antibiotics. We used 5% acetic acid dressings three days before skin grafting on such wounds and results were found to be very promising regarding graft uptake.

Aim and Objectives: To achieve economical & effective control of pseudomonas infection before skin grafting in shorter duration of time

Methods: The study was conducted at Avicenna Medical & Dental College, Lahore, Pakistan from July 2018 to June 2019. It was a prospective study consisting of fifteen patients which were added in the study randomly. Inclusion criteria was patients with infected wounds harboring Pseudomonas organisms. These patients had skin loss lesions after burn & road traffic accidents with dirty wounds showing greenish discoloration of dressings indicating Pseudomonas infection. The infection was controlled with broad spectrum antibiotics covering Pseudomonas, debridement and dressings. All these patients were treated with 5% acetic acid dressings three days before skin grafting. All patients with infection other than pseudomonas were excluded from the study

Results: Out of fifteen patients only one patient had recurrence of pseudomonas infection on 5th post-operative day due to use of unsterilized cotton on wound. That pseudomonas infection was again treated with 5% acetic acid dressings. All other patients had uneventful wound healing and successful skin grafting.

Conclusion: It was noted in this study that Pseudomonas infection can very successfully treated with topical applications of 5% acetic acid dressings before skin grafting and if every patient's wound is being dressed with acetic acid dressings before skin grafting prophylactically, it can reduce the chances of graft failure.

Key Words: Infected Wound, Acetic Acid Dressing, Skin Grafting

Since long time, the major burden in health department is wounds. Various topical agents ranging from simple saline gauze to latest modern material has been used for infected wound dressings demanding many expectations from the treating surgeon.

The major hinderance in healing of chronic wounds is bacterial & fungal infections. Systemic antibiotics have been used for this purpose but don't work effectively in diabetic & non-healing wounds. Cost, availability, development of resistance and adverse effects are limitations in the use of different treatment options.

In the healing of an infected wound, pH plays an important role. Growth of most of the pathogens occurs in alkaline envoirment.[1,2,3] The shift of pH environment towards neutral is the main factor which promotes healing.[4,5,6] This pH modification

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also determines the reduction in wound infection. Historically, acetic acid has been used for the treatment of wounds being infected with Pseudomonas.

Pseudomonas aeruginosa affects post burn skin & soft tissue more readily as compared to any other pathology. The integral part of the management of infected wound is use of antiseptics. Although there are always concerns about its common use.

METHODOLOGY

The study was conducted at Avicenna Medical & Dental College, Lahore, Pakistan from July 2018 to June 2019. Patients were randomly included in the studyand were informed about the study. Consent was taken for this study. Inclusion criteria was patients with infected wounds harboring Pseudomonas organisms. Included patients had skin loss lesions after burn & road traffic accidents with dirty wounds & greenish discoloration of dressing showing Pseudomonas infection. The infection was controlled with broad spectrum antibiotics, debridement and dressings. All these patients were treated with 5% acetic acid dressings to clear pseudomonas 3 days before skin grafting. All patients with infection other than pseudomonas were excluded from the study.

RESULTS

On 5th post-operative day, only one patient out of fifteen, developed reinfection with Pseudomonas reinfection due to use of unsterilized cotton on wound. This was also managed with dressings soaked in 5% acetic acid. All other patients had good healing of the wounds and uneventful skin grafting.

DISCUSSION

Several mechanisms are involved in affecting the wound healing especially lowering the pH of the wound which is seen after the use of acetic acid. It inhibits the growth of the pathogenic bacteria by lowering the pH less than 6.[7,8,9] It has been found that lowering of pH in the wound leads to reduction in bacterial protease activity.[10,11,12] In wound surroundings, low pH promotes wound healing and produces oxygen radicals which kill bacteria by improving cell oxygenation by Bohr effect.[4,13,14] It reduces bacterial toxicity end products& increases macrophage fibroblast activity.[15,16,17] Rapid decontamination leads to improved granulation by all these processes.

In our study, we found that not only Pseudomonas but a wide variety of microorganisms are being killed by acetic acid, which was not mentioned in numerous other studies.[18,19,20] Growth of fungus is also inhibited by acetic acid & no previous extensive literature search proved it. Our study further showed that acetic acid in 1% concentration is sufficient for inhibiting the growth of most of the common bacteria and fungi. Burning sensation and skin irritation is being caused by very high concentrations and this generally is not required. In vitro, cytotoxic effects of acetic acid are suggested by some studies but clinically no such results have been found.[21] Various other acids such as ascorbic acid,[25] citric acid,[22,23,24] boric acid,[25] has been used for acidification of the wounds thus confirming the effective role of low pH in wound healing. In 2006,Gethin and Cowman described honey for decrease in pH when wound were dressed by it.[6]

As compared to other topical agents or systemic antibiotics, acetic acid is available easily, non-toxic & inexpensive. 1% povidone-iodine, 3% hydrogen peroxide and 0.5% sodium hypochloriteas topical agents have been found to be cytotoxic and affect the wound healing adversely. Important side effect of silver sulphadiazine is leucopenia. According to one study by Phillips et al.[19], the efficacy of locally applied acetic acid for the elimination of P. aeruginosa affecting the superficial skin and burn wounds in a tropical climate is better when compared with chlorhexidine or hypochlorite. Multiple drug-resistant bacteria in both forms, planktonic (free-floating in broth) as well as biofilm (attached to a surface) are effected byacetic acid which is of major significance since the biofilm form has been shown to play a major role in causation and maintenance of drug-resistant bacterial infections.[30] When compared

with the findings in other studies,[18,19,20,21] in our study the majority of the wounds improved within 7–14 days too.

Tsukada et al. 1992 (pH 8.9)[2] and Wilson et al. in 1979 (pH = 7.15) demonstrated that average pH of the infected wounds was alkaline (pH-9).[1] The wounds with even a thin layer of granulation tissue showed the average pH of 7.0. Both authors reached on this conclusion after using acetic acid dressing method for patients following in out patients department (OPD). All patients were councelled for 1% acetic acid dressings at home and then to follow in OPD twice a week. Glen Bowen et al. from University of Utah (U.S.A.) showed the same result and they published a patient education sheet for acetic acid dressing also.[32]

Acetic acid dressings have changed the trend of our dressing room when being utilized for patients with clean& odourless wounds. These dressings don't need systemic antibiotics in case of development of drug resistance even. Smaller procedures like skin grafting can replace major surgery like flaps in debilitated unfit patients.

CONCLUSION

In wound healing, the pH of the wound environment plays a pivotal role Acetic acid breaks the barrier of multidrug resistance in diabetic patients and with other chronic non-healing wounds. It can be a simple solution to a complex disease acting at the root level altering the alkaline milieu of infected wounds.

Acetic acid with 1% concentration is effective against a wide range of bacteria as well as fungi accelerating the wound healing. We strongly recommend the use of 1% acetic acid dressings to deal with majority of infected wounds which heals the wound quickly. It reduces hospital stay, morbidity associated with systemic antibiotics and health-care cost.

Most of the patients can be taught self-care and treated with dressing protocol on an OPD basis. Domiciliary care keeps the patient at ease with reduced financial burden.

In the epidemic of diabetes mellitus leading to chronic non-healing limb wounds is responsible for increased number of amputations. Acetic acid dressing shave potential to decrease the rate of amputation in difficult scen arios.

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DIAGNOSTIC ACCURACY OF DOPPLER ULTRASONOGRAPHY FOR TESTICULAR TORSION IN PATIENTS PRESENTING WITH SCROTAL PAIN TAKING INTRAOPERATIVE FINDINGS AS GOLD STANDARD

Samreen Mushtaq, Muhammad Taha Khalil , Ali Akbar, Masood-ur-Rauf Khan, Muhammad Naveed , Maaz-ul-Hassan

Abstract

Objective: Objective of this study was to find out the diagnostic accuracy Doppler ultrasound in diagnosis of testicular torsion in patients presenting with scrotal pain taking surgical findings as Gold Standard.

Study Design: Cross-sectional study

Place and Duration of Study: Department of Radiology, Nishtar Hospital, Multan from 25th October 2016 to 25th March 2017.

Methods; we took 111 male patients of 15-45 years of age with acute scrotal pain (12-48 hours) and with clinical suspicion of testicular torsion. Data was collected using non-probability - purposive sampling from department of Radiology, Nishtar Hospital Multan in 6 months. Doppler ultrasonography was carried out in all the patients by a single radiologist under supervision of my supervisor by using TOSHIBA Just Vision USG machine equipped with curvilinear probe and Doppler USG facilities and the findings was recorded. Then patients were sent for surgery and intraoperative findings were noted. All surgeries were done by a single surgical team.

Results: In this study the mean age of patients was 29 ± 6.52 years. The mean duration of scrotal pain 18.12 ±5.03 and average scrotal pain was 7.17 ± 1.50. Forty-three (38.7%) patients had moderate pain and 68 (61.3%) presented with severe pain. On Doppler ultra sonography testicular swelling was seen in 106(95.5%) patients, decreased Echogenicity was not fond in any patient while decreased blooded follow was observed in 100 (90.1%) of the patients. The sensitivity and specificity of Doppler ultrasonography was 98.06% and 87.5% respectively taking surgical findings as gold standard. Positive and negative predictive value of Doppler Ultrasonography were 99.02% and 77.78% respectively while overall diagnostic accuracy of Doppler ultrasonography was 97.3% taking surgical findings as gold standard

Conclusion: According to this study, Doppler ultrasonography can be used to detect testicular torsion in patients presenting with acute scrotal pain with reliable sensitivity (98.06%), specificity (87.5%) and good diagnostic accuracy (97.3%).

Keywords: Scrotal pain, Echogenicity, Testicular swelling, Doppler ultra Sonography

Acute scrotal pain is most commonly caused by testicular torsion, torsion of the appendix testis, epididymitis and/or orchitis. Of these, only testicular torsion is an absolute surgical emergency as testicular salvage is inversely related to the duration of ischaemia.[1] Testicular torsion is a true urologic emergency and must be differentiated from other complaints of testicular pain because a delay in diagnosis and management can lead to loss of the testicle.[2]

All prepubertal and young adult males with acute scrotal pain should be considered to have testicular torsion until proven otherwise.[3] About 20% of boys presenting with an acute scrotum actually have Testicular Torsion.[4] The most common signs and symptoms include red, swollen scrotum and acutely painful testicle, often in the absence of trauma. Nausea and vomiting are common.[5]

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It is difficult, however, to differentiate testicular torsion from torsion of the appendix testis and epididymitis/orchitis based on historical features alone. The boys with testicular torsion did, however, seek medical attention earlier.[6] More recently, Doppler ultrasonography (DUS) has become an imaging modality for the examination of the acute scrotum with the purpose of detecting ischaemia, thus reducing the need for explorative surgery.[7]

US findings include an enlarged heterogeneous testis, ipsilateral hydrocele, skin thickening, and no color Doppler flow signal in the testis or spermatic cord.[8] Doppler ultrasonography for the diagnosis of testicular torsion has 94% sensitivity, 96% specificity.[9]

However, on review of literature it becomes evident that there are shortcomings in considering Doppler as Gold Standard, and stating that testicular torsion is a clinical diagnosis requiring consideration of many variables, not only color Doppler.[10]

Rationale of the study is to evaluate the diagnostic accuracy of Doppler USG as the noninvasive technique to detect testicular torsion and avoid undue surgical exploration. DUS is cost & time effective and non-invasive technique. If DUS will yield high diagnostic accuracy for testicular torsion, then in future we will use DUS as primary diagnostic tool to screen patients with scrotal pain. It will help to excessive surgeries and reduce burden of surgeons and hospital

METHODOLOGY

This Cross-sectional study performed in Department of Radiology, Nishtar Hospital, Multan from 25th October 2016 to 25th March 2017. After taking permission from ethical committee of hospital, 111 male patients fulfill selection criteria were enrolled in the study from emergency department of NHM. Written informed consent was taken from the each patient was taken. Demographic profile (name, age, address) will also obtained from each patient. Doppler ultrasonography was carried out in all the patients by a single radiologist under supervision of my supervisor by using TOSHIBA Just Vision USG machine equipped with curvilinear probe and Doppler USG facilities and the findings was recorded. Then patients were sent for surgery and intraoperative findings were noted. All surgeries were done by a single surgical team. All this information was recorded on proforma (attached).Statistical analysis was performed by entering all the data in SPSS version 18. The qualitative data like Doppler USG findings, severity of pain (mild, moderate, severe) for testicular torsion was presented as frequency distribution. Quantitative data in the study like age was presented as means and standard deviations. 2×2 table was generated to calculate sensitivity, specificity, positive predictive values, negative predictive values and diagnostic of CDUS taking surgery as a gold standard. Effect modifiers like age and duration of pain was controlled by stratifications. Chi-Square test was applied to see significance of these effect modifiers, at p-value ≤ 0.05.

RESULTS

In this study the mean age of patients was 29 ± 6.52 years with minimum and maximum ages 15 and 45 years (age range = 30 years) respectively. Table-1There were 56 (50.45%) patients who were 15-29 years of age and 55(49.5%) were 30-45 years of age. The mean duration of scrotal pain was 18.12 ±5.03 hours with minimum and maximum duration of pain 12 – 24 hours. There were 61 (54.95%) patients who presented with 12-17 hours of their pain and rest of 50 (45.05%) presented with 18-24 hours. According to visual analog scale (VAS) scrotal pain was also measured, the average scrotal pain was 7.17 ± 1.50. The minimum and maximum scrotal pain was 5 and 10 on VAS respectively. Forty - three (38.7%) patients had moderate pain and 68(61.3%) presented with severe pain. On Doppler ultra Sonography testicular swelling was seen in 106(95.5%) patients, decreased Echogenicity was not fond in any patient while decreased blooded follow was observed in 100 (90.1%) of the patients. Testicular torsion was found positive in 102 (91.9%) patients on Doppler ultra-

sonography. Table-2 Testicular torsion was found positive in 103 (92.8%) patients on their surgical findings. Table-3 Moreover there were 101 (91%) patients who were diagnosed positive on both Doppler ultrasonography and on surgical findings, 1(0.9%) patient was diagnosed positive on Doppler ultra sonography but was negative on surgical findings, 2(1.8%) patients were diagnosed positive on surgical findings and were negative on Doppler ultra sonography. Lastly there were 9(6.3%) cases that were diagnosed negative on both Doppler ultra sonography and surgical findings. The sensitivity and specificity of Doppler ultrasonography was 98.06% and 87.5% respectively taking surgical findings as gold standard. Positive and negative predictive value of Doppler Ultrasonography were 99.02% and 77.78% respectively while overall diagnostic accuracy of Doppler ultrasonography was 97.3% taking surgical findings as gold standard. Table- 4 We stratified our data over age groups (15-29 and 30-45) and duration of pain (12-17 hours and 18-24 hours). Applying chi-square we found significant association between diagnosis of Testicular torsion on surgical and Doppler ultra sonography with respect to age groups and duration of pain (p-value < 0.05).

Table 1: *Descriptive Statistics of Age (Years)*

	Age (years)
Mean	29.00
Std. Deviation	6.52
Range	30.00
Minimum	15.00
Maximum	45.00

Table 2: *Findings of testicular torsion on Doppler Ultrasound*

	Frequency	Percent	Cumulative Percent
Positive	102	91.9	91.9
Negative	9	8.1	100
Total	111	100.0	

Table 3: *Surgical Findings of Testicular Torsion*

	Frequency	Percent	Cumulative Percent
Positive	103	92.8	92.8
Negative	8	7.2	100
Total	111	100.0	

Table 4:

Sensitivity	98.06%
Specificity	87.5%
Positive Predictive Value	99.02%
Negative Predictive Value	77.78%
Diagnostic Accuracy	97.3%

DISCUSSION

The acute scrotum remains to be most challenging diagnostic confusion for radiologists due to absence of any single or combined examination, or test that could provide definitive results with 100% accuracy. Because of this surgical exploration is considered the only better option.[13] This need further necessitates due to lack of latest and accurate diagnostic materials and therapies. However sometimes surgical exploration may not be required and results in delay or misleading diagnosis issues.[14] The implications of a missed diagnosis have emphasized the need for a non-invasive test for confirming testicular ischaemia which has long been highlighted for facing difficulties in establishing the diagnosis clinically.[15]

Most urologists would immediately suggest that if the clinical history and examination are highly suspicious for torsion, immediate surgical exploration is indicated, without radiologic evaluation. However, up to 70% of cases with an acute scrotum have pathology that does not require surgery.[16] For that reason, there exists a great need for rapid, accurate, noninvasive, widely available radiologic test for testicular torsion that could provide faster and accurate utility for this purpose. One such modality which meets many of these criteria is color Doppler ultrasound (US). Understandably, the advent of colour Doppler ultrasound (CDUS) (and subsequently 'power' Doppler and microbubble ultrasound contrast), has been greeted with enthusiasm. However, as in other fields of medicine, a policy placing sole reliance on a single technique is likely to be flawed.[12,15]

A number of studies have established through

their researches that High-frequency real-time sonography has enhanced accuracy in the diagnosis of scrotal abnormalities.[17] One study stated that color Doppler imaging (CDI) has become the study of choice in evaluation of the scrotum due to technological advances resulting in superior resolution and sensitive Doppler systems. CDI has become particularly helpful in evaluating the scrotum in the setting of acute disorders, such as torsion of the spermatic cord, epididymal and testicular inflammation, and scrotal trauma[18] and should conveniently be opted for such investigations.[19] Most reports concerning color Doppler US in the acute scrotum incorporated patients whose history, physical examination, and laboratory evaluation warranted direct surgical exploration for torsion without radiologic investigation. However, the urologic literature has multiple isolated case reports demonstrating instances of missed testicular torsion by color Doppler US imaging (US) raising justified concerns over its use. Despite these isolated cases, color Doppler US is commonly used during the evaluation of the acute scrotum and is considered a safe and preferable approach.[20]

The greater support of data to prove high sensitivity, specificity, and accuracy of Ultrasonography is important to limit the patient population with equivocal or low probability for testicular torsion.[(21)]

Therefore, the aim of our investigation was to find out the diagnostic accuracy Doppler ultrasound in diagnosis of testicular torsion in patients presenting with scrotal pain taking surgical findings as Gold Standard.

Testicular torsion has a bimodal distribution, with extravaginal torsion affecting neonates in the perinatal period, and intravaginal torsion affecting males of any age but most commonly adolescent boys.[2] In males <25 years of age, the annual incidence of torsion in the US is 1 in 4000.[22] Torsion can be seen at any age but it is not generally a disease affecting the elderly.[23]

In our study the mean age of patients was 29 ± 6.52 years with minimum and maximum ages 15 and 45 years (age range = 30 years) respectively. One study included 670 patients with torsion of the spermatic cord presenting in Bristol between 1960 and 1984 to see the incidence and other factors of testicular torsion over the period of 25 years. They concluded that the annual incidence of torsion had increased fourfold from 11.2 cases between 1960 and 1964 to 42.8 cases between 1980 and 1984. Throughout this period > 90 per cent of patients were managed by general surgeons. Patients aged between 12-18 years comprised 62 per cent but 20 per cent were 21 years or older. The age ranges of our study resemble this review to great extent.[24]

According to visual analog scale (VAS) scrotal pain was also measured, the average scrotal pain was 7.17 ± 1.50. The minimum and maximum scrotal pain was 5 and 10 on VAS respectively. Forty-three (38.7%) patients had moderate pain and 68 (61.3%) presented with severe pain. Scrotal pain is the first indication for possibility of testicular torsion. One 2-year retrospective review of 238 cases of acute scrotal pain showed that the incidences of testicular torsion, torsion of a testicular appendage, and epididymitis were 16%, 46%, and 35%, respectively. They concluded that the testicular disease was dependent on duration from onset of pain till surgical exploration.[11] Hence role of pain and its intensity cannot be overlooked at all.

In our study, on Doppler ultra sonography testicular swelling was seen in 106(95.5%) patients, decreased Echogenicity was not fond in any patient while decreased blooded follow was observed in 100 (90.1%) of the patients. Testicular torsion was found positive in 102 (91.9%) patients on Doppler ultrasonography. Testicular torsion was found positive in 103 (92.8%) patients on their surgical findings.

Moreover there were 101 (91%) patients who were diagnosed positive on both Doppler ultrasonography and on surgical findings, 1(0.9%) patient was diagnosed positive on Doppler ultra sonography but was negative on surgical findings, 2(1.8%) patients were diagnosed positive on surgical findings and were negative on Doppler ultra sonography. Lastly

there were 9(6.3%) cases that were diagnosed negative on both Doppler ultra sonography and surgical findings. The sensitivity and specificity of Doppler ultrasonography was 98.06% and 87.5% respectively taking surgical findings as gold standard. Positive and negative predictive value of Doppler Ultrasonography were 99.02% and 77.78% respectively while overall diagnostic accuracy of Doppler ultrasonography was 97.3% taking surgical findings as gold standard.

Another study compared the clinical accuracy of ultrasound with that of surgical exploration. There results showed that in 3 patients, intermittent testicular torsion was diagnosed and in 17 patients, emergent exploration was performed for US diagnosis of testicular torsion. Twenty-five patients (22.7%) were subsequently lost to follow-up. Follow-up of 85 patients with US negative for torsion (mean length of follow-up = 466.9 days) revealed no testicular atrophy in 83. Two patients underwent delayed orchiectomy/contralateral orchiopexy for missed testicular torsion. Consequently, in their study color Doppler US for the equivocal acute scrotum yielded a 1% false-positive rate, sensitivity of 88.9%, and specificity of 98.8%.[25]

Another study compared the diagnostic accuracy of Color Doppler Sonography (CDS) and Ultrasound with surgical exploration. They found that out of 150 patients to be examined Standard US was pathological in 95 patients (63.3%); CDS was pathologic in 70 patients and in 42 of them suggested a testicular torsion. In the pre-operative assessment of scrotal trauma, the Ultrasound showed a sensitivity and specificity of 100% and 90%, respectively and the sensitivity and specificity of physical exam and CDS were 100% versus 95.7% and 86.5% versus 85.3%, respectively. They concluded that color Doppler analysis did not supply with additional elements compared to ultrasound for planning a surgical exploration.[26]Moreover US findings include an enlarged heterogeneous testis, ipsilateral hydrocele, skin thickening, and no color Doppler flow signal in the testis or spermatic cord.[8] Doppler ultrasonography for the diagnosis of testicular torsion has 94% sensitivity, 96% specificity.[9]

All the above cited studies are compatible with our results and support that inclusion of Doppler ultrasound should be appreciated for its advantages like speed, accuracy, non-invasive nature and safety. Further studies are recommended to explore all diagnostic options in depth and generate evidence for usage of ultrasound for possibility of testicular torsions after acute scrotal pain.

CONCLUSION

According to this study, Doppler ultrasonography can be used to detect testicular torsion in patients presenting with acute scrotal pain with reliable sensitivity (98.06%), specificity (87.5%) and good diagnostic accuracy (97.3%). DUS is cost & time effective and non-invasive technique so in future we can use DUS as primary diagnostic tool to screen patients with scrotal pain that will help to get rid of excessive surgeries and reduce burden of surgeons and hospital.

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RHESUS NEGATIVE FACTOR DURING PREGNANCY AND PREGNANCY OUTCOME

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Abstract

Background: Aside from its physiological role recent studies show association between Rh –ve factor and various pathological events in pregnancy. The possible mechanisms for the association are the influences of some Genetic Variants at Rh factor locus on the aberrations of some biological substances such as proinflammatorycytokines, adhesion molecules and chromogenic factors. Additional information is needed due to limited data from few studies with inconsistent results.

Objectives: To determine the frequency of maternal Rh –ve factor among pregnant females and to determine the adverse maternal outcomes in females with Rh –ve factor

Methods: This Cross sectional study was conducted at Department Of Obstetrics and Gynecology, Lahore General Hospital, Lahore for 6 months i.e. from 1st August 2017 to 31st January 2018. Total 2416 pregnant females admitted during this period, among them patients with Rh negative factor were 68 (2.8%). Females with Singleton pregnancy with Rh negative factor were included. The data was analyzed in SPSS version 20.

Results: Patients with Rh negative factor were 68 (2.8%). Among them, 39 females had eventful pregnanti.e. 16 (24%) females had complaint of preterm labour,10 (15%)patients with pre-eclampsia, 3 (4%) patients with Eclampsia, 4 (6%) patients with placental abruption,6 (9%) patients with Postpartum Hemorrhage and 29 (43%) patients pregnancy was uneventful.

Conclusion: Although the frequency of Rh –ve factor is low among pregnant females in our sample, but the adverse pregnancy outcome among females with Rh Negative factor is high.

Key Words: maternal Rh –ve factor, adverse maternal outcomes, preeclampsia, placental abruption, postpartum hemorrhage

Red blood cells (RBCs) or erythrocytes are differentiated from each other on the basis of their surface antigen structures.[1] It was Karl Landsteiner who first discovered the ABO blood group (BG) system in 1900 and rhesus (Rh) BG later.[2] Today, safe blood transfusion is greatly attributed to the pioneering efforts of Karl Landsteiner on human BGs. In general, more than three hundred genetically-different BGs[3] have been determined; however, the ABO and Rh BG system has fundamental importance in transfusions. In clinical laboratories, it is standard procedure to test for BGs A (containing only A antigens), B (containing only B antigens), AB (having both A- and B antigens), O (neither A nor B antigens) and Rh (giving information about the presence or absence of Rh antigens). However, unexpected antigens could be present in some individuals that may not have particular RBC antigens. Nonetheless, certain antibodies are expected to be present in the blood serum of these individuals.[4]

The genes of these blood group systems are autosomal, except XG and XK which are X-borne, and MIC2 which is present on both X and Y chromosomes. The antigens can be integral proteins where polymorphisms lie in the variation of amino acid sequence (e.g., rhesus [Rh], Kill), glycoproteins or

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glycolipids (e.g., ABO). Some of the important groups are mentioned here.[5,6]

The epitopes of ABO antigens are determined by carbohydrates (sugars), which are linked either to polypeptides (forming glycoproteins) or to lipids (glycolipids). Antigenic differences between different species were recognized before differences within a species.[7]

After the discovery of the ABO Blood group system no new blood group systems were found for 25 years. Landsteiner and Witt examined human sera for antibodies other than anti-A and anti-B but could find only weak agglutinins active at low temperatures.[8]

Despite the introduction of Rhesus (Rh) immunoglobulin in 1968, hemolytic disease of newborn remains a serious concern.[9] It was reported that immunoglobulin prophylaxis does not eradicate hemolytic disease of the fetus in the newborn and it is estimated that there is an incidence of 10.6 cases per 10,000 deliveries of hemolytic disease of newborn worldwide with geographic variations.[9] When an RhD negative mother is exposed to the RhD positive red cells (usually as transplacentallyhemorrhage), she develops allo-anti-D which cross the placenta and results in the destruction of fetal red cells. Clinical manifestations of RhD hemolytic disease range from asymptomatic mild anemia to hydropsfetal is or stillbirth associated with severe anemia and jaundice.

OBJECTIVES

To determine the frequency of maternal Rh –ve factor among pregnant females and to determine the adverse maternal outcomes in females with Rh –ve factor.

METHODOLOGY

Study Design: Cross sectional study

Settings: Department Of Obstetrics and Gynecology Lahore General Hospital.

Duration of Study: Six months from 1st August 2017 to 31st January 2018.

Method: Total patients admitted during this period were 2416, among them patients with Rh negative factor were 68.

Inclusion Criteria was Singleton pregnancy with Rh negative factor

Exclusion Criteria was patients who had known underlying disease that could affect the pregnancy outcome like Chronic Hypertension, Vascular diseases etc.

The data was entered and analyzed in SPSS version 20.

RESULTS

Patients with Rh negative factor were 68 (2.8%). Fig 1

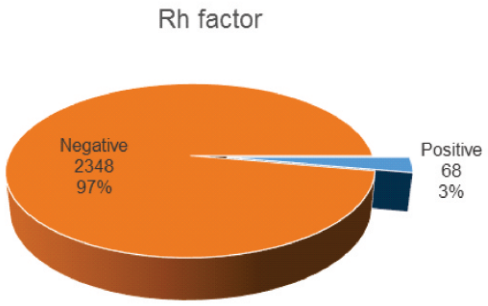

Fig 1: *Distribution of Rh Factor Among Pregnant Females*

Among them, 39 females had eventful pregnant i.e. 16 (41%) females had complaint of preterm labour, 10 (25.6%) patients with pre-eclampsia, 3 (7.7%) patients with Eclampsia, 4 (10.3%) patients with placental abruption, 6 (15.4%) patients with Postpartum Hemorrhage and 29 (43%) patients pregnancy was uneventful. Table 1

Table 1: *Distribution of Events Occurred in Females with Rh- Factor*

n	68
No complication	29 (42.6%)
Complications	39 (57.4%)
Preterm labor	16 (41%)
Preeclampsia	10 (25.6%)
Eclampsia	3 (7.7%)
Placental abruption	4 (10.3%)
Postpartum hemorrhage	6 (15.4%)

DISCUSSION

Hemolytic disease of newborn was a significant cause of fetal mortality and morbidity until the introduction of amniocentesis, intrauterine transfusion, and exchange transfusion in the management of severely all immunized women and their fetuses.[10]

Rhesus-system is the second most important blood group system after ABO.[11] Currently, the Rh-system consists of 50 defined blood group antigens out of which only five are important. RBC surface of an individual may or may not have a Rh factor or immunogenic D-antigen. Accordingly, the status is indicated as either Rh-positive (D-antigen present) or Rh-negative (D-antigen absent). In contrast to the ABO system, anti-Rh antibodies are, normally, not present in the blood of individuals with D-negative RBCs, unless the circulatory system of these individuals has been exposed to D-positive RBCs. These immune antibodies are immunoglobulin G (IgG) in nature and hence, can cross the placenta. Prophylaxis is given against Rh immunization using anti-D Ig for pregnant Rh-negative mothers who have given birth to Rh-positive child.

In our study, Patients with Rh negative factor were 68 (2.8%). Among them, 39 females had eventful pregnant i.e. 16 (41%) females had complaint of preterm labour, 10 (25.6%) patients with pre-eclampsia, 3 (7.7%) patients with Eclampsia, 4 (10.3%) patients with placental abruption, 6 (15.4%) patients with Postpartum Hemorrhage and 29 (43%) patients pregnancy was uneventful.

According to Aljuhaysh et al., 23% pregnant females were Rh negative. Considering pregnancy outcome; 55% of the delivered babies needed incubation after delivery, 23.3% of those babies were born to Rh negative mothers. However, 6.7% of the incubated children died after incubation (47.8% of them belong to Rh negative mothers).[12]

In Izetbegovic S. et al study, only 14% of the studied mothers were Rh negative (42% blood group A, 33% blood group O, 17% blood group B and 8% AB blood group).[13] Another study found that; the highest prevalence blood group was group A (30.1%), followed by O (29.6%) then B (27.2%) and finally came AB (13.1%) and the prevalence of Rh-negative among the study group was (4.2%) (3.6% among females and 4.75 among males).[14] A study in southwestern Nigeria reported that Rh positive women were 563 (94.5%), and Rh-negative women constituted (5.5%). Of the Rh negative women, (45.5%) were of blood group O, while (27.3%), (18.2%), (9.1%) were of blood group A, B, and AB, respectively.[15]

While the mother's and fetus's blood systems are separate, there are times when the blood from the fetus can enter into the mother's bloodstream. If this happens, the mother's immune system identifies the Rh-positive blood as an intruder and responds by making antibodies to destroy it. This response is called Rh sensitization.[16] Sensitization can occur during a blood transfusion, miscarriage, abortion, ectopic pregnancy, and certain procedures like amniocentesis.[17]

The antibodies rarely cause a problem in first pregnancies, but they do not disappear, and it is very important to be screened and give an accurate medical history to your doctor or midwife. The antibodies in an Rh-sensitized mother can cross the placenta and attack the fetus's Rh-positive blood. These antibodies can break down and destroy the fetus's red blood cells (hemolysis), leading to anemia. This condition is called hemolytic disease or hemolytic anemia.

Hemolytic disease can be prevented in women who are not already sensitized. Rh immunoglobulin (Rho GAM) is a prescription medicine given by intramuscular injection that stops an Rh-negative mother from making antibodies that attack Rh-positive red cells.[18] Reactions to this medication are generally minor, including soreness at the injection site and sometimes a slight fever. The Rh factor is a protein that can be found on the surface of red blood cells. If blood cells have this protein, then Rh factor would be positive. If blood cells do not have this protein, Rh factor would be negative.[19]

Most of the discussion of the antibodies invol-

ved have been non-specific thus far; however, it is important to make some distinction between the different types of antibodies. If a Rh-negative mother is antibody positive for IgG, this is of clinical concern because IgG antibodies can cross the placenta and cause HDN. However, it is possible that an antibody screen can be positive for IgM antibodies (i.e., Lewis antibodies); however, these are not of clinical consequence since they do not cross the placenta.[20]

CONCLUSION

Although the frequency of Rh –ve factor is low among pregnant females in our sample, but the adverse pregnancy outcome among females with Rh Negative factor is high. So prenatal and postnatal care among pregnant females having Rh negative factor is more important and requires more care than females with Rh positive factors and especially if fetal blood group is Rh positive.

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DIAGNOSTIC ACCURACY OF DIFFUSION-WEIGHTED MRI IN DIFFERENTIATING BENIGN AND MALIGNANT CENTRAL CERVICAL LYMPH NODES IN METASTATIC THYROID CELL CARCINOMA

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Abstract

Objective: To determine diagnostic accuracy of diffusion-weighted MRI in differentiating benign and malignant central cervical lymph nodes in metastatic thyroid cell carcinoma taking histopathology as gold standard.

Methods: A total of 149 study cases were taken in this cross-sectional study. This study was conducted at department of Radiology, Nishtar Hospital, Multan and total duration was six months after the approval of synopsis from from 25-09-2016 to 25-03-2017. Diffusion Weighted Imaging was performed in every patient using 1.5 Tesla magnetic resonance imaging system. Diffusion weighted imaging findings was confirmed by histopathology report (taking as gold standard). Collected data was analyzed through computer software SPSS 16.0.

Results: Of these 149 study cases, 59 (39.6%) were male patients while 90 (60.4%) were female patients. Mean age of our study cases was 50.55 ± 8.48 years. Of these 149 study cases, 97 (65.1%) belonged to rural areas and most of the patients i.e. 98 (65.8%) were having poor socioeconomic status. Mean size of the lymph node was 1.45 ± 0.38 centimeters and 96 (64.4%) had size more than 1 centimeter. MRI revealed 71 (47.7%) benign and 78 (52.3%) malignant while histopathology revealed 84 (56.4%) benign and 65 (43.6%) malignant lymph nodes. Sensitivity of the MRI was 87.69 % while specificity was 75 % in our study.

Conclusion: Our study results indicated that diffusion weighted magnetic resonance imaging (MRI) is reliable, effective and safe in the differentiation of benign and malignant central cervical lymph nodes in metastatic thyroid cell carcinoma with high sensitivity and specificity and hence can be employed to differentiate benign and malignant lymph nodes to get acceptable results.

Keywords: Histopathology, Thyroid cell carcinoma, MRI

Lymphadenopathy is defined as an abnormality in size and/or consistency of lymph nodes at a particular location in the body. The altered size, consistency and number of those lymph nodes vary according to the underlying disease. Lymphadenopathy is taken as an important sign in diagnosing and planning the management of the disorder. The notable causes for Lymphadenopathy are Infections, Autoimmune disorders and Malignancies.

Head and Neck tumor are almost always accompanied with Cervical Lymphadenopathy. The spectrum of differentiation of cervical lymph nodes play an important role in staging the disease into benign and malignant counterparts and prognosis of those tumors.

Different radiological techniques have been in use to access the differentiation of Lymph nodes. These techniques have their own pros and cons. Conventional radiological imaging take into account the morphological features of the lymph nodes such as maximum short axial diameter, loss of hilum, necrosis, heterogeneous enhancement and peri-nodal infiltration. For instance, Ultrasonography, Computed Tomography and Magnetic Resonance Imaging do not have the capacity to be able to do this differentiation. Moreover, metabolic imaging including ingle proton emission Computed Tomography and Positron Emission Tomography, despite being

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able to differentiate, are limited by their low spatial resolution and unwanted physiological uptake of Fluorodeoxyglucose by normal biological tissues. These techniques are also expensive and less accessible. More invasive procedures like Fine Needle Aspiration Cytology are hindered by operator's acumen and false negative outcomes.

Diffusion Weighted Imaging is a non-invasive Magnetic Resonance Imaging variant which is mostly used in Neuroradiology. It has shown some promise in tissue characterization by technique of exploiting random motion of water molecules and protons in target tissues. Keep in mind that every biological tissue has its own definite diffusion capacity and this precise feature helps in specific tissue characterization and differentiation. In normal body tissues, water molecules can diffuse into confined Intracellular and Extracellular spaces. In hyper cellular tissues such as malignant tumors, water molecules and their protons are limited in their movement and hence got restricted diffusion capacity. Thus the tumor shows low apparent diffusion coefficient values and high signals on Diffusion Weighted Imaging. On contrary, inflammatory tissues having low cellularity compared to high water content have no restrictions on diffusion capacity. That's why they have high diffusion coefficient value but low signals on imaging. As per studies done on Malignant Thyroid tumors, Literature shows that 76.42% tumors manifest with metastasis in central cervical lymph nodes while Diffusion Weighted Imaging shows 75% sensitivity and 90.91% specificity. It is therefore foresighted that Diffusion Weighted Imaging can be a major tool in providing information about tissue biology, physiology and differentiation. Keeping the fact in check that any tissue's apparent diffusion coefficient has a relationship with its cellularity, this imaging can differentiate between benign to malignant and non-invasive to invasive tumors. It is documented that Malignant lymph nodes have slightly lower diffusion coefficients with mean value of 0.85±0.19*103 while benign lymph nodes have mean value of 1.2±0.24*103 mm^2/s.

The intent of this study is to layout the diagnostic accuracy of Diffusion Weighted Magnetic Resonance Imaging in Central cervicallymph nodes differentiation into benign and malignant counterparts. The results can be used in determination of pre-operative nodes status in a patient having malignant tumors and planning their intraoperative fate and post-operative prognosis.

METHODOLOGY

This Cross-sectional study performed in department of Radiology, Nishtar Hospital, Multan from 25-09-2016 to 25-03-2017.After taking permission from ethical review committee, total number of 149 patients who was admitted in other departments of Nishtar Hospital Multan and was referred by clinician to the radiology department fulfilling the inclusion criteria was selected. After taking informed consent and relevant history, Diffusion Weighted Imaging was performed in every patient using 1.5 Tesla magnetic resonance imaging system. Axial diffusion weighted images of the cervical lymph nodes was obtained with a single shot, spin echo type of echo planar imaging sequence. The sequence was repeated for two values of the motion probing gradients ($0mm^2/s$,$1000\ mm^2/s$).The motion probing gradients was placed on the three directions with the same strength. To increase the signal to noise ratio, the sequence was repeated four times for each imaging (number of excitations = 4). The section thickness was 5 mm. Diffusion weighted imaging was performed with a matrix of 128 × 128, field of view of 24 cm^2, and an intersection gap of 1 mm. Diffusion weighted imaging findings was confirmed by histopathology report (taking as gold standard). This all data was recorded on a specially designed performa which contains two parts. Part 1st includes the patient's biodata while part 2nd contains the study variables (Annexure-I).Collected data was analyzed through computer software SPSS 16.0. Mean and standard deviation was calculated for quantitative variables i.e. age, size of lymph node and apparent diffusion coefficient values. Frequency

and percentage was calculated for qualitative variables i.e. gender, type of malignancy and cervical lymph nodes (benign / malignant).2×2 contingency table was used to calculate the sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of Diffusion Weighted Magnetic Resonance Imaging in differentiating benign and malignant central cervical lymph nodes taking histopathology as gold standard. Effect modifiers like age, gender and size of lymph node was controlled through stratifications and diagnostic accuracy, positive predictive value, negative predictive value, sensitivity and specificity were calculated. p-value ≤0.05 was considered as significant.

RESULTS

Our study comprised of a total of 149 study cases who met inclusion criteria of our study. Of these 149 study cases, 59 (39.6%) were male patients while 90 (60.4%) were female patients. Mean age of our study cases was 50.55 ± 8.48 years (with minimum age of our patients was 33 years while maximum age was 60 years). Mean age of the male patients was 56.34 ± 3.33 years while that of female patients was noted to be 46.76 ± 8.70 years (p = 0.000). Our study results have indicated that majority of our patients i.e. 122 (81.9%) were aged more than 40 years. Of these 149 study cases, 97 (65.1%) belonged to rural areas and most of the patients i.e. 98 (65.8%) were having poor socioeconomic status. Mean size of the lymph node was 1.45 ± 0.38 centimeters and 96 (64.4%) had size more than 1 centimeter. MRI revealed 71 (47.7%) benign and 78 (52.3%) malignant while histopathology revealed 84 (56.4%) benign and 65 (43.6%) malignant lymph nodes. Sensitivity of the MRI was 87.69 % while specificity was 75 % in our study with diagnostic accuracy of 80.53%. (Table No. 1-- 4). Stratification was done to calculate sensitivity, specificity, diagnostic accuracy, positive predictive value and negative predictive value with regards to gender, age and size of the lymph nodes showing significance with regard to female ,age and size of lymph node more than 1cm.

DISCUSSION

Results obtained from Fine Needle Aspiration Cytology categorizes Thyroid cancers into 4 sub-

Table 1: *Distribution of Thyroid Cancer Among Study Cases by MRI.(n = 149)*

MRI	No. of patients	Percentage
Benign	71	47.7
Malignant	78	52.3
Total	**149**	**100**

Table 2: *Distribution of Thyroid Cancer Among Study Cases by Histopathology. (n = 149)*

Histopathology	No. of patients	Percentage
Benign	84	56.4
Malignant	65	43.6
Total	**149**	**100**

Table 3: *Cross – Tabulation of Thyroid Carcinoma on MRI with Regards to Histopathology. (n = 149)*

MRI	Histopathology		P – value
	Benign (n=84)	Malignant (n= 65)	
Benign (n= 71)	63 (TN)	08 (FN)	**0.000**
Malignant (n= 78)	21 (FP)	57 (TP)	
Total	**149**		

TP=True positive, FP=False positive, FN=False negative
TN=True negative

Table 4: *Diagnostic Accuracy of MRI using Histopathology as Gold Standard.(n=149)*

Sensitivity

$$\frac{\text{True Positive}}{\text{True Positive + False Negative}} \times 100$$

$$\frac{57}{57 + 8} \times 100 = 87.69\ \%$$

Sensitivity:

$$\frac{\text{True Negative}}{\text{True Negative + False Positive}} \times 100$$

$$\frac{63}{63 + 21} \times 100 = 75\ \%$$

Diagnostic Accuracy

$$\frac{\text{True Positive + True Negative}}{\text{True Positive + True Negative + False Positive + False Negative}} \times 100$$

$$\frac{57 + 63}{57 + 63 + 21 + 08} \times 100 = 80.53\ \%$$

PPV = $\frac{\text{True Positive} \times 100}{\text{True Positive + False Positive}} = 73.07\ \%$

NPV = $\frac{\text{True Negative} \times 100}{\text{False Negative+ True Negative}} = 88.73\ \%$

types. Papillary thyroid carcinoma is the most commonly found thyroid carcinoma which comprises about 70-80% of the total cases. Despite being so common, it is considered as least aggressive variant for its sluggish rate of growth and slowest metastasis to distant tissues. Multifocal follicular and papillary elements make up the whole of the tumor bulk. 14% of all thyroid tumors are Follicular thyroid cancers. This carcinoma has strong association with Iodine deficiency. It spreads more aggressively than its papillary counterpart. Its one variant commonly found is Hurthle Cell Carcinoma. Non-thyroid cells found in thyroid gland may also manifest with rapidly growing tumor. Medullary Carcinoma is one such type comprising about 3% of the total number of thyroid cancer cases. These cells produce Calcitonin which is taken as useful tumor marker. Moreover this malignancy has association with the Multiple Endocrine Syndrome Type-2 (MEN-2) Syndrome. Anaplastic carcinoma of the thyroid cancers is the most dangerous type of the thyroid cancers for its rapid growth and metastasis to distant tissues and surrounding cervical lymph nodes. It takes almost 2% of the total cases while rest of the thyroid tumors are mostly lymphomas.

Histologically, Thyroid cancers are differentiated into two divisions. 1) Well-Differentiated including Papillary and Follicular variants 2) Less-Differentiated including Medullary and Anaplastic variants. Any thyroid cancer should be investigated pre-operatively for staging and grading as it can guide us in our treatment and management. Among differentiated carcinoma, around 50% cases manifest with ipsilateral and contralateral lymph nodes involvement. That's why neck ultrasound is generally indicated in patients planned for total thyroidectomy to look for involvement of contralateral lobe and cervical lymph nodes. But neck ultrasounds are only able to identify only 50% of the actual number of affected lymph nodes. Fine Needle Aspiration Cytology is used to confirm metastasis in abnormal lymph nodes. Moreover, thyroglobulin measurement is also noted in needle's washout. The obtained results are used in staging of the cancer. Tumor size, Number of involved lymph nodes and presence of metastasis (TNM) is used by American Joint Commission on Cancer (AJCC) for staging of cancer.

Our study comprised of a total of 149 study cases who fell under inclusion criteria of our study. Out of these 149 studied cases, 59 (39.6%) were male and 90 (60.4%) were female . A study directed by Shah et al[22] also testified female gender predominance with male to female ratio was 1:2.6 which is in accordance with our study outcomes. Another study conducted by Zuberi et al[23] also described female gender preponderance with male to female ratio was 1:2.2 which is comparable to that of our study results. Zaman et al[24] also reported male to female ratio to be 1:3 which is in agreement with our study results. Qureshi et al[26] from Oman has also reported 82 % female gender predominance which is in accordance with our study results.

Our study group had mean age of 50.55 ± 8.48 years (with least age of our patients was 33 years while extreme age was 60 years). Male patients had mean age of 56.34 ± 3.33 years while female patients had 46.76 ± 8.70 years (p = 0.000). The study results have indicated that most of our patients i.e. 122 (81.9 %) were aged more than 40 years. A study conducted by Shah et al 22reported 36.8 years mean age which is slightly lower than that being reported in our study. Zuberi et al[23] also stated similar results. Zaman et al 24 also reported 48.6 years of mean age which is identical to that of our study outcomes. A study conducted by Marjani et al[25] from Iran has also reported similar results. Qureshi et al[26] from Oman has also documented similar age range which is in accordance with our study outcomes.

Of these 149 study cases, 97 (65.1%) belonged to rural areas and most of the patients i.e. 98 (65.8%) were having poor socioeconomic status. Mean size of the lymph node was 1.45 ± 0.38 centimeters and 96 (64.4%) had size more than 1 centimeter.

MRI revealed 71 (47.7%) benign and 78 (52.3%) malignant while histopathology revealed 84 (56.4%) benign and 65 (43.6%) malignant lymph nodes. Sensitivity of the MRI was 87.69 % while specificity was 75 % in this study. A study conducted by Liu et al[16] has documented that diffusion Weighted Magnetic Resonance Imaging with sensitivity of 75% and specificity of 90.91% which is close to our study results.

CONCLUSION

Our study results indicated that diffusion weighted magnetic resonance imaging (MRI) is reliable, effective and safe in the differentiation of benign and malignant central cervical lymph nodes in metastatic thyroid cell carcinoma with high sensitivity and specificity and hence can be employed to differentiate benign and malignant lymph nodes to get acceptable results.

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DIAGNOSTIC ACCURACY OF MAGNETIC RESONANCE SPECTROSCOPY (MRS) AND DIFFUSION WEIGHTED IMAGING (DWI) IN DIAGNOSING PROSTATE CANCER, TAKING HISTOPATHOLOGY AS GOLD STANDARD

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Abstract

Objectives: To identify the diagnostic accuracy of 2 MRI sequences i.e, (MRS and DW1) in diagnosing prostate cancer keeping histopathology as gold standard

Study Design: Descriptive, cross-sectional.

Settings: Department of Radiology, Nishtar Hospital, Multan.

Methods: 104 patients between the age group of 50 to 80 years having clinical suspicion of prostate carcinoma were included in the study and patients with previously diagnosed prostate cancer, prostate infections and those having contraindications to MRS were excluded from the study. MRS and DW1 were performed on all patients and then findings were compared with histopathology.

Results: Mean age was 67.98 ± 7.90 years. Mean S/PSA levels were 35.86 ± 13.63 ng/ml. In DWI & MRS positive patients, True Positive were 65 and 03 were False Positive. Among 36, DWI & MRS negative patients, 05 were False Negative whereas 31 were True Negative (k=0.769). Overall sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of DWI & MRS in diagnosing prostate cancer was 92.86%, 91.18%, 95.59%, 86.11% and 92.31% respectively.

Conclusion: This study concluded that combined magnetic resonance spectroscopy (MRS) and diffusion weighted imaging (DWI) is the non-invasive modality of choice with high diagnostic accuracy in detecting prostate cancer.

Keywords: Prostate cancer, magnetic resonance spectroscopy, diffusion weighted, sensitivity.

Malignant cells spread form the prostate to other areas specifically bones and lymph nodes. At start it may be asymptomatic, later it can cause dysuria, hematuria or bone pain. Predisposing factors for prostate cancers include increasing age, family history and race. Those above 50 constitutes 99% of cases. A first degree relative positive for disease increases the risk to 2 to 3 folds.

Scirra et all described the prevalence as 49% in his study. Different screening tests are used to diagnose the disease early. Commonly used practice is diagnosis based on DRE, serum PSA levels and transrectal ultrasound (TRUS). Imaging modalities aid in staging of prostate cancer before starting treatment differentiating clinically localized disease that can be rendered to local therapy from advanced disease that need multimodal management. USG and MRI are two important imaging modalities for cancer detection. Urologists perform prostate biopsies using USG which can also show a hypoechoic area (tissues reflecting less of the ultrasound waves projected on them). US is not a commonly used modality because of poor tissue resolution.

MRI is an important tool in detection, localization and staging of prostate cancer. MR spectroscopy has advantage over MRI as it tells about metabolic activity in cancer cells. Rise in choline and fall in citrate is seen in cancer cells as compared to normal prostate cells. DW MRI can provide important regarding pathophysiology and tissue architecture based upon the diffusion capacity of water molecules. Studies have shown that (ADV) apparent

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diffusion coefficient values of normal tissues were higher than cancerous peripheral and transitional zone. MRS and DWI both are important in detecting cancercells but their role is different and their combination help in improving detection of cancer. Combined sensitivity and specificity of MRS and DWI in detecting prostate cancer observed by Li et all was 86.6% and 83.6% respectively.

According to our practice noninvasive investigations causing improper management should not be used, so the purpose of this study is to identify the accuracy of MRS and DWI in identifying prostate cancer. This noninvasive screening modality will benefit the general population if it's diagnostic accuracy is high, so helping in early detection of the tumor before it becomes incurable. In this way mortality and morbidity in these patients can be reduced by early management of the disease before it's progression

METHODOLOGY

This descriptive cross sectional study comprising 104 patients was conducted at radiology department of Nishter hospital Multan from ___. DW MRI was performed by using 1.5 Tesla system in every patient after taking proper history and informed consent. DW-MR images were obtained in all patients using 2D breath-hold T2-weighted half-Fourier acquisition single shot turbo spin-echo (HASTE), breath-hold T2-weighted turbo spin-echo (TSE) and dynamic contrast-enhanced 3D gradient-echo sequences. All the sequences were done during a single breath-hold, at b value of 500 mm^2/s and scan time of 3-4 minutes. After this, proton magnetic resonance spectroscopy (1H MRS) was performed

RESULTS

Age range in this study was from 50-80 years with mean age of 67.98 ± 7.90 years. Majority of the patients 56 (53.85%) were between 71 to 80 years of age as shown in Table I. Mean duration of disease was 12.32 ± 6.08 months Table II. Mean S/PSA levels were 35.86 ± 13.63 ng/ml. All the patients were subjected to magnetic resonance spectroscopy (MRS) diffusion weighted imaging of prostate. DWI & MRS supported the diagnosis of prostate cancer in 68 (65.38%) patients. Histopathology findings confirmed prostate cancer in 70 (67.31%) cases. In DWI & MRS positive patients, 65 were True Positive and 03 were False Positive. Among 36, DWI &MRS negative patients, 05 were False Negative whereas 31 were True Negative (k=0.769) as shown in Table III. Overall sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of DWI & MRS in detecting prostate cancer was 92.86%, 91.18%, 95.59%, 86.11% and 92.31% respectively (Figure I).Stratification of diagnostic accuracy with respect to age groups, duration of disease and with respect to serum PSA levels is shown no significance.

Table 1: *Distribution of Patients According to Age.*

Age (in years)	No. of Patients	% age
50-60	12	11.54
61-70	36	34.62
71-80	56	53.85
Total	**104**	**100.0**

Mean ± SD = 67.98 ± 7.90 years

Table 2: *Distribution of Patients According to Duration of Disease.*

Duration of disease (in months)	Total (n=104)	
	No. of patients	%age
≤12 months	69	66.35
>12 months	35	33.65
Mean ± SD	**12.32 ± 6.08 months**	

Table 3: *Findings of DWI & MRS versus Histopathology.*

	Positive result on DWI & MRS	Negative result on DWI & MRS	K-value
Positive on Histopathology	65 **(TP)***	05 **(FN)*****	**0.769**
Negative on Histopathology	03 **(FP)****	31 **(TN)******	

*-TP=True positive
**-FP=False positive
***-FN=False negative
****-TN=True negative

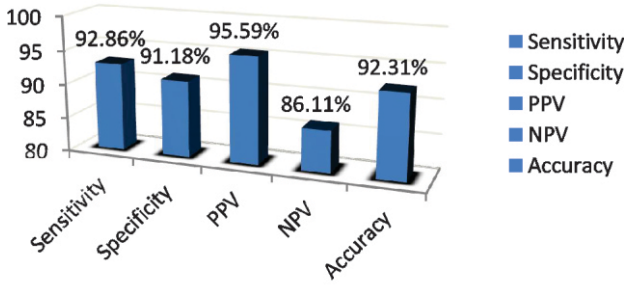

Figure-I: *Diagnostic Accuracy of Magnetic Resonance Spectroscopy and Diffusion Weighted Imaging (DWI) in Diagnosing Prostate Cancer*

DISCUSSION

In the past decades, role of MRI has grown steadily for the diagnosis and management of prostate cancer. It aids functional assessment by DWI and MRS. In DWI normal peripheral zone of prostate appear bright as compared to low intensity focus of cancerous zone. High intensity signals from benign prostatic hypertrophy makes it difficult to detect cancer in central zone. T2W MRI has an accuracy of 67 to 77% in localization of tumor. DW MRI is a noninvasive technique based on measuring movements of water molecules in cells is used as an adjunct to T2WI in detecting prostate cancer. The ADC measured from DWI in prostate cancer showed that the mean ADC for malignant tissues is lower than mean ADC in normal tissues. MRS has an additional benefit to MRI in tumor identification and localization by giving information related to citrate, choline, creatinine within a voxel. This study was conducted to establish the diagnostic accuracy of MRS and DWI in identifying prostate cancer. While histopathology being the gold standard.

Patient with age range of 50 to 80 years and mean age of 67.98 +- 7.90 were included. Whole majority of the patients in the age range of 71 to 80 years. All the patients underwent MRS and DWI of prostate. DWI and MRS aided diagnosis of prostate cancer in 68 patients while histopathology confirmed it in 70 cases. In DWI and MRS positive patients 65 were true positive and 3 were false positive. Among 36 DWI and MRS negative patients 5 were false negative whereas 31 were true negative (K=0.769). Overall sensitivity and specificity and PPV and negative predictive value and diagnostic accuracy of DWI and MRS in detecting prostate cancer was 92.86%, 91.18%, 95.59%, 86.11% and 92.31% respectively.

Studies have shown that combinator both ADC and MRS has increased the diagnostic accuracy consistent with these results, another study showed that combination of both ADC and MRS has greater sensitivity 94.2% and specificity 85% then alone. The appropriate used criteria AUC in combined parameters was 0.93 (kappa test= 0.80) which is significantly greater (P less than 0.001) then ADC alone where AUC = 0.89 and kappa test 0.60 or (Cho +Cr)/Cit ratio alone (AUC=0.86 and kappa test = 0.44).However in another study Mazaheri et all stated that combined DWI and MRS was not more significantly accurate than DWI alone.

In a study of 15 of 42 cases were positive and 27 of 42 cases were negative. All the 252 sextants were confirmed by histopathology, including 201 benign and 51 malignant. T2WI had a sensitivity and specificity of 88.2% and 67.2% respectively for prostate cancer as the cutoff was 3;82.4% and 81.6% for DWI,as the cutoff was 4; 84.3% and 98.0% for MRS, as the cutoff was 5; 96.1% and 96.5% for the combined T2WI + DWI+ MRS as the cutoff was 4. In receiver operating characteristic curve (ROC) analysis, the correlative areas under the ROC curves were 0.848± 0.030, 0.860± 0.033 and 0.961± 0.016 for T2WI, DWI and MRS respectively, and 0.978± 0.009 for the combination of T2WI+DWI and MRS.

In another study relatively larger number of patients were included. In one study the combined role of DWI and MRS in detecting prostate cancer in peripheral zone was better than MRS alone. In our study of 50 patients combination of DWI and MRS has a better diagnostic accuracy in cancer tissues. The regression model correctly classified 291 of 300 probes(97.0%). Only 4 of 238 normal probes were misclassified as tumors and 5 of 62 tumor probes were misclassified as normal. The sensitivity and specificity was 91.9 and 98.3 respectively according to regression model. The sensitivity and specificity

of combined MRS and DW MRI for the diagnosis of prostate cancer was 86.6 and 83.6 respectively as observed by Li B et all.

In another study none of the modality alone had adequate sensitivity and specificity for tumor identification as T2W imaging has 46% sensitivity and 68% specificity, DWI and ADC mapping had 29% sensitivity and 82% specificity, H-MRS acquisition with Cho/cit and Cho+Cre/Cit ratios had 49% specificity for both ratios, 69%sensitivity for Cho/Cit and 70% sensitivity for Cho+Cit ratio. Even for the use of H-MRS (the most sensitive sequence) and DWI (most specific one); was not high enough to diagnose cancer accurately as 3 of 10 cancers were missing. In order to improve and validate these results for each sequence combination of these MR sequences via multiparametric approach should aid for the depiction and exact localization of prostate cancer. When we add DWI to T2-weighted imaging, the sensitivity raised to 52% with statistical correlation to biopsy without significant improvement in the specificity (%65, $p < 0.05$), combination of T2W imaging with H-MRS; A reliable increase for sensitivity was indicated with lower specificity (80% sensitivity and 32% specificity) without any statistical proof over histopathology ($p > 0.05$). By combined use of H-MRS and DWI, an increase in sensitivity with lower specificity under statistical approvement to reference standard, was predicted (77%/43%, sensitivity/specificity) ($p<0.05$). By Multiparametric MR imaging approach via combined use of all three sequences ; Sensitivity was improved to 81%, a reliable increase for specificity, especially higher than H-MRS use alone were also observed (66%), multiparametric approach did not acquire more specific results rather than the acquisition of other two sequences alone, with significant statistical correlation to the gold standard ($p < 0.05$).[32]

Reinsberg et al[33] reported increased specificity without a reduction in sensitivity, for combined DWI and 2DHMRS use with comparison to the use of MR-spectroscopy or DWI alone in the voxels containing 70% or more tumour tissues, with 80% - 90% sensitivity and specificity. Kumar et al34 reported a positive correlation between ADC values and Cho/Cit Cho + Cre/Cit ratios in men with elevated PSA levels, reflecting a direct relationship between the reduction of citrate levels and structural changes of prostate tissue associated with malignancy. On the whole it is concluded that combined magnetic resonance spectroscopy (MRS) and diffusion weighted imaging (DWI) is the non-invasive modality of choice with high diagnostic accuracy in detecting prostate cancer, and has dramatically improved our ability of correct diagnosis of the disease and a better prognosis of the patients by having exact diagnosis.

CONCLUSION

This study concluded that combined magnetic resonance spectroscopy (MRS) and diffusion weighted imaging (DWI) is the non-invasive modality of choice with high diagnostic accuracy in detecting prostate cancer, and has dramatically improved our ability of correct diagnosis of the disease and a better prognosis of the patients by having exact diagnosis. So, we recommend that combined magnetic resonance spectroscopy (MRS) and diffusion weighted imaging (DWI) should be done routinely in all suspected cases of prostate cancer for accurate assessment pre-operatively and opting proper surgical approach and reducing pure diagnostic biopsies in prostate cancer which ultimately reduce the morbidity and mortality of these patients.

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COMPARISON OF TRAMADOL AND KETOROLAC FOR POST-OPERATIVE PAIN MANAGEMENT IN PATIENTS UNDERGOING CESAREAN SECTION

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Abstract

Introduction: Pain after cesarean section is an inevitable consequence of the surgery and needs administration of various drugs to control postoperative pain. Tramadol and ketorolac are two commonly used drugs for controlling post-operative pain but differ significantly in their efficacy and side effect profile.

Objectives: To compare the mean pain scores after administration of ketorolac versus tramadol in patients after cesarean section for postoperative pain management

Methods: Mean pain scores at 6 hours after CESAREAN section. It was Randomized controlled trial. Duration of study was Six months from October 1, 2017 to March 31st, 2018, subject was Pregnant females undergoing elective cesarean section in Gynaecology and Obstetrics Department, Jinnah Hospital, Lahore.

Detailed history was taken and patients randomized to receive either intravenous tramadol 100 mg or ketorolac 30 mg after cesarean section. Visual analog scale was used to measure the pain score at 6 hours after surgery.

Results: There were sixty females (30 in each treatment group) in the study with mean age 24.45 ± 5.23 (range: 18- 34) years with thirty patients in each treatment arm of the study. The overall mean pain score was 4.3 ± 2.5 at 6 hours after cesarean section. The mean pain score in the tramadol group was 3.9 ± 2.1 (range: 0 – 7) whereas it was 5.1 ± 3.1 (range: 1 – 9) in the ketorolac group (p-value: 0.00001).

Conclusion: Both tramadol and ketorolac reduced post-operative pain but tramadol proved itself to be superior in controlling post-operative pain after cesarean section.

Keywords: Cesarean section, post-operative pain, pain scores, visual analog score, tramadol, ketorolac, comparison

By definition, pain is an unpleasant sensory and emotional experience resulting from tissue damage or described in terms of such damage. Even a tiny amount of pain, irrespective of the cause, can hamper daily activity. But the most apprehending of all pains is that produced by surgery. During surgery, millions of cells are damaged, evoking the pathway of inflammation, releasing thereby abundant chemical mediators that trigger the pain. It is said that — the pain of mind is worse than the pain in body‖ and its management would require alleviating both the mental and physical pain thus making the patient comfortable. The management of such pain would vary from delivering analgesics in parenteral form, oral form or patches depending on the intensity and availability. Post-operative pain is considered a form of acute pain due to surgical trauma, characterized by incisional damage to skin or mucosa and various other tissues, application of thermal and chemical stimuli to the wound, and often prolonged traction and manipulation of soft tissues, with an inflammatory reaction and initiation of an afferent neuronal barrage.[1]

The best postoperative regimen is one that offers broad analgesic coverage, easy to administer, is safe and economical. Anesthetists and surgeons must do everything possible to eliminate postoperative pain without causing undesirable effects such

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as respiratory or vascular depression, gastrointestinal and visceral motility disorders, coagulation anomalies and drug tolerance and dependence.[1]

Postoperative pain is currently treated with two classes of drugs: (1) Non-steroidal anti-inflammatory drugs (NSAIDs), which act by prostaglandin synthesis to achieve analgesic and anti-inflammatory actions, but associated with poor gastrointestinal and renal tolerance and risk of interference with coagulation system; and (2) Narcotic analgesics, which act directly on central nervous system opiate receptors, but can cause drug dependence, respiratory depression, constipation, nausea, vomiting and sedation.[2]

Pain is ranked highest among undesirable clinical outcomes associated with cesarean section (CS). Adequate post-operative analgesia in the obstetric patients is crucial as they have different surgical recovery needs which include breastfeeding and care of the newborn; these can be impaired if analgesia is unsatisfactory. The ideal post-CS analgesic regime should be efficacious without impacting the ability of mother to take care of the neonate and with minimal drug transfer through breast milk. However, observational data from developing as well as developed countries have shown that we are far from achieving these goals. In developing countries, limited availability of drugs, equipment and expertise are the major issues in providing adequate post-CS analgesia. In the past 5 years, there has been a surge in studies describing newer post-operative analgesic modalities. Some of these modalities require less expertise and reduce consumption of opioids in post-operative period.[3] Since cesarean section is one of the most common operations, patients who undergo cesarean delivery should achieve more postoperative pain relief than other surgical patients because of different factors related to the operation complications as well as maternal and neonatal wellbeing.[4]

Immobility due to inadequate pain control could result in thromboembolic events, inappropriate neonatal care and delay in discharge which consequently increase the cost of this common procedure both for patients and health care system. Thus, it seems that postoperative pain management in this group of patients is more challenging than other surgical patients.[5]

Several studies have investigated different protocols of post-partum pain management in women undergoing cesarean section and some new technologies of postoperative pain treatment have been also reported. On the other hand, the protocols of post-partum pain management in this group of patients are not similar in different region and it seems that it would be planned regarding the facilities of each center or region.[6]

Among pain reliving agents, opioids have an important role in postoperative analgesia which most commonly are administered systemically or neuraxially.[7] Moreover, recent studies have reported the beneficial effects of oral analgesics. However, oral analgesia not only could provide appropriate pain relief but also they have some advantages such as easy administration and low cost. Providing an appropriate pain management is needed during the post-partum hospitalization period for preventing cesarean section related complications. Inappropriate postoperative pain control in women undergoing cesarean section can significantly affect on the well being of both mothers and newborns during postpartum period.[8] It could result in respiratory, dietary intake and ambulation impairment which consequently lead to complications such as thromboembolism, ileus, atelectasis, and pneumonia. Moreover, it could result in normal development impairment in neonates due to affecting their feeding. In accordance with advances in the understanding of the pain pathophysiology and improvement of mechanism-based pain relief approaches, different protocols for pain managements was investigated.[9]

Tramadol, sold under the brand name Tramal among others, is an opioid pain medication used to treat moderate to moderately severe pain. When taken by mouth in an immediate-release formula-

tion, the onset of pain relief usually occurs within an hour. It is often combined with paracetamol (acetaminophen) as this is known to improve the efficacy of tramadol in relieving pain.[10]

Common side effects include: constipation, itchiness and nausea. Serious side effects may include seizures, increased risk of serotonin syndrome, decreased alertness, and drug addiction. A change in dosage may be recommended in those with kidney or liver problems. It is not recommended in those who are at risk of suicide. While not recommended in women who are breastfeeding, those who take a single dose should not generally stop breastfeeding.[10] It works by binding to the μ-opioid receptor and as a serotonin–norepinephrine reuptake inhibitor (SNRI). Tramadol is in the benzenoid class. In the body it is converted to desmetramadol, which is a more potent opioid.[10]

Tramadol was launched and marketed as "Tramal" by the German pharmaceutical company Grünenthal GmbH in 1977 in West Germany, and 20 years later it was launched in the UK, US, and Australia. It is marketed under many brand names worldwide.[10] Ketorolac, sold under the brand name Toradol among others, is a nonsteroidal anti-inflammatory drug (NSAID) in the family of heterocyclic acetic acid derivatives, used as an analgesic. It is considered a first-generation NSAID.[11]

Ketorolac acts by inhibiting the bodily synthesis of prostaglandins. Ketorolac in its oral (tablet or capsule) and intramuscular (injected) preparations is a racemic mixture of both (S)-(−)-ketorolac, the active isomer, and (R)-(+)-ketorolac. Ketorolac was developed in 1989 by Syntex Corp. (now part of Roche). It was approved for medical use in the United States in 1989. The eye-drop formulation was approved by the FDA in 1992. An intranasal formulation was approved by the FDA in 2010 for short-term management of moderate to moderately severe pain requiring analgesia at the opioid level.[11]

Various studies have been conducted to compare the efficacy of these two drugs in post-operative pain [12,13]. But the topic has received scant attention as regards to their use after various surgeries in obstetrics and gynecology. So, we performed this study to see the effectiveness of these two analgesic medicines in controlling post-operative pain after cesarean section, one of the most commonly performed surgeries in our field. The results were expected to enlighten and broaden the knowledge of clinicianss regarding these two drugs and improve their post-operative pain management protocols.

There is a lot of inter-individual variation in pain threshold, and the way pain is experienced is a reflection of the individual's emotional, motivational, cognitive, social, and cultural circumstances. Inadequately controlled pain in the postoperative period can lead to the development of chronic pain. According to a survey six months after cesarean delivery, 12.3% of patients experience pain that is severe enough to affect infant care and the incidence of persistent daily pain one year after cesarean section was 6%. Chronic pain can lead to postpartum depression.[15]

An ideal method of pain relief after cesarean section should be cost effective, safe for the mother, require minimal monitoring and use drugs that are not secreted into breast milk. Moreover, the mother should not be sedated or hampered by equipment that prevents her from moving freely and caring for the newborn. Minor side effects, acceptable in the general population, like nausea and vomiting, pruritus and shivering may interfere with care of the new born, leading to less maternal satisfaction. Drug availability, maternal health conditions, patient preferences and availability of medical expertise and trained support staff also play a role in choice of analgesic method.

Systemic opiods are the mainstay of pain relief after a cesarean section done under general anesthesia. Patient-controlled intravenous opioids (IV-PCA) lead to low fluctuations in plasma opioid levels and higher maternal satisfaction. However, the quality of analgesia is inferior to the PCEA method. Morphine, fentanyl and remifentanil have been used through an IV-PCA in obstetrics.[14] Though

remifentanil crosses the placenta, it has not been shown to cause adverse effects in the neonate.[16]

Intramuscular and subcutaneous opioids are affordable, easy to administer and associated with less side effects. The disadvantages are the requirement for repeated and painful injections, variable systemic absorption, delayed onset of action and fluctuating plasma levels of the drug.[17]

The advantages of the oral route are ease of administration, low cost, high maternal acceptance and fewer opioid-related adverse effects as compared with the intravenous or neuraxial route. Constipation is a unique side effect of this route, and can be of increased concern in the post-surgical patients. Oral oxycodone in doses = 90 mg in a 24 hperiod poses minimal risks to the neonate. Oral morphine provides satisfactory analgesia, but randomized trials are lacking. Tramadol is a weak μ-opioid receptor agonist, induces a serotonin release, and inhibits the reuptake of norepinephrine. It is given intravenously, intramuscularly and orally. It can be used in combination in diclofenac or paracetamol for moderate pain relief in the post-operative period.[10]

Paracetamol, a cyclo-oxygenase inhibitor, has almost no side effects and hence is routinely used as part of a multimodal plan for postoperative analgesia. However, peripartum women have a faster clearance of paracetamol with a larger distribution volume. Hence higher doses may have to be given in this population.

NSAIDs like ketorolac[18] and diclofenac (intravenous and rectal) [improve the quality of analgesia provided by opioids and reduce its consumption. It is very effective in treating the visceral component of post-cesarean section pain, complementing the somatic wound pain relief from the opioid. NSAIDs are safe in breast-feeding too. Bleeding, platelet dysfunction and renal damage are the major side effects. They act by inhibiting the cyclooxygenase enzyme, and hence prevent prostaglandin synthesis too. This may lead to uterine atony.[19] The drug is contraindicated in postpartum bleeding, asthma, acid peptic disease renal insufficiency. Selective COX2-inhibitors like celecoxib and parecoxib have similar analgesic efficacy as diclofenac with less side effects.[4]

OBJECTIVES

To compare the mean pain scores after administration of ketorolac versus tramadol in patients after cesarean section for postoperative pain management

HYPOTHESIS

There is difference in mean pain scores after administration of ketorolac versus tramadol in management of post-operative pain in patients after cesarean section.

OPERATIONAL DEFINITIONS

Pain Score: was measured at 6 hours post-operatively.

Visual Analog Scale (VAS) was used for measurement of pain.

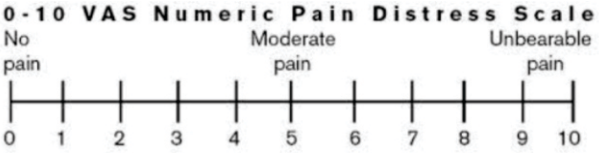
It was mild pain (1—3), moderate pain (4—7) and severe (8—10). Patinets undergoing elective C-section will be included in the study.

METHODOLOGY

Study Design: Randomized controlled trial.

Settings: Gynaecology and Obstetrics Department, Jinnah Hospital, Lahore.

Duration of Study: Six months from October 1, 2017 to March 31st, 2018.



Sample size: Sample size of 60 patients (30 patients in each group) is calculated with 95% confidence interval, 80% power of the test and taking expected mean pain score after tramadol as 3.27 ± 0.63 and after ketorolac as 5.36 ± 2.1 [84].

Sampling Technique: Non-probability, consecutive sampling

Sample Selection: Sample selection was based on following inclusion and exclusion criteria:

Inclusion Criteria: All the patients undergoing elective cesarean section for any indication

Female patients of age 18-45 years with gestational age of 30-42 weeks (of any parity)

Exclusion Criteria: Patients already on analgesics (on history) Patients with known allergy to Tramadol or Ketorolac (on history)

Women with known pregnancy medical disorders e.g. diabetes, essential hypertension, pre-eclampsia as explored on medical records.

After approval from ethical review board, all patients fulfilling the inclusion and exclusion criteria were enrolled in the study. Written informed consent for inclusion in the study was taken from each patient. They were assured regarding confidentiality and expertise used for the particular procedure and were educated for an anticipated better outcome. Patients were randomly divided in two groups by lottery method. Group A: Tramadol. Group B: Ketorolac. All the patients underwent cesarean section in both groups in a standard way. Immediately after the surgical procedure, patients in group A were given Tramadol 100mg intravenously while patients in group B were given Ketorolac 30 mg intravenously. The intensity of the pain was recorded for all patients using VAS at 6 hours after surgery by on duty doctor. All data were recorded on the proforma.

The collected data were entered and analyzed accordingly using SPSS version 20 through its statistical program. The study variables were analyzed using simple descriptive statistics, calculating mean and standard deviation for numerical values like age, gestational age, parity and pain scores. Frequencies and percentages were calculated for qualitative variables like ASA status. Student t-test was used to compare mean values of pain scores in both groups. Mean pain score at 6 hours was stratified for age, gestational age, number of previous C-sections (if any), ASA status and parity in order to address effect modifiers. Post-stratification, student t-test was used. P-value ≤ 0.05 was considered as statistically significant.

RESULTS

There were sixty female patients in the study with thirty patients in each treatment arm of the study. The mean age of the patients was 24.45 ± 5.23 (range: 18- 34) years (Table 1). The mean age of the patients in the tramadol treatment group was 24.2 ± 5.4 (range: 18-34) years and that in the ketorolac group was 24.7 ± 5.1 (range: 19 –33) years. The difference in the mean age of the patients in the two treatment groups was statistically not significant with p-value: 0.475 (Table 4).

The mean gestational age of the patients was 38.60 ± 1.51 (range: 38 – 40) weeks (Table 1). The mean gestational ages of the patients in the tramadol group and ketorolac group were 38.50 ± 1.48 (range: 37–39) weeks and 38.9 ± 1.52 (range: 37 – 40) weeks respectively. The difference in the mean gestational age between the two treatment groups was statistically not significant (p-value: 0.641). Similarly, the overall mean parity of the study population was 3.6 ± 2.4 and the differences between the two treatment groups in the parity was not statistically significant (p-value < 0.05) (Table 1 and 6). Analysis of the previous history of cesarean section revealed that 42 (70.0%) patients had undergone one or more cesarean sections before whereas 18 (30.0%) did not have any previous history of cesarean sections and were undergoing cesarean sections for the first time. Overall, the mean number of previous cesarean sections was 2.0 ± 1.1 with 1.8 ± 1.2 (range: 1 – 3) in the tramadol group and 2.1 ± 1.0 (range: 1 – 3) in the ketorolac group, the difference being statistically not significant (p-value: 0.396). (See tables 1, 2, 7 and 8). Classification of patients into the physical status classification by American Society of Anesthesiologists (ASA) showed that there were 56 (93.3%) in the ASA class I and 4 (6.7%) in the ASA Class II. The mean ASA score of the study population was 1.07 ± 0.25. (Table 3). The difference in the ASA class distribution amongst the patients in the two treatment arms was not statistically significant (p-value >

0.05).

The mean pain scores evaluated at 6 hours after cesarean section were the primary objectives of the study. The results showed that the mean pain score of the study population assessed using visual analog scale at 6 hours post cesarean section was 4.3 ± 2.5 which fell under the category of mild to moderate pain. The results also showed that there a statistically significant difference between the mean pain scores of the two treatment arms of the study. The mean pain score in the tramadol group (group 1) was 3.9 ± 2.1 and it ranged from a score of 0 to 7 (falling under the category of none, mild to moderate pain). However, the mean score in the ketorolac group (group 2) was 5.1 ± 3.1 and ranged from a minimum score of 1 to a maximum score of 9 implying that the pain in this group ranged from mild, moderate to severe. None of the patients in this group reported no pain (score of 0) at the end of 6 hours after cesarean section. The differences in the mean pain scores between the two treatment arms of the study were evaluated using paired t-test that came out to be statistically significant with a p-value: 0.00001. The results showed that tramadol proved itself to be superior in controlling pain at 6 hours after cesarean section.(See Tables 1 and 10).

DISCUSSION

Injury to the tissues causes an exaggerated response to noxious stimuli on both a peripheral basis, by reducing the threshold of nociceptive afferent nerve terminals and at a more central level, by increasing the excitability of the second order neurons in the spinal cord. Based on the aforementioned observations, the concept of preemptive

Table 1: *Demographic And Clinical Profile of the Study Population*

VARIABLE	MEAN ± SD
Age (years)	24.45 ± 5.23
Gestational Age (weeks)	38.60 ± 1.51
Parity	3.6 ± 2.4
Previous C-Sections	2.0 ± 1.1
Pain Score at 6 hours (VAS scale)	4.3 ± 2.5

Table 2: *Distribution of Patients on the Basis of Previous History of Cesarean Section*

Previous History of C-Section	Number (%)
Yes	42 (70.0)
No	18 (30.0)
Mean Number of Previous C-Sections:	**2.0 ± 1.1**

Table 3: *Distribution of Patients on the Basis of American Society of Anesthesiologists (ASA) Physical Examinaiton Classification*

ASA Status	Number (%)
I	56 (93.3)
II	4 (6.7)

Mean ± SD ASA Class: 1.07 ± 0.25

Table 4: *Stratification of Patients on the Basis of Age In Two Treatment Groups*

Variable	Tramadol Group	Ketorolac Group
Mean age (years)	24.2	24.7
Standard Deviation	5.4	5.1
Range (years)	18 – 34	19 - 33
Total number of Patients	30	30

p- Value 0.475

Table 5: *Differences in the Gestational Age in the Two Treatment Groups*

Variable	Tramadol Group	Ketorolac Group
Gestational Age (weeks)	38.50	38.9
Standard Deviation	1.48	1.52
Range (weeks)	37 – 39	37 – 40
Total number of Patients	30	30

p- Value 0.641

Table 6: *Differences in the Parity Between the Two Treatment Groups*

Variable	Tramadol Group	Ketorolac Group
Mean Parity	3.8	3.4
Standard deviation	3.6	2.3
Range	1 – 4	1 – 5
Total number of Patients	30	30

p- Value 0.531

Table 7: Distribution of Patients on the Basis of Past History of Cesarean Section in the Two Treatment Groups

Previous history Of c section	Tramadol group	Ketorolac group	Total # of patients	p value
Yes	22	20	42	0.364
No	8	10	18	0.412
Total	30	**30**	60	

Table 8: Differences in the Mean Number of Previous Cesarean Sections in the Two Treatment Groups

Previous # of c sections	Tramadol group	Ketorolac group
Mean	1.8	2.1
Standard deviation	**1.2**	**1.0**
Range	1 – 3	1 – 3
Total Number of patients	**30**	**30**

p- value 0.396

Table 9: Stratification of Patients On The Basis of Asa Status In The Two Treatment Groups

ASA Status	Tramadol Group	Ketorolac Group	Total No of patients	p-value
Class I	29	27	56	0.124
Class II	1	3	4	0.056

Table 10: Mean Pain Scores In Two Treatment Groups At 6 Hours Post Cesarean Section

Variable	Tramadol Group	Ketorolac Group
Mean Pain Score At 6 hours after C section	**3.9**	**5.1**
Standard deviation	**2.1**	**3.1**
Range	0 – 7	1 – 9
Total Number of patients	**30**	**30**

p- value 0.00001

analgesia has evolved. By administering an analgesic before the painful stimulus, the development of pain hypersensitization may be reduced or abolished, thus resulting in less post-operative pain. It has been postulated that the pain existing before surgery may have already achieved central sensitization, thus making pre-emptive analgesia ineffective.[20]

Post-operative pain is considered a form of acute pain due to surgical trauma, characterized by incisional damage to skin or mucosa and various other tissues, application of thermal and chemical stimuli to the wound, and often prolonged traction and manipulation of soft tissues, with an inflammatory reaction and initiation of an afferent neuronal barrage. Severe postoperative pain may have psychological consequences, increasing the stress response to surgery, seen as a cascade of endocrine-metabolic and inflammatory events thats ultimately contribute to organ dysfunction, morbidity, increased inhospital stay and mortality. Pain often causes the patient to remainimmobile, thus becoming vulnerable to deep vein thrombosis, pulmonary atelectasis, muscle wasting, and urinary retention. Besides restlessness, severe pain may contribute to postoperative hypoxemia. The inflammatory mediators released as a result of trauma activate the primary afferent nerves which in turn can evoke changes at the level of spinal cord, a process referred to as ―peripheral sensitization‖. If acute pain is not properly treated, prolonged activation of pain pathways can lead to further neurophysiologic changes, collectively called ―central sensitization,‖ which may prolong recovery and convert acute pain to a chronic condition. Additionally, patients with moderate to severe pain during the postoperative period, and those having undergone operations with the risk of nerve damage are most likely to develop chronic pain.[1]

Postoperative pain is currently treated with two classes of drugs: (1) Non-steroidal anti-inflammatory drugs (NSAIDs), which act by prostaglandin synthesis to achieve analgesic and anti-inflammatory actions, but associated with poor gastrointestinal and renal tolerance and risk of interference with coagulation system; and (2) Narcotic analgesics, which act directly on central nervous system opiate receptors, but can cause drug dependence, respiratory depression, constipation, nausea, vomiting and sedation[3]. Approaches to the measurement and assessment of pain include verbal and numeric rating scales, VAS, behavioral observation scales, and psychological responses. Of these, the VAS is

the most frequently used self-rating scale. The most common VAS consists of a 10 cm horizontal or vertical line with the two end points labeled ―No Pain‖ and ―Worst Pain‖. Patients are asked to place a mark on the 10 cm line at a point that corresponds to the level of pain intensity they presently feel. Advantages of VAS include ease of scoring, its minimum intrusiveness, its greater sensitivity to detect intervention based changes in pain, and its conceptual simplicity.[13]

The search for appropriate drugs to treat patients with moderate to severe pain has led to the development of Tramadol hydrochloride, a centrally acting synthetic analgesic with a novel mechanism of action: a complementary and synergistic interaction between an inhibition of neuronal monoamine reuptake and a weak affinity for opioid receptors[10]. In humans, Tramadol causes minimal respiratory depression and few gastrointestinal effects, and has less potential for causing opiate-like dependence than morphine. Ketorolac is a member of pyrrolo-pyrrole group of Non-steroidal anti-inflammatory drugs[21]. It possesses analgesic, anti-inflammatory and anti-pyretic activity. The primary action of Ketorolac appears to be inhibition of cyclooxygenase enzyme that metabolizes Arachidonic acid to endoperoxide intermediates and prostaglandins that promote pain. The best postoperative regimen is one that offers broad analgesic coverage, is easy to administer, and is safe and economical. The anesthetists and surgeons must do everything possible to eliminate postoperative pain without causing additional problems, such as respiratory or vascular depression, gastrointestinal and visceral motility disorders, coagulation anomalies, drug tolerance and dependence.[2]

There are several studies comparing the efficacy of various analgesics used for the control of postoperative pain after cesarean section. It is well-known fact that parenteral route is more reliable and effective especially for the patients undergoing surgeries under general anesthesia.[22] Patients in both the study and control groups did not differ in their demographic characteristics and the surgical factors including the precious history of cesarean section; both of which can potentially affect the outcome measures. Any significant difference between both the study and the control groups in terms of pain is thus attributable to the drug effect. The results of this study indicate that adequate analgesic treatment can reduce the intensity and limit the duration of postoperative pain in the population considered. Excellent results were demonstrated with the use of intravenous Tramadol for treatment of postoperative pain after cesarean section (See Tables 1 and 10). It has been reported that intramuscular Tramadol 100 mg, given post-operatively, has an analgesic effect equivalent to 30 mg of Pentazocine but is less potent than 10 mg of morphine[23]. The maximum pain, as experienced by patients, was of none, mild to moderate type in tramadol group but was of mild, moderate to severe type in ketorolac group. No patient reported no pain in the ketorolac group.

The most common side effects associated with Tramadol are nausea and vomiting. An intra-operative parenteral antiemetic and H-1 blocker, Ondansetron, a regular protocol drug in general anesthesia, is usually given alongside tramadol to prevent its potent side effects[24–25]. Therefore, despite the principle side effect being nausea and vomiting, Tramadol can be given safely to patients under the cover of an antiemetic. A few cases of mild skin reactions at the site of injection have also been reported with tramadol in the literature.

However, this complication is mild and does not require any treatment. Regular monitoring of vital signs should be done in all the postoperative patients receiving any kind of pain medication. If vital signs are regularly monitored, various studies have shown that both these drugs are tolerated well and do not cause any serious life threatening complications. The use of Ketorolac is now contraindicated in patients with hemorrhagic diathesis and in patients undergoing surgery that is associated with a high risk of hemorrhage or with incomplete haemostasis, and the maximum permitted dosage has been

reduced from 90 to 60 mg/d in elderly [84]. A recent retrospective trial of more than 20,000 patients showed that parenteral Ketorolac caused a higher incidence of both gastrointestinal and surgical site bleeding than did opioids[26]. Tramadol, on the other hand, causes no significant adverse cardiovascular or respiratory reactions, and has no effect on coagulation either. These advantages bring it closer to an ideal analgesic which would have a high level of activity and a reassuring safety profile[27]. There are several studies comparing the analgesic efficacy of parenteral Tramadol and Ketorolac and most of them are in favor of Tramadol with regard to postoperative pain control. However, few authors have found Tramadol-induced vomiting to be significant which can be controlled by anti-emetics that have been found to be safe in normal healthy adults [28–29].

We conducted an extensive literature search on PubMed, PMC, Cochrane library, EMBASE, PakMediNet and Google Scholar to find a direct head to head trial between these two pain killers after cesarean section. But to the best of our knowledge, this is the first report from our country and most probably in the world that has compared the two drugs head to head in a randomized control trial.

The study lays the foundation of future researches that can be built on the same design but with a larger sample size to acquire more power of the study. Besides, we also recommend studies to compare the analgesic effect of the two drugs at every hour after the cesarean section so as to have a more detailed look into the pain relieving effect of these medicines. Such a design can let us know the actual time required to achieve full analgesia in patients after cesarean section so that subsequent dosages of the drugs can be designed accordingly.

Besides, one of the major limitations of the study was that we did not arrange to monitor the side effects of these drugs in our study population. All the aforementioned findings about various peculiar side effects of these two drugs have been found in our extensive literature review. So, we also recommend future studies to consider monitoring the side effects of the drugs especially in our populations.

Generally the patients are drowsy after the anesthesia that they undergo for the cesarean section but a careful evaluation of the patients post-operatively can let the clinicians judge and decide that side effects are due to the pain medications or are due to the remnant effects of the anesthesia, whether general or spinal or epidural that are generally administered for cesarean section.

Monitoring for side effects can let us further know how efficacious these drugs are in our part of the world and can let us decide whether do we need to administer simultaneous ondansetron or other antiemetic drugs to prevent side effects of tramadol. But if the patients tolerate the drugs well, we may propose that the drug is well tolerated and we may limit the use of anti-emetics with tramadol which itself carries certain risks on the body.

CONCLUSION

To conclude, though both the drugs were effective in controlling postoperative pain in patients undergoing cesarean section under, the comparative results of this study clearly demonstrate that intravenous Tramadol is significantly better than intravenous Ketorolac ($P < 0.05$). in controlling post-operative pain at 6 hours after cesarean section. However, both drugs produce side effects that are generally considered benign and do not appear to influence the outcome. The duration of action of a drug depends on its half-life but its efficacy is chiefly dependent on its route, consistency and frequency of administration. Side-effects are inevitable however in each case. Future randomized placebo-controlled research trials need to be performed to determine rational dose–response curves, in order to minimize undesirable side-effects but maximize benefits, economically.

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ADDENDUM, AMENDED OR DISCREPANT SURGICAL PATHOLOGY REPORTS; EXPERIENCE AT A UNIVERSITY AFFILIATED TERTIARY CARE HOSPITAL IN LAHORE, PAKISTAN

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Abstract

Background: Medical errors are the major issue for patient safety. With the growing demand of health care delivery there is a need to improve our diagnostic centers to approach an affordable, timely and accurate diagnosis. Secondary review in surgical pathology means to review a specimen by second pathologist (originally reported or signed out by first pathologist) on the basis of pre-acknowledged parameters to improve the quality of diagnosis. Accurate histological examination is the base line for the initiation of therapy and any error in report may lead to serious issues regarding patient's treatment and prognosis.

Objective: To analyze the second opinion discrepancies in surgical pathology at our institution.

Material and methods: All discrepant reports with related originally dispatched reports for cytology and surgical pathology cases at histopathology laboratory of King Edward Medical University, Lahore, during a six-month period, from September 2018 to February 2019, were reviewed and 254 reports were scrutinized for this study. Secondary reviews, analysis of amended reports, addendum with indications and correlation studies (cytology-histology) were used to sort out the reports. We did root cause analysis of these cases using Eindhoven model of classifying errors and distributed them according to the phase of the routine testing.

Results: Diagnostic discrepancies constituted a major bulk of discrepant report resulting in amendments in surgical pathology reports. We observed that 64.1% of the errors were encountered in analytical phase, whereas 20.4% and 15.3% of errors were seen in pre-analytical and post-analytical phases of the routine testing. Discrepancy was mainly detected as a result of secondary review from referral laboratories with indication being physician's dissatisfaction with initial diagnosis. The majority of errors were seen in reporting breast, skin, lymph nodes and endoscopic biopsies.

Conclusion: Patient safety culture needs to be adopted by both resident and reporting pathologists. Individual factors are mainly attributed to cultural attitudes and educational constraints. Lack of intra-departmental consultation and failure to acquire proper clinical information with ineffective communication with requesting physician were major constraints in providing a good quality report. Technical errors need to monitored and minimized to a negligible extent. Quality controls need to be monitored at every step from requisition till report dispatch.

Keywords: Discrepancies, KEMU, Surgical pathology

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A specimen submitted for diagnosis in pathology laboratory passes through three usual phases of test cycle that are pre analytical, analytical and post analytical. All these three phases are prone to errors. In surgical pathology, diagnosis is made in the analytical phase.[1]

As an accurate histological diagnosis is the base line for the initiation of therapy, any error may lead to serious impact on the patient care.[2,3] Although all surgical pathologists aim at providing a correct diagnosis while analyzing tissue in analytical phase,[4] different factors like inexperience, lack of clinical correlation, unawareness about updates regarding tumor classification, excessive work load, lack of subspecialty practices and no secondary intra departmental consultations on complicated cases, can lead to an erroneous diagnosis1.To prevent these errors and before selecting an optimal treatment, many institutes recommend secondary review of pathological reports.[5,6]

Secondary review means to review a specimen by a second pathologist (originally reported or signed out by a first pathologist) on the basis of preacknowledged parameters. In early 1970, secondary review in surgical pathology was instructed in an effort to reduce unnecessary surgical operations.[7]

Secondary review maintains quality by scrutiny of diagnosis.[8] It is the method for quality assurance to improve patient care.[9] The association of directors of Anatomic and Surgical Pathologists recommends the retrospective review of at least 1% accessioned cases.[10]

Secondary review provides appropriate, affordable, timely diagnosis and prevents unnecessary treatment. It decreases cost and contributes to value based health care.[11,12,14] Thus for patient safety, optimal patient care and cost effective treatment, second opinion policy is advocated by many institutions.[13] This study aimed at determining the benefits of secondary review to improve health care system, in a developing country like Pakistan, where resources are limited and field of histopathology is still evolving.[4]

METHODOLOGY

This cross-sectional descriptive study was conducted at department of pathology, at a tertiary care hospital, from September, 2018 to January, 2019. Sample size of 254 reports was estimated by using 95% confidence level, 9% absolute precision with expected percentage of discrepancies as 13%[4]. Data was collected from all the surgical pathology reports issued by the department and was subjected to review from other laboratories; by non-probability purposive sampling. The reports of specimens submitted for frozen section and cytological analysis were excluded from the study. All the researchers obliged themselves to practice in accordance to Helsinki Declaration 1964 and its later amendments. The study was approved by the institutional review board of our institute(291/RC/KEMU).

For this study, we used preexisting reports obtained from tissue for clinical purposes from human participants; thus, this study was deemed "minimal risk," and the requirement for informed consent was waived as per the Institutional Review Board of the institution. The proforma was prepared after extensive literature search and diagnostic discrepancies were classified as major and minor. Major discrepancies are those that have significant effect on patient treatment and prognosis while minor discrepancies have no significant effect on patient treatment and prognosis.[9,14,15] Later on, it was validated by distributing it to the academic members and subject specialist for its content validity. The initial reports of patients coming for review were retrieved from the record registers. Patients' details and diagnosis were entered in proforma.

Discrepancies between original and final report were categorized as follow:

A. No discrepancy in diagnosis between original and reviewed report.
B. Minor discrepancy in diagnosis- histopathological differences that did not influence treatment and prognosis.
C. Major discrepancies in diagnosis -differences

that would affect patient treatment and prognosis.

Discrepancies were also categorized according to phase of test cycle as pre-analytical, analytical and post-analytical and site of the biopsy. All collected data was entered by using Statistical package for social sciences (SPSS version 21). Qualitative variables like discrepancies were calculated as frequencies and percentages.

RESULTS

This study was carried out from September 2018 to February 2019 at atertiary care pathology laboratory at King Edward Medical University, Lahore. Total 5000 reports were signed out in this time period. Out of these, 254 reports were sent for secondary review mostly after clinician's dissatisfaction and other reasons as given in table 1.

Out of total 254 reports sent for review,157 were concordant with original reports and discrepancies were seen in 97 reports.

Table 1: Factors Initiating Review of the Reports

Causes initiating the review	
Discordance between clinical & pathological diagnosis	15.7%
Physician dis-satisfaction with diagnosis	24.40%
Disagreement during intra-departmental consultation	15.34%
Dis-satisfaction with Margin status	6.29%
Discordance with radiological findings	5.11%
Clinical behavior of the tumor	8.26%
Discordance with cytological findings	10.23%
Difference with outside expert opinion	18.89%
Discordance with immunohistochemistry	7.08%
Request for additional special stains for fungus	3.14%

Discrepancies were divided according to their impact on patient care, the phase of test cycle in which they occurred and according to the site of their occurrence. Out of these 97 discrepant reports, 62 (64.1%) had errors in analytical phase, 20 in pre analytical phase and 15 in post analytical phase. 9 out of 97 reports were classified as major discrepancies and remaining 88 as minor as shown in table 2.

Table 2: No. of Disagreements in Second Opinion Diagnosis

Total no. of disagreements	Major disagreements No.	Minor disagreements No.
97	9	88

In this study, highest rate of discrepancies was seen in breast pathology(16%) followed by lymph nodes(14%),Gynecology (13%), head and neck (13%), soft tissue (12%), Gastrointestinal tract (12%), Dermatology(11%),Genitourinary (7%) and lungs(2%) as shown in table 3.

Out of 9 major discrepancies, 3 were from

Table 3: Changes in the Reports According to the System Involved

Organs involved	Cases
Breast	16
Skin	11
GIT	12
Soft tissue	12
Genitourinary	7
Gynecological	13
Head & neck	13
Lungs	2
Lymph nodes	14

Table 4: Frequency of Type of Addenda or Amended Reports

Amendments	Number
Tumor type	3
Tumor grade	3
Tumor size	2
Change in Gleason scoring	1
Margin status	9
Benign versus malignant	3
Presence of Ganglion cell	1
Tissue misidentification	1
Tumor missed	1
Change in patient demographics details due to transcriptional errors	5
Change in type of infection	2
Presence of lymphovascular invasion	1
Presence of perineural invasion	1
Type of fungus changed	1
Change in type of benign tumor	2
Addenda	
Grade not mentioned	3
Special stain not included in the report, though performed	1
Margin status not mentioned	7
Missed tumor sections in gross	1
Tumor size not mentioned	2
Exact tumor location not mentioned	11
Ancillary studies not recommended or wrongly advised	13
% of DCIS not mentioned	10
Additional pathological findings not mentioned	11
Percentage & type of necrosis not mentioned	2

breast, 1 from lymph nodes, 2 from gynecology, 1 from head and neck (thyroid) and one from gastro-intestinal tract and one from skin.

The reports after review were dispatched as amendments or addendum reports. In amended reports, corrections were done and in addendum reports additional findings were added as shown in table 4.

Factors resulting in discrepant reports were analyzed as organizational (27%), technical (38%) and individual (35%).These were analysed according to Eindhoven classification as shown in table 5.

Table 5: *Root Cause Analysis using Eindhoven Classification according to Phase of Testing*

	Causative factors	Eindhoven model of Root cause analysis
Pre-analytical phase	Incomplete or wrong clinical information	OEX, OK, HKK
	Specimen manipulation	
	Insufficient quantity	
	Incorrect anatomical site	
	Margins not marked, mal-oriented	
	Unfixed specimen or inappropriate fixative	
	Specimen loss during transportation	
	Specimen mix-up during transportation or labeling	
	Biopsy not from representative area	
	Cautery & crushing artifacts	
Analytical phase	Equipment failure	TEX, TD, OC, HKK, HRI, HRM, HRQ, PRF
	Protocols & procedures not being followed	
	Specimen damaged during decalcification	
	Lack of immunomarkers	
	Carry over & floaters	
	Thermal injury	
	Block exhausted	
	Mislabeled cassettes & slides	
	Over-processing	
Post - analytical phase	Transcriptional errors	TD, OEX, HRV, HKK, HRC, HRQ
	Ineffective laboratory information system	
	Delayed turnaround time	
	Lack of intra-departmental consultation	
	Failure to act on test results	
	Lack of co-ordination between physician & pathologist	

LIMITATIONS

Unwillingness of patients to provide second review reports, uncooperative behavior of some consultants to exclude their discrepant reports and lack of an effective laboratory information system for data retrieval were limitations of this study.

DISCUSSION

Surgical pathology reports act as treatment guide for the clinicians. A discrepant report with erroneous diagnosis can lead to hazardous consequences. Upon examining the rate of discrepancies in surgical pathology reports, many studies focus on the importance of secondary review infavor of patient care, health and cost.[16] It means to review a specimen by a second pathologist on the basis of pre-acknowledged parameters before initiating therapy.

Association of Directors of Anatomy and Surgical Pathology (ADASP) mandated the secondary review to improve health care facility.[1].

Overall, discrepancies are classified as major or minor depending upon their effects on patient care. Major discrepancies affected the clinical outcome significantly while minor discrepancies had no effect[15]. In our study, during a period of 6 months, 5000 reports were dispatched. 254 samples were selected mainly because of clinicians' dissatisfaction and their blocks were sent for review to other well established histopathological centers including both government and private laboratories. The reviewed reports were compared with the original reports to check discrepancy rate.

Possibility of high rate of disagreements between original and reviewed reports were because of some issues including lack of technology, interobserver variability and absence of uniform terminology. Out of 254 cases, 157 cases were concordant with original reports and discrepancies were seen in 97 cases. 62 cases had discrepancies occurring because of problems in diagnosis in analytical phase. Major discrepancies affect the treatment and prognosis significantly. Many previous studies have reported overall high (35.2%) discrepancy rate with major discrepancy rate of 7.2%.[17] Manion et al, observed 9% minor disagreements and 2.3% major discrepancy rate for 5629 patient cases.[18] Weir et al,

in reviewing the pathological consultation submitted to the University Health Network, observed a 6.8% discrepancy rate in 1,000 randomly selected patients.[19]

In our study all of the major discrepancies and most of minor discrepancies occurred in analytical phase. Errors in analytical phase were related to incorrect histological diagnosis of the lesion, lack of awareness about latest guidelines, wrong method or carelessness during grossing specimens, excessive workload, no equipment for ancillary studies and lack of sub specialization along with no intradepartmental consultations on complicated cases.

Most of the discrepancies were seen in reporting of breast pathology. Out of these, 3 had major discrepancies and affected the treatment and clinical outcome of the disease. One major discrepancy was because of inaccurate histological diagnosis of tumor. It was reported as ductal carcinoma in situ in biopsy specimen and was found to be usual ductal hyperplasia in secondary review. Second major discrepancy was in reporting of borderline phyllodes tumor that was later on diagnosed as malignant phyllodes on review. Third major discrepancy was missing section of skin involved by malignant infiltrating ductal carcinoma. A study conducted by Khazai L et al, found significant discrepancy (11.47%) that affected patient care in a retrospective one year study of 1970 breast cases.[3] Similarly a study by Price JA et al on inter institutional pathology consultation on breast cancer found 11% discrepancies with high or medium clinical impact.[20]

We found that second area with most discrepancies after breast pathology was lymph nodes. There were 2 major discrepancies. One of the lymph node was diagnosed as granulomatous and was found to be reactive on secondary review. Second lymph node was diagnosed as Hodgkins lymphoma but was found to be Langerhans cell histiocytosis on secondary review. In a study conducted by al Maghrabi and Sayadi H 7 % major discrepancies were found in lymphoma diagnosis.[9] In gynecological specimens, one major discrepancy was seen in case of teratoma that was classified as mature and was found to be immature on second review.

In head and neck region one major discrepancy was seen in reporting of thyroid gland. Follicular carcinoma was reported as follicular adenoma. In a study conducted by Kronz JD, head and neck was labeled as a high risk area prone to diagnostic errors and secondary review was termed mandatory before major surgical intervention.[21] In a study conducted by Gerhard R et al, a definitive diagnosis was achieved in 42.9 % cases by second opinion diagnosis of indeterminate thyroid cytology with 55.8 percent positive predictive value on histological follow up.[22]

One major discrepancy in gastrointestinal tract was found because of lack of thorough grossing. Specimen had perforation and a very small area of tumor was missed. A study conducted by Hahm GK et al to find out value of second opinion in gastrointestinal and liver pathology, fourteen cases with major discrepancies had significant impact on clinical outcome were observed.[17]

For dermatopathology, a study conducted by Gaudi S et al found that 22% cases had major discrepancies. This study proposed need of supra specialization in field of pathology like dermatopathology to reduce diagnostic errors.[11] In a study of Trotter and Bruecks, 1.4% discrepancy rate was observed in skin biopsies.[23]

In addition to the improvement in health care delivery, many studies also reported the effective cost saving with the use of secondary review. For example, upon reviewing 535 core needle biopsies before radical prostatectomy, Epstein et al examined clinical and cost effect of secondary review of prostatic needle biopsy referred to their hospital for radical prostatectomy. The review of these cases costed US$44883. Seven of these were actually benign lesions and six patients had their surgeries cancelled saving approximately US $85,686. It was therefore concluded that secondary review is also cost effective.[24] Similarlyreview of 131 specimens of in a study conducted byCobelentz TR et al found

similar results.[25]

A reasonable question is whether all pathological specimens need secondary review or only specific organs or organ systems are prone to discrepancies. This study and previous studies show overall change in diagnosis and it is similar for all type of surgical pathology material. No organ or organ system is immune from diagnostic errors. Our study and previous studies focus on the importance of secondary review. For the benefit of patients and to raise the standard and quality of health care, intra and inter departmental consultations should be opted before therapeutic interventions.

CONCLUSION

Patient safety culture needs to be adopted by both resident and reporting pathologists. Individual factors are mainly attributed to cultural attitudes and educational constraints. Lack of intra-departmental consultation, failure to acquire proper clinical information with inappropriate communication with requesting physician; were major constraints in providing a good quality report. Technical errors need to be monitored and minimized to a negligible extent. Quality controls need to be checked at every step from requisition till report dispatch.

IMPLICATIONS

By highlighting the most relevant points of interest, it is possible to improve both the methodology and the procedural safety. A follow up study must be carried after adoption of lean methodology to reevaluate the impact of new quality measures on six sigma metrics. Furthermore, errors in the post-analytical phase and other tests including fine needle aspiration cytology and frozen sections should also be subjected to six sigma metrics and root cause analysis using Eindhoven Classification.

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SPECTRUM OF DERMATOLOGICAL PATTERN CHANGES DURING PREGNANCY AT KISHWER FAZAL TEACHING HOSPITAL

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Abstract

Background: Immunologic, endocrine and metabolic variations during pregnancy often lead to various physiological skin changes.

Objectives: Current study assessed one hundred sixty-eight (n=168) pregnant ladies to determine instigated physiological cutaneous impairments during pregnancy in our local community.

Results: The different changes in the current study includes: increase level of pigmentation (89.47%) and melasma (47.5%) with different region of distributions.

Conclusion: Pigmentary changes are the most well-known findings in pregnancy having unique distribution on different region of body such as neck.

Keywords: pigmentation, pregnancy, physiological skin changes, melanomas.

During pregnancy metabolic, endocrine and immunological changes lead to different pigmentation patterns in skin. Most of these changes are so frequent and risk free that they are considered normal and termed as "physiological skin changes." 90% of women show high levels of melanin pigmentation and straie formations.[1] As far as vascular changers are concerned distension, instability and proliferation are more common in pregnant women. These changes often manifest on skin as spider agiomas, palmar erythema, cutis marmorata, varicosities and gingival edema.[2] There is also possibility of nail and hair changes in some women.[3] Accompanied other variations eccrine and sebaceous glands activity increases while apocrine glands show decreased level of secretions.[1] No well-established literature is available on this topic, and this study was designed to evaluate pregnancy induced changes.

METHODS

This was an observational study conducted on 168 women in the department of Obstetrics and Gynaecology, at Kishwar fazal teaching Hospital, SHEIKHUPURA and MAYO Hospital LAHORE during the time period of January 2019 to December 2019. Females of reproductive age group (21-46 years) having the history of skin changes or new onset of dermatological changes were included in this study after the clearance of ethical committee of both hospitals. Written informed consent was taken before including the patients in this observational study. Detailed medical history was obtained including skin changes like pruritus and other obstetric parameter including duration of pregnancy. Each patient was examined clinically and location, pattern and time of onset of new systemic and cutaneous changes were noted. Patient follow up duration was one month. All medical and clinical history and cutaneous changes were noted on specially designed perfoma. Those women suffering for any other disease that may lead to skin changes in addition to pregnancy such as hyperprolactinemia, Cushing's

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disease, hypothyroidism, hyperthyroidism, active liver disease, renalimpairment, established type 1 or type 2 diabetes mellitus, any history of drug abuse or intake of estrogen and progesterone were excluded from this study.

RESULTS

Findings of the current study suggests that out of 168 patients, about 141 (n=141) were assessed. Rest of them were left and did not come for follow up. Age of the substituted samples range in between 21-46 years, with their mean age of 26.7 years. Most of the patients introduced in the second and third trimester of pregnancy; 52 primigravida (36.8%) and 38 were second gravida (22.6%).The majority of the patients were expected to have type III and type IV skin. Whereas, the majority of the patients were observed to have lower center and financial classes.

Out of 141, patients showed pigmented changes in 126 (89.4%) patients. Of these, expanded pigmentation was generally located in the areolar region, saw in 126 (100%) cases, in genitalia 65 (51.5%), 44 (34.9%) in linea alba, 26 (20.6%) in neck and followed by the 6 (4.7%) in axillary region. (Table 1)

Table 1: Regional Distribution of Pigmented Area

Region	Number of patients	%age
Areolar	126	100
Genitalia	65	51.5
Linea alba	44	34.9
Neck	26	20.6
Axillary region	6	4.7

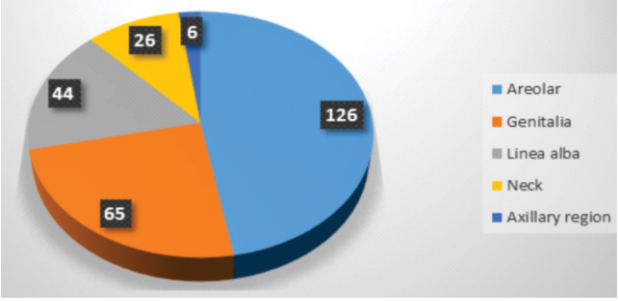

Figure 1: *Regional Distribution of Pigmentation*

41 patients demonstrated summed up hypermelanosis. Also, pigmentation of late scars was found in four (3.1%) cases. Single instances of infra-mammary and speckled pigmentation over both breasts of the patients were observed. Similar Pigmentation induced during pregnancy over the neck were seen in about 26 (20.6%) patients. It regressed immediately after delivery and a background marked by comparable pigmentation during past pregnancies was seen in 15 patients (11.9%).

Pregnancy-induced melasma had seen in 67 patients (47.5%). There was no past history of any topical application. The cheeks and nose were the most usually influenced sites, associated with 41 (61.1%) and 49 (73.1%) cases separately. Different sites involved included the 14 in forehead (20.9%), 2 in eyebrows (2.9%), 10 in jawline (14.9%) and 16 in upper lips (23.8%). (Table 2)

Table 2: Regional distribution of Melasma

Region	Number of patients	%age
Nose	49	73.1
Cheeks	41	61.1
Upper lips	16	23.9
Forehead	14	20.9
Jawline	10	14.9
Eyebrows	2	2.9

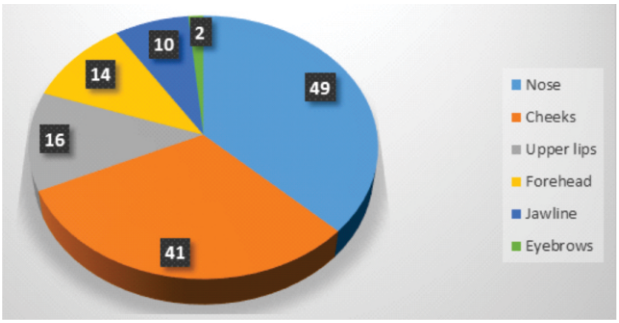

Figure 2: *Regional Distribution of Melasma*

Dermal type of cases 8 (11.9%), whereas an epidermal type of melasma was found in 52 cases (77.6%) and 19 cases (28.3%) mixed were seen. The beginning in 28 cases (41.7%) was in the first trimester, 39 cases (58.2%) in the second trimester and in 6 patients in the third trimester. 59 patients (88.6%) created melasma for the first time during progressing pregnancy. Determination of the condition postpartum was found in 8.32% of cases. However, repeat with subsequent pregnancies, postpar-

tum regression was seen in 8.1% of cases.

DISCUSSION

Findings of the current study suggests that the hyper pigmentation of the skin remains as one of the most common and recognizable cutaneous change in the patient group during their course of pregnancy. About 89.4% of patients executed pregnancy induced increased skin pigmentation, that highlighted regularly increased pigmented districts, such as, the areolae of the genitalia, axillae, and breast remained most common. Scar pigmentation and formation of neck lining were also observed in some of the patients. Findings predicted with the past reports and the pigmentation of the neck were accounted already.[4,5] In 23.2% patients was found pregnancy prompted pigmentation of the neck in the findings of the present study. About seventeen (n=17) patients, were those who have reported comparable changes during the course of their disease or in their previous pregnancies. Darkening of the skin special darkening around the orifice more prominent affectability of melanocytes to hormonal stimulation in addition to the reported types such as type III and type IV skin shading in their respective ethnicity. Due to their racial characteristic features such as unusual destinations and the number of pigmentation during their pregnancy.[6]

About 47.5% were observed with melasma. It was reported to account for about 50 to 75% of the substituted pregnant females. The beginning in the vast majority of our cases was during the first trimester, though Leal Khouri and Martin revealed a beginning during the subsequent trimester. The most widely recognized site of inclusion was nose (73.1 %), followed by other regions shown in table 1.This pattern of conveyance is a predictable component of melasma of pregnancy. 9 (7.4%) cases had dermal type, 53 (67.2%)cases epidermal type and 24(29.3 %) cases mixed type of melasma. The frequency of mixed type was higher in our study compared with past study. This might be due to racial contrast.[7]

CONCLUSION

The remarkable highlights of our study are, in 20.1% of cases was found pigmentation of neck; pigmentation of this region has not been reported previously other skin changes and pigmentations are more similar to the other regions and communities. We also found that these changes are not harmful to pregnancy and less severe as compare to other communities that may be the good use of vitamin C in our region.

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FREQUENCY OF VARIOUS CONTRIBUTING FACTORS FOR DIABETIC KETOACIDOSIS IN PATIENTS OF DIABETES MELLITUS

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Abstract

Background: Diabetic ketoacidosis (DKA) is the life threatening but preventable complication among the patients of diabetes mellitus. Infections, non-compliance to the treatment and low socioeconomic status are major factors of DKA in diabetic children.

Objective: To find the frequency of various contributing factors for diabetic ketoacidosis in patients of diabetes mellitus

Methods: This Cross-sectional study was done at Pediatric Department, Jinnah hospital, Lahore for 6 months. 135 children with diagnosis of DKA were enrolled. Contributing factors were evaluated in DKA patients among Type I diabetes. All the information was entered in structured questionnaire. Data was entered and analyzed using SPSS version 20.

Results: The mean age of children was 8.61±4.47years. There were 110 (81.5%) males and 25 (18.5%) females. The mean duration of diabetes was 4.69±2.87years. In this study, 65 (48.2%) children had infection. In this study, 36 (26.7%) had compliance to treatment. In this study, 112 (82.96%) belonged to low socioeconomic status.

Conclusion: Thus the infection, non-compliance to treatment and low socioeconomic status are more prone to cause DKA in children.

Key words: Diabetic ketoacidosis, type I diabetes mellitus, children, infection, non-compliance, low socioeconomic status

Diabetic ketoacidosis (DKA) is the life threatening but preventable complication observed among the patients of diabetes mellitus. It is described as the metabolic acidosis, hyperglycaemia and ketosis, which can occur in the existence of very less concentration of an effective insulin action.[1] All over the world, every year around sixty five thousand children of age less than 15 years develop the type 1 diabetes mellitus. Out of these, 80% children develop DKA and present in emergency.[2] DKA is one of the most frequent cause of admissions in the pediatric intensive care unit for the children. Cerebral oedema is the most common and critical complication of the DKA among diabetic children, which cause morbidity and mortality in large number of cases.[1]

Approximately 15 - 70% of children who diagnosed to have type I diabetes mellitus, present with DKA at initial presentation. Nevertheless, the children with known type 1 diabetes mellitus can got DKA because of non - compliance or poor compliance to the prescribed insulin therapy, or any other undercurrent illness.[1] Infants and children with DKA are often misdiagnosed as having bronchiolitis,

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asthma or pneumonia and given glucocorticoids or sympathomimetic drugs for treatment, which worsen the metabolic imbalances. Due to this misdiagnosis, type I diabetes leads to more severe dehydration & acidosis and eventually to the altered level of consciousness or even coma.[3]

Overall, the annual incidence of the diabetes mellitus among adults is approximately 24.3 cases per 100000 population. Though about 15,000 new cases diagnosed with diabetes are type 1 each year, rising the number of young children being diagnosed with the type II diabetes, particularly, in minorities (3,700 each year).[4] One study, conducted by Mayer-Davis et al., during the period of 10 years i.e. 2002 to 2012, the rate of type I & type II diabetes mellitus significantly increased in young adults in US. According to the final report, after adjusting the values for age, gender, and ethnicity or racial groups, the incidence of type I (in individuals of age 0 - 19 years) and type II diabetes (in individuals of age 10 - 19 years) during this tenure had annually relative increase of 1.8% & 4.8%, respectively. The highest increases happened in minority youths. [5]

The rationale of my study is that there is limited availability of local data on DKA occurrence in diabetic children. This study is proposed to find out major risk factors for DKA in children who present with DKA. This study will help guiding the parents of diabetic children, so that they could identify risk factors of DKA and seek early treatment in order to avoid occurrence of DKA and the reduction of expected morbidity.

OBJECTIVE

To determine the frequency of various contributing factors for diabetic ketoacidosis in patients of diabetes mellitus

METHODOLOGY

Study Design: Cross-sectional study

Setting: The study was carried out in Pediatric Department, Jinnah hospital, Lahore.

Duration: The study was completed in 6 months i.e. 28-11-2017 to 28-05-2018

Sample Size: n = 135 patients was estimated by using confidence level = 95%, margin of error = 6% and expected proportion of poor compliance i.e. 14.7% (6) (lowest percentage of all contributing factors of DKA in patients of diabetes mellitus).

Sampling Technique: The techniques used to include the patients in the study was Non-probabi-lity, consecutive sampling.

Inclusion Criteria: Patients of age <15years, either gender with type 1 diabetes (Fasting blood sugar of >126mg/dL on two separate tests and HbA1c of 6.5%, diagnosed at least 6 month ago) who fulfilled the criteria of DKA. DKA was biochemically defined as serum glucose level > 200 mg / dl, venous pH < 7.30, serum bicarbonate concentration < 15 mmol/L, together with ketonuria (ketone ++ + in urine) were included.

Exclusion Criteria: Patients not accompanied by parents or Patients not willing for study were not included

Data Collection Procedure: 135 Patients with diagnosis of DKA admitted in the Pediatric Department of Jinnah hospital, fulfilled the selection criteria were recruited in the study. Informed consent was taken from parents and approval of study from ethical committee. Their information including name, age, sex, address, date of admission and low socio-economic class were recorded. Complete medical record, physical examination and laboratory findings were taken. Contributing factors were evaluated in DKA patients among Type I diabetes i.e. infections including sepsis, respiratory tract infection, urinary tract infection, central nervous system infection, non-compliance / poor compliance of diabetes treatment, and low socioeconomic status. All the information was entered in structured questionnaire.

Data Analysis: Data was entered and analyzed using SPSS v. 20. Quantitative variables (age) were presented as mean & standard deviation while qualitative variables (contributing factors i.e. gender,

infection, compliance to treatment, low socio-economic class) were presented as frequency and percentage.

RESULTS

The mean age of children was 8.61±4.47years. There were 110 (81.5%) males and 25 (18.5%) females. The mean duration of diabetes was 4.69±2.87years. Table 1

In this study, 65 (48.2%) children had infection, 99 (73.3%) had poor compliance to treatment while 112 (82.96%) belonged to low socioeconomic status. Table 2

Table 1: Characteristics of children

n	135
Age (years)	8.61±4.47
Gender	
Male	110 (81.5%)
Female	25 (18.5%)
Duration of diabetes (years)	4.69±2.87

Table 2: Causes of DKA in type I diabetes

Causes	F (%)
Infection	65 (48.2%)
Non-compliance	99 (73.3%)
Low socioeconomic status	112 (82.96%)

DISCUSSION

DKA is the lethal emergency condition observed in pediatrics, which is described as hyperglycemia (11.1 mmol/l or >200 mg/dl), metabolic acidosis (venous pH <7.3 or bicarbonate < 15 mEq/l in blood) accompanying with ketonuria, glycosuria, & ketonemia.[6] The rate of DKA - related mortality among pediatrics in developed countries was reduced to 0.15 - 0.31%.[7, 8] But, the region of under - developed or developing countries with less medical facilities, the chances of DKA related mortality is high, and several children die before getting the correct treatment. Latest research found the DKA related mortality rate from 21% to 24% among individuals who also develop cerebral edema due to DKA, thus causes the higher rate of mortality in most cases of DKA and also high frequency of perpetual neurological damage.[6,9-11]

In our study, 65 (48.2%) children had infection, 36(26.7%) had compliance to treatment and 112 (82.96%) belonged to low socioeconomic status. Naveed et al., conducted a study in Pakistan, infections (50%) were the major risk factor for DKA followed by non-compliance to the treatment (11 %).[12] They also found that DKA was more frequent in females (55%) as compared to males (45%).[12] Syed et al., conducted a study in Pakistan showed that severity of DKA was linked with presence of infection (33%) and poor compliance (15%).[13] In a study Syed M et al., following risk factors associated with DKA, history of insulin emission in 23.1%, infection in 36.4%, family history of diabetes mellitus in 68.1 % poor compliance in 14.7% and low - middle socioeconomic status in 93.1%.[13]

According to one study, conducted in Saudi Arabia regarding the causes of recurrence of DKA, inappropriate use or poor compliance of insulin was the most common cause i.e. 67% for recurrence of DKA, followed by infection i.e. in 31% cases. Among children who had poor compliance of insulin, 46.3% children did not give any reason, 37.3% said that they were feeling sick, 10.4% had mixed reasons while 6% said that there was the lack of supplies.[14] Qari et al., also observed that the discontinuation or had poor compliance of insulin as well as the infection were the two most common risk factors accounting for 54.4% & 28% DKA cases respectively. They proposed on the basis of the findings that DKA is the lethal complication in the diabetic individuals. The implementation of the patient's education program is a very important step to raise the awareness regarding diabetes and DKA to prevent the development of DKA and its associated complications. The part of the cultured and socioeconomic risk factors in provoking or triggering the DKA must always be deliberated and controllable factors must be eliminated if possible.[15]

Alourfi and Homsi reported that first and second factors were infection (74%) and treatment compliance problem (17%) in type I diabetic

patients.[16] Rodriguez-Gutierrez et al., also reported that origin of the DKA could be ascribed to the two main reasons i.e. (I) treatment omission (non-compliance) in 44.4% patients and (II) infections in 38.8% patients.[17] Lee et al., showed that preceding infections (19.8%) was prevalent in the DKA. An earlier infection (OR = 3.16; 95% CI; 1.61 - 6.23; P = 0.001) also increased the risk for DKA.[18] Mudly et al., found in their study that Infection was present in 40% of type 1 diabetes patients with single episode of DKA. A total 23.2% of all the admissions for single episode of DKA involved the non-compliance of the medication that was previously prescribed.[19]

Zhong et al., conducted a study in England, observed that among individuals with type I or type II diabetes mellitus, the rate of hospital admissions was increasing for episodes of DKA during the period 1998 to 2013. More precisely, the researchers found that the rate for individuals of type I diabetes increased during 1998 & 2007 and then continued to stay at same level till 2013, but the rate for individuals of type II diabetes increased by 4.24% every year during 1998 & 2013.[20] The complications related to DKA include diffuse ischaemic processes and sepsis. Jessup et al., conducted a cohort study and opposed that among pediatrics, who had a new-onset type I diabetes mellitus, also those who have severe, but uncomplicated diabetes, DKA inclined to show less intellectual functioning followed by the improvement in individuals with DKA than did individuals without DKA. The researchers proposed that DKA and its treatment causes the neuronal injury, which leads to "acute and possibly long-term cognitive deficits."[21]

CONCLUSION

Thus the infection, non-compliance to treatment and low socioeconomic status are more prone to cause DKA in children. Now we have got the local evidence which also showed that these factors have high frequency to cause DKA. Now in future, we can plan surveillance programs and counselling of parents to avoid such factors (modifiable factors) and can screen patients regularly in case (non-modifiable) factors.

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ASSOCIATION OF PHYSICAL ACTIVITY WITH SARCOPENIA & SARCOPENIC OBESITY IN MIDDLE AGED PERSONS COMING TO JINNAH HOSPITAL LAHORE

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Abstract

Background: Sarcopenia is common in aged population across Pakistan. However, it is one of least investigated subject.

Objective: The objective of this study is to evaluate any association of insufficient physical activity with sarcopenia and sarcopenic obesity in middle aged persons coming to JHL.

Study Design: Cross sectional study

Study Setting: Medical and surgical wards of JHL in Jinnah hospital Lahore.

Duration of study: From April – June 2018

Sample size: 100individuals aged 45 years or above were included in this study.

Sampling technique: Non probability / convenience sampling technique

Results: Analysis of collected data described that sarcopenia and obesity are related to lack of exercise. Majority of individuals who showed symptoms of sarcopenia and obesity are those who have lower physical score and used to do insufficient exercise.

Conclusions: Though insufficient physical activity is not the only reason of sarcopenia, however in this study data suggests it is one of major reasons for obesity and sarcopenia.

Key words: Sacropenia, Sacropenic obesity, physical activity,

Decrease in muscular mass characterized by lower muscle strength and motor function is called as sarcopenia[1,2] and when related with excess body fat, it is labeled as sarcopenic obesity.[3] Sarcopenia and sarcopenic obesity enhances the risks of musculoskeletal disorders and can retard functional capacity.[4] In addition, both these conditions are risk factors for cardio-metabolic disorders,[5] falls,[6] frailty,[7] and death.[8,9]

Regular exercise or active life style is helpful in maintaining or even increasing muscle mass and strength.[10,11] It reduces body fat[12] and consequently, improves motor performance.[13] Similarly physically active life style is reported to prevent sarcopenia[14] and regular exercise may help to decrease sarcopenic obesity.[15] Association of lesser physical activity with sarcopenia and sarcopenic obesity in elderly people is reported by some studies,[16-19] but these studies did not find type of physical activities, duration and their relationship with sarcopenia and sarcopenic obesity. Moreover, most of these studies are not conducted in Pakistan, especially on patients coming to Jinnah Hospital, Lahore. Domain of physical activity linked with improving muscle structure and function would help adopting preventive measures, like knowingly beneficial physical activity of a particular type/domain. These aspects must be studied to determine the resultant sarcopenia and sarcopenic obesity linked with other complications in older patients. Hence, the primary objective of this study was to assess whether insufficient physical activity is associated with sarcopenia or sarcopenic obesity among individuals aged 45 years or above.

Sarcopenia is common in aged population across Pakistan. However, it is one of least investigated subject. The purpose of study is to establish a link between insufficient physical activ

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ity and sarcopenia and sarcopenic obesity. Obesity was defined as waist circumference ≥90 cm for men and ≥ 85 cm for women will be taken as sarcopenic obesity.[19]

METHODOLOGY

Cross sectional study was conducted in at different wards of JHL in Jinnah Hospital Lahore. The patients were usually from poor socio-economic background and sarcopenia was common among them. Sample size was 100. Convenience sampling technique was used for data collection. According to inclusion criteria, Participants from 45 to 65 years old were included because most respondents participated in this phenomenon, especially at this age, without gender discrimination and Subjects with sarcopenia or sarcopenic obesity as defined in the operational definition were included in this study. Participants with sarcopenia or sarcopenic obesity with malignancy and with chronic communicable diseases like tuberculosis were excluded from this study.[20] Data was entered and analyzed in SPSS-21. Mean and SD was calculated for numerical variables like age, duration of disease, BMI, mid arc circumference. Frequency and percentages were calculated for qualitative variables like gender, and presence of sarcopenia / sarcopenia obesity. Data was cross tabulated for age, gender and duration of disease with sarcopenia and chi-square test was used to assess statistical significance with p<.05 as statistical significance.

RESULTS

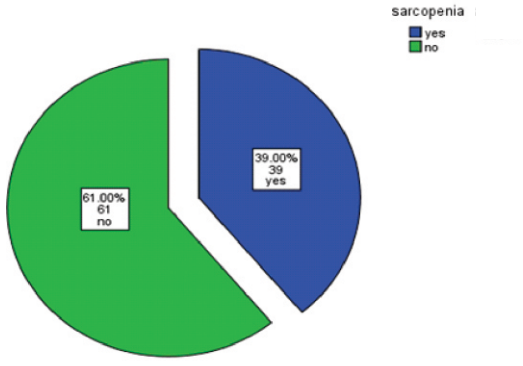

Figure 1: *Sarcopenia Among Subjects*

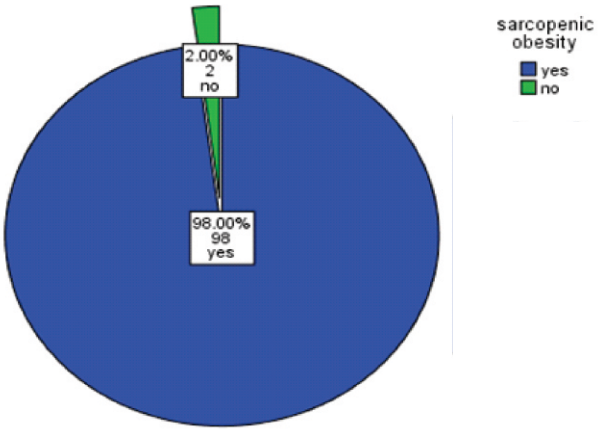

Figure 2: *Sarcopenic Obesity Among Subjects*

Table 1: Demographic and Clinical Profile of Subjects

Variables n= 100		Frequency	Percent
Age	less than 55	65	65.0
	55 – 65	35	35.0
Gender	Male	39	39.0
	Female	61	61.0
Education	None	21	21.0
	Primary	32	32.0
	Secondary	15	15.0
	Higher	32	32.0
Disease	Diabetes	29	29.0
	heart disease	11	11.0
	Hypertension	23	23.0
	Arthritis	31	31.0
	liver disease	6	6.0

Table 2: Anthropometric Measurement and Physical Activity Score

Variables n=	Frequency	Percent
mid upper arm circumference		
less than 20	7	7.0
21 - 25	32	32.0
25 - 45	61	61.0
waist circumference		
< 85 cm	21	21.0
86 – 90 cm	55	55.0
91 – 100 cm	22	30.0
101 and above	2	2.0
physical activity score		
Low physical activity (Score < 10)	38	38.0
Moderate physical activity (Score 11 - 20)	48	48.0
Normal physical activity (Score 21- 30)	14	14.0

Table 3: *Physical Quality of Life of Subjects*

Variables n=	Frequency	Percent
How would you define your lifestyle		
Active	62	62.0
Sedentary	33	33.0
Bedridden	5	5.0
Do you exercise?		
Yes	42	42.0
No	58	58.0
How many times per week?		
Once	6	6.0
Twice	9	9.0
Three-four	11	11.0
Everyday	15	15.0
Don't do exercise	59	59.0
How many minutes a day?		
15-20mins	15	15.0
30mins	15	15.0
1 hour	10	10.0
More	2	2.0
Don't do exercise	58	58.0

Table 4: *Correlation of Sarcopenia, Sarcopenic Obesity and Physical Score*

Correlations					
			Sarco-penia	Sarcopenic obesity	Physical score
Spearman's rho	sarcopenia	Correlation Coefficient	1.000	.114	-.323**
		Sig. (2-tailed)	.	.258	.001
		N	100	100	100

A Spearman's rho correlation was run to assess the relationship between Sarcopenia, Sarcopenic obesity and physical activity. Data was collected from a sample of 100 individuals (aged 45 and above) in Jinnah hospital, Lahore. There was a moderate positive correlation between Sarcopenia and Sarcopenic obesity as value of Correlation Coefficient is .114. Secondly, there was a negative correlation between Sarcopenia and physical score as value of Correlation Coefficient is -0.323.

It shows that sarcopenia and Sarcopenic obesity are associated with lack of physical activity as correlation depicts the negative association of physical score with sarcopenia i.e lesser the physical activity, the more chances of having sarcopenia and Sarcopenic obesity. Similarly positive relation between sarcopenia and Sarcopenic obesity indicates the reduced muscular mass due to insufficient physical activity is also induced/influenced by resultant obesity.

Table 5: *Physical Activity Score and Sarcopenia Among Subjects*

Crosstab			Sarcopenia		Total
			yes	no	
physical score	Low physical activity (Score < 10)	Count	7	31	38
		% within sarcopenia	17.9%	50.8%	38.0%
	Moderate physical activity (Score 11- 20)	Count	24	24	48
		% within sarcopenia	61.5%	39.3%	48.0%
	Normal physicalactivity (Score 21- 30)	Count	8	6	14
		% within sarcopenia	20.5%	9.8%	14.0%
Total		Count	39	61	100
		% within sarcopenia	100.0%	100.0%	100.0%

Table 4: Chi-Square

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.143[a]	2	.004

The Chi square test shows the relationships among the different variables of the study. The value

Table 6: *Physical Activity Score and Sarcopenic Obesity Among Subjects*

Crosstab			Sarcopenic obesity		Total
			yes	no	
physical score	Low physical activity (Score < 10)	Count	36	2	38
		% within sarcopenic obesity	36.7%	100.0%	38.0%
	Moderate physical activity (Score 11 - 20)	Count	48	0	48
		% within sarcopenic obesity	49.0%	0.0%	48.0%
	Normal physical activity (Score 21- 30)	Count	14	0	14
		% within sarcopenic obesity	14.3%	0.0%	14.0%
Total		Count	98	2	100
		% within sarcopenic obesity	100.0%	100.0%	100.0%

Table 6: Chi-Square

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.391[a]	2	.009

of Pearson-Square chi is 11.14. The degree of freedom for this test is 02. The corresponding test statistics is .004. This shows that this association is significant.

The Chi square test shows the relationships among the different variables of the study. The value of Pearson-Square chi is 9.391. The degree of freedom for this test is 02. The corresponding test statistics is 0.009. This shows that this association is significant.

DISCUSSION

Sarcopenia and sarcopenic obesity induces micro and macro changes in morphology and physiology of muscles making them more vulnerable to injury and disorder.[5] Sarcopenia and obesity, in turn are caused by a number of risk factor, sedentary life style and lack of exercise being one of the majors. Moreover conditions like arthritis which restricts the mobility are also important factors for developing sarcopenia and obesity.[21] Some studies show that in liver diseases where protein synthesis is malfunctioned, the structural proteins in muscles also undergo degradations leading to reduced muscular mass.[22] In various metabolic disorders too sarcopenia is reported by many studies.[23] In most of studies sarcopenia and sarcopenic obesity is not investigated in association with insufficient physical activity.[24] The main objective of this study was to highlight the crucial link between physical activity and sarcopenia and sarcopenic obesity. Analysis of data revealed that 39% of respondents show the symptoms of sarcopenia and out of these 98% individuals were obese. Majority of respondents did not do exercise even having active life style. Sarcopenia and obesity was observed not only in sedentary respondents but also in active people who did not exercise and had some other condition like diabetes, hypertension etc. Majority of individuals showed higher values for mid arm circumference and waist than those which were set to determine obesity. In most cases physical score was lesser denoting lower muscular strength.[25] As shown by some studies that reduced muscle strength accompanied by lower muscle mass is related to lesser physical stress i.e physical activity and exercise to muscles,[26] similarly findings of this study hint about the role of lesser physical activity in developing sarcopenia and obesity of total 38% performed lower on physical score scale and 36 had sarcopenic obesity while 2 did not have. While 48% performed moderate and only 14% showed normal physical activity and they showed sign of sarcopenic obesity. This can be contributed to the fact that other conditions like arthritis, diabetes hypertension and some metabolic problems are the reason for sarcopenia and obesity other important one being the lack of exercise.[27]

In this study a moderate positive correlation was found between sarcopenia and obesity while negative correlation was found between physical activity and sarcopenia. As discussed in various studies that a number of factors can cause obesity and sarcopenia. This study focused to assess muscle strength, size and performance to investigate only the effects of lesser physical activity and exercise on muscle function and structure.

CONCLUSIONS

It is concluded that there is very vital association between the physical activity and sarcopenia and sarcopenic obesity. Analysis of data supports the hypothesis that insufficient physical activity contributes to development of sarcopenia and obesity.

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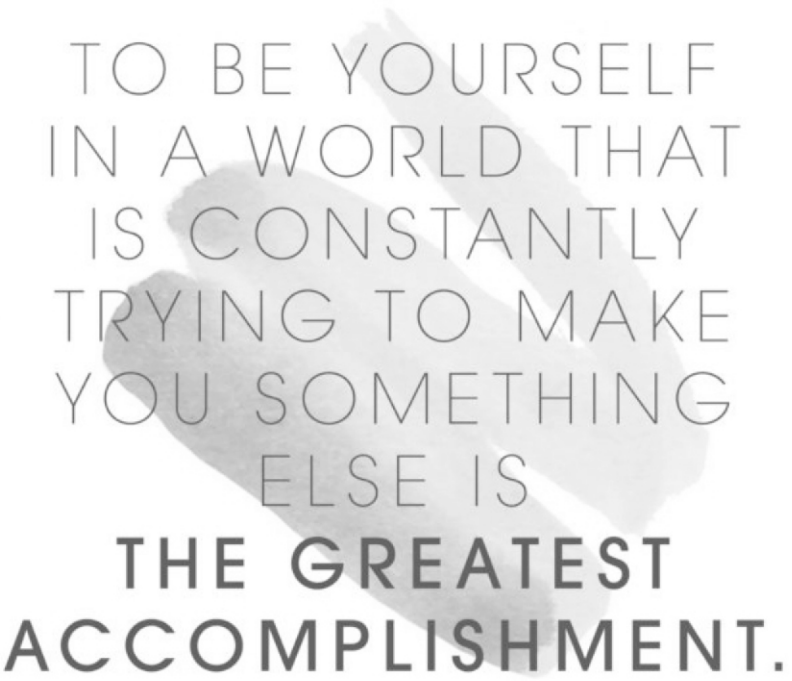

COMPARISON OF MISOPROSTOL AND TRANSCERVICAL INSERTION OF FOLEYS CATHETER IN INDUCTION OF LABOUR

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Abstract

Objectives: To find out the efficacy and safety of misoprostol and Transcervical Foleys catheter for induction of labor.

Method: The study was conducted in Kishwar Fazal Teaching Hospital Sheikhupura and Fatima memorial hospital Lahore from 2018 september to January 2020. 200 women with term gestation, having Bishop score < 6 with various indications for labor induction were included in the study and randomly divided in two groups. In Group 1, 25 microgram of misoprostol was placed intravaginally 4 hourly upto maximum 6 doses. In Group 2, Foleys catheter 16 F was placed through the internal os of cervix under aseptic condition and then inflated with 30 cc of sterile saline. Statistical analysis was done using SPSS software.

Results: Women who were candidates for induction of labor due to different indications were part of the study. Primary out come was induction to delivery interval. Secondry out comes were rate of vaginal delivery, cesarean section , chorioamnioitis, hyperstimulation of uterus, techysystole and Apgar scoreof baby at the time of delivery. The induction to delivery interval was 13.0+_6.50 hours versus 17.0+_7.00 hours (p<0.01). the rate of vaginal delivery was 76.5 % and 56.5% in misoprostol and foleys catheter group, respectively. Uterine hyperstimulation was more common with misoprostol. Neonatal outcome was same in both groups.

Conclusion: Intrauterine misoprostol is associated with a shorter induction to delivery interval than foleys catheter and increases the rate of vaginal delivery in cases of unripe cervix at term. Trancervical Foleys catheter is associated with lower incidence of uterine hyperstimulation during labor.

Key Words: Bishop score, induction of labor, hyperstimulation, tachysystole, hypertonus.

Labour induction is usually performed when the risks of continuing a pregnancy are more than the delivery of baby. There has been a considerable increase in the rate of labour induction. Approximately, 20% of all deliveries are initiated with labour induction.[1] Different methods are used for induction of labor but none of the available methods of labour induction is free of associated maternal and fetal risks; therefore, labour should only be induced when the risk of allowing the continuation of pregnancy outweighs the risk of delivery[4,5]. Bishop score and Cervical ripening has a close relationship with success rate of induction. The most common methods of labour induction when the status of cervix is unfavourable involve intravaginal use of misoprostol, transcervical insertion of Foley's catheter, prostaglandin passary and insertion of prostaglandin gel whereas with a ripe cervix oxytocin may be administered intravenously.[2,3,4] Misoprostol can be administered orally and by vaginal route. However, there remains some controversy concerning the dosage, the mode, and interval of administration of misoprostol[6]. Although perhaps use of a high dose could be associated with an increased risk for hyperstimulation of the uterus; however there are ongoing trials regarding optimal dose, dosing regimen, and route of administration. That's why, the method that ripen cervix in a short period of time play an important role in modern obstetrics. There exist no agreement on the choice of best and most proper labor induction

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method with unripe cervix[4]. Another procedure adopted for routine induction of labour involves transcervical insertion of Foley's catheter. Such a catheter appears to induce labour not only through direct mechanical dilation of the cervix but also by stimulating endogenous release of prostaglandins.[7,11] Mellah F et al performed a study which concluded that foleys catheter is suitable and safe method for patient with unfavorable cervix. Some other studies reported the same results.[3,7] A study done by Mundal et al, reported the almost similar results.[11] Our study is done to compare the effect of Transecervical Foley's catheter and Misoprostol in labor induction.

METHODOLOGY

The study was conducted at kishwar fazal teaching hospital and Fatima memorial hospital Lahore. 200 women included in the study were having singleton pregnancy with cephalic presentation, gestation age >37 weeks on the basis of LMP or first trimester ultrasonography, intact feta membranes, unfavourable cervix (Bishop score < 6), and needed delivery for fetal or maternal indication. Exclusion criteria was ruptured fetal membranes, chorioamnionitis, antepartum haemorrhage, cervical dilation >3cm, temperature >38°C, contracted pelvis, fetal distress, polyhydramnios, indication for immediate delivery, and previous caesarean section or other uterine surgeries .

A total of 200 women having indication of induction of labour with an unfavourable cervix (Bishop score ≤ 6) were included in the study. They were randomly divided into two groups: 100 women induced with intravaginal misoprostol (Group 1) and 100 women with transcervical Foley catheter (Group 2). At first, the method of the study was completely explained to them . This study was approved by the Ethics Committee of Faculty of KFTH. Cases were selected from outpatient department (OPD), and patients admitted in the hospital. The two groups were comparable with respect to maternal age, parity, duration of pregnancy and preinduction Bishop score. Demographic and clinical data was collected at routine antenatal visits. In Group 1, 25mcg of misoprostol tablet was placed intravaginally, 4 hourly for maximum 6 doses. When spontaneous contractions (>40–45 seconds every 3 minutes) were started , the further dose was not given. If there was no effective uterine contractions after the sixth dose, then it was considered as failure of induction by the concerned method. In Group 2, 16 sized Foley catheter was inserted into the endocervical canal under direct vision by doing a per-speculum examination. Once it crossed the internal os, the balloon was filled with 30mL of sterile saline solution and the catheter was attached to the inner side of thigh to maintain traction. The catheter was checked till the expulsion of the balloon spontaneously and labour augmentation was done by artificial membrane rupture or oxytocin drip (2.5 or 5 IU in 500 mL of Ringer's lactate solution was started then and it was titrated according to frequency and intensity of uterine contractions) whatever is indicated. The primary outcome measures were induction to delivery interval and secondary outcome measures include uterine contraction abnormalities like uterine tachysystole (6 contractions in a 10-minute period), uterine hypertonus (a single contraction lasting longer than 2 minutes) and uterine hyperstimulation. Other conditions like mode of delivery, maternal and neonatal outcome and Apgar score. Any other maternal or fetal complications were also taken into consideration.

RESULTS

A total 200 women in the study were randomly divided into two groups: Group 1 women induced with intravaginal misoprostol (n = 100) and Group 2 women induced with transcervical Foley catheter (n = 100). Maternal baseline characteristics were similar between the two groups in terms of age, parity, gestational age, pre induction Bishop score, and indications for induction (Table 1).

As shown in Table 2 the induction to delivery interval (mean ± SD) in women induced with intravaginal misoprostol was 13.03 ± 6.50 hours

while that of women induced with transcervical Foley catheter was 17.00 ± 7.00 hours. The induction to delivery interval in misoprostol group was significantly shorter than that in Foley catheter group ($p < 0.01$).

Table 1: *Demographic Profile and Ondication for Induction*

Parameters	Group I ($n = 100$) (misoprostol)	Group II ($n = 100$) (Foley catheter)	"p" value
Age (years) (mean = SD)	25- 30	25 – 30	> 0.05
Gravidity Primigravida	42%	40%	> 0.05
Multigravida	58%	60%	> 0.05
Gestational age (weeks) (mean ± SD)	39-41 weeks	39-41 weeks	> 0.05
Indication for induction Post dated pregnancy	70	67	> 0.05
Pregnancy induced hypertension	20	22	> 0.05
Intrauterine growth restriction	2	2	>0.05
Gestational diabetes mellitus	8	9	> 0.05

The use of oxytocin and ARM (artificial rupture of membranes) for labour augmentation was significantly higher in women induced with Foley catheter as compared to women induced with intravaginal misoprostol 77.2% versus 48.3% and 95.5% versus 66.7%, respectively. Combined use of oxytocin and ARM was 41.7% and 77.2% in misoprostol and Foley catheter group, respectively, and statistically it was very highly significant ($p < 0.001$). Uterine contraction abnormalities like hyperstimulation were reported in 7% of women while there was no case of hyperstimulation noted in Foley catheter group (Table 3).

Table 2: *Induction to Delivery Interval (Mean ± SD)*

Parameters	Group I ($n = 100$) (misoprostol)	Group II ($n = 100$) (Foley catheter)	"p" value
Induction to active phase interval (hrs) (mean ± SD)	10.6 ± 5.21	11.8 ± 5.82	>0.05
Induction to delivery interval (hrs) (mean ± SD)	13.0 ± 6.50	17.00 ± 7.00	<0.01

As shown in Table 4, the rate of vaginal delivery and caesarean section was 76% versus 56% and 24% versus 44% in misoprostol and Foley catheter group, respectively. The rate of vaginal delivery was significantly more in misoprostol group as compared to Foley catheter group ($p < 0.05$). In this study, there was a tendency towards more frequent caesarean section in response to fetal distress among women who were given misoprostol. This finding is in consistance with many studies that have demonstrated a higher incidence of hyperstimulation associated with fetal distress in women induced with misoprostol. In women induced with Foley catheter, nonprogression of labour was seen in 20% women. Meconium stained amniotic fluid was seen in 10 mothers (10%) induced with misoprostol and 8 women (8%) induced with Foley catheter. The caesarean section rate was more in Foley catheter group as compared to misoprostol group and the results were statistically significant ($p < 0.05$).

Table 3: *Outcome in Labour*

Augmentation required	Group I (Misoprostol)		Group II (Foley catheter)		*p* value
	N	%	*n*	%	
Oxytocin drip	29	48.3	34	77.2	< 0.01
Artificial rupture of membrane	40	66.7	42	95.5	< 0.001
Oxytocin + ARM	31	41.7	24	77.2	< 0.001
Complications					
Hyperstimulation	07	7%	00	00.0	< 0.01
Tachysystole	00	00.0	00	00.0	—
Uterine rupture	00	00.0	00	00.0	—

The Apgar score at 1 minute and 5 minutes (mean ± SD) was 6.80 ± 0.66 versus 6.91 ± 0.44 and 9.02 ± 0.06 versus 9.08 ± 0.14 in misoprostol and Foley catheter group, respectively (Table 5). Statistically there was no significant difference in the Apgar score between the two groups at 1 minute and

5 minutes ($p > 0.05$).

Table 4: *Comparison of Mode of Delivery.*

Mode of delivery	Group I (Misoprostol)		Group II (Foley catheter)		Total		"*p*" value
	n	%	*n*	%	*n*	%	
Vaginal delivery	76	76	56	56	132	66	<0.05
Caesarean delivery	24	24	44	44	68	34	<0.05
Total	100	100.0	44	100.0	200	100.0	

DISCUSSION

Induction of labour is an important part of obstetrics practice and is opt for good feto maternal outcome.[1] Labour induction in the presence of an unfavorable cervix is associated with high incidence of prolonged labour and increased rate of caesarean section.[2] Hence, the use of cervical ripening agents prior to conventional methods of induction of labor is now a standard practice. Until now different methods for labour induction are used. Their efficacy and safety is different.[1,3,4] So, in this study, we compared the efficacy and safety of 25µg vaginal misoprostol with transcervical Foley catheter for induction of labour. The results of the study show that induction to delivery interval was significantly shorter in misoprostol group as compared to Foley catheter group. Our findings were similar to Wind DA et al[5] Stephenson ML et Al[6],who also found significantly shorter induction to delivery interval in misoprostol group. Agarwal M et al[7] reported that the total duration of labour was significantly less in women induced with prostaglandins. Noor N et al,[8] also reported shorter interval for misoprostol compared to Foley' catheter. The shorter induction delivery interval in misoprostol group could be explained on the basis of greater oxytocic effect on uterus via vaginal route due to direct access to myometrium by cervical canal. Use of oxytocin for labour augmentation was significantly higher in women induced with Foley catheter as compared to women induced with intravaginal misoprostol[11]. Tuuli et al[9] reported same results. Abnormalities in uterine contractions were more common in women using misoprostol as compared to Foley's catheter. The induction with transcervical Foley catheter is associated with no risk of hyperstimulation that may be particularly useful when inducing labour in woman with previous caesarean section who is at increased risk of uterine rupture[7,11]. No case of tachysystole or uterine rupture was found in both the groups. Mellah F et al, found trancervical foleys catheter is associated with less side effects and more safe than misoprostol with no risk of hyperstimulation and techysystole that are occurring more frequently in the misoprostol group. Shoja S et al.[7] in their study found the same results. devaan MD et al[9]. found that uterine contraction abnormalities were more frequent in the misoprostol group than the Foley catheter group and thus this finding supports the fact that have demonstrated a higher incidence of hyperstimulation associated with fetal distress in women induced with misoprostol. Statistically there was no significant difference in the Apgar score between the two groups at 1 minute and 5 minutes. Similar results were obtained by Agarwal M et al.[2] and Roudsari et al.[12] ML Ten Eikelder[3] et al found no difference in neonatal outcome in mothers induced with Foley's catheter or Misoprostol but uterine contraction abnormalities are more with Misoprostol. Our study also supports these results.

Table 5: *Neonatal Outcome in Group I and Group II.*

Parameters	Group I ($n = 100$) (misoprostol)	Group II ($n = 100$) (Foley catheter)	"*p*" value
Apgar scor at (1 min)	6.80 ± 0.66	6.91 ± 0.44	>0.05
Apgar score (at 5min) Mean ± SD	9.02+- 0.06.	9.08+_0.14	> 0.05

CONCLUSION

The present study suggests intravaginal misoprostol is associated with a shorter induction to delivery interval as compared to Foley's catheter and it increases the rate of vaginal delivery in cases of unripe cervix at term. Transcervical Foley catheter is associated with a lower incidence of uterine hyperstimulation; thus Foley catheter may be a reasonable alternative for patients who are at risk of uterine

rupture during labour.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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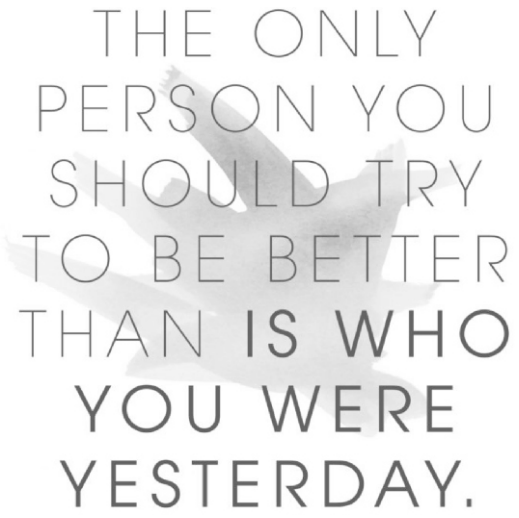

A CASE OF INFANTILE MASTURBATION (GRATIFICATION DISORDER)

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Abstract

Gratification disorder (infantile masturbation) is an interesting and rarely encountered clinical entity. It presents a diagnostic dilemma, as it closely resembles a seizure. So understanding the characteristics can help avoid unnecessary investigations, medication and parental anxiety. This is the first case being reported in our country.

Key words: gratification disorder, infantile masturbation, seizures

Infantile masturbation (gratification disorder) is a clinical entity in which a very young child (3months-3yrs)[1] exhibits episodic symptoms of orgasm like behavior (flushing, panting, moaning etc.) along with torsion of legs, adduction of thighs and sometimes rocking movements of the body.[2] Since there is no manual stimulation of genitalia, this condition is often confused with a seizure; resulting in unnecessary investigations and pharmacotherapy which can have side effects of its own. Omran et al[3] has described a case series of 3 such cases in Iran. Similarly, some cases have also been reported in India.[4] In some instances, apart from seizures, the disorder has been confused with abdominal colic and movement disorders; resulting in unnecessary and potentially dangerous investigations.[5]The purpose of our case report is to bring home to the clinicians the characteristic differentiating features of this condition and also to highlight its management. In addition to being the first case reported in our country, this is also first being reported in an adopted child, to the best of our knowledge.

CASE DESCRIPTION

A 30months old female child was referred to psychiatric outdoor, for assessment and evaluation. She had been brought by her parents who had observed that every night just before going to sleep, she experiences an episode characterized by symptoms that resemble an orgasm. She starts gazing upwards and her face flushes, making grunting sounds. At the same time, her lower legs are crossed over each other and there is adduction of her thighs. Sometimes, rocking movements of lower trunk occur as well. There is no use of hands for stimulation of genitalia. No incontinence or tongue bite was associated with the episode, which occurs for a few minutes, after which the child becomes floppy and goes to sleep.

The child was adopted by the couple who were her maternal aunt & uncle. She was born via normal delivery at a hospital. At birth, APGAR score was normal. She had attained developmental milestones at appropriate ages. She was bottle fed from the beginning. Her present complains started when she was just 6 months old (its onset roughly coincided with starting of weaning). There was no family history of medical or psychiatric issues. No signs and symptoms suggestive of sexual or physical abuse were present in history or upon physical examination. Dermatological evaluation was normal as well. Marital relationship between parents was often tense and punctuated by frequent quarrels. Mother was a housewife and spent quite a lot of time with her daughter.

The child was advised routine investigations (CBC, LFTs, RFTs, serum electrolytes, BSR) and EEG by

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pediatrics department. The labs subsequently revealed her to have iron deficiency anemia. Rest of the investigations, including EEG, were normal.

Treating psychiatrist advised the parents to make a video recording of the episode. Also it was taught to the parents to try to distract the child by diverting her attention during the episode and observe her reaction. It was observed that child could be distracted and then the episode would stop. Although, she would always get annoyed when interrupted during the episode. This, along with the absence of other clinical signs helped clinician to reach the diagnosis of infantile masturbation. Parents were given psychoeducation regarding the phenomenon and also that further tests or pharmacological treatment was not indicated. They were also instructed to avoid criticism, stigma and anger towards the child. Parents were taught distraction techniques and use of positive and negative reinforcements by the psychologist. In addition, parents were counselled to improve their marital relationship, as this might have an influence over her gratification disorder. At follow-up visit after 1 month, there was a considerable decrease in the frequency of aforementioned episodes of the child.

DISCUSSION

Gratification disorder (infantile masturbation) is an interesting phenomenon in which infants indulge in sexual self-gratification without any use of hands. They usually do this by adduction and rubbing of inner thighs and torsional scissoring of legs along with (sometimes) rocking movements of lower trunk. At times, upward gaze fixation is also observed. This is due to eidetic imagination by infant. These features mimic a seizure. Hence, usually, such children undergo unnecessary tests such as EEG and CT scan and trials of antiepileptic medication, which can be harmful. If a clinician pays heeds to the voluntary nature of the episode, such as distractibility of the child along with annoyance on being interrupted, and absence of other seizure-specific findings, the diagnosis can be made clinically. Although gaze fixation mimics absence seizures, there is no distractibility in an absence seizure (and other orgasm like behaviors).The gratification disorder must also be differentiated from traumatic sexualized behavior[6] in sexually abused children.

Finally despite its benign nature, patients are often distressed,[7]as it carries a social stigma. Hence the treating physician or psychiatrist needs to show empathy towards the parental concerns. Behavioral therapy including distraction techniques, and positive and negative reinforcement is often very effective in treating this condition.

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