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EDITORIAL

INCORPORATING FAMILY MEDICINE MODULE IN THE UNDERGRADUATE CURRICULUM

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"Family medicine is defined as that specialty of medicine which is concerned with providing comprehensive care to individuals and families and integrating biomedical, behavioural and social sciences. As an academic discipline, it includes comprehensive health care services, education, and research (WHO)" [1]. Family Medicine (FM) was incorporated in medical curricula from the early 60s in the west. About 2 decades ago, many South Asian countries have adopted it as a specialty. Recently, many other third-world countries are in the process of developing curricula in both undergraduate and postgraduate programs[2].

In Pakistan, Shaheed Zulfiqar Ali Bhutto medical university, University of Health Sciences Lahore, Nishtar Medical College Multan, Ayub Medical College Abbottabad, Pakistan Institute of Medical Sciences Islamabad, Liaqat National medical college Karachi and Fatima Memorial Hospital Lahore are running MCPS programs since the late 90s. Agha Khan medical university, Baqai medical university, and Shifa hospital Islamabad are running undergraduate programs in FM. Khyber Medical University (KMU) is offering a diploma in FM since 2018 [3].

In the recent PMDC (now PMC) inspection document, 100 hours have been allocated for teaching FM to undergraduate MBBS students as a compulsory subject. This step has created unrest in medical schools throughout the country as limited faculty is available for FM teaching. However, this will prompt the administrations of the medical schools to start this program [4].

To develop and implement an undergraduate curriculum for FM in Khyber Medical college, there is a dire need for nominating proper personnel including FM specialists, medical educators, and representatives of the administration of the institute to form a committee. The roles and responsibilities of this committee will include, developing a module containing, the learning outcomes, contents, teaching methods, time allocation, and assessment techniques. The ongoing curriculum reforms undergoing in KMU will help the colleges to develop and implement this module. However, till the establishment of proper departments of FM in affiliated hospitals, the contents of the module need to be taught by disciplines like Public Health, General Medicine, Gynaecology, and Psychiatry.

Establishing a full-fledged department of FM and incorporating the curriculum in undergraduate medical education and training will strengthen the healthcare delivery to communities in villages and small towns where health facilities are meagre. It will enhance the skills of medical graduates who are freshly appointed in these areas for service delivery. This will ultimately reduce the workload on the major hospitals in the province and will improve the referral system which is the backbone of the healthcare system of a country.

The government, regulating bodies (PMC), assessing bodies (KMU), and individual medical institutions should speed up the development and implementation of the FM curriculum at the MBBS level to improve and streamline the healthcare delivery at the community level.

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DIAGNOSTIC ACCURACY OF ELECTROCARDIOGRAPHY (ECG) FOR THE DIAGNOSIS OF LEFT VENTRICULAR HYPERTROPHY, TAKING ECHOCARDIOGRAPHY AS GOLD STANDARD

Muhammad Fahad, Ayesha Nawaz, Khalid Mehmood, Rameesha Hussain, Raza Ahmad

Department of Medical Unit 1, Services Hospital, Lahore - Pakistan

ABSTRACT

Objective: To determine the diagnostic accuracy of Electrocardiography (ECG) of Left Ventricular Hypertrophy, taking echocardiography as a gold standard.

Mterial & Methods: It was a Cross-Sectional Study. The study was conducted in the Medicine Department, Services Hospital, Lahore from February 19, 2018, to August 19, 2018. A total of 300 cases were enrolled. Standardized 12-lead ECG was used in subjects by Cardiofax electrocardiograph paper speed at 25mm/sec. Two dimensionally (2D) guided M Mode echocardiographic measurements were taken and the presence/absence of LVH was recorded. The collected data was entered and analyzed in computer software SPSS software v25.0. A 2x2 table was drawn to calculate the sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of ECG for LVH taking Echocardiographic findings as a gold standard.

Results: Out of 300 cases, 172(57.33%) were male and 128(42.67%) as females. The mean age was 38.72±5.64 years. Accuracy of electrocardiography (ECG) for LVH diagnosis taking echocardiography as the gold standard was calculated as 85.21%, 84.18%, 82.88%, 86.36% and 84.67% as Sn, Sp, PPV, NPV, and diagnostic accuracy respectively.

Conclusion: Diagnostic accuracy of Electrocardiography (ECG) for LVH diagnosis is good and this diagnostic modality can be used in areas where echocardiography is not available.

Keywords: Electrocardiography (ECG), Diagnostic Accuracy, Echocardiography, Left Ventricular Hypertrophy..

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INTRODUCTION

Left ventricular hypertrophy (LVH) is an independent, solid indicator of cardiovascular mortality and morbidity[1]. It is currently valued that LVH is intervened by different neuro-hormonal substances that autonomously apply trophic consequences for myocytes and non-myocytes in the heart[2]. Choices about treatment ought to be founded on appraisals of hypertensive target organ harm and in general cardiovascular hazards. Different ECG criteria have been advocated, however, there is little data with regards to the prescient estimations of the particular criteria for the right determination. Above all, the clinical utility of ECG has been restricted by its inability to study the structures in details [3]. Echocardiography is a typical way to deal with survey the myocardial structures, which can give a quantitative assessment of LV bulk and the qualities are close to those found at necropsy [4,5]. Echocardiography (echo) is exact yet also increasingly costly system.

The introduction of the practice of ECG in diagnosing left ventricular hypertrophy has proven its benefits when compared to ECHO as the gold standard for the validation of ECG as a tool to diagnose LVH would benefit centers that lack access to echocardiography. Moreover, in developing countries, echocardiography can't be prescribed to screen each patient with hypertension, starting assessment utilizing ECG can help in choosing the individuals who require echocardiography [6,7]. In an Indian study, the sensitivity of ECG was 43.5% and specificity was 88.9 when it was used for diagnosis of LVH keeping ECHO as a gold standard,[8] while another recent study recorded these findings as to the sensitivity of 86% and specificity of 81% [9]. A higher hazard of cardiac morbidity and mortality, left ventricular hypertrophy is linked, however, its earlier exposure is important especially among those patients who are having hypertension or other associated cardiovascular etiologies. ECG for detection of LVH is used as the common diagnostic tool but the findings of different studies showing different results. However, we planned this study

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to determine the diagnostic accuracy of Electrocardiography (ECG) for the diagnosis of LVH taking echocardiography as a gold standard. As no local data is available to evaluate electrocardiography in the diagnosis of left ventricular hypertrophy and variability is also seen in the sensitivity and specificity of previously conducted studies. This research will be beneficial in making the diagnosis of left ventricular hypertrophy cost-effective and with high accuracy comparable to echocardiography without exposing the patient to harmful ionizing radiation.

MATERIAL & METHODS

It was a Cross-Sectional Study. The study was conducted in the Medicine Department, Services Hospital, Lahore from February 19, 2018, to August 19, 2018. A total of 300 patients fulfilling inclusion criteria (patients of both genders having ages between 20-50 years, patients with clinically diagnosed LVH with the displaced apex beat and with well-sustained heave) were included. The exclusion criteria were; patients using drugs or on digital therapy, that could amend ECG (on history and medical record) and patients with ischemic heart disease and lung disease due to obstruction (on history and medical record). The sample size of 300 cases was calculated by using a 95% confidence level with an expected percentage of sensitivity as 43.5% with a 7% margin of error, specificity 88% with 8% margin of error 9 with an expected percentage of LVH in 84%11 of patients of hypertension. Standardized a 12-lead ECG was used in subjects by Cardiofax electrocardiograph paper speed at 25mm/sec. and with an amplitude of 1mV/cm of stylus deflection. Findings of LVH (according to operational definition) on ECG were recorded as the presence/absence of LVH by the researcher herself. Then echocardiography of all patients was done by a well-trained echocardiographer, using Toshiba Applio 50 echocardiography system using 2.5MHz transducer. According to the American Society of Echocardiography, two-dimensionally (2D) guided M Mode echocardiographic measurements were taken and the presence/absence of LVH was recorded.

LVH assessed on Echocardiography: Those patients whose echocardiography revealed concentric LVH and LVM1≥116 g/m2 and 104g/m2 for females. Left ventricular mass thickening was calculated by the following formula: LV mass = 0.8 ×1.04[(IVS + LVID + LVPW)3 – (LVID)3] + 0.6 LV mass Index = LVM1: LV mass (g)/ BSA (m2) LVH on Electrocardiography (ECG): Twelve lead ECG was taken adopting the standard procedure and LVH was diagnosed based on the voltage criteria: S in (V1 or V2) + R in (V5 or V6 ≥ 35 mm).

The collected data was entered and analyzed in computer software SPSS v25.0. The quantitative data like age was presented as Mean±S.D. Qualitative variables like gender and presence/absence of LVH on ECG & echocardiography were presented as frequency and percentages. A 2x2 table was drawn to calculate the sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of ECG for LVH taking Echocardiographic findings as a gold standard.

RESULTS

A total of 300 cases fulfilling the inclusion criteria were included to assess the diagnostic accuracy of Electrocardiography (ECG) for the diagnosis of Left Ventricular Hypertrophy taking echocardiography as gold-standard. According to the age distribution, it was noted that 83(27.67%) were between 20-35 years of age, while 217(72.33%) were between 36-50 years of age. The mean age was as 38.72±5.64 years.

Gender distribution of the patients was done which showed that 172(57.33%) were male and 128(42.67%) as females. The frequency of LVH on echocardiography showed that 142(47.33%), while 158(52.67%) had no findings of LVH. Accuracy of electrocardiography (ECG) for LVH diagnosis taking echocardiography as the gold standard was calculated as 85.21%, 84.18%, 82.88%, 86.36% and 84.67% as Sn, Sp, PPV, NPV, and diagnostic accuracy

Table 1: Frequency distribution of LVH on Electrocardiography

LVH on Electrocardiography	Frequency	Percent
Yes	146	48.67
No	154	51.33
Total	300	100.0

Table 2: Frequency distribution of LVH on Electrocardiography

LVH on Electrocardiography	Frequency	Percent
Yes	146	48.67
No	154	51.33
Total	300	100.0

Table 3: Findings of Echocardiography and Electrocardiography

LVH on Electrocardiography	LVH on Echocardiography		Total
	Yes	No	
Yes	121	25	146
No	21	133	154
Total	142	158	300

Table 4: Diagnostic accuracy of Electrocardiography.

Sensitivity	85.2%
Specificity	84.1%
Positive predictive value	82.8%
Negative predictive value	86.3%
Accuracy	84.6%

respectively.

DISCUSSION

A higher hazard of cardiac morbidity and mortality, left ventricular hypertrophy is linked, however, its earlier exposure is important especially among those patients who are having hypertension or other associated cardiovascular etiologies. ECG for detection of LVH is used as the common diagnostic tool but the findings of different studies showing different results. However, we planned this study to determine the diagnostic accuracy of Electrocardiography (ECG) for the diagnosis of LVH taking echocardiography as a gold standard.

Gender distribution of the patients was done which showed that 172(57.33%) were male and 128(42.67%) as females. The frequency of LVH on gold standard showed that 142(47.33%), while 158(52.67%) had no findings of LVH. Accuracy of electrocardiography (ECG) for LVH diagnosis taking echocardiography as the gold standard was calculated as 85.21%, 84.18%, 82.88%, 86.36% and 84.67% as Sn, Sp, PPV, NPV, and diagnostic accuracy respectively.

An Indian study recorded the sensitivity of ECG as 43.5% and specificity was 88.9 when it was used for diagnosis of LVH keeping ECO as a gold standard,[9] our results are in contrast with this study. Another recent study recorded these findings as to the sensitivity of 86% and specificity of 81% which shows a big variation in sensitivity of ECG and needs another study to be conducted to find out its diagnostic accuracy, these findings agree with our study[9]. Waqas Hameed and others,[10] Sn and Sp of electrocardiography (ECG) for LVH diagnosis taking echocardiography as the gold standard were calculated as 35% and 90%, our findings agree regarding the specificity of the ECG while sensitivity is higher in our study.

In another study done by Okin, et al.,[11] Sn and Sp of electrocardiography (ECG) for LVH diagnosis taking echocardiography as the gold standard was calculated as 12% and as 100%. In another study by Devereux, et al.,[12] Sn and Sp of electrocardiography (ECG) for LVH diagnosis taking echocardiography as a gold standard was calculated as 34% and as 98%. Ahmad Hasan and colleagues[13] conducted a study to find out how much we can solely rely on the electrocardiography for the diagnosis of LVH and recorded that Left ventricular hypertrophy on electrocardiography, 96(48%) patients were found positive and 104(52%) were found negative. They concluded that the frequency of true positive cases of Left Ventricular Hypertrophy on Electrocardiography taking Echocardiography as the gold standard is acceptable.

We are of the view that left ventricular mass determination on echocardiography is the most sensitive modality to diagnose LVH but ECG also remains a useful initial investigation and it can be used in those areas where the facility of echo is not available especially in rural areas and non-specialized centers. In this study, there are some limitations as well. First, there is a small sample size and second, this was a single centered study.

CONCLUSION

Diagnostic accuracy of Electrocardiography (ECG) for LVH diagnosis is higher and this diagnostic modality can be used in areas where echocardiography is not available.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Fahad M: Concept, study design, discussion, manuscript writing, facilitation of the reagent and materials, critical review

Nawaz A: Facilitation of the reagent and materials, critical review, interpretation.

Mehmood K: Analysis, interpretation , manuscript writing, study conduction.

Hussain R: Analysis, interpretation , manuscript writing, study conduction

Ahmad R: Critical review, study conduction.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

EFFICACY OF CIPROFLOXACIN AND CEFOTAXIME IN PATIENTS WITH CIRRHOSIS LIVER PRESENTING WITH SPONTANEOUS BACTERIAL PERITONITIS TO A TERTIARY CARE HOSPITAL

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ABSTRACT

Objectives: To compare the efficacy of Ciprofloxacin and Cefotaxime in Cirrhosis Liver patients with spontaneous bacterial peritonitis (SBP)

Materials and Methods: This prospective, comparative, single center study was conducted in the Department of Medicine, Khyber Teaching Hospital Peshawar from 1st October 2017 to 31st December 2018. A total of 300 admitted patients having Cirrhosis Liver with SBP were included in this study. The patients were randomized into Group A and Group B. Group A was treated with intravenous Ciprofloxacin and Group B was treated with intravenous Cefotaxime given twice daily for a period of 5 days. Diagnostic peritoneal paracentesis was done before the start of the treatment and repeated after 5 days therapy. Patients who were either non cirrhotic or had secondary bacterial peritonitis were excluded from the study.

Results: A total of 300 cirrhosis liver patients with SBP were studied in two equal randomized groups. Out of these 168 were male and 132 were female. The mean age of patients in study was 51.14±11.9 years. The age ranged between 15-75 years. In Group A, 82% responded to ciprofloxacin and in group B, 86% responded to cefotaxime.

Conclusion: Both intravenous ciprofloxacin and cefotaxime are effective in treating spontaneous bacterial peritonitis in patients with cirrhosis liver.

Key Words: Ciprofloxacin, Cefotaxime, Spontaneous bacterial peritonitis, Efficacy

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INTRODUCTION

Conn and Fessel defined spontaneous bacterial peritonitis (SBP) in 1971 as a syndrome manifested as infected ascitic fluid in patients with decompensated hepatic cirrhosis [1]. SBP is an infection of previously sterile ascitic fluid and the source of infection is not clearly identifiable but the infecting organisms usually belong to normal intestinal flora [2, 3]. SBP can occur in both adults and children and is a well-recognized complication of cirrhosis of liver [4].

The mechanism for bacterial inoculation of ascites has been a subject of great debate since Harold Conn [1] who first described it, but evidence suggests that bacterial infection of ascitic fluid from intestine or hollow organ lumen occurs through transmural migration (bacterial translocation) and/or hematogenous route in combination with an impaired immune system[1]. The theory of bacterial translocation is supported by frequent isolation of enterotoxin from ascitic fluid [5-8].

Bacterial infection of ascitic fluid is a common complication of decompensated cirrhosis. Its incidence is about 10-27% at the time of admission or after hospitalization [9-11]. Gram negative aerobic organisms are responsible in 75% of SBP cases, of which Klebsiella pneumonia organism accounts for 50% of these. Gram positive aerobic organisms are also responsible in minority, of which Streptococcus pneumoniae or Streptococcus Viridans group are the commonest [12, 13]. As ascitic fluid is a high oxygen tension media so anaerobic bacteria are very rarely isolated in SBP. In most of cases only one infecting organism is isolated (92%) though polymicrobial isolation has also

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been reported [14].

To establish the diagnosis of SBP ascitic fluid analysis obtained through paracentesis of peritoneal cavity is mandatory. In the microbial analysis total neutrophil count is the most valuable test to make the presumptive diagnosis of SBP. Usually a total neutrophil count in excess of 250 cells/mm^3 points towards a diagnosis of SBP and is considered valid evidence for the start of antibiotic treatment in symptomatic patients [15].

As untreated, SBP can be fatal, starting empiric antibiotic therapy well in time improves the overall survival rates in patients. But despite timely treatment the mortality rate is about 10-30% and the survivors have a high chance of reinfection [16, 17].

Broad spectrum intravenous antibiotics having good coverage against gram negative aerobic organisms should be used as soon as SBP is diagnosed. SBP is usually treated with third generation cephalosporin but cefotaxime is the best choice which is given for 5 days. These drugs are highly efficacious and have no nephrotoxity and resolution is obtained in 80-90% of cases [18, 19].

Quinolones are used as alternative drugs in place of cephalosporins. The two mostly used quinolones are ciprofloxacin and ofloxacin. The pharmaceutical advantage for the prescribing physician is that both intravenous and oral preparations are available for both the categories of drugs. Studies have clearly shown that both quinolones and cefotaxime have comparable results and have no difference in resolution rate [20, 21].

The current study was aimed at comparing intravenous cefotaxime with intravenous ciprofloxacin in terms of resolution of infection and overall efficacy of treatment. This study would also help us understand the emergence of resistance against these two groups of antibiotics.

MATERIAL AND METHODS

This randomized non-blinded controlled trial was conducted in department of medicine, Khyber teaching hospital Peshawar (KTH) from 1st October 2017 to 31st December 2018. An Institutional ethical approval was granted for this research work through IREB of the institute. A total of 300 cases of decompensated cirrhosis liver with ascites who were admitted in the medical units in KTH were included in this study. Study population was 15 to 65 years old patients. Patients who had features of secondary peritonitis, those with ascites due to cardiac failure, renal failure or malnutrition, those currently using corticosteroids and a recent history of use of intravenous antibiotics in the last 7 days were excluded from the study, Additionally patients with normal ascitic fluid cytology or serum creatinine levels greater than 2 mg% or those patients who did not want to participate in trial were also excluded from the study.

A thorough history was taken and clinical examination of all patients was performed. All relevant laboratory investigations were performed in our local hospital laboratory under supervision of consultant pathologist. The diagnosis of SBP was established by ascitic fluid analysis before start of the study protocol. A total neutrophil count more than 250 cells/mm^3 in the setting of a transudative ascites with protein concentration less the 2.5 grams/dL was considered as suggestive of SBP. Moreover, Ascitic fluid culture was done in those cases who had not received antibiotics in the last 3 days (before hospital admission). However, culture was not considered essential for the diagnosis. All patients were randoy divided into two groups by lottery method, group A and group B. Each group comprised 150 participants. Group A was assigned to receive 2 gm intravenous cefotaxime twice a day and group B was assigned to receive 200 mg intravenous ciprofloxacin twice a day. Both groups received antibiotic therapy for a total period of 5 days. After 5 days of therapy, ascitic fluid paracentesis was re-performed and a neutrophil count less than 250/mm^3 along with absence of fever and abdominal pain was considered as a desirable outcomes.

All informations and demographic data like name, age, sex, address were recorded on pre designed proforma and analyzed using SPSS version 20. P value of < 0.05 was considered significant. The results were presented in form of tables or graphs.

RESULTS

Total 300 patients were enrolled in the study, out of which 168 were male and 132 were female. The mean age of patients was 51.14±11.9 years while age ranged between 15 and 75 years (Table 1).

The most common clinical presentations of patients were abdominal pain (77.7%) followed by abdom-

Table 1: Age of patients (Years)

Mean	51.14
Std. Deviation	11.95
Minimum	15.00
Maximum	75.00

Table 2: Response to treatment

Ciprofloxacin (Group A)		Frequency	Percent	p-Value
Response	Yes	123	82.0	0.9
	No	27	18.0	
	Total	150	100.0	
Cefotaxime (Group B)				
Response	Yes	129	86.0	
	No	21	14.0	
	Total	150	100.0	

Table 3: Neutrophil count in Ascitic fluid

Neutrophil Count (cells/ mm^3)	Frequency	Percent
250-350	49	16.3
351-450	56	18.7
451-550	65	21.7
551-650	56	18.7
651-750	37	12.3
>751	37	12.3
Total	300	100.0

Table 4: Age wise distribution of SBP

Age Range (Years)	Frequency	Percent
15-25	15	5.0
26-35	56	18.7
36-45	74	24.7
46-55	83	27.7
56-65	47	15.7
66-75	25	8.3
Total	300	100.0

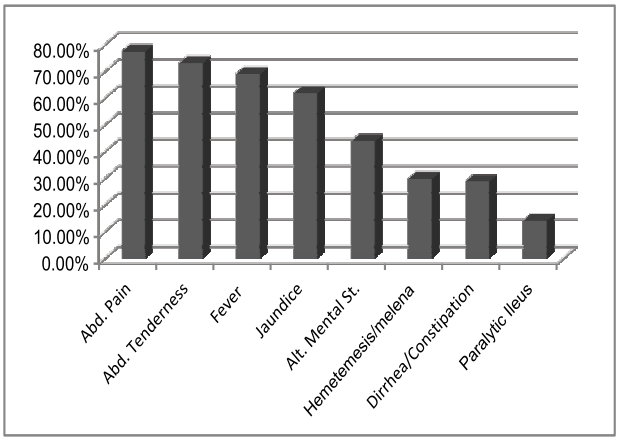

Fig 1: Clinical Presentation of SBP

inal tenderness (73.3%) and fever (69.3%) (Fig. 1).

Out of 150 patients with SBP in group A, 123 (82%) patients responded to 5 days' infusion of Ciprofloxacin compared with 129 (86%) patients who received 5 days infusion of Cefotaxime (P. value: 0.9).

Table 3 shows the results of ascitic fluid paracentesis. The results were further analyzed age wise and the age group found to be affected the most was 46-55 years (27.7%) followed by 36-45 years (24.7%) (Table 4).

DISCUSSION

Spontaneous bacterial peritonitis (SBP) is an acute bacterial infection of ascitic fluid in the absence of any identifiable secondary bacterial infectious cause. Patients with decompensated cirrhosis are at higher risk of developing spontaneous bacterial peritonitis. It is a serious and a common complication of End Stage Liver Disease (ESLD). Clinically among patients who present with spontaneous bacterial peritonitis, 70% of them are in Child-Pugh class C [22, 23]. Spontaneous bacterial peritonitis can occur in both children and adults. It can affect patients with cirrhosis due to any pathological cause and can occur as complication of Budd-Chiari syndrome.

We registered total of 300 patients in this study, dividing them into two equal groups randomly. The mean age of patients was 51 years in our study. Taskiran B reported mean age of 51 in a study comparing responses of Cefotaxime with Ofloxacin in SBP while Manohar TP reported mean age of 42 years which is less than our study [22- 24]. In a local study conducted by Imran M, the mean age was 52 years which correlates with our study [25]. These results from above and many other sources demonstrate that SBP mostly develops in age group between 40 to 50 years denoting the commonest age of decompensation in most patients with Cirrhosis Liver.

Scores of local and international studies have deliberated on the prevalence of SBP in cirrhotic patients and response it shows to the different treatment regimens. This study compared the efficacy of two well-known drugs, Ciprofloxacin (Quinolone) and Cefotaxime (3rd Generation Cephalosporin). The aim was to know whether the efficacy of both drugs is the same or any different as in recent past a decline was noted due to the emergence of multiple drug resistance. In this study we compared the efficacy of both the given drugs in diagnosed cases of SBP and found that both the drugs were quite effective i.e. Ciprofloxacin vs. Cefotaxime (82% vs. 86% with p-Value 0.09). Angeloni S also compared the efficacy of ciprofloxacin with cefotaxime however, his findings were that ciprofloxacin was more effective than cefotaxime in infection resolution (80% vs. 41%) [26]. In another study, oral ciprofloxacin was proved to be slightly more effective than cefotaxime (80% vs 76%) [27]. Terg R and Tuncer I in their studies reported infection resolution rate of 78.4% and 80% with ciprofloxacin and cefotaxime respectively [21-27]. These studies nearly correlate with our study. In a local study conducted by Ahmad M, quite high percentage of resistance was reported with sensitivity of 67% vs. 60% to ciprofloxacin and cefotaxime respectively [28]. A recent study conducted abroad by Yin HJ et al showed efficacy of 69% vs 76% to cefotaxime and ciprofloxacin respectively [29]. The results of this study are contradictory to our study. In a study conducted by Felisart J concluded that Cefotaxime was 85% effective in treatment of SBP [30]. A similar study was conducted on efficacy of cefotaxime by Runyon B and it revealed that it cured 91% of SBP patients [18]. A recent local study conducted by Sarwar S reported 86% efficacy to Cefotaxime which correlate with our study [31]. All these results reveal that both ciprofloxacin and cefotaxime are still effective in the treatment of SBP and there is no significant difference in the efficacy of these two medications.

Regarding the clinical presentation of patients included in study, 77.7% had abdominal pain, 73.3% had abdominal tenderness, 69.3% had fever, 62% had jaundice, 44% had altered mental status, 30% had hematemesis and melena, 29% had either diarrhea or constipation and 14.3% had paralytic ileus. Rashid A reported abdominal pain and tenderness in 78% of his population which is coinciding with our findings [32]. Different percentages of clinical signs and symptoms have been reported in other studies [22, 32- 34]. One study reported that 30% of patients with SBP were completely asymptomatic [33]. Another study conducted locally showed asymptomatic SBP in 7% of his studied population[32].

Regarding age wise distribution, 27.7% of patients were in age range of 46-55, 24.7% were in age range of 36-45 and 18.7% were in age range of 26-35. Nearly the same age wise distribution of patient has been reported by Ahmad M and Aziz A in their studies [28, 35,36].

Regarding the neutrophil count in ascitic fluid, 21.7% patients had 451-550/mm^3 and 18.7% had 351-450/mm^3 and 551-650/mm^3. Only 12% had neutrophil count more than 750. Aziz A has reported mean neutrophil count of 283± 305/mm^3 while a local study reported quite high mean neutrophil count (1760/mm^3) [35,37].

Both the ciprofloxacin and cefotaxime need more clinical applications in the setting of SBP and can serve as a lifesaving tool aimed at improving the outcome of this serious disease especially in our set up where meager health facilities and resources are available.

Being a single centered study with limited number of patients are the pertinent limitations of this study. A large cohort randomized multicenter clinical trial is the need of time for generalization and validation of these outcomes.

CONCLUSION

Both ciprofloxacin and cefotaxime are still very effective in resolution of infection in spontaneous bacterial peritonitis and there is no significant difference in the efficacy of these two drugs. Both are quite cost effective as compared to drugs like Imipenem or Tazobactum.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Khan Z:	Concept and critical review.
Rashid A:	Acquisition and proof reading.
Haider I:	Analysis and interpretation of data.
Suleman S:	Data collection and final approval.
Badshah A:	Critical Rewiew.
Khan I: :	Manuscript Writting.
Khan WM:	Final drafting, manuscript evaluation.
Din JU:	Overall supervision, manuscript evaluation.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

ORIGINAL ARTICLE

PREVALENCE OF ALUMINUM PHOSPHIDE INTOXICATION AMONGST VICTIMS OF POISONING – FORENSIC MEDICINE AND TOXICOLOGY REGISTRY DATA

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ABSTRACT

Objectives: To study the prevalence of aluminum phosphide intoxication reported to Forensic Medicine and Toxicology Department.

Material and Methods: Retrospective chart review was conducted on the victims of aluminum phosphide poisoning out of the total autopsies conducted at the Department of Forensic Medicine and Toxicology, Khyber Medical College, Peshawar, from January 2019 to December 2019. The cases were identified on the basis of postmortem findings, laboratory results and the police inquest report. SPSS 20.0 was used as a statistical tool for the study.

Results: A total of 940 cases of poisoning were received, out of which 99 were of aluminum phosphide intoxication making a percentage of 10.5%. Amongst these 70 were females and 29 were males. The most commonly affected age group is 11-20 years among females and 21-30 years among males and intoxication was more common in rural than in urban areas.

Conclusion: Aluminum phosphide (wheat pills) is one of the most commonly used substance for poisoning among young people. More prevalent in rural areas, due to easy availability with a maximum number of cases received in the month of December.

Keywords: Postmortem, Toxicology, Intoxication, Aluminum Phosphide

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INTRODUCTION

Metal phosphides such as aluminum phosphide is a potent insecticide. Aluminum phosphide (ALP) and zinc phosphide are highly effective fumigant pesticides which are used throughout the world to protect grains and rice from rodents and pests [1,2]. ALP exists as yellow to gray granules or powdered solid, formulated as tablets or powder sachets, the lethal dose of ALP is 1-1.5gm. It is cheaper and easily available in market with the brand name of Celphos, Alphos, Quickphos, Phostoxin, Phosphotex. Due to its properties it is being used in the developing countries as an effective grain fumigant [2].

When it comes in contact with moisture, Phosphine gas is liberated which is very toxic and lethal for the insects, pests and rodents. Pure phosphine gas is colorless and odorless but technical grade phosphine has odor similar to decaying fish or garlic since impurities are added to it during the manufacturing [2,3-5]. It is very harmful for human beings due to lethal effects, after oral ingestion of aluminum phosphide it enters into the circulation. Phosphine produces unrestricted organ damage due to cellular hypoxia resulting from its binding to Cytochrome oxidase[6]. The interference with trans-membrane exchange of electrolytes causes acute cardio toxicity and may lead to focal myocardial necrosis. No antidote is available for phosphine gas poisoning and majority of the patients do not survive [7,8].

Phosphides do not possess any danger to the population if used properly. Accidental and intentional poisoning due to phosphides is dangerous [9]. Many countries use the legal regulation of pesticide trading and utilization in order to prevent deaths associated with the toxic compounds. ALP containing tablets are banned in Iran by the authorities since 2007 [10].

In 2008, the number of deaths due to poisoning exceeded the deaths resulting from road traffic accidents and was considered the main cause of death for the first time since 1980. In the past three decades, the death rates due to poisoning increased to almost three folds [11]. The easy availability and toxicity of poisons and the poor health care services in the developing countries shows a high mortality rate of suicidal poisoning 10-20% even in industrialized countries [12]. In the rural areas of Sri Lanka, pes-

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ticides poisoning is the most common method of suicide [13], which is highly lethal [14] and stands fifth leading cause of death. In Pakistan very little data is available regarding aluminum phosphide poisoning but still it is labelled as the second commonest cause among unintentional injuries in a national health survey of Pakistan [15-18].

Low survival rate after ALP poisoning and the scale of deaths related to poisoning is on rise in Pakistan [4,7-19], this was the reason to conduct the present study in Forensic Medicine department, KMC, Peshawar, Pakistan. The drive to conduct this study was to define phosphine related deaths in KPK, Pakistan. Our aim to perform the present study was to include the results of toxicological analysis, demography, age group, gender, seasonal variation and trends of ALP poisoning and its prevalence.

MATERIAL AND METHODS

A Retrospective chart review was conducted at the Department of Forensic Medicine, Khyber Medical College Peshawar, Pakistan, after approval from Institutional research and ethical board, from 1st January 2019 to 31st December 2019. All cases of aluminum phosphide poisoning, including both genders and covering all age groups brought to the department and whose record was available were included in the study. Intoxication due to other poisons and reasons was excluded. External and internal examination of the body was conducted. The internal examination included systematic toxicological analysis performed on liver, stomach contents and blood collected during autopsy. The final opinion of phosphine poisoning was based on history given by relatives, autopsy findings, hospital records and the toxicology reports. The collected data was entered on a pre-designed proforma and the results were summarized as tables and figures after entering the data in SPSS 20.0.

RESULTS

A total of 940 cases of poisoning were reported to the department for toxicology during 2019, out of which 99 cases were of aluminum phosphide poisoning. Out of the total of 99 cases of aluminum phosphide poisoning 29 (29.29%) were males and 70 (70.7%) were females. Shown in figure-1. The commonly affected age group of victims was between 11-20 years among females and 21-30 years among males, making a highest percentage of 36% and 12% respectively. Followed by 21-30 years in females (30%) and 11-20 years in males (8%) given in Table-1.

Majority of the postmortems were conducted during December 13 (13.1%) followed by October 11 (11.1%) shown in Figure-2. Highest number of cases were received from Swat that is 33 (33.3%) followed by Kohat 12 (12.1%), detail of other districts is shown in Figure: 3.

Table 1: Age and gender distribution of victims of Aluminum phosphide intoxication

Gender	Age Group (years)				
Years	11-20	21-30	31-40	Above 40	Total
Male	8 (8.08%)	12 (12.12%)	7 (7.07%)	2 (2.02%)	29
Female	36 (36.36%)	30 (30.30%)	4 (4.04%)	0	70
Total	44	42	11	2	99

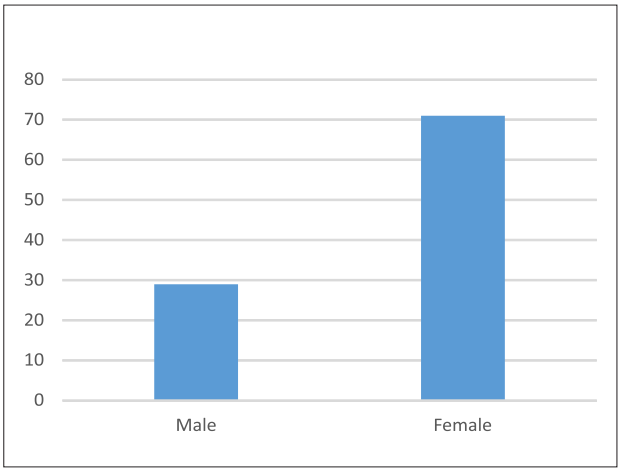

Fig 1: Gender distribution of victims of Aluminum phosphide intoxication

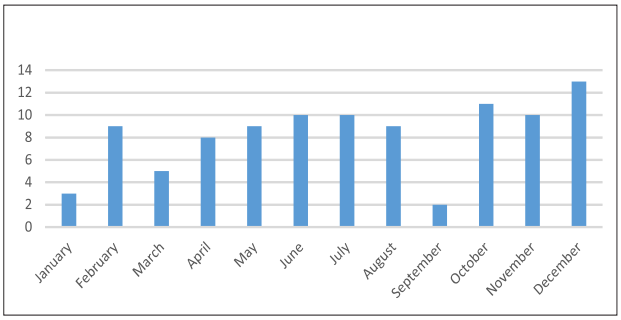

Fig 2: Monthly distribution of victims of Aluminum phosphide intoxication

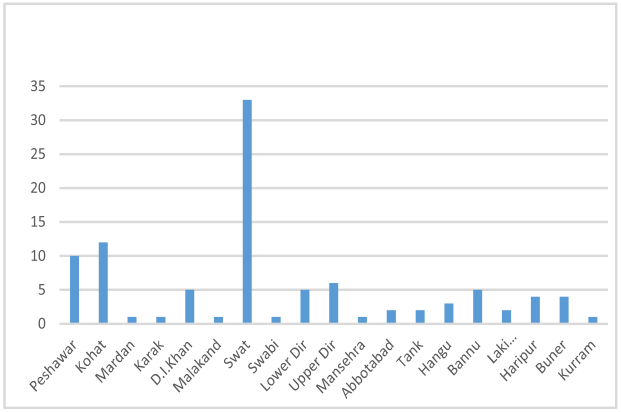

Fig 3: District wise distribution of victims of Aluminum phosphide intoxication

DISCUSSION

Poisoning is a common public health problem all over the world since a long time, occurring all over the world and affecting people of all walk of life. It is reported that almost 700 people die from poisoning everyday all over the world [20]. The incidence of pesticides poisoning in developing countries is reported to be 13-fold higher as compared to the developed countries [21,22].

The purpose of this study was to inspect phosphine related deaths in KPK. Poisoning as a result of accidental or intentional ingestion of ALP is a common medico-legal issue in Pakistan. In European countries ALP is available only to qualified users, hence suicide by ALP is rare [23]. In the current study phosphine was detected in biological samples with other drugs in Forensic Medicine and Toxicology Department KMC, Peshawar. Phosphine is very volatile and can evaporate from the body during autopsy and due to decontamination, which can give negative results, death due to other poisons can also give negative reports.

The study included 940 victims of poisoning, aluminum phosphide was detected in 99 cases, with 70 female and 29 male. Risk factors maybe underreported, several studies have described a strong association between suicide and mental or physical illness [24-27]. Deaths due to poisoning being more common in females due to the psychological stress, pressure from in-laws and lack of education, which coincides with the studies conducted at China, Japan and Austria. Majority of the victims comprised of younger age groups 21-30 years in males and 11-20 years in females which is in accordance with studies conducted in six major cities of Pakistan [28]. Loss and personal conflicts being the common identifiable life events precipitating suicidal nature. The prevalence of majority of the cases of poisoning was in December in our study, however many cases were received during the hot months of summer, which was also reported in a study conducted in Faisalabad, a major agricultural city of Pakistan [28].

Adequate law enforcement in the sale and distribution of dangerous drugs and addictive medicines and creating awareness amongst the society especially the young generation through mass media, are one of the few goals to be set on a serious note, which will help reduce the number of deaths due to ALP poisoning. The time interval between poisoning, the dosage and time taken to come to hospital has a significant influence on the outcome of ALP poisoning. The formulation of 3gm tablets to 10gm powder in sachets has resulted in a decline in mortality rate in India [29]. The mortality rate depends on the number of survivors reported in the hospital. Negligible legislation for undue propagation of media with minimal implementation results in negative solutions such as suicide or homicide to even minor problems faced by emotionally immature minds.

CONCLUSION

Aluminum phosphide (wheat pill) is a dangerous and lethal poison and the symptoms progresses quickly to death and there is no antidote for this poison. Pakistan being an agricultural country, with low income and easy availability of wheat pills is the leading cause of ALP. There is a need to substitute safe agents instead of phosphides for preserving grains. Emphasis should be made on the fact that ALP is a lethal poison with low safety and high mortality rate. In our study concluded that intentional poisoning was common amongst young adults. There is insufficient data regarding the exact frequency and therapeutic measures of wheat pill poisoning, therefore large-scale studies are required to improve survival from exposure to this dangerous poison. Proper legislation is also required for strict control on the purchase of this lethal drug.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Malik B: Concept and critical review.

Saleem K: Acquisition and proof reading.

Afridi HK: Analysis and interpretation of data.

Khan R: Final approval.

Zaman MU: Data collection.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

THE IMPACT OF PANDEMICS ON SURGICAL RESIDENCY PROGRAM; A SURVEY IN TERTIARY CARE HOSPITALS OF PESHAWAR, PAKISTAN

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ABSTRACT

Objective; To evaluate the impact of the COVID 19 pandemic on the national surgical residency program of Pakistan in terms of its effects on skill development, academics, research activities, and fellowship examination/assessment.

Material and methods: A 16 item validated survey was designed to conduct this cross-sectional study which was carried out in 3 tertiary care hospitals of Peshawar, Khyber Pakhtunkhwa Province of Pakistan. Ethical approval was granted by institutional review board after formal piloting. The study included 169 residents from both general surgery and surgery-allied disciplines. Participants characteristics and Responses were analyzed using SPSS 25.0 and presented as percentages value of less than 0.05 was considered significant.

Results: Before the pandemic, more than 80 % general surgery residents had frequent or occasional opportunities to engage in surgical activities as observer, assistant, dependent or independent performer. During pandemic these opportunities were less than 20 % and more than 75 % had rare or no such opportunities. Almost similar and statistically significant was the impact on the skills exposure opportunities for surgery-allied residents. 100 % general surgery residents and 98.9 % surgery-allied residents had frequent or occasional opportunities to attend academic ward rounds before the pandemic while 91 % general surgery residents and 80 % surgery allied residents had only rare or no opportunities to attend academic ward rounds. Data collection of 88.6 % general surgery residents and 80 % surgery allied residents were affected to more or less extent on the Likert scale. In both disciplines less than 15 % residents. Among the general surgery residents only 9 (11.4%) confident, and 1 (1.3%) very confident that the exam will take place in time despite the pandemic. These figures were 11.4% and 4.4 % only in surgery-allied discipline.

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INTRODUCTION

Pandemics halts all the aspects of life. The history of epidemics and pandemics shows that these disasters have damaged the social and financial fabric of nations in addition to their direct impacts on human health through times. From global climate to regional weathers, giant economies to small businesses, family gatherings to professional meetings, International transportation to local movements, pandemics transform everything [1]. Since health and life become a priority in pandemics, policies to shrunken other aspects become unavoidable. Consequently, countries suffer in all aspects of prosperity. As a strategy to contain the spread of the virus schools, colleges and universities are closed, developmental works cease and businesses get closed. The health sector and hospitals are not exceptions and hospitals channelize all its resources to diagnose and treat the sufferers and at the same time ensuring the safety of its manpower [2-4]. By the end of 2019, SARS-CoV-2 was identified spreading quickly in China, causing a notoriously dangerous infectious disease called the COVID-19 [5]. By January 20, 2020, the first confirmed case was documented in the United States [6]. On March 11, 2020, the world health organization declared COVID-19 as a global pandemic. In mid-March, the disease began to spread out of proportion in Pakistan in a way no less than other countries [7]. Almost sparing no continent the COVID-19 has been disrupting the normal social and professional routine everywhere.

Where the front-line warriors have been at risk of inflicting the disease themselves and spreading it to their dear ones, the pandemic has also been a serious threat for the professional growth of budding physicians and surgeons around the globe. The pandemic transformed global surgical practice in a way which not only interrupted the

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delivery of services to patients with surgical conditions but also the training of surgical residents [8].

Surgical academic conferences have also been postponed [9]. The Royal College of Surgeons of Edinburgh announced cancellation of all examinations and training events on March 13,2020 [10].

Since the pandemic has shown its potential to lead to significant training disruptions affecting all resident levels and surgical specialties. This survey was conducted with the aim to analyze its effects on skills development, academics, research and examination of Fellowship exam offered by college of physicians and surgeons of Pakistan

MATERIAL AND METHODS

After formal ethical approval from the institutional review board, an electronic survey comprising one introductory and four standard sections was designed on google forms. The survey was initially reviewed by institutional research expert and then validated by two independent reviewers. Purpose of this survey was explained to all participants with a brief introduction. Participants were asked for their consent at the beginning. Survey participation was voluntary, and no incentives were offered. The survey comprised 16 items with 4 to 6 options including a YES/NO question. An open-ended question was asked at the end of the survey. The Survey was centered to evaluate the impact of COVID 19 pandemic on the opportunities of skill development, academic activities, research and examination preparation and schedule. Participants were asked to express their perception regarding the opportunities to observe, assess and perform surgeries before and during the pandemics on a validated Likert scale as none, rare, occasional or frequent. The same scale was used to assess the impact on the academic ward rounds and educational activities like workshops and seminars. Participants were asked the extent to which the pandemic was affecting their data collection and dissertation writing. Their response was recorded as not affected, slightly affected, moderately affected, quite affected, extremely affected, or not applicable. Survey responders expressed their level of confidence about the occurrence of FCPS 2/IMM exam on proposed dates despite the pandemic as very confident, confident, unsure, less confident or not confident. The survey was piloted on 19 residents of surgery to ensure reliability. All these participants were excluded from the actual study.

We used OpenEpi Info Version 3.01, with a 95% confidence interval to calculate the sample size. It was estimated that 169 participants were needed to achieve the objective of the study. The questionnaire was shared with 300 residents of general surgery and surgery-allied specialties (Including Orthopedics, Neurosurgery, Plastic Surgery, Urology, and Paediatric surgery). Electronic distribution of the questionnaire was started on June 24, 2020, and the software was stopped from receiving further responses when the required number of participants was achieved on July 24, 2020. Data were analyzed using spss 25.0 and presented with frequencies and percentages for participants' characteristics. P value < 0.05 was considered significant.

RESULTS

Out of 169 residents who responded to the survey, 114 (67.5 %) were males and 55 females (32.5%) (figure 1). Among these 90 residents were of general surgery and 79 residents of Surgery-allied. Year of residency wise distribution of residents in both categories is shown in figure 2 and figure 3. As shown in the table.1, residents of general surgery expressed that they had more frequent opportunities to observe, assist or perform surgeries under the supervision and independently before the pandemic than during the pandemic where they had mostly rare or no opportunities. This difference was statistically significant as shown in table 2. The table also shows that general surgery residents experienced a clear decline in the number of academic ward rounds during the pandemic due to change in hospital protocols and the difference in frequency of academic ward rounds conducted before and during the pandemic was statistically significant ($p < 0.001$). Likewise, the majority of residents (55.7 %) chose that occasionally they had academic workshops before the pandemic while during the pandemic these were none according to 68.4 % residents. This difference was also significant ($p < 0.004$).

When opportunities of engagement in operative and academics activities of national residency programs were compared before and after the pandemic for residents of surgery-allied almost similar statistically significant negative impact was observed (table.2). According to 47 (59.5 %), residents of general surgery and 37(41.1%) residents of surgery-allied their synopsis submission and/or acceptance was delayed due to the pandemic. Data collection of 88.6 % general surgery residents and 80 % surgery allied residents were affected to more or less extent on the Likert scale. Regarding Dissertation writing, 76 % general surgery residents to a varying degree expressed negative impact during the pandemic while this figure was 70 % in the case of surgery-allied residents.

Perception of general surgery residents about the impact on scheduled IMM/FCPS 2 on Likert scale revealed that 23 (29.1%) residents were not confident, 20 (23.5%) less confident, 26 (32.9%) so, 9 (11.4%) confident, and 1 (1.3%) very confident that the exam will take place in time despite the pandemic. In surgery allied 20 (22.2%) were not confident, 31 (34.4%) less confident, 25 (27.8%) so, 10 (11.1%) confident and 4 (4.4%) very confident about the proposed schedule. In open question, the majority of candidates expressed that their exam preparations were badly impacted because of less interactive sessions with

Table 1: Skill development and academic opportunities before and during the pandemic; General surgery residents' perception

	Before pandemic				During pandemic				P Value
	frequent	occasional	rare	none	frequent	occasional	rare	none	
Opportunities to observe Surgeries	44 (55.7 %)	35 (44.3 %)	0 (0%)	0 (0%)	0 (0%)	15 (19.0%)	31 (39.2%)	33 (41.8%)	<0.001
Opportunities To assist Surgeries	56 (70.9%)	21 (26.6%)	2 (2.5%)	0 (0%)	0 (0%)	8 (10.1%)	49 (62.0%)	22 (27.8%)	0.042
Opportunities to perform surgeries under Supervision	34 (43.0%)	40 (50.6%)	05 (6.3%)	0 (0%)	1 (1.3%)	5 (6.3%)	36 (45.6%)	37 (46.8%)	0.005
Opportunities to perform Surgeries independently	32 (40.5%)	36 (45.6%)	10 (12.7%)	1 (1.3%)	7 (8.9%)	10 (12.7%)	28 (35.4%)	34 (43.0%)	<0.001
Academic rounds	49 (62.0%)	30 (38.0%)	0 (0%)	0 (0%)	1 (1.3%)	6 (7.6%)	25 (31.6%)	47 (59.5%)	<0.001
workshops	30 (38.0%)	44 (55.7%)	5 (6.3%)	0 (0%)	3 (3.8%)	3 (3.8%)	19 (24.1%)	54 (68.4%)	0.004

Table 2: Skill development and academic opportunities before and during the pandemic; Surgery-allied residents' perspective

	Before pandemic (%)				During pandemic (%)				P Value
	frequent	occasional	rare	none	frequent	occasional	rare	none	
Opportunities to observe Surgeries	57 (63.3%)	30 (33.3%)	2 (2.2%)	1 (1.1%)	2 (2.2%)	21 (23.3%)	32 (35.6%)	35 (38.9%)	0.04
Opportunities To assist Surgeries	58 (64.4%)	28 (31.1%)	4 (4.4%)	0 (0%)	2 (2.2%)	21 (23.3%)	47 (52.2%)	20 (22.2%)	0.07
Opportunities to Perform surgeries under observation	37 (41.1%)	43 (47.8%)	8 (8.9%)	2 (2.2%)	2 (2.2%)	17 (18.9%)	26 (28.9%)	45 (50.0%)	0.04
Opportunities to Perform surgeries independently	30 (33.3%)	36 (40.0%)	19 (21.1%)	5 (5.6%)	7 (7.8%)	19 (21.1%)	20 (22.2%)	44 (48.9%)	<0.001
Academic rounds	58 (64.4%)	31 (34.4%)	1 (1.1%)	0 (0%)	9 (10.0%)	9 (10.0%)	31 (34.4%)	41 (45.6%)	0.09
workshops	43 (47.8%)	37 (41.1%)	10 (11.1%)	0 (0%)	4 (4.4%)	12 (13.3%)	17 (18.9%)	57 (63.3%)	0.03

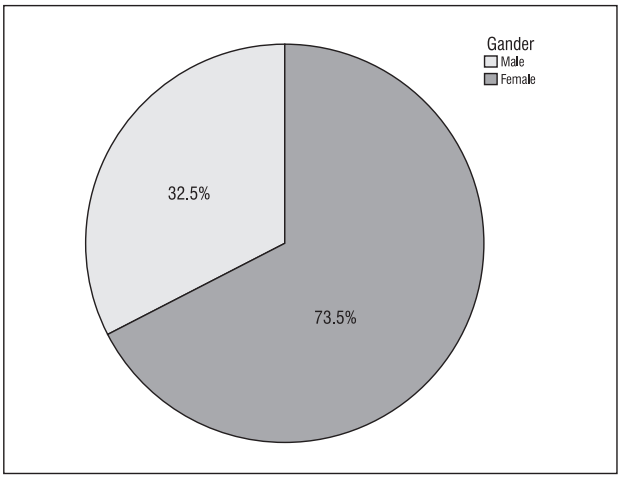

Fig 1: Gender distribution

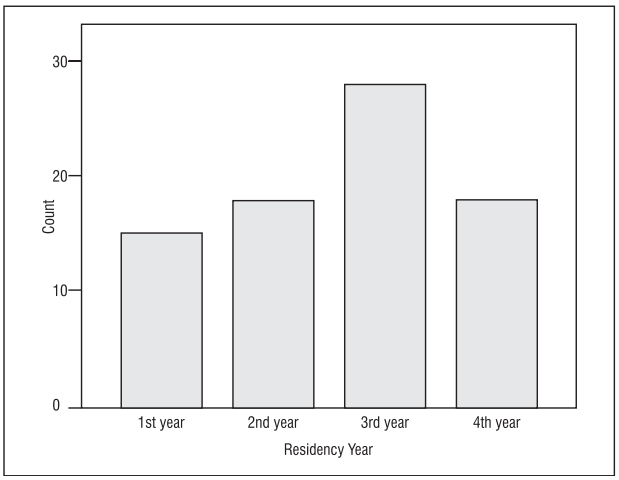

Fig 2: General surgery resident doctors' distribution according to year of residency

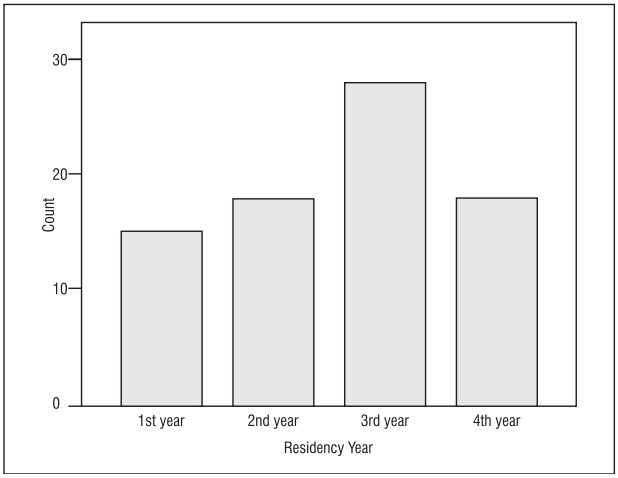

Fig 3: Surgery-allied resident doctors' distribution according to residency year

supervisors, fewer opportunities for combined studies, and group discussions. The closure of libraries was a constant highlighted factor.

DISCUSSION

Surgical training and its aspects vary from country to country and there are no standardized criteria to measure the expected skills acquired during the residency program. Adequacy of surgical training in residents' perspective is again a very difficult task to assess. On the other hand, trainers have their different perspective [11]. The impact of the COVID 19 pandemic on residency programs is a universal fact and its effects on national surgical residency programs offered by the college of physicians and surgeons of Pakistan (CPSP) is also not an exception. It is important to analyze this impact not only to overcome the deficiencies in training attributable to the current pandemic in a safe and effective manner but as a future reference for such un expected mishaps in future as well.

In this study we gathered residents' perspective of their training during the times of COVID. Among 169 residents who responded 114 were males and 55 females. Residents of general surgery were 90 and those of surgery-allied were 79. The spectrum of residents ranged from postgraduate year 1 to post graduate year 5 in different proportions. In a survey by Balhareth A, 240 residents of surgery responded comprising 97 (40.4%) males and 143 (59.6%) females from both Junior and senior grades [12]. In a study by M Osama, out of 112 post graduate residents 67 (59.8%) were males and 45 (40.2%) females. Among these 48 (42.8%) were general surgery residents and 64 (47.2%) surgery-allied residents [13]. In D Pertile's survey, 756 questionnaires qualified for study analysis where 46.6 % residents were from general surgery department mostly from year 1 and year 3 of residency [14]. Our responders noticed a statistically significant reduction in opportunities of skill development in operation theaters during the pandemic. Reduction in surgical exposure was up to 97 % in study by Balhareth A, while 86.6 % decline in surgical hands on timing was reported in survey by M Osama [12,13]. Reduction in surgical activities was more than 96 % in D Pertile's study [14].

In our study the academic ward rounds and workshops declined in frequency to rare or none in all tertiary care hospitals. A reduction of more than 84 % was expressed by residents in study by Balhareth A, and 82.1 % in survey by M Osama [12,13]. In study by D Pertile, trainees had to curtail their clinical activities by 42.3 % [14]. Likewise, data collection for research purpose was negatively impacted by the pandemic for 80 to 86.6 % of our responders. In D Pertile's survey a 43.8 % reduction/interruption in research activities was encountered [14]. M Osama, in his study evaluated the impact on these activities in terms of time available for research and reported that 78.6 % residents had more time for research than they had before pandemic [13].

In our survey 84.5 % residents were not sure if their exam would be held on scheduled time despite the pandemic. In an open question they attributed this confusion along with closure of libraries and cessation of group discussions as major causes of disturbed studies. This aspect was also evaluated in Balhareth A's survey where 86.7 % of residents were worried about their exam and 76.2 % had problems in studies [12].

CONCLUSION

The COVID 19 pandemic has severely damaged all the pillars of surgical residency program in Pakistan. Residents think that they have lagged behind than they should have been at this stage of residency and are not sure of the months to come in prospect of their training. They feel insecure whether they will be able to complete their research projects in time or not. Moreover, they are not confident about the schedule of their module/exit exam.

RECOMMENDATION

In era of pandemic where the educational activities are badly affected, there should be standardized tools to evaluate the impact on residency programs. Moreover, the alternative online efforts offered by the institutions governments and organizations need to be objectively analyzed for effectiveness and improvements.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Ali S: study design, discussion, manuscript writing.

Ahmed F: Concept, critical review.

Mabood W: Analysis, interpretation.

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Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

OUTCOMES OF COVID-19 INFECTION IN RENAL TRANSPLANT RECIPIENTS –A SINGLE CENTRE EXPERIENCE

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ABSTRACT

Objective: The objective of this study was to analyze the outcomes of renal transplant recipients who contracted COVID-19 at institute of Kidney diseases, Peshawar.

Material and Methods: This was a case series involving 7 patients with renal transplants with good graft function, who presented to the Institute of Kidney Disease, Hayatabad, Peshawar, Pakistan with clinical features of COVID-19 from March to September 2020. Patients were evaluated for clinical features, laboratory data, radiological findings and their outcomes. Data was presented in the form of tables.

Results: Out of seven patients, 6 were males (85.71%) with a mean age of 45.71 ± 22.209 (range 20-73) years. The clinical features included, fever (all patients) and cough and dyspnea (in 5 patients). Three patients had white mild leukopenia. A combination of consolidation and ground-glass opacity was the most predominant (in 5) pattern of lung involvement on computed tomography (CT). Three out of 7 patients were admitted to Intensive care unit, where all were intubated and died of severe COVID-19 pneumonia and ARDS. The rest were treated at high dependency units that didn't need intubation, where one patient died of severe septicemia and 3 patients recovered. The mean hospital stay was 17.86 ± 5.92 days. All recovered cases had a unilateral peripheral pattern of involvement limited to only one zone on initial chest CT scan.

Conclusion: Organ transplant recipients are at high risk of developing severe Covid pneumonia and with added risk of artificial ventilation than normal population. CT imaging has an important role in predicting COVID-19 outcomes for solid organ transplant recipients.

Keywords: Covid-19, Renal Transplant Recipients.

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INTRODUCTION

The Pandemic of Corona Virus started from Wuhan, China on December 31, 2019, involving Pulmonary System and named as COVID-19 [1]. The Morbidity and mortality of COVID-19 is high among elderly & immunocompromised patients worldwide [2, 3]. Patients with renal transplantation are especially at high risk owing to immunosuppressive therapy with mainly respiratory & other manifestations [4-6] .

The Immune response to covid-19 in each patient is different due to viral load & immunological make-up [7]. At the moment only limited data is available regarding COVID-19 related to renal transplant recipients. In our study, we analyzed the outcome of covid-19 infection on renal transplant patients. This small study will help prepare the renal physicians for managing such patients.

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MATERIAL AND METHODS

This was a case series involving 7 patients with renal transplants with good graft function, who presented to the Institute of Kidney Disease, Hayatabad, Peshawar, Pakistan with clinical features of COVID-19 from March to September 2020. This facility is one of its kind in the province where facilities for conducting and managing renal transplantation are available. We studied 7 patients with functioning kidney transplant with clinical features of COVID-19 from March to September, 2020. Their clinical features, and radiological findings were noted on a proforma and presented in tables in the next section.

RESULTS

All 7 patients were found to be positive for SARS-CoV-2 nasopharyngeal sample through polymerase chain reaction. The baseline information and clinical features are presented in table-1 and 2. Six patients were males and

the most common presentation were fever and cough. Laboratory findings and radiological changes are mentioned in table 3 and 4. All patients were on triple immunosuppressive regime (Cyclosporin+ Steroid +Mycophenolate Mofetil) with a history of Induction with Basliximab.

The laboratory tests of all seven patients were analyzed (see Table 3) with mean base line Creatinine at presentation was 2.01 mg/dl. (See table 4). Most of the patients had a normal white blood cell count, while 42.85% (03/07) had leukopenia.

The radiological evidence of Pneumonia was found in all 7 patients with CT showing a combination of consolidation and ground glass opacity was the most predominant (71.4%, n= 5) pattern of lung involvement (see Table 5). All recovered cases had a unilateral peripheral pattern of involvement limited to only one zone on initial chest CT. Three patients were admitted in ICU, who were intubated and died of severe COVID-19 pneumonia and ARDS. Four were treated at high dependency units who didn't need intubation. Amongst these, one patient died of severe septicemia after 3 weeks of stay, and 3 patients recovered and were discharged home. The mean hospital stay was 17.86 ± 5.92 days with longer stay in ICU. A multidisciplinary approach including Nephrologist, Urologist, Pulmonologist and Intensivists were applied to treat all these patients. The immunosuppressive therapy was reduced and MMF was stopped completely in severe ill patients with increase dose of IV steroids and Broad spectrum IV antibiotics. There outcome is given in table 6.

Table 1: Gender and Age-wise Distribution

Gender			
	Frequency	Percent	Mean Age ± Std. Deviation
Male	6	85.7	45.71 ± 22.209
Female	1	14.3	
Total	7	100.0	

DISCUSSION

The renal transplant patients, especially elderly, are at more risk of COVID-19 infections and its morbidity and mortality due to the use of intense immunosuppressive therapy. Limited studies are available regarding renal transplant outcomes in COVID-19 infections till date especially in our country. The optimal management of SARS-CoV-2 has not yet been established especially in solid organ transplant recipients, where adjustments to immunosuppressive medications must be considered while balancing the potential for acute rejection and coinfection with bacterial or opportunistic pathogens [7]. A case

Table 2: Clinical presentation

No.	Patients	Cough n (%)	Fever n (%)	Sore Throat n (%)	Myalgia n (%)	Gastro-intestinal Symptoms n (%)	Dyspnea
1	Male	+	+	-	+	-	+
2	Male	+	+	+	-	-	-
3	Female	-	+	+	+	+	+
4	Male	+	+	-	-	-	+
5	Male	-	+	+	+	+	-
6	Male	+	+	-	+	+	+
7	Male	+	+	-	-	-	+
Total		5 (71.4)	7 (100)	3 (42.9)	4 (57.1)	3 (42.9)	5 (71.4)

Table 3: Laboratory Data of Each Case

No.	Patients	Hemoglobin	Total leucocyte count	Neutrophil	Lymphocytes	Platelets	C-Reactive proteins	Alanine Transaminase (ALT)	INR	Blood urea	Serum Creatinine
1	Male	11.5	5400	4276	920	150	33	43	1	62	2.3
2	Male	12.3	8800	7653	1244	320	2	22	1	45	1.0
3	Female	10.8	3800	3265	533	60	120	172	1.4	56	1.9
4	Male	13.6	7200	5993	1105	255	3	40	1	38	1.1
5	Male	12.7	7600	7453	1041	180	7	35	1	40	1.2
6	Male	11.9	3958	3232	720	54	75	48	1.2	91	2.2
7	Male	13.4	2500	2088	510	43	83	123	2.2	110	4.4

Table 4: Descriptive Statistics

Descriptive Statistics					
	n	Minimum	Maximum	Mean	Std. Deviation
Duration after Transplant	7	2	16	7.43	4.962
Hemoglobin	7	10.8	13.6	12.314	1.0090
Neutrophils	7	2088.0	7653.0	4851.429	2199.5121
TLC	7	2500.0	8800.0	5751.143	2490.8584
Lymphocytes	7	510.0	1244.0	867.571	286.4931
Platelets	7	43.0	320.0	151.714	107.6796
CRP	7	2.0	120.0	46.143	46.8346
ALT	7	22.0	172.0	69.000	56.0476
INR	7	1.0	2.2	1.257	.4429
Urea	7	38.0	110.0	63.143	27.4495
Creatinine	7	1.0	4.4	2.014	1.1796

Table 5: Radiological findings of Covid patients

Radiological Data		
Findings on CT	Frequency	Percentage
Unilateral Consolidation one zone	2	28.6
Consolidation and GGOs	5	71.4
Total	7	100.0

Table 6: Demographic Features and outcome

No.	Patients	Age (Years)	Duration of Renal Transplant	Co-Morbidity	Outcome
1	Male	65	16 years	Hypertension	Death
2	Male	20	2 years	None	Discharged
3	Female	30	4 years	Diabetes mellitus, Hypertension & Obesity	Death
4	Male	22	3 years	Hypertension	Discharged
5	Male	45	8 Years	Hypertension	Discharged
6	Male	73	11 Years	Hypertension, Diabetes Mellitus & Coronary Artery Disease	Death
7	Male	65	8 years	Hypertension & Coronary Artery Disease	Death

report of 2 cases revealed good outcome in renal transplant recipients suffering from Covid 19, who were treated with reduction in immunosuppressive dosages, along with supportive care. Both patients survived [8]. Many studies have reported a similar incidence of complications related to Covid with normal population with debilitating illnesses [9]. A similar study was presented in the journal of Kidney international recently included the data of 7 patients with similar results [10].

Although, this is a small data which is limited to a single center, and for a limited time, further observational studies of this kind are needed to explore the outcome of Covid 19

CONCLUSION

In Conclusions, in renal transplant patients, high suspicion screening should be done regarding COVID-19 clinical features especially elderly patients. The laboratory findings of Leucopoenia with lymphopenia and Radiological evidence of COVID-19 pneumonia are diagnostic and prompt treatment with multidisciplinary approach should be adopted to save the lives.

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Munib S: Study design, discussion, manuscript writing.

Ahmed T: Concept, Critical review.

Ahmed R: Analysis and interpretation.

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THE EFFECTIVENESS OF LEVOBUNOLOL VERSUS TRAVOPROST IN REDUCING INTRAOCULAR PRESSURE; A COMPARATIVE STUDY CONDUCTED IN A TERTIARY CARE HOSPITAL OF PESHAWAR

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ABSTRACT

Objective: To compare the therapeutic efficacy of Levobunolol and Travoprost for lowering intra-ocular pressure (IOP) in patients with primary open-angle glaucoma and ocular hypertension.

Materials and Methods: A Quasi experimental study was conducted in the ophthalmology department of Khyber Teaching Hospital, Peshawar. One-hundred and twenty patients of both genders and age between 18-80 years with primary open angle glaucoma or ocular hypertension requiring single pressure lowering drug were enrolled in the study. Subjects were divided into two groups (60 in each). One group was treated with Travoprost eye drops (0.004%, OD) while other group with Levobunolol eye drops (0.5%, OD). After initial screening visit where demographic data and baseline IOP was recorded on the structured proforma, three follow-up visits were arranged each at 02 weeks interval. At each follow-up visit, IOP was recorded by standard protocol to evaluate and compare the ocular hypotensive efficacy of the study drugs by calculating mean IOP change from the baseline. Only patients with no missing IOP measurements for all visits were considered eligible for efficacy evaluation.

Results: A total of 120 patients were observed having age range from 18 years and above with mean age 52.16 ± 9.56 years and predominance of male gender. Upon comparative analysis, no significant statistical difference (p value >0.05) was observed in the ocular hypotensive ability of Levobunolol and Travoprost measured at each follow-up visit, indicating both drugs as equally effective. Moreover, age groups did not reveal any significant statistical impact on the treatment outcome of patients treated with either study drug.

Conclusion: Clinical data revealed that both study drugs reduced the intraocular pressure (IOP) without any significant difference and were found equally effective in primary open angle glaucoma and ocular hypertension.

Keywords: Levobunolol, Travoprost, Glaucoma, Ocular hypertension, Intra ocular pressure.

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INTRODUCTION

Glaucoma is a neurodegenerative disease which causes progressive and irreversible visual impairment by affecting the optic nerve and related structures. It is one of the principal causes of blindness all over the world[1-3]. In 2013, globally 64.3 million people were affected by glaucoma with expected increase to 76 million by the year 2020 and 112 million by 2040. According to epidemiological surveys, it is more common in Asian countries and contribute 60% of the total prevalence of glaucoma, worldwide [4]. Pakistan too is in the race as the overall prevalence of glaucoma here is 3.9% and continue to increase[5].

There are two types of glaucoma i.e. Open angle glaucoma and angle closure glaucoma. Approximately three-quarters of all glaucoma occur in individuals with open angles. Although some forms of open-angle glaucoma occurs secondary to other phenomena, the majority is idiopathic, known as primary open angle glaucoma. POAG is regarded as the most prevalent type and asso-

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ciated with raised IOP [6]. Consistent elevation of IOP often leads to degeneration of the optic nerve, which may be followed by loss of visual field. Previous research has shown that the extent of damage to optic nerve depends on the degree of IOP raised [7]. The only treatment strategy for glaucoma is reduction of intra ocular pressure to halt the disease progression and preserve vision [8]. This can be achieved by a variety of pressure lowering medications [2, 9]. Over the past three decades, a number of different drugs have become available with proven effectiveness in glaucoma including topical alpha 2 agonists, beta blockers, carbonic anhydrase inhibitors, prostaglandin analogues, parasymathomimetics (meiotic) and hyperosmotic agents (mannitol) [10-12] .The availability of wide variety of pharmacological treatment options make it difficult for the clinicians to choose appropriate and specific regimen.

Different drugs decrease the intra ocular pressure through different mechanisms, leading to different efficacies with regard to lowering IOP. Topical beta-adrenergic receptor blocking agents, such as Timolol was introduced in the late 1970s and have been widely accepted as a first line anti-glaucoma therapy. Levobunolol, a drug of same class reduces IOP by slowing the rate of formation of aqueous humor. In the recent years, a new family of drugs called prostaglandin analogues has gain popularity for its remarkable IOP lowering ability. Unlike beta-blockers, Travoprost reduce IOP by increasing both uveoscleral and conventional aqueous humor outflow [13].

In a number of studies, both drugs have proven their effectiveness individually but data regarding their comparative efficacy was scarce [14]. Our study attempts to evaluate and compare the therapeutic effectiveness of these two commonly available anti-glaucoma drugs for reducing IOP in local population. Such a thorough understanding would possibly help the clinicians in better management of patients.

MATERIALS AND METHODS

A Quasi experimental study was conducted in the Ophthalmology department of Khyber Teaching Hospital, Peshawar from Sept 2014 to Aug 2016. After taking approval from the institutional review board, 120 patients of both genders and age between 18-80 years with Primary Open Angle Glaucoma (POAG) or Ocular Hypertension (OH) were identified. Only subjects with recorded IOP of 21-26 mmHg in both eyes and requiring single pressure lowering drug (monotherapy) were included in the study. Patients with IOP above 26 mmHg or having uveitis, cystoid macular edema, inflammatory glaucoma or any other ocular condition preventing reliable applanation tonometry or those with congestive heart failure, bradycardia, bronchial asthma, obstructive airway disease or hypersensitive to either study drug were excluded from the study. The sample size was taken on the basis of cure rates of study drugs with 95% confidence interval (CI) and power of 80 [15, 16].

After taking informed consent, patients were counseled to sit straight with both eyes open and local anesthetic drops were instilled in their eyes to record the IOP by specialist ophthalmologist using standard protocols [17]. All the patients were randomly divided into two groups (60 in each). One group was treated with Travoprost eye drops (0.004%, OD) while other group with Levobunolol eye drops (0.5%, OD). After initial screening visit where demographic data and baseline IOP was recorded on the structured proforma, three follow-up visits were arranged each at 02 weeks interval. Ocular hypotensive efficacies of both study drugs were evaluated and compared by calculating the mean IOP change from baseline to each follow-up visit. Only patients with no missing IOP measurements for all visits were considered eligible for efficacy evaluation.

The collected data was entered and analyzed by SPSS version 22. Numerical variables like age, IOP and other demographics were described as Mean ± SD while categorical variables like age groups and gender were expressed in terms of frequencies and percentages. The difference between two treatment groups was determined by applying independent sample t-test whereas analysis of variance (ANNOVA) was applied for more than two groups. P-value <0.05 was considered significant.

RESULTS

One-hundred and twenty patients of open-angle glaucoma and ocular hypertension were enrolled in the study and randomly assigned to one of the two treatment groups (Travoprost or Levobunolol) to compare their efficacies in terms of lowering intraocular pressure and the results were analyzed. The distribution of age and gender is mentioned in Table 1, with mean age 52.16 ± 9.56 years and predominance of male gender.

The efficacy of study drugs in terms of reducing IOP for each follow-up visit is shown in Table 2. Patients responded quickly to both therapies with almost equal efficacy, displaying no significant statistical difference between the results of two groups (p value >0.05).

To determine the impact of various age groups on treatment outcome of patients treated with either Levobunolol or Travoprost, ANNOVA was applied. The mean reduced IOP (19.13 ± 4.884) of younger age group i.e. 30-40 years was taken as reference group whereas all the other age groups were compared with it as shown in Table 3. Results did not reveal any significant impact on the treatment outcome by different age groups.

DISCUSSION

Raised intra-ocular pressure is one of the most widely studied and important risk factor associated with

Table 1: Distribution of Age and Gender

AGE (YEARS)		30-40	41-50	51-60	>60
Drugs	Travoprost	8 (13.3%)	23 (38.3%)	17 (28.3%)	12 (20.0%)
	Levobunolol	8 (13.3%)	28 (46.7%)	16 (26.7%)	8 (13.3%)
Gender	Female	1 (2.8%)	24 (66.7%)	4 (11.1%)	7 (19.4%)
	Male	15 (17.9%)	27 (32.1%)	29 (34.5%)	13 (15.5%)

Table 2: Comparison b/w Levobunolol and Travoprost for reducing IOP

Visits	IOP (Mean ± SD)		P Value
	Travoprost	Levobunolol	
Baseline visit (Right eye)	21.68 ± 4.139	20.73 ± 4.226	0.8
Baseline visit (Left eye)	22.47 ± 3.280	22.23 ± 2.825	0.6
1st Follow-up Visit (Right eye)	18.45 ± 2.715	18.27 ± 2.863	0.7
1st Follow-up Visit (Left eye)	18.78 ± 1.851	18.87 ± 2.167	0.8
2nd Follow-up Visit (Right eye)	17.25 ± 2.384	17.83 ± 2.598	0.5
2nd Follow-up Visit (Left eye)	17.72 ± 1.698	18.30 ± 2.212	0.5
3rd Follow-up Visit (Right eye)	16.92 ± 2.346	16.67 ± 2.014	0.5
3rd Follow-up Visit (Left eye)	17.43 ± 1.619	17.53 ± 1.692	0.6

Table 3: Effect of different age groups on IOP reduction

Visits	Age Groups (Years)					
	31-50		51-60		>60	
	IOP (Mean ± SD)	P-Value	IOP (Mean ± SD)	P-Value	IOP (Mean ± SD)	P-Value
Baseline visit (Right eye)	20.92 ± 4.175	0.42	22.27 ± 3.329	0.06	21.85 ± 4.522	0.20
Baseline visit (Left eye)	21.80 ± 3.118	0.97	23.18 ± 2.920	0.70	22.50 ± 3.502	0.99
1st Follow up Visit (Right eye)	18.22 ± 2.831	0.36	19.06 ± 2.263	0.05	18.70 ± 2.922	0.22
1st Follow up Visit (Left eye)	18.75 ± 1.809	0.15	19.39 ± 2.164	0.01	19.05 ± 2.114	0.13
2nd Follow up Visit (Right eye)	17.29 ± 2.640	0.61	18.18 ± 1.845	0.09	18.00 ± 2.596	0.23
2nd Follow up Visit (Left eye)	17.90 ± 1.942	0.89	18.27 ± 2.111	0.58	18.25 ± 2.023	0.67
3rd Follow up Visit (Right eye)	16.49 ± 2.185	0.80	17.30 ± 1.741	0.16	17.40 ± 2.326	0.18
3rd Follow up Visit (Left eye)	17.43 ± 1.500	0.64	17.70 ± 1.759	0.36	17.75 ± 1.997	0.39

the development and progression of glaucoma which can be reduced by a variety of drugs [11]. Being a developing country, selection of drug should be based on effectiveness as well as its availability. Keeping the said facts in view, we conducted this study to compare IOP reducing ability of two commonly available drugs i.e. Travoprost and Levobunolol.

Our study revealed that men are more prone to develop primary open angle glaucoma as compared to women, resembling the reports presented by Song et al [18]. Increasing age did not show any difference in the degree of IOP reduction by study drugs. Also, no significant statistical difference was observed in the mean reduced IOP between two treatment groups. Similar pattern was observed in a meta-analysis published by Li T et al who compared the effectiveness of different anti glaucoma drugs showing mean reduced IOP of 4.83 mmHg in Travoprost group and 4.51 mmHg in Levobunolol group. Moreover, the mean reduced IOP by Levobunolol was found better than other competitors like apraclonidine, levobetaxolol, brimonidine, dorzolamide, brinzolamide, tefluprost, timolol, betaxolol, carteolol and unoprostone [19-21].

Contrary to our study where Levobunolol and Travoprost both has shown to have almost equal effica-

cy, some clinical trials reported Travoprost to have IOP reducing efficacy significantly better than beta blockers [22]. This superiority of prostaglandins for treating primary open-angle glaucoma was verified by van der Valk et al in a meta-analysis, followed by non-selective β-blockers, α-adrenergic agonists and finally topical carbonic anhydrase inhibitors [23]. In some clinical studies, Travoprost produced reductions in IOP of 7-8 mmHg, from a mean baseline IOP of 25-27 mmHg, which is significantly better than IOP lowering efficacy of Travoprost in our study [16]. That's why, a review article in 2019 labeled prostaglandin analogues including Travoprost as first line drugs for glaucoma management [24].

The socioeconomic impact of medical therapy in glaucoma is considerable, and treatment should be individualized to suit the educational and socioeconomic aspect of each patient. Levobunolol is cost effective than Travoprost (Rs: 150 vs Rs: 1150), so prescribing Levobunolol would improve the compliance of poor patients. In addition, beta blockers have relatively quick onset of action i.e. Levobunolol after topical administration, start its ocular hypotensive effect within 1 hour, reaches to maximum in 2-6 hours and last for 24 hours [25].

Patient safety profile is also necessary to keep in view while selecting anti-glaucoma drug. The prostaglandin analogues including Travoprost are contraindicated in conditions like uveitis, cystoid macular edema and herpes simplex virus infections, while beta blockers should be cautiously used in glaucoma patients with co-existing heart block, bradycardia, chronic obstructive pulmonary disease or asthma. Among β-blockers, Levobunolol has relatively better safety and tolerability profile as compared to other drugs of same class with the advantage of once daily dose [21, 26].

One of the major limitations of this study was non-randomized experimental design. Randomized control trial involving large sample size is recommended to achieve evidence base results of higher level for a definite conclusion. Secondly, lowering IOP is not the sole parameter for measuring drug efficacy that demands attention. To evaluate the exact disease status, perimetry and optical coherence tomography are recommended to perform along with IOP.

CONCLUSION

Both Levobunolol and Travoprost are equally effective in reducing intraocular pressure in patients of primary open angle glaucoma and ocular hypertension. If not contraindicated, Levobunolol may be started as an initial treatment because of well-established facts regarding its rapid onset of action and cost effectiveness. Travoprost may be reserved as an alternative or adjuvant therapy for patients not achieving target IOP with Levobunolol.

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Following authors have made substantial contributions to the manuscript as under

Naz F:	Concept designing and data collection.
Faisal MS:	Manuscript writeup.
Iqbal W:	Data and statistical analysis.
Naz M:	Management and interpretation of data.
Khan MS:	Data collection.
Hayat W:	Bibliography and critical review.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

FREQUENCY OF MECONIUM STAINED LIQUOR IN PATIENTS WITH POSTDATES PREGNANCIES

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ABSTRACT

Objective: To determine the frequency of meconium stained liquor in patients having gestation period of more than 40 weeks.

Material and Methods: This is a retrospective chart review of 495 patients treated at Khyber Teaching Hospital Peshawar Pakistan from September 2017 to September 2019. All the cases were identified from the medical record maintained at the Department. Laboring women having gestational age of more than 40 weeks were included in the study.

Results: A total of 495 patients were included in the study. The Frequency of meconium stained remained high (67.47%). Mean gestational age was 40 weeks with the SD of ± 1.084 weeks. With Primigravida (39.2%) and multigravida (60.8%), incidence of spontaneous labour was high (60%) as compared to induced labour (39.5%). Presence of meconium and fetal distress lead to high number of cesarean deliveries (64%). Out of total cases (334) delivered with meconium stained liquor, majority of cases (76%) were of grade 3MSL (39.5%) and grade 2 MSL (36.5%) respectively. 63.7% of cases led to cesarean deliveries.

Conclusion: Postdates pregnancy is a key factor causing meconium stained liquor. Timely induction of labour at 41 weeks of gestation is advised.

Keywords: Meconium stained liquor, postdates pregnancy, Meconium aspiration syndrome.

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INTRODUCTION

There is an increased interest in the study of etiological factors leading to perinatal morbidity and mortality. In postdates pregnancies, meconium stained liquor occurrence had been extensively counted as the predictor for the adverse fetal outcome, like meconium aspiration syndrome and perinatal asphyxia that increases the perinatal as well as neonatal morbidity and mortality [1]. Meconium, a germfree odorless, thick and black green material, found in the intestine of fetus during twelve weeks of gestation and stored during whole antenatal period. As the age of gestation increase the meconium-stained amniotic fluid also increase while it's uncommon before 37 weeks of gestation [2].

The passage of meconium into the amniotic fluid may be associated with obstetric factors such as prolonged labour, post-term pregnancy, babies having low birth-weight, oligohydramnios, hypertensive disorders of pregnancy and retardation of intrauterine growth [3]. The medical factors are pregnancy with anemia and cholestasis while advanced maternal age, drug abuse especially use of cocaine and tobacco are considered to be the sociodemographic and behavioral risk factors [4].

The literature shows that increased gestation period increases the incidence of meconium stained liquor rate. Evidence suggests that meconium stained liquor complicate the pregnancy (7% to 22%) [5].

The ratio of Meconium aspiration syndrome reported worldwide is about 5 to 10.5% of neonates with meconium stained liquor, that contributes to about 12% of neonatal death (the rate of fatality reported 40% in neonates and 2% of perinatal mortality [6,7]. The meconium fluid aspiration has adverse outcome in short and long terms mainly by increasing the rate of neonatal resuscitation, Reparatory distress, lower Apgar score, neonatal admissions, meconium aspiration syndrome, sepsis, and pulmonary disease in neonate. The infant born with meconium fluid aspiration also have high chances of severe mental retardation and cerebral palsy.

The meconium stained amniotic fluid related perinatal morbidity and mortality can be reduced if the major

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associated factors are recognized and timely decision taken for the mode and time of delivery.

The objective of the study is to identify the level of prevalence of meconium stained liquor with postdates gestation in our setting. The findings and conclusion of the study would be helpful for making appropriate decisions by health practitioners for managing the postdates pregnancies.

MATERIAL AND METHODS

The was study conducted in the Department of Gynecology and Obstetrics Khyber Teaching Hospital Peshawar Pakistan. Study design was retrospective chart review and duration of study was two years from September 2017 to September 2019.

Sample size was 495, by taking all patients with postdated pregnancy who were identified from the medical record maintained at the Department. All the patients (N=495) having gestational ages of more than 40 weeks were included in the study. Whereas, patients with comorbid conditions like diabetes, hypertension, cardiac, renal, or having obstetrical conditions such as antepartum hemorrhage, breech presentation, cord around neck, congenital fetal anomalies, and intrauterine fetal demise were excluded from the study.

Data was collected on a structured proforma where all the necessary patient data including clinical details such as age of the patient, parity status, gestational age, type of labour covering spontaneous or induced, degree of meconium (first, second or third degree), and mode of delivery (normal vaginal, operative, or instrumental deliveries). Thereafter, data was entered and analyzed. The analysis was carried out mainly through descriptive statistics. Quantitative variable like gestational age was calculated. Gestation period, mode of delivery, types of labour were presented in frequency whereas, frequency of meconium stained liquor, gestation period and meconium stained liquor, types of meconium were presented in numbers.

Meconium stained liquor was defined as the staining of the amniotic fluid that convert the colour of liquor from clear to different shade like yellow, greenish or brown colour which depends upon the degree of meconium stained liquor. Whereas, postdates pregnancy was defined as gestation period of more than 40 weeks.

RESULTS

A total of 495 patients were included in the study. In the study, frequency of gestational age was worked out. The mean gestational age was found to be 40 weeks with standard deviation of ± 1.084 weeks. Mean age of the patient was calculated as 26 years with standard deviation of ± 3.49 years.

The Frequency of meconium stained remained high (67.47%) in postdates pregnancies. The parity status reported different results. The percentage of multi paras remained high (60.8%) whereas, primis were 39.2%. Incidence of spontaneous labour was 60.5% as compared to induced labour where 39.5% cases were recorded.

Presence of meconium and fetal distress lead to high number of cesarean deliveries (63.7%), followed by normal vaginal deliveries (26.6%) and instrumental deliveries (9.5%) respectively. Out of total cases (334) delivered with meconium stained liquor, majority of cases (76%) were of grade 3 meconium stained liquor (39.5%) and grade 2 meconium stained liquor (36.5%) respectively.

DISCUSSION

Meconium stained liquor prevalence was high (67.47%), which may be due to the selection or targeting of specific population i.e. postdates pregnancy. The result also corresponds with findings of Jimma University and specialized hospital of south west Ethiopia who also reported high prevalence (58.7%) of meconium stained liquor in postdate pregnancy [8]. Similarity maybe due to the resemblance in the health institutions or same services

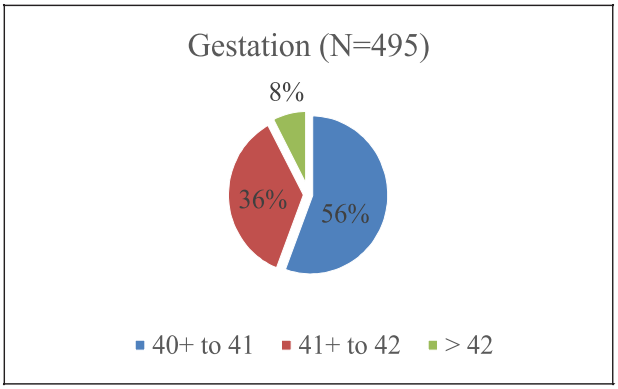

Fig 1: Percentage distribution of postdated gestations.

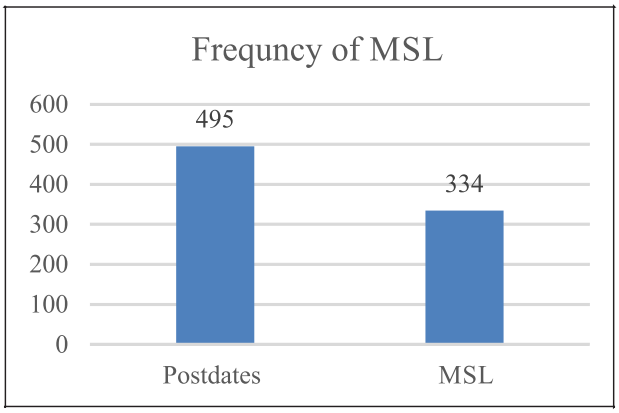

Fig 2: Frequency of MSL in postdated gestations.

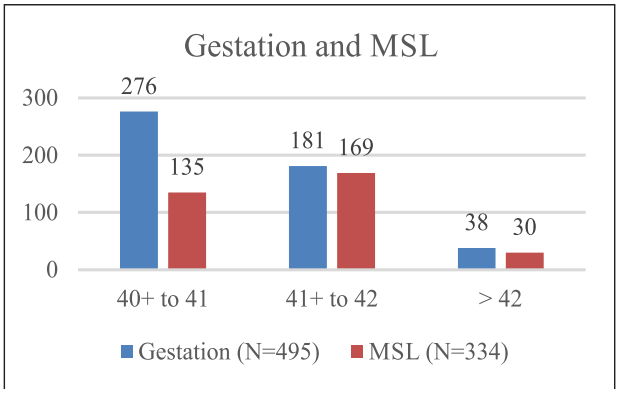

Fig 3: Distribution of MSL in postdated gestations.

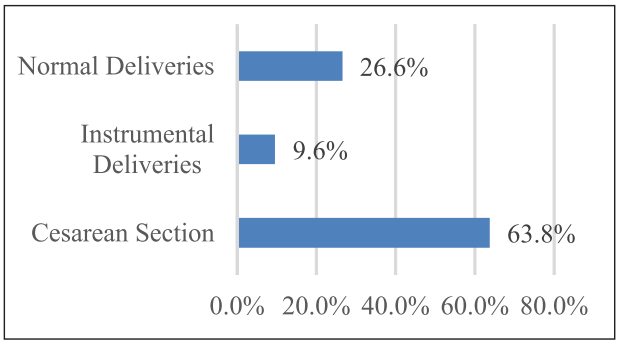

Fig 4: Percentage distribution of mode of delivery with MSL

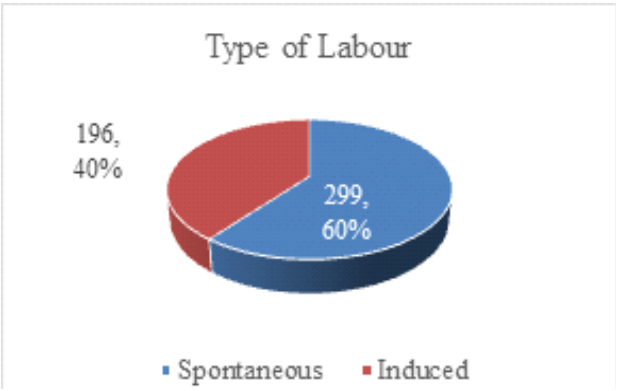

Fig 5: Percentage distribution of type of labour in patients with MSL

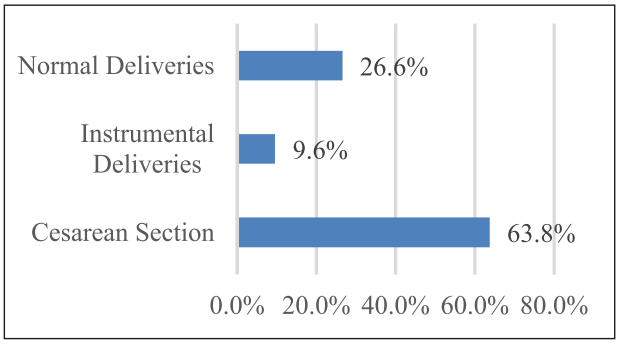

Fig 6: Distribution of types of meconium

quality.

Similarly, an Indian study [10] also reported high frequency (88.5%) of meconium stained liquor in postdates pregnancies. They considered low behavioral risk factors of meconium stained liquor like smoking, cocaine consumption, and addiction of Marijuana as well, which are missing in our setting.

Conversely, frequency of meconium stained liquor in the Brazilian context is low (35.8%), [9] which may be due to better accessibility and quality of services. Whereas, this study was performed in a tertiary level referral setting covering catchment area of low level of health service facilities.

The mean age of the patients was found to be 26 years with standard deviation of ± 3.49 years which is in line with the findings of other studies. Beisher [11] found that majority of patients with postdate pregnancies falls in the range of 25 to 30 years age. He explained that mother's age also showed significant association with the progression of meconium stained liquor. The explanation of this can be the age-related effects on cardiovascular vessels and this association is also related to age of uterine blood vessels and stiffness of arteries which can cause deficient perfusion of placenta and utero placental perfusion.

The study reported different results for parity status as 301 (60.8%) cases were found to be of multi paras and 194 (39.2%) cases of primary gravida. Similarly, Punya et al [12] also showed that para one status was high (50.2 %) in less than 40 weeks gestation whereas, para 0 status was high (59.5%) in 40 to 41 weeks gestation.

Incidence of labour induction quoted by various authors is in the range of 20% - 40% [13,14]. It was found that induced labour and meconium stained liquor are significantly associated. Incidence of spontaneous labour (60.4%) and induced labour (39.5%) were found to be in line with other studies. For example, Shilpa's [15] reported 38% induction rate. The tetanic uterine contractions (uterine tachysystole) and the administration of oxytocin leads to intrauterine fetal hypoxia and insufficient placental perfusion. When the fetus is exposed to hypoxia or asphyxia, vagus nerve stimulation increases the parasympathetic effect on the passage of meconium [16]. The stressful environment for the fetus can cause augmented peristalsis of fetal gastrointestinal tract, relaxation of anal sphincter and then the passage of meconium. Therefore, there is a need of vigilant fetal monitoring of induced cases of postdates pregnancies.

Research studies have reported that perinatal morbidity and mortality increases with the increase in gestational age. Rokade and Nadia, reported in their studies the perinatal mortality of 2 to 3 deaths per 1000 deliveries at gestation period of 40 weeks. It doubles till 42 weeks of gestation and is 4 to 6 times at gestation period of more

than 42 weeks [17,19]. The study found meconium stained liquor in more that 90% cases having gestation of 40+ to 42 weeks with 40.4% in 40+ to 41 weeks and 50.5% in gestation of 41+ to 42 weeks respectively, which is also in line with similar studies. Punya [12] found that MSL and fetal distress was present in 30.4% cases in gestations 40 to 41 weeks and 45.5 % in more than 41 weeks gestation. Tilstra and Mathews [18] study showed that the gestational ages at delivery were higher in meconium stained liquor group. Out of total cases (334) delivered with meconium stained liquor, majority of cases (76%) were of grade 3 meconium stained liquor (39.5%) and grade 2 meconium stained liquor (36.5%) respectively.

The study found cesarean section (63.7%) as key mode of delivery in postdates patients with MSL followed by normal virginal deliveries (26.6%) and instrumental deliveries (9.5%) respectively. Similarly, Sori D and Beleteet al [8] found that in postdates pregnancy with MSL 70.2% of patients had operative deliveries and those mothers with grade three meconium had 5 times increased risk of operative deliveries compared to those with grade one staining. Punya12 concluded that both forceps 3.3% and vacuum assisted vaginal deliveries 7.8 % were more in > 41 weeks gestation group. Emergency cesarean sections were more in > 41 weeks 30.8 %. Kumars et al [20] found 72% cesarean section rate. Conversely, Ayesha Arif [21] found 15% cesarean section rate in a study carried out on 150 patients. In her study induction of labour for postdates pregnancy resulted in normal vaginal deliveries with good fetal outcome. The difference in result can be attributed to their small sample size.

CONCLUSION

Postdates pregnancy leads to increased perinatal morbidity and mortality in the form of birth asphyxia, meconium aspiration syndrome, increased rate of admission to neonatal intensive care unit. The prevalence shows that postdates pregnancy is highly associated to meconium stained liquor. Correct assessment of gestational age and then induction of labour at 41 weeks has to be the protocol to prevent adverse feto-maternal outcome.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Mazhar T: Concept design, literature review, data analysis and manuscript drafting

Jabeen S: Drafting bibliography

Arif R: Assisted in manuscript drafting and proof reading

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

ORIGINAL ARTICLE

COMPARISON OF SALVADORA PERSICA CHEWING STICK AND MANUAL TOOTH BRUSH FOR EFFICACY OF PLAQUE REMOVAL: A RANDOMIZED CONTROLLED TRIAL

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ABSTRACT

Objectives: To clinically evaluate the efficacy of chewing stick as alternative to tooth brushing for plaque removal in subject with clinically healthy gingival status.

Material and methods: This randomized controlled trial was conducted from March 2020 till December 2020 a total of 80 participants, randomly allocated into two groups of 40 each at Department of Periodontology, Sardar Begum Dental College, Gandhara University, Peshawar, Pakistan. Group A were guided to use toothbrush, while group B was miswak users. Both groups were advised to use the respective group technique twice daily for four weeks. Pre and Post intervention examinations were planned by using Modified Quigley-Hein Plaque Index Quigley-Hein Plaque Index, which measures the plaque levels. Data was recorded on the first day (baseline) and after 4 weeks. Data was analyzed using SPSS v.24.0.

Results: Mean age of the study participants was 25.54±6.004 years. Plaque was measured using QHPI, at baseline group A presented mean of 5.001±1.50, group B had mean of 4.923±0.63 (p=<0.001), while after 4 weeks, group A showed mean of 2.52±7.82, while mean of group B was 1.37±0.427 (p=<0.001) with more evident decrease in Miswak group.

Conclusion: It was concluded that Salvadora Persica chewing stick was comparatively better anti plaque agent as compared to tooth brushes in this specific study.

Key words: Tooth brush, Miswak, Salvadora Persica, Chewing stick, Dental Plaque Quigley-Hein Plaque Index (QHPI).

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INTRODUCTION

Removal of dental plaque is affective in treating gingivitis, and periodontal diseases [1]. Oral health has a highly crucial role for effective healthy life. To forestall oral and dental conditions a good oral cleanliness is required. There are various approaches accessible for the support of oral wellbeing. These are mainly mechanical and chemical methods, among mechanical methods, tooth brushing and chewing stick are widely used ones. Traditional tooth brushing by chewing called Miswak has been used since ancient times [2]. Locally accessibility and a minimal effort to use have established on it the apparatus of decision for plaque control in various networks and is popular among Muslim community. Chewing stick were used by Babylonians some 7000years ago and it is known by different names, it has been called a natural tooth brush and Darkhe-i-Miswak [1,3]. About 182 species of this plant have been utilized as biting sticks all through the world. The most well-known kind of Miswak is a derivative of Salvadora Persica, otherwise called Arak or little tree or bush with a supple stem and root that effectively pulverize between teeth [4]. It is used as a traditional tooth brush for maintenance of oral hygiene. Different studies have reported that

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the oral health status of chewing stick user are far more better than expected , studies also supports the claim that Miswak sticks are useful for its chemicals content, like it has fluoride, chloride, ascorbic acid, silica, resins, tri-methylamine, and Salvadorine that effectively reduce plaque and gingival inflammation [5-7]. Another study reported that Miswak has significantly removed plaque ($P<0.001$) from teeth and addressed gingivitis($P<0.01$),when compared with the toothbrush [8]. It has been reported that miswak is as effective as tooth brush. Research claims that removal of plaque using Miswak from inter-proximal site has almost the same effectiveness as plaque removal from any other accessible site. It has been discovered that biting the stick limits plaque collection unnaturally and is effective in prevention of microbial impaction against numerous oral microorganisms [9].

The international body of World Health Organization(WHO) in 1987, energized the utilization Miswak for oral cleanliness in light of customary accessibility and ease; also it proved that it gives therapeutic effect on gingival disease and is an effective tool for oral hygiene measures [2]. Chewing stick accomplishes the essential basic principal of oral health and could be an appropriate substitute to tooth brush. It is inexpensive and easy accessible in the community, particularly in the developing world. About, 50% population of Pakistan's society is living in rural area and due to affordable range of chewing stick its purchase is fairly more than tooth brush. Data revealed that affordability of tooth brush is low by 8% among rural population as compared to urban, which is about 38% in number. This is the main concern for the selection of salvadora persica sticks compared to manual tooth brush in a country like Pakistan. In a similar way, miswak has been reported to be in daily tool of oral hygiene care and is considered to be practiced in Saudi Arabians (50%), where about 65% of population lives in country side, and 43% of the people living in cities. More over the use of miswak is higher rural population (90%) in Nigeria and Tanzania, and Karachi [10].

In order to re-establish the effectiveness of the miswak sticks and proving it as exclusive tool of oral hygiene care in current life style where nylon bristle tooth brush are attractive and easier to use and readily available in every where than the old traditional miswaks. Literature review has proven its importance and benefits at all levels. The present study aimed to evaluate the efficacy of chewing stick against plaque as an adjunct to tooth brush in subjects with clinically healthy gingival status in clinical terms.

MATERIAL AND METHODS

This Randomized controlled trial was conducted from March 2020 till December 2020 at Department of Periodontology, Sardar Begum Dental College, Gandhara University, Peshawar, Pakistan. Sample size was calculated at 95% confidence interval and 0.10% margin of error using WHO calculator11.Sample size was 80 and using simple randomization technique, the samples ($n=40$) each were allocated into group A (tooth brush users) and group B (miswak users).

After getting the ethical approval, the study included the subjects between the age group of 18–45 years with 20 teeth at least 5 teeth per quadrant that are clinically healthy as per gingival status, subjects showing Basic periodontal examination (BPE), and periodontal depth less than 3mm. Systemically compromised individuals, pregnant women , lactating mothers, subjects with on going orthodontic treatment for mal-positioned teeth; subjects with carious teeth and overhang margins restorations and subject who were on antibiotics in last 3 months were excluded from the study. All the study subjects were not only given verbal guide lines but also a written document was provided to them; tooth brushing and miswak techniques were demonstrated and guided properly on model followed photographs of different steps to be taken during the whole process.

After taking informed written consent the trial was conducted over 4 weeks duration. Group A used tooth brush with tooth paste provided by the researcher and the participants were directed to brush twice a day: after breakfast and after dinner for about four weeks. In group B, miswak was used with the same frequency of twice daily and at the same times for four weeks. At the baselines, BPE was carried out to access the periodontal status(-calculus, periodontal pocket, bleeding gum) of the participants by Community Periodontal Index (CPI). Plaque scores were recorded both at baseline and at follow up after four weeks. Identification of plaque was done using dental plaque-disclosing tablets containing 1.36% Erythrosine (Produits Dentaires SA Vevey. Swizerland) while scoring was done using modified Quigley Hein Plaque Index (QHPI), the tool was used to measure different plaque levels at buccal and lingual aspect per tooth 10. The same procedure was repeated after 4 weeks to record the follow-up results. SPSS v.24.0 used for data analysis. The paired t-test was used to determine the difference among means of two different groups, where p-value ≤ 0.05 was taken as significant. Whole mouth = total score / number of surface examined Plaque was graded as Quigley Hein

Index, a score of 0 to 5 wa s assigned to each facial and lingual surface.

RESULTS

The mean age of the sample was 25.54±6.004 years, while distribution as per age group with gender is given in table I. The study tested the hypothesis for difference in means of Quigley Hein Plaque Index (QHPI) for both groups at two different intervals, results revealed a significant difference (p-value = <0.001) at both intervals with better results for Miswak group as shown in table II.

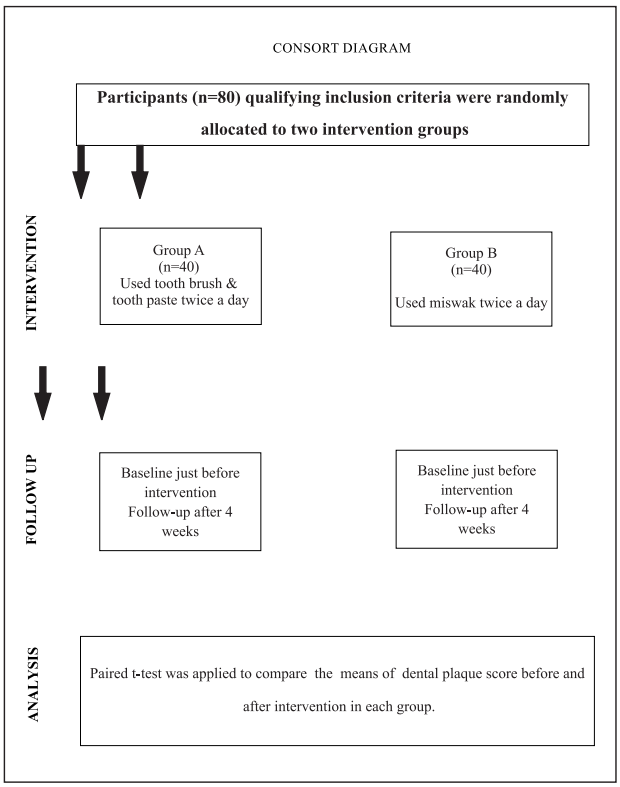

Fig 1: Flow chart of the study according to CONSORT guidelines

The Plaque Index System

Scores	Criteria
0	No plaque
1	Separate flecks of plaque at the cervical margin of the tooth
2	A thin continuous band of plaque (up to one mm) at the cervical margin of the tooth
3	A band of plaque wider than one mm but covering less than one-third of the crown of the tooth
4	Plaque covering at least one-third but less than two-thirds of the crown of the tooth
5	Plaque covering two-thirds or more of the crown of the tooth

Table 1: Age group for the study population

Age Groups (Years)	Male (%)	Female (%)	Total (%)
18-27	11 (13.75)	04 (5)	15 (18.75)
28-37	35 (43.75)	18 (22.5)	53 (67.5)
38-45	10 (12.5)	02 (2.5)	12 (15)

Table 2: comparison among both groups based on modified quigley hein plaque index (QHPI)

Time	Group	Mean± SD	P-value
Baseline	Tooth Brush	1.50±5.001	<0.001
	Miswak	0.63±4.923	
After 4 weeks of intervention	Tooth brush	7.82±2.52	<0.001
	Miswak	0.427±1.37	

DISCUSSION

Plaque is well known multi-factorial entity with in vivo malfunctioning. Microorganism of plaque S. Sanguis is the primary colonizer in the oral cavity, and is placed in the deeper layer of plaque, therefore dentifrices may not be able to stop its colonization. In comparison to our study results, Poure slami, et al. have reported that the minimum concentration of Salvadora Persica miswak stick required for effectively killing of S. Sanguis microorganisms the concentration was only 7.4 mg/ml; this proved effectiveness of miswak against S. Sanguis [12]. Increased efficacy of miswak may be due to several reasons: traces of Salvadora Persica 10mg/10ml solution were detected in the mouth up to 6 hours after use expectoration this substantively in approximate, but it gives a well-defined and comparable picture. Moreover, Miswak is generally used for longer period than tooth brush, cleaning usually done 5-10 minutes each time and the plant fibers remove the plaque along with massage to the gum3.

The reason of choosing the salvadora persica tree chewing stick was based on a number of factors. Miswak is commonly used in Pakistan, Indian sub continents and middle-east region. It is inexpensive with acceptable taste and has anti plaque and medicinal properties [13,14]. The use of tooth paste with brush could be the reason of significant reduction of plaque in tooth brush group; other studies used tooth brush alone in comparison with chewing stick [15,16]. In the current clinical trial, participants of the study were observed over a period of 4 weeks. This decision was based on the fact that previous studies have shown that after 9 to 21 days without proper oral hygiene, healthy gingiva develops heavy accumulation of plaque and leads to generalize mild gingivitis [17]. This study was designed to be a convenient model for detection of plaque inhibitory

ability of the chewing stick and to determine its relative activity in relation to the well-established tooth brush. Similar study designs were utilized in different studies worldwide and almost similar results were obtained, which showed better results for Miswak [11-18]. Quigley Hein plaque index was chosen in this study to measure the plaque score because it is the most commonly utilized index in previous similar investigations, which is a visual determination of disclosed plaque on cervical 1/3rd of tooth surface. Plaque disclosing agents are available in the form of chewable tablets, lozenges gums, and rinses and contain 1.36% erythrosine. Many studies are being directed to know the anti-microbial activities of the Miswak, results revealed excellent effect of Miswak killing the microorganisms [19].

CONCLUSION

It was concluded that Salvadora Persica chewing stick remains a good anti plaque agent as compared to tooth brush users. In order to maintained oral health and preventing dental diseases, routine use of chewing stick is a better and good alternate to tooth brush.

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Following authors have made substantial contributions to the manuscript as under

Riasat M: Study idea, concept, design and drafting.

Hassan S: Study supervision and critical revision.

Farooq A: Data collection.

Gul K: Statistical Analysis.

Alam K: Proof reading.

Shehzad S: Data Collection.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

ASSESSMENT OF HEALTH INFORMATION SYSTEM IN DISTRICT NOWSHERA, KHYBER PAKHTUNKHWA, PAKISTAN

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ABSTRACT

Objective: To evaluate the general status and functioning of health information system (HIS) in district Nowshera.

Methodology: An observational study was conducted in district Nowshera Khyber Pakhtunkhwa, Pakistan between June 2015-2016.The study population included all districts, health information system (HIS) health workers in Khyber Pakhtunkhwa. District Nowshera was selected for the purpose on non-probability sampling technique. The data collection instruments used in this study was adapted from the PRISM tool package that was modified for the purpose of this study.

Results: A total of 30 health facilities of District Nowshera were assessed for Quality of Data and Use of Information through DHIS Diagnostic Tool. 60% of the health facilities compile DHIS data and 93% do not get feedback from DHO office. 94% of the health facilities have not displayed map of their catchment areas. 87% of the health facilities do not arrange meetings regarding the managerial issues. Regarding the use of information, no documentation is available in any health facility of the district. The DHIS workers were assessed and interpreted according to the scale of Mann-Whitney-U method. The organizational and behavioral assessment was done which was statically insignificant.

Conclusion: There is an immediate need to install the system wide up gradation of technology and software. The manageable data would help the health personnel and managers to formulate the policies that would be helpful in up grading the standard of HIS and a universal HIS should be operated throughout the province.

Key words: Health Information System, WHO, DHIS, RHIS

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INTRODUCTION

According to the World health Organization, health system consists of six core elements of the i.e. provision of services, health information system, workforce for health services, reach to necessary medication, resources and leadership or governance. Among these he most essential constituent is the Health information system (HIS) [1]. Health information system is the systematic procedure that works by collecting the data, generates reports for improvement of efficacy and effectiveness of the services of health and plans the health programs for improving the status of a health sector [2].

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A recent study revealed that there is direct relationship between deficiency of information and overall health status of the community [3]. The Health Information system (HIS) provides benefits to patients, their families, and the healthcare providers. Despite these benefits, the health information system utilization in Pakistan is very low and health care providers are not adopting the latest trends and technology in the information interpretation [4]. Healthcare is the least developed department in case of technological development. The developed nations have effectively implemented primary healthcare setup but almost all of these lacks in interpretation of the electronic health information records of the patents and exchange of this health information with the particular health provider for decision making and policy planning [5]. HMIS intends to strengthen the procedures for the data collection and composing the events related to the health, to reproduce the authenticity, value ability and credibility to the available data, to utilize the available information for the analysis and interpretation and taking the evidence based decisions, to disseminate the health information on the regular

basis to all the relevant stake holders and to improve the behavior of all the health providers for effectively improving the delivery and response of the services [6]. A RHIS is a system utilized for assembly, distribution and utilization of data in providence of routine information at systematic intervals for predicting the intervention to address the public health processes and needs [7].

The government of Pakistan, in 2001 felt the need for a system that could cover the first-level health facilities more effectively and precisely. The government of Pakistan then with the technical assistance and cooperation of Japan installed a new system in Pakistan that is District Health Information System (DHIS) with an objective of planning and operating the routine processes of the health system at particular districts.

Pakistan has traditionally had poor health outcomes relative to other countries in South Asia and East Asia. In Khyber Pakhtunkhwa, many weaknesses and challenges have been identified in the current Health Sector Strategy (HSS), including poor access to and utilization of health services, low quality and effectiveness of care, limited managerial capacity and weak accountability at all levels [8, 9]. As per the Khyber Pakhtunkhwa Health Survey 2017, 67.5% of births were delivered in health facilities, but only 26.8% stayed for at least 12 hours for postnatal care. The neonatal mortality rate is 41 per 1,000 live births, the infant mortality rate is 58 per 1,000 live births, and the maternal mortality ratio is 206 per 100,000 live births.9 Of children aged 12–23 months, 55.5% are reported to be fully immunized (based on records and mother's recall). Approximately 17.3% of children aged 0–23 months have not received any vaccination at all. Over 40% of women have nutritional health problems [8].

There is a critical and dire requirement for enhanced improvement of the health information system in the health sector of the country in general and Khyber Pakhtunkhwa in specific. Hence, the current study was designed to study the existing weaknesses and strengths of the district health information system in Khyber Pakhtunkhwa and recommend some ways to improve the health information system.

MATERIAL & METHODS

This was an observational cross-sectional study conducted at district Nowshera between June 2015 and June 2016. The study included all districts and health information system (HIS) health workers. The research included census of primary and secondary health care facilities in Nowshera district. This study was carried out to analyze the functioning of Provincial District Health Information (DHIS) Cell, Districts Health Offices, and Health Facilities and the health staff involved in the process of health information systems. The data collection instruments used in this study was adapted from the PRISM tool package that was modified for the purpose of this study.9 This tool package addresses the utilization of routine health information system (RHIS) data that is collected within 1 year range from the health facilities[10]. This tool helps to identify the strengths and weaknesses of the health information system. HIS Performance Diagnostic Tool determines the overall DHIS performance by looking at quality of data and use of information to identify weak areas. This diagnostic tool identifies strengths and weaknesses; the other three tools identify the underlying technical, organizational, and behavioral factors for strengths and weaknesses. PRISM performance tool provides four types of diagnostic tools which include:

1. Data Quality Assessment at District or Higher level
2. Use of Information Assessment at District or Higher level
3. Data Quality Assessment at Facility Level
4. Use of Information Assessment at Facility Level

The following data collection tools (questionnaires) were adopted for the assessment of the health information system in district Nowshera:

- Organizational and Behavioral Assessment Tool (OBAT)
- DHIS Diagnostic Tool Health Facility Proforma: Quality of Data
- DHIS Diagnostic Tool Health Facility Proforma: Use of Information
- Data was analyzed through SPSS version 22.

RESULTS

There were a total of 30 facilities from where data was collected at Nowshera District. Table 1 illustrates the responses of participants regarding the use of information at the respected facility. For question regarding compilation of DHIS data, sixty percent i.e. 18 out of 30 facilities responded in negative. Only 2 out of 30 facilities displayed mother related health information while only a single facility displayed pediatric health information on DHIS websites. See table 1.

In organizational and behavioral domain, the DHIS workers were assessed and interpreted according to the scale of Mann-Whitney-U method in which p value of 0.05 or less is considered significant. Various queries were designed concerning the basis on which health decision were taken in the department, behavior of supervisor and staff in strategic planning and the self-efficacy of the health system. We could not get a single significant value in this regard.

Majority of the employee claimed that in health departments, the decisions are based on either political interference or personal likings. The mean score for decisions based on facts and evidence was very low i.e. 1.9. See table 2 for details.

Majority claimed that collecting information related to health, makes them feel bored. They further added that they are held accountable for poor performance. See table 2.

In table 3, the quality of data (health information) is demonstrated. 7/30 (23.3%) facilities kept proper records. However, the majority i.e. 60% claimed that they regularly reported data to the district head office. In more than one-half of the facilities, there was no specific person appointed for the collection of monthly report. The data accuracy was challenged in many facilities. The majority of the facilities' employees claimed that they find the report form difficult and complex. See table 3 for details.

Table 1: Use of Information among the facilities at district Nowshera

Serial	Query	Response from Facility	Percentage
FU1	Does this facility compile DHIS Data?	Yes 12	40.00%
		No 18	60.00%
FU2	Does the facility compile any report containing DHIS information?	Yes 8	26.67%
		No 22	73.33%
FU3	Did the facility receive any feedback report from district office on their performance for the last three months?	Yes 2	6.67%
		No 28	93.33%
Display of Information			
FU4	Does the district office display the following data;	Yes 2	6.67%
		No 28	93.33%
FU4a	Mother Health	Yes 2	6.67%
		No 28	93.33%
FU4b	Child Health	Yes 1	3.33%
		No 29	96.67%
FU5c	Facility Utilization	Yes 3	10.00%
		No 27	90.00%
FU5d	Disease Surveillance	Yes 1	3.33%
		No 29	96.67%
FU 6	Does the office have a map of catchment area?	Yes 2	6.67%
		No 28	93.33%
FU 7	The office displays a summary of demographic information	Yes 1	3.33%
		No 29	96.67%
FU 8	Any feedback (quarterly, yearly) report on DHIS data	Yes 2	6.67%
		No 28	93.33%
FU 9	If yes, what kinds of decisions are made in reports of DHIS data/information?		
FU 9a	Review strategy by examining actual performance on month to month comparisons	Yes 1	50%
		No 1	50%
FU9b	Review facility personnel responsibilities by examining service performance	Yes 0	0%
		No 2	100%
FU9c	Mobilization/shifting of resources based on comparison by services	Yes 0	0%
		No 2	100%
FU9d	Advocacy for more resources by comparing performance by targets	Yes 0	0%
		No 2	100%
Discussion and Decision on DHIS information			
FU10	Does the facility have routine meetings for reviewing managerial matters?	No 2	13.33%
		No 26	86.67%

FU11	How frequently is the meeting supposed to take place?	Yes 3	10.00%
		No 27	90.00%
FU12	How many times did the meeting take place during the last three months?	Yes 2	6.67%
		No 28	93.33%
FU13	Is an official record of management meetings maintained?	Yes 2	6.67%
		No 28	93.33%
FU14	If yes, please check the meeting records for the last three months:		
FU14a	Management of DHIS, such as data quality, reporting, or timeliness of reporting	Yes 2	15.38%
		No 0	0%
FU14b	Discussion on DHIS findings such as disease data, or service coverage, medicine	Yes 2	15.38%
		No 0	0%
FU14c	Have they made any decisions based on the above discussions?	Yes 1	7.69%
		No 1	7.69%
FU14d	Any follow-up action taken on the decisions made during the previous meetings?	Yes 1	16.67%
		No 1	16.67%
FU14e	Any DHIS related issues/problems referred to provincial level for actions?	Yes 1	16.67%
		No 1	16.67%
Use of Information by the District Office			
FU15	Facility received annual/monthly planned targets based on DHIS information?	Yes 4	13.33%
		No 26	86.67%
FU16	Did records of facility of last three months show that district directives?	Yes 1	3.33%
		No 29	96.67%
FU17	Did facility receive district DHIS office newsletter/report in last three months?	Yes 0	0%
		No 30	100%
FU18	Any documentation exists to show use information?	Yes 0	0%
		No 30	100%
FU19	Did the person in charge of the facility participate in meetings at district level to discuss DHIS performance for the last three months?	Yes 1	3.33%
		No 29	96.67%
FU20	Examples of how the facility uses DHIS information for health system management	Yes 1	3.33%
		No 29	96.67%
Supervision by the district health office			
FU21	Did the district supervisor visit your facility during the last three months?	Yes 0	0%
		No 30	100%
FU22	Did you observe supervisor having a checklist to assess the data quality?	Yes 0	0%
		No 30	100%
FU23	Did supervisor check the data quality?	Yes 0	0%
		No 30	100%
FU24	Did the district supervisor discuss performance of health facilities based on DHIS information when he visited your facility?	Yes 0	0%
		No 30	100%
FU25	Did the supervisor help you decide based on DHIS information?	Yes 0	0%
		No 30	100%

Table 2: Mean score of facility staff on OBAT

Serial Item #		Mean Score	p-value
			Mann-Whitney-U
In health department, decisions are based on;			
D1.	Personal liking	5.1	0.073
D2	Superiors' directives	6.13	0.943
D3.	Evidence/facts	1.9	0.076
D4	Political interference	5.63	0.904
D5.	Comparing data with strategic health objectives	1.77	0.52
D6.	Health needs	1.8	0.962
D7.	Considering costs	3.4	0.435
In health department, superior officers;			
S1	Seek feedback from concerned persons	1.8	1
S2.	Emphasize data quality in monthly reports	1.93	0.881
S3	Discuss conflicts openly to resolve them	2.37	0.635
S4	Seek feedback from concerned community	2.4	0.22
S5	Use HMIS data for setting targets and monitoring	2	1
S6	Check data quality at the facility and higher level regularly	2	0.407
S7	Provide regular feedback to their staff through regular report based on evidence	2.53	0.87
S8	Report on data accuracy regularly	2.13	0.84
In health department, staff			
P1	Are punctual	2.2	0.605
P2	Document their activities and keep records	1.93	0.559
P3	Feel committed in improving health status of the target population	1.93	0.783
P4	Set appropriate and doable target of their performance	2.27	0.425
P5	Feel guilty for not accomplishing	2.43	0.353
P6	Are rewarded for good work	1.97	0.844
P7	Use HMIS data for day to day management of the facility and district	1.9	0.329
P8	Display data for monitoring their set target	2.2	0.896
P9	Can gather data to find the root cause(s) of the problem	2.07	0.864
P10	Can develop appropriate criteria for selecting interventions for a given problem	2.6	0.257
P11	Can develop appropriate outcomes for a particular intervention	2.37	0.366
P12	Can evaluate whether the targets or outcomes have been achieved	1.9	0.925
P13	Are empowered to make decisions	2.17	0.745
P14	Able to say no to superiors and colleagues for demands/decisions not supported by evidence	1.83	0.858
P15	Are made accountable for poor performance	5.77	0.844
P16	Use HMIS data for community education and mobilization	1.77	0.559
Personal			
BC1	Collecting information which is not used for decision making discourages me	2.37	0.509
BC2.	Collecting information makes me feel bored	5.9	1
BC3	Collecting information is meaningful for me	2	0.173
BC4	Collecting information gives me the feeling that data is needed for monitoring facility performance	2.53	0.103
BC5	Collecting information give me the Feeling that it is forced on me	1.87	0.323
BC6	Collecting information is appreciated by Co-workers and superiors	1.87	0.728

SE1	I can calculate percentages/rates correctly	0.67	0.643
SE2	I can plot data by months or years	0.67	0.643
SE3	I can compute trend from bar charts SE5	0.33	0.165
SE4	I can explain findings & their implications	0.67	0.643
SE5	I can use data for identifying gaps and setting targets	0.33	0.557
SE6	I can use data for making various types of decisions	and providing feedback	0.33

Table 3: Quality of Data in Nowshera District Facilities

Query	Response from Facility	Percentage
Keeping Record	**Yes 7**	**23.33%**
	No 5	16.67%
No of facilities actually reporting	Yes 18	60.00%
	No 12	40.00%
A Reporting Month A	Before deadline 16	53.33%
	After deadline 14	46.67%
Availability of person for collection of monthly report	Yes 14	46.67%
	No 16	53.33%
Data Accuracy	Yes 11	36.67%
	No 19	63.33%
Indicators for Each Facility Catchment Area	Yes 6	20.00%
	No 24	80.00%
Comparison among Facilities	Yes 2	6.67%
	No 28	93.33%
Comparison among Type of services	Yes 4	13.33%
	No 26	26.86%
Is monthly report form complex and difficult to follow	Yes 18	60.00%
	No 12	40.00%
Do you find that IT is easy to manage	Yes 10	33.33%
	No 20	66.67%
DHIS has information that is spread over in different information system	Yes 17	56.67%
	No 13	43.33%
(LAN) exist to provides access to information to all district managers	Yes 10	33.33%
	No 20	66.67%

DISCUSSION

In Pakistan, research has shown that many issues exist in the existing health information system. Many districts are still operating on the old-fashioned Health Information Management System HIMS. The few one which have installed the latest District Health Information System DHIS still face basic operating problems. As evident from our study, the most important of which are lack of facility to record the data systematically, lack of feedback system, lack of utilization of information in taking decisions and disease surveillance, inefficient management, power politics and the incapability of the staff to adapt to the modern system. These are the core issues that have been pointed out by our study. Other than these there are many other issues that need to be addressed in the future for a more efficient health information system.

Results of our study are similar to the results of 20 studies from 11 countries that recognized proper management of data in the health sector [11]. In another research, it has been indicated that the public sector structure system and style of management in Pakistan are the main hurdles in the way moving forward. The managers and the subordinates are not content with the authority above them supervising them and the existing information system. Personnel working in the HMIS feel a lack of sense of job security when taking any action independently. They feel a sense of fear and threat of being transferred and held accountable for doing anything against the management.

Literature indicates that a true leadership could inculcate the essential values in the system and could play an important role in sustaining the values that could benefit the majority of the public. They should try to introduce a culture of submission of regular reports and data to the DHO and to the national level in particular, arranging the resources necessary for the usage of latest techniques in the HIS and minimizing the inaccuracies in the data.

Other studies show that lack of clear explanation of the nature of the job leads to un-clarity about the duties and responsibilities of the staff. That is one of the major causes of the inefficiency of the system. Absence of satisfaction, motivation, appreciation, and reward for efficient working are amongst the other causes. Literature has proven that in cases where steps were taken to introduce reforms in the existing HIMS, the focus is only paid towards the financial or the organizational reforms ignoring the human resource reform intervention. It is suggested that for the improvement in the system the top priority should be given to human resource policies, improving management skills, developing planning from grass root level to national level and initiation of the training programs to equip them with modern skills for operating the HMIS efficiently[12,13].

Current researches suggest that the main obstacle in improving the HIS is not shortage of tools but the poor management of the resources. The reasons behind this include: poor management of data, poor quality of data due to data duplication, selection of data without taking the technicalities into the account, lack of proper channel for timely and updated transmission of data to the national level and lack of coordinated efforts to address the problems of the periphery to the district and then to the national level respectively. The health workers do not have access to the proper and standardized training through which they could develop an understanding of procedure for collection and processing of the data. Furthermore, there is a lack of motivation and financial incentives for the health services worker due to which they tend to lose interest in their work and chances of errors increases. The lack of feedback system is another reason behind this poor quality of data.

On general assessment of the existing health system it was found out that the overall system is very feeble, the data collection system is not that much organized and information is disseminated in fragments. In view of this situation, efforts should be organized where the prime focus should be on the organization of data, utilization of the data and dissemination of the data to the respective stakeholder.

There is no proper management system that ensures the timely transmission of the data from district to provincial and from provincial to the national level. The ultimate result of which has to be faced by the HIS in the form of outdated, low quality data and decisions taken without any sound background data. As a result the staff and healthcare personnel have to make decisions based upon their gut feelings. As the HMIS is not of universal type across all the districts of Pakistan, the information generated by this software is of different standard from one another. This creates the problem at the provincial and national level when data is assimilated together to generate monthly or annual reports. In many facilities computers are not being used, reason is not the unavailability of the computer but the absence of skilled staff to operate the computer. The utilization of some very simple and sophisticated programs like SPSS, GIs, and EPIINFO is not very popular in the health sector. Regarding the training of the HMIS staff, it is of utmost necessity to up regulate and appraise the training process seriously. The possible reason behind the lack of implementation of an effective training process is lack of professional or ethical incentives for utilization of staff skills with maximum efficacy in routine work. Work ethics should be defined for all the workers and it should be implemented without any discrimination from the top level authority to the grass root level. Universal code of ethics should be institutionalized in every facility and its implementation should be followed strictly. A reliable HMIS should produce complete, authentic and timely information to the health managers and all the stakeholders. So that this information could be utilized as a basis for taking the timely decisions that would contribute in improving the quality and sustainability of the health programs.

The HMIS operating in the facilities could be used as the most powerful tool for planning and managing the health services. In order to establish a system that could prove to be efficient enough to respond to the needs of taking a decision based upon the information from the healthcare delivery system. We need to have a vast health information system that should have the ability to process all over the country in terms of infrastructure and networking.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Nawaz R: Study design, discussion, Manuscript writing.

Khan SA: Concept, critical review.

Khan GS: Analysis, interpretation.

Nawaz S: Literature search.

Nasir F: Bibliography.

Tayyaba: Statistical Analysis.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

ORIGINAL ARTICLE

THE THERAPEUTIC EFFECT OF OLEANOLIC ACID ON EXPERIMENTALLY INDUCED GASTROESOPHAGEAL REFLUX DISEASE

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ABSTRACT

Objective: This study was aimed to evaluate the therapeutic effect of Oleanolic acid (OA) on experimentally induced Gastroesophageal reflux disease (GERD).

Materials and Methods: GERD was induced in twelve albino Wister rats by daily administration of 2 mL of acetic acid 15 %, pH: 2.41 for 30 days, while another group of three rats received the same volume of distilled water during the same period. The twelve rats being administered acetic acid were divided into four groups of three rats each and treated as follows; Group 1-the control group, with intra-peritoneal administration of 0.2 mL saline solution; Groups 2 and 3, with intra-peritoneal administration of 0.2 mL of OA 20 mg/kg and 40 mg/kg respectively and Group 4 with oral administration of 2 mL of Lansoprazole 20 mg/kg. All treatments were given simultaneously with the acetic acid daily for 30 days. All rats' oesophagi were harvested for histological analysis.

Results: Rats treated with 20 mg/kg and 40 mg/kg OA revealed a more intact oesophageal lining compared to the detached saline group one. There was no damage to blood vessels and the mucosal protective barrier was thick.

Conclusion: Our results suggest that OA may protect the oesophagus against GERD.

Key words: Gastroesophageal reflux disease (GERD), oesophagus, therapy, Oleanolic acid, inflammation.

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INTRODUCTION

Gastroesophageal reflux disease (GERD) is a common chronic digestive disorder that develops due to the reflux of the acidic stomach contents that cause irritation of the oesophagus lining [1, 2]. When gastric contents with pH range lower than that of the oesophageal pH 7.0 reach the oesophagus, cellular injury, inflammation (acute and chronic) and tissue death can consequently occur [3]. This condition accounts for 75% of oesophageal diseases worldwide and is estimated to affect up to 33% of the world's population and the prevalence is reported to be increasing with time [4–6]. GERD is related to everyday lifestyle and has a very costly treatment and management [7,8]. With Africa slowly changing to being urban, there should be expectations of an increase in the disease reports as high-risk factors associated with GERD are the result of urbanization [9, 10].

Uncomplicated symptoms of GERD are treated with proton pump inhibitors (PPI) which reduce the acid. Lack of response from PPI's can result in complications such as; esophagitis, respiratory problems, Barrett's oesophagus, oesophageal strictures and ulcers that might require surgery [4,11]. GERD is a chronic and relapsing condition and these conventional therapies are costly and can be inconvenient. There is a need for data that can provide new treatment insights. Medicinal plants provide therapies that are considered safe and effective compared to the synthetic chemicals and are the main source of structurally important chemical substances that lead to the development of innovative drugs [12]. Plants contain important phytochemicals, one of which is oleanolic acid (OA), a pentacyclic triterpenoid known for its wide array of biological properties [13]. These include anti-nociceptive, anti-cancer, antioxidant and anti-inflammatory properties. [14–18] OA is a compound present in food, vegetables and all edible plants [19]. This study was aimed to investigate the therapeutic role of OA in experimentally induced GERD.

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MATERIALS AND METHODS

Albino female Wistar rats weighing 250 g to 350 g obtained from the South African vaccine program (Johannesburg, South Africa) were used. They were housed in the Department of Physiology Animal holding facility, Walter Sisulu University (Mthatha, Eastern Cape, South Africa) during the experimental period under standard

light-controlled conditions (12hr light: 12hr dark) and controlled temperature of 24 ^{0}C to 26 ^{0}C. These rats were accommodated in groups of 5 animals per cage of 30 cm (breath) x 90cm (length) x 30cm (height). The cage bedding, which was made of wood shaving, was changed twice in 10 days. The animals had access to pellets (EPOL SA): protein-180g/kg, moisture- 120g/kg, fibre- 60g/kg, fat- 60g/kg, calcium- 18g/kg, phosphorus- 7g/kg) and water. They were allowed two weeks of acclimatization of the new environment before the start of the experiment. The study was approved by the ethical review committee of Walter Sisulu University under the reference no. 064/2016.

A total of fifteen rats were used. Experimental GERD was induced in twelve rats by daily oral administration of a single dose of 2 mL of acetic acid 15 %, pH: 2.41 for 30 days. While another group of three rats received the same volume of distilled water during the same period.

The twelve rats were administered a single dose of 2 mL of acetic acid 15 %, pH: 2.41 were divided into four groups of three rats each and treated as follows; Group 1; the control group was treated with intra-peritoneal administration of 0.2 mL saline solution. Groups 2 and 3 were treated with intra-peritoneal administration of 0.2 mL of OA (SIGMA, St. louis, Missouri, USA) 20 mg/kg and 40 mg/kg respectively. Group 4 was treated with oral administration of 2 mL of Lansoprazole (Cipla, Capetown, SA) 20 mg/kg. All treatments were given simultaneously with the acetic acid daily for 30 days.

At the end of the treatment period, the animals were allowed an overnight fast and, in the morning, they were all sacrificed, and the esophagus was harvested for histological analysis. The oesophagi were kept in 10% buffered formalin for preservation. Two days after the tissues were preserved, small pieces were cut and routinely processed through ascending grades of alcohol using a TP102 automatic processor and clearing in xylene. The processed oesophagus tissues were then embedded in paraffin wax using embedding unit, trimmed at 30**µm**, and sections cut to a 5µm thickness. Tissue sections were then stained using the Haematoxylin and Eosin technique (Sigma-Aldrich, St Louis Missouri, USA) and mounted for evaluation. The sections were examined using a DMD 108 Imaginer microscope at x10 and x20 magnification.

RESULTS

The oesophagus of rats that received 2ml of distilled water for 30 days had intact stratified squamous non-keratinised epithelium overlying loose connective tissue and an intact serosa (Figure 1A). While all rats that received a daily oral administration of 2 mL of acetic acid 15 %, pH: 2.41 during the same period showed a disruption of the squamous epithelial which appeared keratinised and there was thinning of the stratified epithelium. There was also metaplastic mucosal alterations characterised by the detachment of the mucus protective barrier of mucosa of the oesophagus. There was also blood scattered inside the oesophagus indicative of loss of cell cohesion. These histo-morphological changes are indicative of GERD (Figure 1B).

The oesophagus showed no apparent damage on rats given distilled water (H&E, 10x [A1] and 20x [A2]). [B] Rats treated with acetic acid showed detachment of the mucus protective barrier of mucosa with blood scattered inside the oesophagus and thinning of the stratified epithelium (arrows 1,2 & 3) (H&E, 10x [B1] and 20x [B2]), scale bar = 100µm.

The oesophagus of the group 1 rats treated with acetic acid and saline only showed keratinised squamous epithelial cells. There was detachment of the mucus protective barrier of mucosa of oesophagus with blood scattered inside the oesophagus and the thinning of the stratified epithelium (Figure 2A). The oesophagus of rats treated with acetic acid and 20mg/kg of OA (Group 2) and those given 40mg/kg of OA (Group 3) showed an intact stratified squamous keratinised epithelial cells. The granular cell layers were prominent, and the basement membrane was intact (Figure 2B & 2C). Blood vessels with tiny blood spots inside the oesophagus and development and thickening of stratified epithelium and attachment of the mucus protective barrier was more prominent on rats treated with 40mg/kg of OA (Figure 2C). Rats treated with Lansoprazole (Group 4) showed no irritation with a prominent intact stratified squamous keratinised epithelial cell on their oesophagus (Figure 2D).

Rats treated with saline show detachment of the mucus protective barrier of mucosa and thinning of the epithelium (arrows 1 & 2). (B.) Oesophagi of rats treated of 20mg/ kg of OA show an intact mucosa layer in most areas and an intact epithelium (arrow 3). (C.) Oesophagus of rats treated with 40mg/kg of OA show a more prominent thick stratified epithelium and attachment of the mucus protective barrier (arrow 4), than that of the 20mg/kg of OA rats (D.). Rats treated with Lansoprazole show fully intact and well-developed mucosa and blood vessels. (H&E, 20x) scale bar = 100µm.

DISCUSSION

The oesophagus is one of the vital organs of the digestive system that serve as a conduit for substances that enter the body through oral cavity [20]. However, highly toxic acidic substances are likely to cause morphological changes in the mucosae of the oesophagus. This study showed detachment of the mucus protective barrier of the mucosae and rupture of the blood vessels after exposure to acetic acid, these histomorphological changes are indicative of gastroesophageal reflux disease (Figure 1B). The absence of the damaged mucosae shown in figure 2 might have been caused by the medicinal ability of OA.

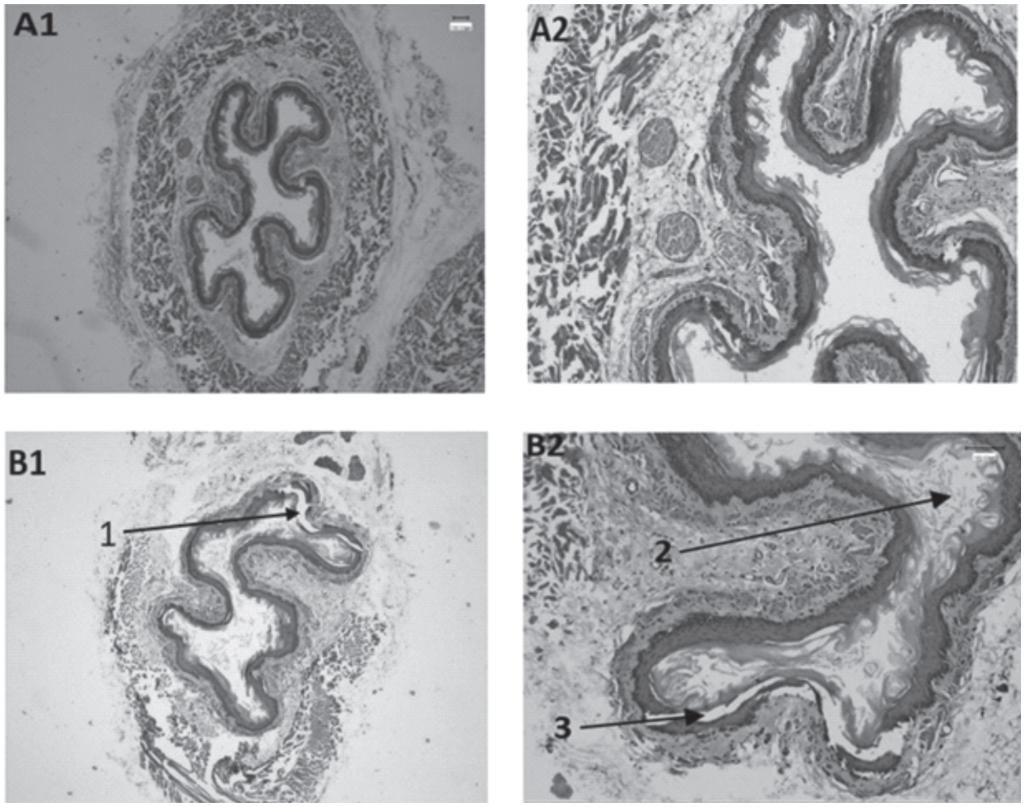

Fig 1: Photomicrographs of the oesophagus of (A) Group 1 rats given distilled water and of (B) group 2 rats given 2 mL of acetic acid 15 %, pH: 2.41 daily for 30 days.

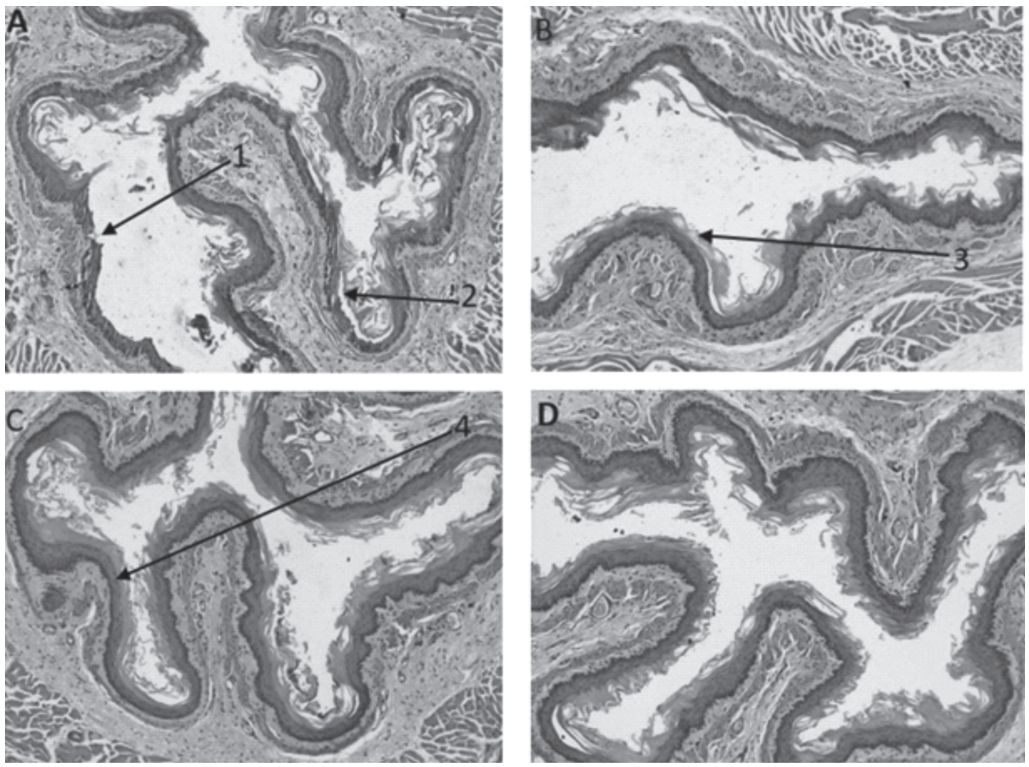

Fig 2: Photomicrographs of the Oesophagus of rats that received (A) 2 mL of acetic acid 15%, pH: 2.41 (Group 1) and saline; (B) 0.2 mL of OA 20 mg/kg in combination with acetic acid (Group 2); (C) 40mg/kg intra-peritoneal in combination with the acetic acid (Group 3); 2ml Lansoprazole 20 mg/kg orally in combination with acetic acid (Group 4) for 30 days..

Previous research have shown OA to be part of phytochemical component of medicinal plants with anti-inflammatory effect. As an example, the anti-inflammatory activities of fruits of Prunus padus, Kleinia odora and Syzygium aromaticum are shown to be due the presence of OA in these plants [21-24]. OA studies have shown that this compound has the ability to reduce oxidative and inflammatory injury through sparing glutathione by raising the activity of superoxide dismutase (SOD) and reducing the release of IL-6 and TNF-α [25]. This compound has been brought into the spotlight of the latest research due to its chemo preventive, anti-inflammatory, antioxidant, hepatoprotective and immunomodulatory properties [26].

CONCLUSION

Our results show that OA may have the ability to prevent the effects of the acid secretion, which suggests that the compound may possess anti-inflammatory activity against acetic acid as an aggressive factor of the oesophageal lining as indicated by the prevention of the damage to the lining of the oesophagus. The properties of OA provide advantages to GERD patients by decreasing the aggressive factors and increasing the protective factors showing that plants rich in OA should be used as a good alternative treatment for the disease.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Ndebia EJ: Concept, supervision, critical review, data analysis.

Madikizela K: Data collection, critical review.

Seipone ID: Manuscript writing, Critical review.

Mathulo S: Data collection.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

THE ROLE OF INTRA-OPERATIVE WOUND IRRIGATION WITH NORMAL SALINE IN REDUCTION OF SURGICAL SITE INFECTION IN GYNAECOLOGICAL SURGERIES- A PROSPECTIVE COHORT STUDY AT PAK-EMIRATES MILITARY HOSPITAL

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ABSTRACT

Objective: To evaluate the efficacy of intra-operative wound irrigation with normal saline in reducing surgical site infections in gynaecological surgeries.

Methods: It is a prospective cohort study carried out at Obstetrics and Gynaecology Department, Pak-Emirates Military Hospital, Rawalpindi from 1st November 2019 to 30th April 2020. A total of 400 patients undergoing abdominal surgery for gynecological reasons were recruited by consecutive non-probability technique. Patients with known comorbidities were excluded. Participants of study were allocated cohort and control groups at the end of the surgery after closing the abdominal fascia. In cohort group, the subcutaneous soft tissue was irrigated with 1000 ml of Normal saline solution before skin closure and sterile dressing. No intra-operative wound irrigation was performed in the control group. The primary and secondary endpoint measures (SSI up to 10th Post-Operative day) and (SSI up to 30th Post-Operative day) respectively, were assessed clinically.

Results: The study included 400 patients, with 200 in the cohort group and 200 in the control group with a mean Age of (Mean ± SD) 33.6±8.1 years. The majority of the patients had Pre-Op Hemoglobin of >11 g/dl (54%). The most common surgeries were Caesarean section (81%) and Hysterectomy (10%). Maximum surgeries were performed between 30-30 min (312)78% with mean hospital stay of (Mean ± SD) 2.9±0.5 days. Analysis of the results showed that Intra-operative wound irrigation with normal saline significantly lesser rate of postoperative SSIs in comparison to no irrigation at both primary outcome measure that was SSI at 10th Post-operative day (RR=0.417, 95 % CI [0.15;1.161]) and secondary outcome measure that was SSI at 30th POD (RR=0.286, 95 % CI [0.060;1.359]).

Conclusion: Intra-operative wound irrigation with Normal Saline decreases the risk of SSI by 58.3% (AR) at 10th POD and by 71.4% (AR) at 30th POD in otherwise healthy women with no comorbidities.

Key words: Surgical site infection, Gynecological surgeries, Intra-Operative Wound saline Irrigation.

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INTRODUCTION

Incidence of Surgical site infection following abdominal surgeries is as high as 15%–25% which invariably depends on the level of contamination making it one of the most frequently occurring infectious complication[1, 2, 3]. Surgical site infection is defined as an infectious complication of surgical wounds. Apart from other factors, surgical technique also influences SSI rate therefore significant number of intraoperative irrigation regimens in order to reduce postoperative SSI are documented in the literature.

The burden of SSI according to World Health Organization (WHO) was reported to be 11.8 per 100 surgical patients undergoing surgical procedures (95% CI: 8.6–16.0) and 5.6 per 100 surgical procedures (95% CI: 2.9-10.5) [4]. Wound infection occurring during first 30 postoperative days or one year postoperative (if an implant is left in place) as well as, the infection secondary to the surgery, is defined as surgical site infection by the Centers for Disease Control and Prevention [5]. It includes infections of incision area, below the incision in muscles and tissues surrounding muscles and infections in other parts of the body involved in the surgery. Any type of surgery inadvertently has a potential complication associated in the form of SSI which is void of access (minimal invasive or open) or surgical discipline. Studies identify SSI to be a significant cause leading to morbidity which can be effectively

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prevented [6,7].

Amongst hospital-acquired infections, SSIs are thought to be most frequent as well as an economic burden, accounting for 20% of all hospital acquired infections6. Statistical review undertaken by European Centre for Disease Prevention and Control 2011 reflected in SSI surveillance report indicate incidences with colorectal surgery at 9.5% besides 1.4% and 1.0% for cesarean section cholecystectomy respectively [7]. However, 11% of patients undergoing surgical procedures in developing countries develop SSI. In Africa, the incidence is up to 20%, contributing significantly to morbidity and mortality. Moreover, surgical site infections are problematic not only for poor countries but as well as developed countries like America, and it is documented that patients are spending more than 400000 extra days in hospitals due to SSIs, at a cost of an additional US$ 10 billion per year [8].

Keeping in view this high incidence of SSIs, surgeons all over the world are working on developing prophylactic measures to lessen the rates of SSIs. These prophylactic measures to prevent SSIs significantly alters surgical outcome [9]. Flow of solution experienced across the surface of a surgical incision before closure of wound is described as Wound irrigation (WI). Normal routine in surgical procedures for Prophylactic intra-operative wound irrigation (IOWI) is to undertake irrigation before skin closure. At contrary, no evidence reflects such practices to be effective in reducing chances of SSIs [10,11]. Study aims to undertake comparative review of intra operative saline irrigation of wound done prior to closure, with conventional wound closure method which is without irrigation, in terms of development of SSIs, which shall lead to identify preferred method having lesser cases of SSIs for patients treated for gynecological abdominal surgeries.

MATERIAL AND METHODS

A total of 400 patients undergoing abdominal surgery for gynecological reasons irrespective of the diagnosis were recruited by consecutive non-probability technique from 1st November 2019 to 30th April 2020. Approval of study was taken from Ethical Review Committee (A/28/EC/50/19) and consent taken from patients. Patients with known comorbidities such as essential hypertension, diabetes, thyroid disease, renal disease, anti-phospholipid Syndrome (APS), Systemic Lupus erythematosus (SLE) or any other medical illness were excluded from the study. Patients undergoing minimally invasive surgery like mini-laparotomy of more than 3 cm wound size were included. Any patient having pre-op hemoglobin < 11g/dl was excluded from the study as low Hb makes wound healing delayed. No discrimination was made between elective and emergency surgeries or between patients with or without drains. After initial screening and assessment of inclusion and exclusion criteria, demographical data was collected followed by base-line investigations as per indication of surgery. Allocation to cohort and control groups was done towards completion of surgical procedure after closing the abdominal fascia. In cohort group, the subcutaneous soft tissue was irrigated and carefully rinsed with 500ml of Normal saline solution (NaCl 0.9%), removing excessive fluid, debris and blood by suction. The wound, once irrigated and excess fluid removed was not mopped again and sterile dressing done after closing the skin was performed according to departmental protocols, without any further wound-related procedure. Detailed documentation including type and duration of surgical procedure, antibiotic prophylaxis, changing of gloves during the operative procedure, the wound closure technique as well as suture material selection, were done. No intra-operative wound irrigation was performed in the control group. The primary endpoint measure (SSI up to 10th Post-Operative day) and secondary endpoint measure (SSI up to 30th Post-Operative day) were assessed clinically by a person (with 10 years clinical experience), who was not part of the surgical team as well as was not involved in compiling the results, in order to minimize the bias. The data was compiled and statistically analyzed by SPSS 21. Descriptive tests were applied to calculate the frequencies, means, standard deviations and relative risk (RR) for association with confidence interval (CI=95%). A relative risk (RR) of <1 was considered statistically significant. Attributable risk was found using the formula [(RRR-I) = (1-RR) ×100].

RESULTS

The mean age of participants in both groups was 33.6 (±8.1) years. Majority of the patients belonged to middle socioeconomic class (71%) and had Pre-Op Hemoglobin of >11 g/dl (54%). Most of the abdominal surgeries included in the study were Caesarean section (324) followed by Hysterectomy (40) and laparotomy (36). Maximum surgeries were performed between 30-30 min (312) with mean hospital stay of (Mean ± SD) 2.9±0.5 days. Analysis of the results showed that Intra-operative normal saline irrigation of wound significantly decreased the rate of postoperative SSIs compared to no irrigation at both primary outcome measure that was SSI at 10th Post-operative day (RR=0.417, 95 % CI [0.15;1.161]) with Attributable Risk (AR= 58.3%) and secondary outcome measure that was SSI at 30th POD (RR=0.286, 95 % CI [0.060;1.359]) (AR=71.4%)

DISCUSSION

Surgical site infection (SSI) is one of the most commonly occurring postoperative complication worldwide with an incidence of about 20% and is described as an infectious complication of surgical wounds and effective measures for its prevention is an ongoing research subject [12]. Literature shows that 20% of patients undergoing abdominal surgery will suffer from SSI, leading to increase overall morbidity rate [13]. Implementation of strategies pre-

Table 1: Demographic variables

		Frequency (n)	Percentage (%)
Socioeconomic Status	High	48	12
	Middle	284	71
	Low	68	17
Pre-Operative Haemoglobin(g/dl)	10-11g/dl	112	28
	>11 g/dl	216	54
Type of Surgery	Caesarean Section	324	81
	Hysterectomy	40	10
	Laparotomy	36	9
Duration of Surgery(min)	<30 min	32	8.0
	30-60min	312	78.0
	>60min	56	14.0
Age (Mean ± SD)	8.10 ± 33.6		
Post-Op Hospital Stay (Mean ± SD)	0.72 ± 2.96		

Table 2: Findings at 10th Post-Op day (Saline Irrigation Vs No Saline Irrigation)

Saline Irrigation	Infection		RR	RRR(I): [(1-RR)×100] %
	No n (%)	Yes n (%)		
Done	195(97.5)	5(2.5)	0.417	58.3
Not Done	188(94)	12(6)		

Table 3: Findings at 30th Post-Op day (Saline Irrigation Vs No Saline Irrigation)

Saline Irrigation	Infection		RR	RRR(I): [(1-RR)×100] %
	No n (%)	Yes n (%)		
Done	198(99)	2(1)	0.286	71.4
Not Done	193(96.5)	7(3.5)		

venting wound infection is gaining further attention. It is easier to prevent the surgical infections leading to grave complicationsthan to treat them [14]. Intra-operative surgical site irrigation or lavage is a common practice in surgical procedures advocating some form of irrigation before wound closure [15]. It is imperative to further develop clinical efficacy and ascertain optimal combinations, as well as the cost-effectiveness of such measures. Normal saline is cost effective solution (compared to topical antibiotics) as well as easily available. It has high safety profile being isotonic with normal human tissue making it hypertonic for bacteria. The incidence of SSIs is decreasing due to the global campaign that invloved all the stakeholders. Studies had also shown a significant reduction in wound infection rate in patients where wound irrigation with 300 ml of normal saline was done preoperatively [16].

The rate of SSI in our study was lower as compared to the global statistics. Studies conducted at Saudia Arabia and Tanzania found statistically significant relationship between intra-operative irrigation of wound with isosmotic solution and reduction in the rate of SSI observed both on the 10th Post-operative day (RR=0.417) and 30th Post-Operative day (RR=0.286) which agrees with randomized controlled trials conducted locally in Pakistan[17-20]. Another local study on the efficacy of Normal Saline as an irrigation medium showed comparable results [21]. Our findings are also in agreement with the study by Edmiston et al [22]. One of the limitations of study was that the role of Normal Saline as irrigation agent was compared to controls where patients had no comorbidity. There is a need to carry out further studies for standardization of the technique of wound irrigation to reduce post-operative surgical site infections.

CONCLUSION

Intra-operative wound irrigation with Normal Saline decreases the risk of SSI by 58.3% at 10th POD and by 71.4% at 30th POD in otherwise healthy women with no comorbidities.

Furthermore, procedure has considerable reduction of SSIs with no comorbidities whilst being of low cost.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Khan S: Main concept, data collection.

Imran R: Data collection.

Urooj U: Data analysis.

Kashif A: Bibiliography.

Zohra S: Critical review.

Afzal S: Proof reading.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

ORIGINAL ARTICLE

EDUCATIONAL ENVIRONMENT IN PUBLIC AND PRIVATE MEDICAL COLLEGES OF PESHAWAR: UNDERGRADUATE MEDICAL STUDENT'S PERCEPTIONS

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ABSTRACT

Objectives: To explore student's perceptions of the educational environment in their respective medical colleges.

Materials and Methods: A cross sectional study was conducted at two medical colleges (one public sector and one private sector medical college), both affiliated with Khyber Medical University, Peshawar from January 2020 to March 2020. Dundee Ready Education Environment Measure (DREEM) was used to measure the educational environment of both public sector and private sector medical colleges.

Results: The overall mean score with standard deviation was 113± 22 SD for private medical college and 109 ± 25 SD for public sector medical college, which means more positive than negative perception. Private sector college overall score was better than public sector college but with no significant difference. Private sector medical college score was better in all DREEM subscales except Student's Academic Self-Perception in which public college scored 18± 5 and private college scored 16± 5.

Conclusion: There is significant margin for improvement for all domains of educational environment in both public and private sector medical colleges, especially the low scores in the domain of Students' Social Self Perceptions need attention.

Key words: DREEM, Educational Environment, Perception, Undergraduate.

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INTRODUCTION

Educational environment can be defined as everything in an institute that has an effect on the learning of its student [1]. This predominantly is affected by the curriculum of the institute. Teachers and the overall process of teaching are another important factor contributing to student's perception of their educational environment. The well-being and performance of students is affected by the educational environment of an institute influencing their performance in their selected courses as well [2]. The collection of institutional data regarding the educational environment and its analysis highlights the perception and satisfaction level of the students [3].

The Dundee Ready Education Environment Measure (DREEM) is a validated test composed of fifty items that was developed to measure the perception of students regarding their educational environment. It has shown reliability across students from diverse social and cultural backgrounds [4].

The measure can also be utilized for the comparison of the perception of students regarding educational environments among the departments of the same institute or among two different institutes. One major consideration is to ensure that the groups of students are adequately similar to make comparisons among the institutes [5].

The objective of our study was to measure the perception of students regarding educational environments of their medical colleges. This study was undertaken in two medical colleges under a public sector medical university. A validated tool DREEM was used to assess the educational environment of a public sector medical college with a private sector medical college. No modifications were made in this tool as it was already been utilized in multiple institutes in Pakistan and across the world. This would provide students perspective of the educational environment in both public sector and private sector medical colleges and would highlight the areas that need improvement. This in turn would prove beneficial to design and

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provide optimum learning environments for undergraduate medical students in both the public and private sectors.

MATERIAL AND METHODS

A cross sectional study was conducted at two medical colleges (one public sector and one private sector medical college),both affiliated with Khyber Medical University, Peshawar from January 2020 to March 2020.

Data was collected from 424 undergraduate medical students (sample was calculated on the basis of 50% prevalence and 10% was added for missing data). Both colleges take 100 students' enrolment every year, so we divide sample equally in two colleges and collected data from 212 students from each medical college. Out of 212, data was collected randomly from 53 students each from first, second, third and fourth year MBBS. Final year students were not included in the study as they have clinical rotation in hospital and no classes at college. After obtaining ethical approval (ref no Nwgh/EC/25), DREEM questionnaire [4] was distributed to all students willing to participate in the study. Before data collection, all participants were given description of the aim of study and any ambiguity was addressed, especially with regards to their voluntary participation and anonymity. Questionnaire was distributed at the end of lecture by senior faculty member. Students were requested to fill the questionnaire within 20 minutes and give it back to the faculty member. Students were instructed to avoid discussion in order to avoid bias and timely completion of questionnaire. SPSS version 20 was used to analyse the data. Descriptive analysis was done by calculating mean ±SD. Mean scores were calculated for individual items, domains, sub scales and scales of DREEM inventory.4

The 50-item DREEM-inventory [4] has a maximum score of 200, which indicates in ideal environment at educational institute. The 5-point Likert scale indicates 4=strongly agree, 3=agree, 2=unsure, 1=disagree and 0=strongly disagree. Nine items (4, 8, 9, 17, 25,35,39,48 and 50) are negatively expressed in the inventory and are scored in reverse order. If an item had mean score of 3.5 and above, they are considered positive points. If the item had a mean score of 2 or less, they were considered as problem and needed attention. If the item had mean score between 2 and 3, they were considered as areas which can be enhanced or improved.

RESULTS

A total of 424 student's responses were collected via DREEM inventory. Out of 424 students, half data was collected from students in public sector medical college and half from students in private sector medical college. The overall mean score with standard deviation was 113± 22 SD for private medical college and 109 ± 25 SD for public sector medical college, which means more positive than negative. Private sector college overall score was better than public sector college by a small margin. Private sector medical college score was better in all DREEM subscales except Student's Academic Self-Perception in which public college scored 18± 5 and private college scored 16± 5.

Variations were observed in responses to individual items while identifying specific strengths and weaknesses within the learning environment. The mean subscale score on Student's Perceptions of Learning (SPL) was 29±6 in private sector medical college and 27±8 in public sector medical college which indicates more positive perception in both medical colleges.

The mean DREEM item- score on Students Perception of Course teachers was 25±5 in private sector medical college and 23±7 in public sector medical college which shows both colleges are moving in the right direction.

The mean subscale score on Student's Academic Self Perceptions was 16±5 in private sector medical college which indicates many negative aspects, and the private sector medical college should take it into consideration while Student's Academic Self Perceptions was scored 18±5 in public sector medical college which indicates students are feeling more on the positive side.

According to mean DREEM item- score on Student's Perception of Atmosphere was 27±7 in private sector medical college and 26±8 in public sector medical college which shows a more positive attitude. According to mean DREEM item- score on Student's Social Self Perceptions was 16±5 in private sector medical college and 15±4 in public sector medical college which indicates not too bad.

In DREEM subscale "Students' Academic Self-Perception", item no 27 "I am able to memorise all I need" was scored less than 2 in private sector medical colleges which indicates problem area. While In DREEM subscale "Students' Perceptions of Atmosphere" item no 42 "The enjoyment outweighs the stress of the course" was scored less than 2 in public sector medical colleges and in DREEM subscale "Students' Social Self Perceptions" item no 3 "There is a good support system for students who get stressed" and item no 14 "I am rarely bored on this course" was scored less than 2 in public sector medical colleges which indicates problem areas and public sector medical college should take this into consideration.

DISCUSSION

A great educational environment in a medical institution can be a great enabler for its medical students to develop the necessary competencies for their chosen profession [6, 7].DREEM as a tool can be effectively utilized

Table 1: Guideline to interpret the DREEM scores

Overall Interpretation	
Score	Interpretation
0-50	Very poor
51-100	Plenty of problems
101-150	More Positive than negative
151-200	Excellent
Subscales Interpretation	
Students' Perception of Learning	12-0 Very Poor
	24-13 Teaching is viewed negatively
	36-25 A more positive perception
	48-37 Teaching highly thought of
Students' Perception of Course teachers	11-0 Abysmal
	22-12 In need of some retraining
	33-23 Moving in the right direction
	44-34 Model course teachers
Students' Academic Self Perceptions	8-0 Feelings of total failure
	16-9 Many negative aspects
	24-17 Feeling more on the positive side
	32-25 Confident
Students' Perception of Atmosphere	12-0 A terrible environment
	24-13 There are many issues which need changing
	36-25 A more positive attitude
	48-37 A good feeling overall
Students' Social Self Perceptions	7-0 Miserable
	14-8 Not a nice place
	21-15 Not too bad
	28-22 Very good socially

Table 2: Overall Mean Scores with Standard Deviation on Subscale

DREEM Subscales	Private Medical College		Public Medical College	
	Mean	Std. Deviation	Mean	Std. Deviation
Students Perception of Learning	29	6	27	8
Students Perception of Course teachers	25	5	23	7
Students' Academic Self-Perception	16	5	18	5
Students' Perceptions of Atmosphere	27	7	26	8
Students' Social Self Perceptions	16	5	15	4
Overall Mean & Standard Deviation Score	113	22	109	25

Table 3: Year-wise Mean Scores with Standard Deviation on Subscale

DREEM Subscales	Private Medical College				Public Medical College			
	1st Prof	2nd Prof	3rd Prof	4th Prof	1st Prof	2nd Prof	3rd Prof	4th Prof
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
Students Perception of Learning	29.2	30.0	27.9	29.8	26.7	26.5	28.7	25.6
Students Perception of Course teachers	24.9	25.1	24.7	25.3	23.5	23.1	24.2	22.5
Students' Academic Self-Perception	15.5	16.2	17.3	14.7	20.5	21.0	19.1	21.1
Students' Perceptions of Atmosphere	27.0	27.6	25.6	27.8	26.3	26.0	28.0	24.9
Students' Social Self Perceptions	16.0	16.5	15.4	16.6	14.2	14.4	15.7	14.2

to objectively measure the educational environment of a particular institution and works well in both undergraduate and post graduate setting. It can also be used cross-sectional to assess the education environment of two institutes catering to similar programs and level of students as demonstrated by the study undertaken in India [8, 9].

In our study the overall score mean was 113± 28 SD for private medical college and 109 ± 33 SD for public sector medical college, which means more positive than negative but was far from excellent [10].A corresponding study undertaken in six medical colleges across Pakistan also found that their Overall mean score 105.0±25.8 was more positive than negative [11]. The results are also favorably comparable to another study undertaken in public sector medical colleges of Punjab where a mean score of 115 was reported [12].

There is no clear cutoff of recommended DREEM score for an institution in literature but clearly higher is better and should be strived for. The DREEM score from the medical institutes relates favorably to the published studies from medical colleges of Pakistan.

DREEM mean scores from our neighboring countries have been reported as 99.6 from Iran and 107.4 from Sri Lanka [13-15]. While the institutes with student centered programs from countries like United Kingdom have reported good perception of educational environment with scores of 139 [16].

Literature shows that the burden of studies needs to be better managed to cope well with the cognitive load of the students [17,18]. A mix of teaching strategies maybe adopted to keep the students engaged and interested during sessions. Co-curricular activities during the academic session may also help to alleviate the stress related to medical education [18]. Steps to improve upon these issues will enhance the educational environment of medical institutions.

CONCLUSION

There is significant room for improvement for all domains of educational environment in our study. Especially the low scores in the domain of Students' Social Self Perceptions need attention. The data reflects that the support mechanisms present for the students need to be improved.

This cross sectional study gave us a snap shot view at one point of time of educational environment of an institute. Due to limited time and resources the study was conducted at two medical institutes. Involvement of more medical institutes and data collected across the time would enhance the understanding of factors that are affecting educational environment of medical institutes at Pakistan.

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Following authors have made substantial contributions to the manuscript as under

Mahsood N: Study idea, concept, design and drafting.

Khan NA: Study supervision and critical revision.

Khattak A: Data collection, Statistical Analysis.

Ahsan A: Data collection, Proof reading.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

ORIGINAL ARTICLE

THE FREQUENCY OF ESCHERICHIA COLI AND ITS SENSITIVITY TO NITROFURANTOIN IN URINARY TRACT INFECTION

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ABSTRACT

Objective: This study is conducted to determine frequency of E-Coli and its sensitivity to nitrofurantoin in patients with urinary tract infection.

Material and Methods: The study was conducted at a tertiary care hospital of District Peshawar, i.e. Khyber Teaching Hospital (KTH), after reviewed and approved by the Committee for Ethical Review of Research involving Human Subjects of KTH. Non-random consecutive sampling technique was used for the collection of data and data collection was completed in 06 months' time i.e. from 20th February to 19th August 2018. The survey was conducted as a descriptive cross-sectional study using open Epi calculator, keeping confidence interval of 95%, sample size calculated is 148. Urine samples were collected in sterile containers and was sent to laboratory for routine examination, culture and sensitivity. A colony 105 or more was considered E Coli growth. Nitrofurantoin was used to check the sensitivity for organisms as per operational definition. All the tests and examinations were carried out under the supervision of experienced medical specialist and microbiologist.

Results: In this study, 148 patients were studied. Average age was 41.86 years + 11.62SD. E coli was found in 91(61.5%) of patients out of total 148 patients. Among UTI patients 78(85.7%) were sensitive to Nitrofurantoin.

Conclusion: High prevalence of drug-resistant urinary tract pathogens, particularly to Nitrofurantoin suggests cautious use of antibiotic therapy for the treatment of UTI.

Keywords: Urinary tract infection, Antibiotics, Common Bacteria, sensitivity.

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INTRODUCTION

Urinary tract infection (UTI) is one of the most common bacterial illnesses in adults and is one of the most common indications for antibiotics. UTIs are a common cause of morbidity in women . The majority of cases involve only the lower urinary tract and the most common pathogen is Escherichia coli.

For uncomplicated infections, especially those without signs of upper tract infection, empirical therapy without culture and susceptibility analysis are recommended. Resistance to amoxicillin has been established for years and resistance to trimethoprim- sulfamethoxazole (TMP-SMX) has emerged more recently with rates of >20% in some areas . The Infectious Diseases Society of America recommends that in regions where resistance rates to TMP-SMX exceed 10% to 20%, TMP-SMX should not be used for empirical therapy . Fluoroquinolones, in particular ciprofloxacin, are used increasingly but resistance to ciprofloxacin is also rising . Amoxycillin + clavulanate may be an alternative in uncomplicated UTIs caused by multidrug-resistant isolates if susceptibility is confirmed by laboratory findings. Nitrofurantoin, which currently retains activity against most multidrug-resistant strains may also be considered.A recent study reported 29.6% resistance to trimethoprim-sulfamethoxazole and 88.2% sensitivity to Fluoroquinolones particular ciprofloxacin with 100% sensitivity to Nitrofurantoin . The frequency of E- coli was observed in 56.42% of patients with 91.77% sensitivity to nitrofurantoin with urinary tract infection. The sensitivity of bacteria to antibiotics varies in relation to the geographical region, due to frequent use and misuse .

The emergence of resistance and consequent reduced efficacy of antibiotics in the management of UTIs is indeed a serious public health problem. This is particularly important in the developing countries like Pakistan, where apart from high level of poverty, ignorance and poor hygienic practices and drugs of questionable quality are often in circulation. The current study is designed in this regard to find statistics about the efficacy of nitrofurantoin for the treatment of UTIs in our local population. UTI poses significant financial stress and reduced quality of life due

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to non-availability sensitivity data. By finding individuals as well as community local statistics of antibiotics sensitivity will help empiric therapy early in our local population. Moreover, this study will help us gain knowledge about the type of pathogens responsible for UTIs. These results will be projected to various health care institutions for improvements in the current treatment in order to decrease the morbidity and mortality and better management of patients with UTIs.

MATERIAL AND METHODS

This descriptive cross-sectional study was conducted at a tertiary care hospital of District Peshawar, i.e. Khyber Teaching Hospital (KTH), after being reviewed and approved by the Committee for Ethical Review of Research involving Human Subjects of KTH. Non-random consecutive sampling technique was used for the collection of data and data collection was completed in 06 months' time i.e. from 20th February to 19th August 2018.

The sample size calculated is 148, calculated by using open Epi calculator, keeping confidence interval of 95%. The patients were recruited after obtaining a written informed consent. Data was collected while respecting the anonymity of the individual participants. Urine was collected in sterile containers and was sent to the laboratory for routine examination, culture and sensitivity testing. A colony 105 or more was considered E Coli growth. Nitrofurantoin was used to check the sensitivity for organisms as per operational definition. All the tests and examinations were carried out under the supervision of experienced medical specialist and microbiologist who had extensive experience in their respective fields i.e. a minimum of 5 years. Patients of either gender or age 18-60 years admitted or presenting to out-patient department during the days of data collection fulfilling the criteria of UTI as defined in operation definition were included. Out of them those who had taken antibiotics in last 48 hours of presentation or immunocompromised patients i.e. HIV, Diabetes Mellitus and patients on Immunosuppressive drugs or their urine culture showed mix bacterial growth were excluded from the study. Exclusion criteria were strictly followed to control confounders and bias in the study results. For the analysis of data SPSS version 23.0 was used. Frequencies and percentages were calculated for categorical variables like gender, education status, residence and sensitivity to nitrofurantoin. Mean ± Standard Deviation were computed for numerical variable like age and BMI. Effect modifiers like age, gender, education status, BMI and residence were dealt through stratification. Post stratification Chi square test was applied keeping P value ≤ 0.05 as significant.

RESULTS

A total of 148 patients with culture proven UTI with the age of 18-60 years were approached. There were 81 (54.73%) females and 67(45.27%) males. Male to female ratio was 0.63:1. Patients' age was divided in three categories, out of which majority presenting with culture proven UTI were of age more than or equal to 45 years which were 65(43.9%), 55(37.2%) were of age 31-45years and 28(18.9%) patients had age range less than or equal to 30 years. The study included age range 18 to 60 years. Average age was 41.86 Years + 11.62SD. E coli was found in 91(61.5%) of patients out of total 148. Among UTI patients,78(85.7%) were sensitive to nitrofurantoin. Majority of our sample were having BMI less than 25kg/m2 while 54.1% of patients were literate having up to secondary level education and 54.7% of patients belonged to urban area of this locality. Stratification of sensitivity to nitrofurantoin showed that except for residence all the other factors were insignificant.

Age wise distribution of resistance to nitrofurantoin showed that old age was more prone as compared to younger age. The patients with age less than or equal to 30 years had sensitivity of 57.1%, age group 31-45 years had 54.5% sensitivity and patients with 45-60 years of age had 50.8% sensitivity in patients with UTI. Gender wise distribution of sensitivity showed that gender had no significant impact. There was 9.5% sensitivity in male and 9.4% in female patients.

Table 1: Age Wise Distribution of the Patients (N=148)

	Frequency	Percent	Mean + SD
<= 30.00	28	18.9	41.86+ 11.62
31.00 - 45.00	55	37.2	
46.00+	65	43.9	
Total	148	100.0	

Table 2: E Coli and Antibiotic Sensitivity Distribution (N=148)

Sensitivity to Nitrofurantoin		E-Coli		Total
		Yes	No	
Yes	Count	78	1	79
	% within E-Coli	85.7%	1.8%	53.4%
	% of Total	52.7%	.7%	53.4%
No	Count	13	56	69
	% within E-Coli	14.3%	98.2%	46.6%
	% of Total	8.8%	37.8%	46.6%
Total	Count	91	57	148
	% within E-Coli	100.0%	100.0%	100.0%
	% of Total	61.5%	38.5%	100.0%

Table 3: BMI, Educational status and Residence (N=148)

		Count	Table N %
BMI	<25	104	70.3%
	>=25	44	29.7%
Educational Status	Illiterate	37	25.0%
	Up to Secondary	80	54.1%
	Intermediate above	31	20.9%
Residence	Rural	67	45.3%
	Urban	81	54.7%

Table 4: Stratification of Sensitivity to Nitrofurantoin

		Sensitivity to Nitrofurantoin		P-value
		Yes	No	
Gender	Male	33	34	0.360
		49.3%	50.7%	
	Female	46	35	
		56.8%	43.2%	
BMI	<25	56	48	0.861
		53.8%	46.2%	
	>=25	23	21	
		52.3%	47.7%	
Educational Status	Illiterate	18	19	0.727
		48.6%	51.4%	
	Up to Secondary	45	35	
		56.2%	43.8%	
	Intermediate above	16	15	
		51.6%	48.4%	
Residence	Rural	52	15	0.000
		77.6%	22.4%	
	Urban	27	54	
		33.3%	66.7%	
age (in years)	30.00 - 18.00	16	12	0.832
		57.1%	42.9%	
	45.00 - 31.00	30	25	
		54.5%	45.5%	
	60.00 - 46.00	33	32	
		50.8%	49.2%	

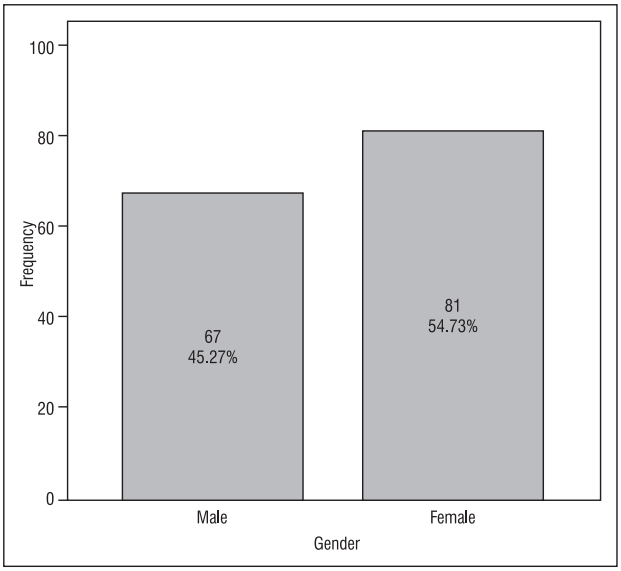

Fig 1: Gender Wise Distribution of the Patients (N=148)

DISCUSSION

Uncomplicated urinary tract infections (UTIs) are usually diagnosed in previously healthy women with no underlying disease or anatomical anomalies, whereas complicated UTIs refer to patients with co-morbidities, anatomical anomalies, and catheter-associated or hospital acquired infections . UTIs are a global financial burden and the emergence of resistance in uncomplicated and complicated uropathogens is of great concern . Escherichia coli (E. coli) is the most common uropathogen in both uncomplicated and complicated UTIs.16 There is a wide spectrum of pathogens causing complicated UTIs including E. coli, Klebsiella,Pseudomonas, Enterobacter, Enterococcus and Candida species .

Guidelines recommend a short course of trimethoprim-sulfamethoxazole (TMP-SMX) for the empiric treatment of uncomplicated UTIs if resistance is less than 20% . In South Africa, TMP-SMX is widely used for UTI prophylaxis and treatment and for Pneumocystis jirovecii prophylaxis in immunocompromised patients which has led to increased bacterial resistance . In a setting where more than 20% of E. coli cultures are resistant to TMP-SMX, guidelines recommend ciprofloxacin, nitrofurantoin or Fosfomycin . Nitrofurantoin is an effective urinary tract antiseptic that is not used for other kind of infections. It does not affect antibiotic use in any other infection and it has a resistance rate of less than 20% in this study. Therefore it should be used as first-choice treatment in uncomplicated UTIs in this hospital.

A very high rate of culture-negative urine samples was received at the laboratory. This might imply that samples are sent for culture inappropriately. Routine urine culture is not necessary . Cost effectiveness can be achieved by only sending cultures from patients with both symptoms of UTI and abnormality on urine dipstick. The dipstick strategy is most likely to be cost-effective. This criterion will also help to limit the unnecessary use of empiric antibiotics. TMP-SMX and amoxicillin are of no use in this population with UTIs. Nitrofurantoin should be the empiric choice for uncomplicated UTIs.

E. coli showed the highest sensitivity to nitrofurantoin in the current study, which are in line with those of previous studies in Saudi Arabia and other countries [,21]. These data further support recommendations made in previous studies, in which, nitrofurantoin may be more effective than co-trimoxazole or amoxicillin in the empiric treatment of UTIs.

For nitrofurantoin, the prevalence of resistant isolates were higher among elderly patients. This match the results observed in earlier studies that found ciprofloxacin resistance was highest among patients older than 65 years (7.1%). However, nitrofurantoin resistance pattern in our study is contrary to that described by Sham's study, in which resistance to nitrofurantoin was constant irrespec-

tive of patient's age .

Antibiotic abuse and practicing incomplete antibiotic regimen has considerably promoted the multidrug resistant bacteria . Our study showed that E. coli had lower resistance for less commonly used drugs like imipenem, meropenem, amikacin and nitrofurantoin. This finding is supported by the study of Sharmin S which reported a good sensitivity for imipenem, ceftazidime and amikacin against UTI-isolates of E. coli in Bangladesh . Encarnacion A R also reported sensitivity of the UTI-isolates of E. coli for amikacin in Philippines. Although E. coli exhibits high sensitivity to nitrofurantoin, this antibiotic is not suggested for cases with serious upper urinary tract infections or systemic involvement. In the present study, sensitivity of E. coli to nitrofurantoin was less than that reported in other surveys performed in Iran and other parts of the world . In this regard, in a previous study by Ghorbani A E. coli was more susceptible to ciprofloxacin, amikacin, and nitrofurantoin . Comparison of the present findings with previous research showed that the prevalence of gentamicin and cephalothin resistance of E. coli isolates were much lower in our study as compared to the research by Khoshbakht R in Shiraz, Iran .

Our study revealed high rates of prior antibiotic use for UTIs and other unrelated infections such as upper respiratory tract infections. These prior antibiotics might have played a role in the current resistance profiles.

A meta-analysis showed that antibiotic use in primary care for respiratory or urinary infections leads to selection of resistance to that antibiotic and that this would lead to increased population carriage of resistant organisms and increased use of second-line antibiotics. It was also reported that infection with organisms with resistance after prior antibiotic use was greatest in the month immediately after treatment but could persist for up to 12 months .

A single centre cohort is the main limitation of this study. Multicentre randomized large trials are needed to generalize these study findings.

CONCLUSION

Increased resistance of urinary tract E. coli isolates to nitrofurantoin was demonstrated, suggesting re-evaluation of empirical therapy for the treatment of UTIs. Periodic monitoring of antimicrobial susceptibility both in the community and hospital settings is recommended.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Khan HA:	Study design, discussion, Manuscript writing.
Yousaf SUM:	Concept, critical review Analysis, interpretation.
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ORIGINAL ARTICLE

BLACK FUNGUS- A MISNOMER FOR RHINO MUCORMYCOSIS- AN EXPERIENCE AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Objective: To find out presenting complaints of mucormycosis in the nose and paranasal sinuses and its treatment

Material and Methods: This case series was conducted in the Department of ENT, Khyber Teaching Hospital, Peshawar, and Abaseen Medical Centre Peshawar, Pakistan, from May 2020 to March 2021. A total of 12 patients were included. Among them, 08 patients were admitted in Khyber Teaching Hospital, and 04 patients were treated at Abaseen Hospital, Peshawar. In addition, literature was reviewed, and results compiled.

Results: Among 12 cases, 3 (25%) were females, and 9 (75%) were males. The age range was 55 to 80 years. All patients were diabetic Type 2. At the time of presentation, 35% of patients presented with uncontrolled diabetes mellitus in whom immediate medical opinion was sought. Before doing surgery, their blood glucose levels was within normal limits. In 83.3 % of cases, there was complete nasal obstruction, while in 17%, there was partial nasal obstruction. There were right maxillary sinusitis in 8 (66.6%) cases, and in 4 (33.33%) patients, there was left maxillary sinusitis. In 2 Patients, all of the paranasal sinuses were involved except frontal sinuses. Nearly all the patients had severe headache as well.

Conclusion: Mucormycosis was commonly seen in elderly diabetic patients, mostly involving the nose and paranasal sinuses.

Keywords: Nose, Paranasal sinuses, Fungus, Infection, Mucormycosis

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INTRODUCTION

Rhinocerebral mucormycosis is one of the most rapidly progressing and lethal form of fungal infection in humans, which usually begins in the nose and paranasal sinuses and can extend to the Central Nervous System. Mucormycosis is a fatal opportunistic infection caused by the fungi of the order Mucorales, including mucor, rhizopus, absidia, and others [1,2]. These organisms are ubiquitous and are found in soil and decaying organic matter. Rhizopus oryzae is the predominant pathogen accounting for 60% of all the forms of mucormycosis and 90% of rhinocerebral cases. This disease usually develops in patients who are metabolically or immunologically compromised but can be seen in otherwise healthy individuals [3]. Mucormycosis can manifest as one of six different clinical syndromes; rhinocerebral, pulmonary, cutaneous, gastrointestinal, central nervous system, and disseminated. Rhinocerebral type is the most common and is subdivided into rhinomaxillary, rhinoorbital and rhinoorbitocerebral [4]. The exact pathogenesis of rhinocerebral mucormycosis and its pathways of spread are not clearly known. It is believed that the fungus initially inoculates the nasal mucosa spreading to the paranasal sinuses, orbit, and intracranial fossa [5]. Among the intracranial structures, involvement of cavernous sinus and internal carotid artery is well known. This study was conducted with the aim to analyze the presentation and distribution of sites involved by this disease.

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MATERIAL AND METHODS

This case series was conducted in the Department of Otorhinolaryngology, Khyber Teaching Hospital, Peshawar, and Abaseen Medical Centre Peshawar, Pakistan, from May 2020 to March 2021. A total of 12 patients were included. Among them, 08 patients were admitted at Khyber Teaching Hospital, and 04 patients were examined and treated at Abaseen Hospital, Peshawar. Out of all patients, 10 (83.33%) were referred from Medical Units / Medical ICU / Isolation units, while 2(16.66%) were presented directly to the clinics. All patients underwent Endoscopic sinus surgery (ESS) or Functional Endoscopic Sinus Surgery (FESS) under General anesthesia. On the day of surgery, complete debridement of the lesion depending upon the extent of the disease was done using 0° and 30° Karl Stortz 2 mm rigid endoscope. The excised specimen, piecemeal, was collected in a kidney tray with normal saline to avoid orbital fats and their sequelae. The debridement was done to the extent that healthy tissue was visible and felt. The excised specimen was transferred in a Jar containing 0.9% saline and sent to the Labortey

for fungal studies. Nasal Splints were kept in each nostril, and the Nasal cavity was packed with Bismuth Iodoform Parrafin Paste (BIPP) for 24-48 hours. All the patients were treated with Intravenous Amphotericin B for 6 to 8 weeks. At follow-up of 12 months, no recurrence was found except thick debris in nasal cavities in 25% of cases which were cleared by instilling normal saline drops and liquid paraffin drops.

RESULTS

In our study of 12 cases, 3 (25%) were females, and 9 (75%) were males. The age range was 55- 80 years, and all patients were diabetic Type 2. At the time of presentation, 35% of patients presented with uncontrolled diabetes mellitus in whom immediate medical opinion was sought. Before doing surgery, their blood glucose levels were within normal limits. There was complete nasal obstruction in 10 (83.3 %) cases, while in 2 (17%), there was partial nasal obstruction. There was right maxillary sinusitis in 8 (66.6%) cases, and in 4 (33.33%) patients, there was left maxillary sinusitis. In 2 Patients, all of the paranasal sinuses were involved except frontal sinuses. Nearly all the patients had severe headaches as well (Table 1).

Table 1: Clinical features of participants

S.no	Symptoms	Nubmer of patients (%)
1	Complete nasal obstruction	10 (83.33)
2	Right Maxillary sinusitis	08 (66.66)
3	Left maxillary sinusitis	04 (33.33)
4	All Paranasal sinuses except frontal sinus	02 (16.66)
5	Headache	11 (91.66)
6	Post nasal drip	03 (25)

DISCUSSION

Mucormycosis is one of the most rapidly progressing and lethal forms of fungal infection in humans, usually in the nose and paranasal sinuses. It is best known for its rhinocerebral presentation [6]. Although first described by Paltauf in 1885, the term Rhinocerebral Mucormycosis was coined by Baker [7]. About 70% of patients with this disease have been found to have suffered from diabetic ketoacidosis [8]. Other predisposing factors are renal failure, long-term corticosteroid therapy, desferrioxamine and immunosuppressive therapy, burns, organ transplant, lymphoma, leukemia, and AIDS [9]. Rhinocerebral mucormycosis usually originates in the nasal cavity, and paranasal sinuses extend to the palate, pharynx and orbit [10]. The progression of the disease is by direct spread or hematogenous dissemination facilitated by angioinvasion. Intracranial extension via perineural spread has also been documented [11]. Muscles are usually spared. Angioinvasion by the hyphae produces a fibrin reaction and the development of mucor thrombi which occludes the arteries leading to ischemia and infarction, producing the characteristic black necrotic crusts [12]. The infection spreads rapidly to adjacent sinuses, orbit, and the cranium via the ethmoid bone and the orbital vessels [13]. A classical presentation of the disease is a poorly controlled diabetic patient presenting with fever, facial pain and swelling, nasal congestion, and eyelid swelling consistent with acute rhinosinusitis or periorbital cellulitis [14]. They may also have a retro-orbital headache, occasional blood-tinged nasal discharge, anesthesia over the cheek, cranial polyneuropathy, proptosis, and ophthalmoplegia. Examination of the nasal cavity may reveal thick nasal discharge with black necrotic areas over the turbinates and septum. Though this finding is highly suggestive of mucormycosis, this occurs in only 40 % of the cases [15]. Orbital involvement in rhinocerebral mucormycosis occurs in 66-100% of cases resulting in chemosis, proptosis, and ophthalmoplegia. Blindness may result from central retinal artery occlusion or involvement of the optic nerve via direct orbital extension [16]. Intracranial spread of the disease indicates extensive infection, and grave prognosis due to encasement and thrombosis of major intracranial vasculature. Bilateral eye signs are suggestive of cavernous sinus thrombosis. Involvement of the cerebellar artery is very rare. Intracranial extension without orbital involvement is also uncommon. Early diagnosis and immediate initiation of treatment are absolutely essential to ameliorate the poor prognosis. In a diabetic patient presenting with features of rhinosinusitis with black necrotic slough in the nose and palate, diagnosis of rhinocerebral mucormycosis should always be suspected. Initial CT imaging shows nonspecific mucosal thickening with soft tissue infiltration [16]. Bone erosion in CT is strongly diagnostic; but, radiological findings often lag behind the clinical progression. MRI is more sensitive in detecting meningeal and intracranial vascular occlusion often before the patient develops the clinical signs [17].The diagnosis of mucormycosis is confirmed histologically by demonstrating angioinvasion by irregular, broad non septate hyphae that branch at right angles. The hyphae of other fungi are septate and branch at acute angles. Sterile culture doesn't rule out mucormycosis as organisms may be killed during preparation for tissue culture. If mucormycosis is suspected, initial empirical therapy with antifungal drugs should begin while the diagnosis is being confirmed. Surgical treatment of the infected and necrotic tissue is the standard treatment along with medical treatment. The angioinvasion and the tissue necrosis make it difficult for the chemotherapeutic agents to penetrate the tissue in which the fungus thrives. Combined treatment increases the survival to 78 % as compared to 57.5 % with medical treatment alone. In the presence of intracranial extension, surgical debridement may not be possible, and almost all cases are fatal [18]. Several surgical procedures have been described ranging from debridement of the mucosa, Caldwell-Luc surgery, medial maxillectomy, ethmoidectomy, sphenoidectomy, radical maxillectomy with orbital exenteration [19]. Both endoscopic and open approaches have been used. The standard medical therapy is Amphotericin B in a dose of 1-1.5 mg/kg/day for several

weeks depending upon the clinical response and degree of nephrotoxicity [20]. Our patient received intravenous Amphotericin for four weeks after the debridement. Other modalities of treatment tried are hyperbaric oxygen therapy and nasally nebulized Amphotericin B, and oral Posaconazole [8]. Reported survival rates range from 21-70%. Proper management of diabetes adds to improved prognosis. The main limitations of this study are, the sample size is small due to the rarity of the disease and unusual presentations in a short period in our setup.

CONCLUSION

Mucormycosis was commonly seen in elderly diabetic patients, mostly involving the nose and paranasal sinuses. In order to control the disease, regular monitoring of blood glucose levels is advised mostly in immunocompromised patients with co-morbid conditions.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Khan AR: Concept and critical review.

Hafeez M: Final Approval.

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CASE REPORT

CRANIOPHARYNGIOMA PRESENTING WITH BILATERAL OPTIC ATROPHY

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ABSTRACT

A young pre-pubertal female patient presented to the medical department with bilateral marked loss of vision. She also complained of facial and bipedal edema in the near past though other features of hypothyroidism were lacking in her history. She had a strong history of mental disorders in the family. General physical examination was unremarkable. Abdominal examination revealed hepatomegaly. Central nervous system examination showed bilateral optic atrophy and an up-going left plantar response. Baseline investigations were normal. Thyroid functions suggested sub-clinical hypothyroidism. MRI scan of the brain and orbits revealed a locally invasive cystic lesion with solid components, encasing the major structures consistent with craniopharyngioma. Partial excision of the lesion was carried out, and biopsy report confirmed it to be an adamantinoma variety of craniopharyngioma.

Key words: Optic atrophy, hypothyroidism, craniopharyngioma, adamantinoma.

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INTRODUCTION

Craniopharyngiomas are embryonic tumors that are benign on histopathology but behave aggressively like malignant tumors [1]. They most commonly arise from the pituitary stalk and project into the hypothalamus [2]. They extend in all directions along the path of least resistance. They can even extend extra-cranially as far as the cervical spine [3]. Craniopharyngiomas usually present as cystic lesions with gelatinous material that shines on exposure to light due to presence of cholesterol crystals [4]. Surgical resection is the usual treatment but recurrence after complete removal can occur 5. We hereby report a case of craniopharyngioma in a young patient presenting with bilateral optic atrophy.

CASE REPORT

A seven year old girl presented with a three months history of right hypochondrium pain and bilateral marked reduction in vision. She also had a history of frequent falls and was unable to walk independently; most likely attributable to her visual problem. She had suffered from bipedal edema and facial puffiness in the recent past. She was somnolent most of the times and had lost interest in her daily activities. There was no complaint of constipation, cold intolerance or weight gain. She was pre-pubertal. She had a family history of mental disorders and epilepsy in her siblings. One of the siblings was epileptic; another elder sister was also having some manic disorder, and one other elder sister had passed away a few years back; she was also reported to be having some mental disorder. The child was born to a non-consanguineous marriage.

On examination, she had a normal blood pressure and pulse. She was pale, but rest of the general physical examination was unremarkable, and there was no thyroid swelling. Her abdominal examination revealed hepatomegaly palpable up to two finger breadths below right hypochondrium. Central nervous system examination showed a left up-going plantar response. Power, reflexes and sensations were intact. Both the pupils were dilated, and the right pupil had very sluggish response to light. She had horizontal nystagmus. Visual perception of hand movements was there but patient could not count fingers. Fundoscopic examination of eyes revealed bilateral optic atrophy. Gower sign was also positive.

Her baseline investigations showed a hemoglobin of 11.2 gm/dl, White cell count = 5,900/cmm with a normal differential leukocyte count, and platelet count = 250,000/cmm. Her serum electrolytes were normal. Creatinine phosphokinase (CPK) measured 95 unit/liter (24-175 unit/liter). Random blood sugar was 60mg/dl. Renal profile was not deranged. Liver profile showed alanine transaminase = 82unit/liter (10-40unit/liter), serum bilirubin = 0.33mg/dl (0.1-1.5mg/dl) and alkaline phosphatase = 267unit/liter (child upto 625unit/liter). Serum calcium = 10.4 unit/liter (8-10 unit/liter). Thyroid function tests were suggestive of a sub-clinical hypothyroid state with TSH =

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11.4unit/liter (5-8unit/liter), T3 = 5.2 unit/liter (3-7 unit/liter), and T4 = 4.2 unit/liter (4-7unit/liter). An MRI brain and orbits was planned.

The MRI (Figures: 1 and 2) showed a large multi-septate predominantly cystic lesion measuring 4.5x4.1x3.5cm involving sella, supra-sellar cistern and extending into inter-peduncular cistern and right ambient cistern. The lesion had thick irregular septations and eccentric solid components which showed avid enhancement on post-contrast images. The lesion was closely applied to bilateral supra-clinoid parts of internal carotid artery and expanding the sella. The cystic chiasma was encased and distorted by the disease. Multiple small rounded cystic satellite nodules were seen in the left basal ganglia and right mid-brain. Disease was also closely applied to floor of 3rd ventricle and having mass effect on brainstem. In light of the MR findings, it was concluded that it is a locally inoperable neoplastic lesion, consistent with craniopharyngioma.

The patient was further referred to neurosurgery department, where she was operated upon, with partial excision of the mass. It could not be excised in total because of close approximation to vital structures, but to reduce its compressive symptoms, partial excision was carried out. The biopsy report returned confirming Adamantinoma type of craniopharyngioma, with palisades of small cells visible in the biopsy specimen, enclosing a loose, reticular zone and squamous cells. Few nodules of keratin were also seen in the specimen (Figure 3).

The patient was thus diagnosed as a case of craniopharyngioma of the Adamantinoma variety, and referred for radiotherapy after partial removal of the tumor mass. We hereby present her case to shed light on atypical presentation of craniopharyngioma with bilateral optic atrophy.

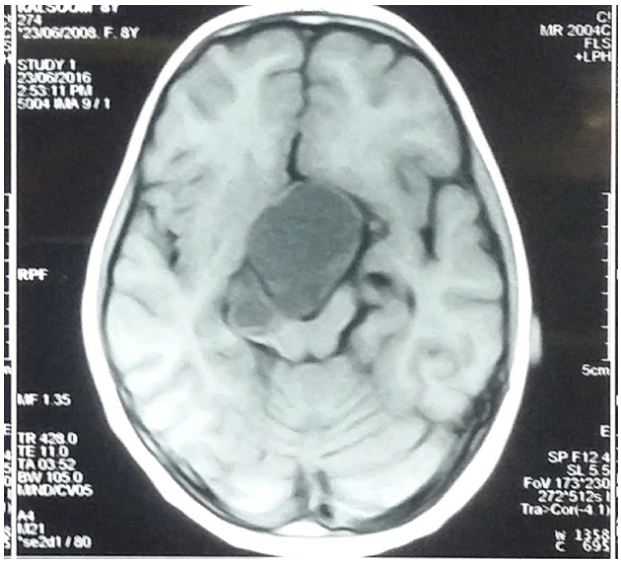

Fig 1: MRI Brain showing large craniopharyngioma

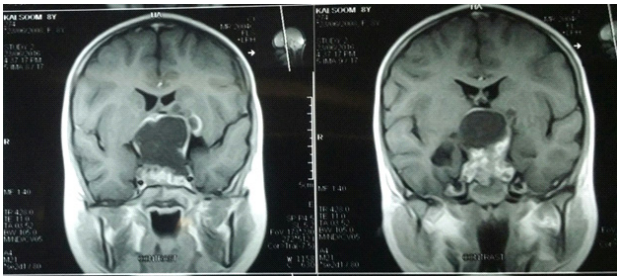

Fig 2: MRI Brain showing coronal view of craniopharyngioma

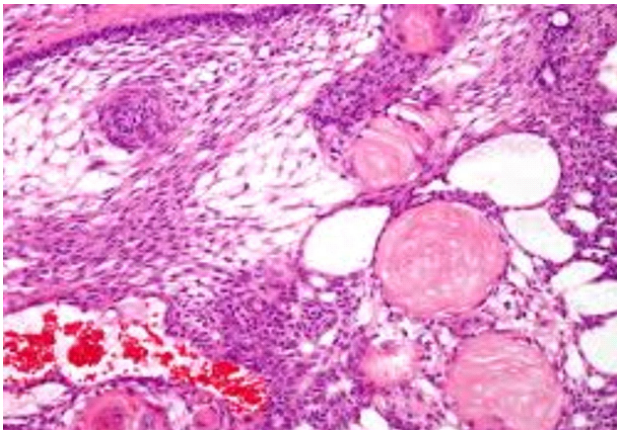

Fig 3: Histopathology of craniopharyngioma (magnification x100)

DISCUSSION

Craniopharyngiomas are slow-growing tumors that lead to symptoms when they grow beyond 3cm 6. They most commonly present with headaches, endocrine dysfunction and visual disturbances [7]. Our patient did not complain of headache but was having sub-clinical hypothyroidism and bilateral optic atrophy. Dysfunction of optic pathways occurs in 40-70% of the patients. Children become aware of visual problems only after almost complete damage to visual pathways. At this stage the loss is irreversible [8]. Craniopharyngioma is the most common cause of bilateral optic atrophy in population under 20 years of age [9].

Greater than 50% of the children with craniopharyngioma in one study presented with clinical features of raised intracranial pressure. However, one-third of these patients had optic atrophy on visual examination, instead of papilledema [10]. Our patient did not have raised intra-cranial pressure but had bilateral optic atrophy because of extension into and invasion of the visual pathway by the craniopharyngioma.

There are multiple non-surgical and surgical treatments available for the management of craniopharyngiomas. Bleomycin, radiotherapy, intracystic chemotherapy, cytokines, biomodulation and gross total or partial resection are the different approaches for management of craniopharyngioma. Total resection still has chances of

recurrence. Partial resection needs to be followed by radiotherapy to reduce risk of re-expansion of tumor mass [11, 12].

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INSTRUCTIONS FOR AUTHORS

Manuscript Submission

The Journal of Medical Sciences follows the uniform requirements for manuscripts submitted to Biomedical Journals as approved by the International Committee of Medical journal Editors as updated in Oct. 2004 and available at www:icmje.org. Manuscripts are accepted for consideration if neither the article nor any of its contents has been or will be published or submitted elsewhere before appearing in Journal of Medical Sciences.

Manuscript Formatting Guideline

While submitting the document on JMS website, the authors are advised to follow the following guidelines:

1) Always use MS Word format. Don't send any tables in JPG format.

2) Always use Calibri fonts.

3) use 12 size fonts.

4) Double space the manuscript.

5) Justify the margins

6) Keep the main headings bold and in size 14.

7) No extra spaces between paragraphs.

8) Black text on white background only.

Title and Authors Name

The first page of the manuscript must give the title of the article that should be concise and descriptive. Also include on this page the name(s) of the author(s), highest academic degrees, the name of the department and institution in which the work was done, the institutional affiliation of each author, and the name and address of the author to whom reprint requests should be addressed.

Any grant/support that requires acknowledgement should be mentioned on this page. Abstract's word count and article (excluding references) word count should appear at the bottom of this page.

Abstracts

Abstract must not exceed 250 words and the **article must not exceed 3000 words** (excluding references). Articles exceeding the word count or not conforming to "Instructions for authors" will be returned without processing. It is further emphasized that results must not be duplicated in text/tables/figures/graphs.

Key words

Three to 10 key words or short phrases should be added to the bottom of the abstract page. Terms from the Medical subject headings (MeSH) list of Index Medicus should be used.

Introduction, Material and Methods, Results, Discussion, Conclusion, Acknowledgments and references should all start on a separate page from page 03 onwards.

References

The total number of references in an original article must not exceed 40 while in the review articles maximum limit is 100. References must be written double-spaced and numbered as they are cited in the text.

The references must be written in Vancouver style. The style for all the types of references is given in the "Uniform requirements for manuscripts submitted to biomedical journals" at the website of International Committee of medical journal editors. **www.icmje.org**

List all authors when there are six or fewer. If there are more than six, list the first six followed by "et al".

Tables and Illustrations

Each of the tables and illustrations should be on a separate page, must have a title and be on a double space.

Figures should be professionally designed. Symbols, lettering and numbering should be clear and large enough to remain legible after the figure has been reduced to fit the width of a single column. The back of each figure should include the sequence number, the name of the author and the proper orientation (e.g. "top"). If photographs of patients are used, either the subjects should be unidentifiable or their pictures must be accompanied by written permission to use the figure. Duplication of results given in tables and into figures must be avoided.

Ethics

When reporting experiments on human subjects, indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (Institutional or regional) and with the Helsinki Declaration of 1975, as revised in 1983. Do not use patients names, initials, or hospital numbers especially in illustrative material. When reporting experiments on

animals, indicate whether the institution's or a national research council is guide for, or any national law on the case and use of laboratory animals was followed. No article will be entertained without prior ethical approval from ethics committee/ board.

Units of Measurements

Authors should express all measurements in conventional units, with System International (SI) units given in parentheses throughout the text.

Abbreviations

Except for units of measurements abbreviations are discouraged. The first time an abbreviation appears it should be preceded by the words for which it stands. However title and abstract must not contain any abbreviation.

Statistics

Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. When possible quantify findings and present them with appropriate indicators of measurements error or uncertainty (such as confidence intervals). Avoid relying solely on statistical hypothesis testing, such as the use of ρ values, which fails to convey important quantitative information. Discuss the eligibility of experimental subjects. Describe the methods for and success of any binding of observations. Report complications of treatment. Give numbers of observations. Report losses to observation (such as dropouts from a clinical trial). Specify any computer programs used.

Put a general description of methods in the Methods Section. When data is summarised in the Results Section, specify the statistical methods used to analyse it. Restrict tables and figures to those needed to explain the argument of the paper and to assess its support avoid non technical uses of technical terms in statistics, such as "random" (which implies a randomizing device) "normal" significant, "correlation", and sample.

Define statistical terms, abbreviations, and most symbols.

Drug Names

Only generic names should be used.

Permissions

Materials taken from other sources must be accompanied by a written statement from both author an publisher giving permission to the journal for reproduction.

Case Report

Short report of cases, clinical experience, drug trials or adverse effects may be submitted. They must not exceed 500 words, 5 bibliographic references and one table or illustration. The report must contain genuinely new information. The format is title, abstract, introduction, case report, discussion, references.

Review and Action

All articles on receipt for publication are immediately acknowledged but that does not imply acceptance for publication.

Submitted manuscripts are reviewed for originality, relevance, statistical methods, significance, adequacy of documentation, reader interest and composition. Manuscripts not submitted according to the instructions will be returned to the author for correction prior to beginning the peer review process. All manuscripts considered suitable for review are evaluated by a minimum of two members of editorial board. The manuscripts is then sent to two or more than two reviewers who may take a couple of months time to review the manuscript. The ultimate authority to accept or reject the manuscript rests with the Editor.

Revised manuscripts are judged on the adequacy of responses to suggestions and criticisms made during the initial review. All accepted manuscripts are subject to editing for scientific accuracy and clarity by the office of the Editor. When the manuscripts is deemed fit for publication, letter of acceptance is issued to the author. No article is rejected unless similar comments are received from at least two reviewers.

FOR DETAILS, SEE OUR EDITORIAL POLICY IN THE NEXT SECTIONS

AUTHOR'S AGREEMENT

Journal of Medical Sciences (KMC Peshawar pISSN 1997-3438)

ArticleTitle_____

The undersigned author (after reviewing criteria for authorship as defined by International Committee of Medical Journal Editors [ICJME] found at 'http://www/icmje.org/' and have participated reasonably in the intellectual content, analysis of data and writing of the article) jointly and severally, hereby transfer and assign all rights, title, and interest therein, including any and all copyrights in all forms and media now or hereafter known, to the Journal of Medical sciences. The author/s retain the nonexclusive right to use part or all of the article in future work of their own, provided proper credit is given to the Journal of Medical Sciences. In case, the submitted article is not published, the Editorial Board agrees to release its rights therein.

I certify that

A) None of the material in the manuscript has been published previously/currently under consideration for publication elsewhere.

B) The article has not been accepted for publication elsewhere

C) I have not signed any right or interest in the article to any third party

D) I am able/willing to produce the data on which this article is based, should the Editorial Board of the Journal of Medical Sciences request such data.

E) Animal Care Committee/Institutional Review Board approval was granted for this study.

I (including spouse and children), disclose financial interest at the level

a) Nothing to disclose b) Financial interest to the amount of _____

F) I/We confirm to comply fully with the suggestions/critical views of the reviewers/editor, failing which my/our article may be rejected at the sole discretion of the editor. I/we further confirm that if our article is rejected (whihc is the sole discretion of the editor) I/we will have no right to complain against the journal/editor/representative of the journal/printer in any forum including the court of law.

G) I/we suggest the following two overseas reviewers to review our article.

1) _____	_____	_____
2) _____	_____	_____
Name of reviewer	Postal address	Email address & Telephone No.

_____	_____	_____
Author name	Author signature	Author e-mail address

Note: Author agreement form must be signed by each author (one page for each) and submitted with the article.

Author's Checklist:

i) Eliminate nonstandard abbreviation in the titles
ii) Supply full author names (including institutional affiliation and contact informations)
iii) Contribution of individual authors
iv) Nomination of first 3 co-authors by the principal author
v) Abstract: 200 words, Article: 2000 words (excluding references).
vi) Supply references in Vancouver style, accurately cited in the text in numerical order
vii) Cite tables in the text in numerical order
viii) Send 03 Hard copies and on a R/W CD (in MS Word), in a protective envelop, do not use clips
ix) Cite figures in the text in numerical order
x) Author agreement is signed by all authors.
xi) Departmental Permission Letter for the study.
xii) Letter of ethical review of concerned hospital/study place.
xiii) Bank draft for Rs. 5000/- (Rs. Five Thousand) in the name of Journal of Medical Sciences, Peshawar, Pakistan/or deposit in cash with Managing Editor Account No. 4048685170 (3548-9) Can be transferred ONLINE to the Account No. 4048685170 (3548-9) Branch Code 0388 at National Bank of Pakistan, University Campus Branch, Peshawar.

EDITORIAL POLICY

EDITORIAL POLICY OF JOURNAL OF MEDICAL SCIENCES (JMS), KHYBER MEDICAL COLLEGE, PESHAWAR

OVERVIEW

This document highlights the mission, objectives and editorial policy of JMS in regard to publication process by adhering to the guidelines by COPE (Committee in Publication Ethics) and ICMJE (International Committee of Medical Journals Editors). Each component of the editorial policy is explained in the next sections.

A MISSION OF JMS

To publish relevant, scientific and accessible material to help medical students and health professionals in their practice, teaching and learning, and career development

B OBJECTIVES OF JMS

a To publish clinical, epidemiological, public health, educational, translational, and allied sciences research to enable the scientists, clinicians and researchers to learn about developments and innovations in these disciplines

b To publish high quality descriptive and experimental research, review articles, editorials and case reports to enhance the understanding of scientific community regarding clinical practice and education

c To provide a platform for scientific community in promoting their career development through publishing quality research

C EDITORIAL POLICY

1 Open access

JMS is an Open access scholarly literature source that is free of charge and often carries less restrictive copyright and licensing barriers than traditionally published works, for both the users and the authors. However, it complies with well- established peer review processes and tries to maintain high publishing standards.

2 Peer review process

The review process of JMS is following a "triage approach". Upon submission of a manuscript, either online or physical, the document undergoes a preliminary open (un-blinded) review in the office of the chief editor. The document is either accepted for further review, sent for revision back to the authors, or rejected at that time. Further review of JMS is following a blinded approach, where the article is sent to 2 reviewers, a local and international. During this process, all the relevant information about the authors and reviewers is kept confidential. However, we encourage to share reviewers' comments with co-reviewers of the same paper in a blinded manner, so reviewers can learn from each other in the review process. We also encourage the readers to send us the post publication reviews about a research work in the form of letters to the editors, which are then published and shared with the authors of relevant articles. The editorial board has the authority to retract an article if serious violation of credibility or quality of research is found after the article is published.

The journal is under no obligation to send submitted manuscripts for review, and under no obligation to follow reviewer recommendations, favourable or negative at all times. The editor of a journal is ultimately responsible for the selection of all its content, and editorial decisions may be taken by issues unrelated to the quality of a manuscript, such as suitability for the journal. An editor can reject any article at any time before publication, including after acceptance, if concerns arise about the integrity of the work.

3 Authorship

According to the ICMJE criteria, authorship is based on 4 criteria; (1) conceptualization and designing, (2) AND, data collection, (3) AND, writing and critical review, (4) AND, taking responsibility for the authenticity and integrity of all the research process. All those designated as authors should meet all these 4 criteria. The

co-authors should declare their roles and contributions in the research process explicitly. Those who do not meet all 4 criteria should be ACKNOWLEDGED only. If agreement cannot be reached about who qualifies for authorship, the institution(s) where the work was performed, not the journal editor, should be asked to investigate. If authors request removal, addition or change in the sequence of an author after manuscript submission or publication, journal editors should seek an explanation and signed statement of agreement for the requested change from all listed authors and from the author to be removed or added. The corresponding author is the one individual who takes primary responsibility for communication with the journal during the manuscript submission, peer review, and publication process. The corresponding author typically ensures that all the journal's administrative requirements, such as providing details of authorship, ethics committee approval, clinical trial registration documentation, and disclosures of relationships and activities, are properly completed and reported.

4 Submission of manuscript

The manuscript should be submitted through journal website which is using the Online Journal System (OJS) along with the Institution research and ethics board (IREB) certificate. The article should have the following format:

4.1: The abstract should be structured with word count of not more than 250 words. 4.2: The fonts should be Calibri, with size 12, and spacing of 1.5, with justified margins in MS office format.

4.3: The whole document should not be more than 3000 words (excluding references and appendices).

4.4: The number of figures and tables should not exceed 5 in the whole document.

4.5: The pictures and tables should be black and white in color.

4.6: Copied pictures and tables from other sources will not be entertained, unless a written approval from the original researcher and publisher is provided

5 Institutional research and Ethics board (IREB) certificate

Under no circumstances, an article will be accepted if approval from the relevant ethical board / committee is not taken before the start of a research. The board / committee should assess the proposal of a research in both ethical and technical aspects before giving a certificate of approval.

6 Conflict of interest

To ensure transparency in the research conduction, writing and publication, the authors, peer reviewers and editors have to declare conflicts of interest regarding financial aspects, academic competitions, and relationships during writing, reviewing and publishing the manuscripts. Details of sponsors along with their roles and access to data should be clearly stated.

7 Confidentiality

The editorial board in no way should publicize the work of a researcher in any form unless it is published. They should not publicize the comments and critique given by reviewers. Similarly, the reviewers are bound to keep the confidentiality of the work of researchers during and after the review. The work of researchers and the critique should never be discussed or exemplified in forums. The confidentiality of the researchers should be maintained in every possible way when the documents are sent for review. However, our review process is open (non-blinded) in the first phase, as per policy of the journal. In this case, the policy is clearly displayed on journal`s website for the researchers. Reviewers must not retain the manuscript for their personal use and should destroy paper copies of manuscripts and delete electronic copies after submitting their reviews. If a manuscript is rejected, it should be deleted from the editorial system. If an article is published, the manuscript along with its reviews and other relevant documents should be retained for a period of 3 years and then deleted. The only situation where confidentiality needs to be breached is when a situation of fraud or misconduct is found during the review process or after publication. Still, the authors and sometimes the reviewers, have to be notified.

8 Correction and retraction of articles

The guidelines for correction and retraction of articles are as follows:

8.1: A specific page is allocated in the journal (both electronic and printed) that will be used for news related to corrections in articles published in previous journals.

8.2: The editor should also post a new article version in the journal with details of the changes from the original version and the date(s) on which the changes were made.

8.3: Previous electronic versions will prominently note that there are more recent versions of the article (that will be placed at the end of abstract). Similarly, the more recent version should be cited by the authors or others.

8.4: If the error is judged to be unintentional, and the underlying science appears valid, and the changed version of the paper survives further review and editorial scrutiny, then retraction with republication of the changed paper, with an explanation, allows full correction of that research paper.

8.5: If serious violation of credibility or quality of a research paper is found after the publication, the article has to be retracted after approval of at least 3 members of the editorial board in consultation with chief editor. The whole process will follow the guidelines presented by Committee on publication ethics (COPE).

8.6: The retracted article should clearly be notified on the website and the word “retracted” should be mentioned along the title of the article.

9 Correspondence

Correspondence for submitting an article in JMS will be through a corresponding author. The duties of a corresponding author have already been presented in a previous section. Correspondence regarding debating an article is given high value and a separate page for letters to the editors has been allocated. Derogatory and demeaning letters are screened and letters which promote debates and critique are encouraged to be published. However, correspondence about the articles published in the last 1 year will be included only.

10 Fee submission process

The editorial board in a recent meeting has fixed a fee of 7000/- Rs (Pakistani), for local authors and 250 $ (US) for international authors. The fee should be submitted as bank draft/online payment through account (IBAN) no: PK56NBPA0388004048685170 (Branch code: 0388 / National Bank of Pakistan, University campus branch, Peshawar, Pakistan) as follows:

1) Article processing fee of 3000/- PKR at the time of submission of article after acceptance for preliminary / initial triage, open review by the Chief Editor. This amount will be non-refundable.

2) Article publication fee of 4000/- PKR at the time of acceptance of article after external review. This amount will be refundable if the article is rejected for any reason.

3) For international authors, the amount of 250 US dollars will be accepted after both internal and external review. Researchers belonging to countries other than Pakistan are advised to submit the fee after the whole process of review is completed and the article is accepted for publication.

11 Roles of editorial board, editors and members

The editorial board of JMS is following the Higher Education Commission (HEC) policy for research journals. The roles of the editorial board for JMS are mentioned below:

11.1: The roles of the Editorial Board are:

11.1.1: To offer expertise in their specialist area

11.1.2: To review submitted manuscripts

11.1.3: To advise on journal policy and scope

11.1.4: To work with the Editor to ensure ongoing development of the journal

11.1.5: To identify topics for special issues of the journal or recommend a Conference which would promote the journal, which they might also help to organize and/or guest edit

11.1.6: To attract new and established authors and articles

11.1.7: To submit some of their own work for consideration, ensuring that they adhere to Conflict of Interest rules and stating their relationship to the journal. This is very important as the journal cannot be seen to publish only papers from members of the Editorial Board.

11.1.8: It is important that Editorial Boards have a regular communication forum with other boards of similar nature, either face to face in person (depending on their country of origin, funding availability, etc.) or as more journals are doing today, communicating by teleconference, Skype or other web platforms.

11.2: The Patron is usually the Dean of the institute, and is overall incharge of the journal, who needs to be kept informed of the decisions taken by the editorial board. The patron is the final authority to approve the decisions and policies of the editorial board.

11.3: The Chief Editor:

11.3.1: The criteria for selection of Chief Editor are:

i. Expertise and experience in the specialist field related to the journal

ii. Publication record of a number of articles and /or books (usually in / related to the specialist field)

iii. Being a reviewer for an international peer reviewed journal

iv. Senior research position with equivalent experience in research and scholarship

v. Enthusiasm to undertake the Editor role

vi. Preferably a diploma, master or doctoral degree in Education and Research. It is not necessary to fulfill all the criteria to become a chief editor.

11.3.2: The roles of Chief Editor are:

i. The key role of a journal`s chief editor is to promote scholarship in the specialist field associated with the journal, whilst also promoting the journal as the best journal to publish in. For any journal, the editor will need to encourage new and established authors to submit articles and set up a reliable panel of expert reviewers. Editors are also responsible for offering feedback to reviewers when required and ensure that any feedback to authors is constructive.

ii. An editor should also familiarize themselves with the Committee on Publication Ethics (COPE) 'Code of Conduct and Best Practice Guidelines for Journal Editors'.

iii. Depending on how the journal is managed and how it is structured, an Editor may have to make all the decisions regarding which articles to accept or reject for publication.

11.3.3: Managing editor:

The roles of manging editor are:

i. To help the chief editor to achieve the above-mentioned goals

ii. To communicate with the authors, reviewers, publishers and other agencies for smooth running of the journal

iii. To regularly evaluate the research work

iv. To communicate with funding and regulating agencies (HEC and others) for grants and accreditations.

11.3.4: Executive editor:

The roles of executive editor are:

i. To evaluate the research articles presented for publication

ii. To help the editorial board in policy making

iii. The help the editorial board in smooth publishing

iv. To communicate with reviewers and collaborate with external agencies for relevant purposes

11.3.5: Section editors:

Section editors are allotted different responsibilities. Some of these are mentioned below:

i. Bibliography

ii. Proof-reading

iii. Academic writing reviewing, grammar and spell checking

iv. Dissemination of articles for review

v. Contact with publishers under the supervision of senior editorial team

vi. Training of future reviewers, young members and other faculty members

vii. others

11.3.5: Editorial advisory board:

Editorial advisory board members consist of national and international senior academicians, researchers, clinicians and others to help the current editorial board in designing, implementing and evaluating policies regarding upgrading the quality of research work. These people also share best practices to help the editorial team to refine their research work.

12- Policy regarding recruitment and continuation of editorial board Policy for recruitment and continuation of the editorial board is based on the guidelines discussed in the previous section. The chief editor, managing editor and executive editors are recruited by the patron in-Chief. Members are then selected by them from amongst the faculty who have an aptitude for research, and their names are endorsed by the patron. The tenure of editorial board is decided by the Patron after a period of 3 years whether to continue or recruit a new team or member. The editorial advisory board members are recruited for indefinite period by the editorial team of JMS.

13 Plagiarism policy

The journal is following the plagiarism policy of Higher Education Commission of Pakistan, and for this purpose, a plagiarism standing and review committee has been established under the chairmanship of Chief Editor of JMS along with 4 members amongst senior faculty. The committee has been given the authority to review research papers and plagiarism complaints related to published work in the journal.

14 Contact information

The office of managing editor or chief editor should be contacted anytime in working hours or can be contacted through their emails for correspondence.

15 Journal funding

Main funding of the journal is from HEC, which provides funds once on yearly basis and it depends upon the category of HEC recognised journals. We also receive funding from our institute on need basis. Another source of funding is through research paper processing fee amounting to Rs: 7000/- or 250 US$ (for overseas researchers). We also receive funding through annual subscription by different national libraries amounting to 5000/- annual (500 US$ for overseas libraries).

REFERENCES

1. ICMJE recommendations
2. COPE guidelines
3. SCOPUS

This document is developed by including the recommendations of ICMJE (2019) and COPE guideline and in case of any conflict, lack of clarity and ambiguity, the recommendations of latest ICMJE recommendation and COPE will prevail.

A STUDENT'S EXPERIENCE AT HEALTHCARE LEADERSHIP ACADEMY (HLA) SUMMIT

Being a year 4 medical student; studying at Khyber medical college, which is one of the pioneer medical school for undergraduate education conducting MBBS program at Pakistan, and travelling far from my home that is based in London, I wanted to achieve something great during my undergraduate career. I feel that public speaking is an essential skill in the medical education and training. Inspired by speeches delivered by trained physicians, clinical researchers, and other healthcare professionals, I also wanted to enhance this skill and started finding ways to do so. The healthcare leadership academy (HLA) launched its 2021 annual online international conference spanning from the 29th-30th May 2021 in London. In this unique two-day event, keynote speakers presented lectures and workshops in different disciplines. Being selected as a representative of my college to present two ongoing pieces of research at this prestigious conference was one of the greatest and most humbling opportunities for me as an undergraduate medical student.

Introducing my first article during the conference was regarding factors that lead to COVID vaccine noncompliance amongst healthcare workers in Peshawar, in which I analysed and discussed the common explanations to vaccine refusals. My second article was concerned with the risk of myocardial infarction in diabetic and non-diabetic patients; I elaborated on the issues faced by students whilst publishing research papers during the COVID pandemic. As a result, I mentioned that along with myself, my colleagues initiated a student-led online platform where students nationwide can benefit from the resources that we provide. However, like any medical student presenting along with other internationally renowned medical educators from all continents of the globe, it was very nerve-racking. To tackle this, I structured and tailored my speech concisely so that my aims and objectives were clear and concise. To familiarize myself, I rehearsed my speech multiple times to practice before the final day. Due to the COVID pandemic, the annual summit was conducted online and was one of the most challenging aspects of delivering this conference. Issues with the resolution, audio and internet were something which made communicating really difficult and to keep up to standard.

However, the opportunity to advocate for my research projects and to represent my college made it worthwhile. Receiving feedback from consultants and specialists in the medical field provided me with valuable information for my personal and professional growth, and I would definitely encourage other students to do the same. Attending conferences, signing up for webinars and contributing to sessions is one way to start. Reflecting on this opportunity, I developed the skills and abilities of presentations, not only have I enhanced my public speaking skills, but I have also built upon my expertize of management and planning when attending an event. I hope that sharing my experiences will excite and encourage other students across Pakistan to join conferences such as this one in future and keep developing and learning more skills. My advice to all medical undergraduates would be to take their research a step further because this is how most people will be able to understand your procedures, discuss results and offer feedback.

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