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EDITORIAL

THE CHALLENGES OF COVID-19 FOR MEDICAL EDUCATION AND TRAINING IN MEDICAL SCHOOLS IN DEVELOPING COUNTRIES- IS IT A BLESSING IN DISGUISE?

The recent COVID-19 pandemic has affected societies in all aspects of living throughout the globe and the sufferings continue. Education in general and medical education and training, in particular, is under enormous pressure especially in developing countries where the technology, resources, and expertise is lagging behind the developed nations. Contrary to online teaching, assessments, and promotions without being summatively assessed (at the end of year/semester) to next grades in general education, there is a fear that these steps may hamper patient safety if undergraduate medical students are not trained and assessed in conventional ways.[1] This article is about discussing these challenges in the context of the Pakistani perspective, especially in public sector medical schools. Moreover, many of these challenges can be converted into opportunities which are discussed in the next section.

Since March 23, 2020, all face to face teaching sessions in medical schools and clinical training in teaching hospitals in Pakistan is at a halt. However, both private and up to some extent the public sector medical schools have continued online teaching sessions to undergraduate medical students. The opinions of students about the utility of these activities are divided between satisfactory and unsatisfactory. Most of the online teaching sessions are one way, with uploading of teaching materials while some institutes have much-improved e-learning system. The situation of clinical teaching is dismal due to many reasons. Many clinical training facilities have halted bedside teachings, seminars, tutorials, and other teaching activities for medical students. Many clinical units, which were previously used for training the students have been converted to quarantine facilities for managing patients with COVID-19. Although online teachings, whatever the quality may be, can instill knowledge into the students, these are by no way a good way of instilling attitudes, and other soft skills in these students. The hidden curriculum which is mostly related to role modeling, communication, and acquiring proper attitudes in students cannot be taught through online teaching. Similarly, clinical training in the form of history taking, clinical examination, problem-solving, clinical reasoning, clinical judgment, and critical thinking, is very difficult to teach through online platforms. Moreover, procedural skills, though, taught nowadays via online videos, and demonstrations, will limit the students to the "knows" and "knows how" level of Miller`s pyramid.[2] The hands-on training of students and clinical assessments will still be limited. This may leave a big gap in the skills acquisition of students during their clinical training.

Challenges to assessments are more worrisome, as the end of the year assessments has been postponed so many times in the last 5 months by the universities. Similar is the case with formative assessments, as these activities were stopped due to abandoning of all teaching activities in the country due to lockdowns. This is not only challenging the system of promotions of students but the long-term consequences may result in endangering patient safety especially for students of year-5.[3] In no way, these students can be left without end-of-the-year assessment, as there is the issue of "fitness to practice" if these students are not assessed in terms of their knowledge, skills, and attitudes at the time of exit from the medical schools.

These challenges, which the students and institutes have faced, made the curriculum committees, faculty, and deanery much stronger in most of the medical schools, in terms of their preparations in these difficult times. The COVID-19 pandemic has shown us that students` teaching can continue in times of calamities, pandemics, lockdowns, political instabilities, and other such situations where face to face teaching is not possible.[4] Gone are the days, that educational institutions used to be kept locked in political uncertainties, strikes, and other situations. ZOOM, Google MEET, and other online platforms have transformed the way we keep in touch with students during uncertain times. [5] Time has come that the curriculum developers have to adapt to these situations by modifying their syllabi, teaching methods, tools, and assessment techniques to keep the educational activities operational.[6] This is an opportunity for us to continue our educational activities according to the schedule and stop wasting the allotted time to the curriculum. The time has come that these online platforms need to be used even when the pandemic is over, thus transforming the curriculum into a "hybrid" form of face-to-face and online teaching in near future. Similarly, assessments have to become "hybrid" as well. The medical education institutions need to train the faculty, develop hybrid curricula and hybrid assessment methods (at least formative assessments) to incorporate the technology into teaching and assessment activities. These online platforms for teaching and assessment will save time, act as a teaching and assessment tool, boost the competencies of the faculty, improve the delivery of the contents and incorporate more avenues for teaching and training of medical students.

Incorporating these e-learning strategies into clinical rotations will help the students in many ways. Many skills that we teach and learn at the bedside, can

be presented as videos and live demonstrations for students. This can create opportunities for curriculum developers as delivering a uniform curriculum rather than an opportunistic one, as is presently happening in many clinical rotations. Moreover, this can cover a large number of students at one time, rather than a small group of students in a limited space.

Some of the challenges for such "hybrid curriculum" for curriculum developers, policymakers, implementers, and faculty may be, a "resistance for change culture" in the institutes, lack of faculty preparedness, lack of infrastructure, meager finances for some institutions, interrupted internet availability, lack of proper curriculum for hybrid teaching especially in clinical rotations and many unforeseen issues. Issues faced by students in such a situation may be, internet non-availability in certain areas, lack of gadgets with students, and failure to keep pace with the syllabus by some. Challenges for hybrid assessments include a large number of students in some public sector medical schools, internet speed, and interrupted services, lack of faculty preparedness, the possibility of cheating, and other unforeseen issues. One way of erasing the issue of cheating is to inculcate the "open book assessment' techniques. Even that looks to be challenging as such assessments need converting the didactic question items into a problem solving one, where the students need to do a lot of critical thinking to answer such questions. Although looking daunting, the time has come to challenge our faculty to develop such items and manipulate the existing archaic assessment techniques and challenge the minds of learners.

In summary, the COVID-19 pandemic has trained us in many ways. It would have taken us decades to start using the online teaching and assessment activities that we are using today. It has challenged the policymakers and curriculum developers to create syllabi that can replace the traditional face to face teaching and assessment activities. The curriculum committees are thinking of incorporating online activities into curricula of both basic sciences and clinical sciences to make it a hybrid curriculum. This new form of teaching and assessment model will go a long way in improving teaching, innovating clinical rotations structure and converting the traditional assessment items into the format of problem-solving questions.

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CHARACTERISTICS OF POST-NATAL PAKISTANI WOMEN WITH CHRONIC APICAL PERIODONITITIS

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ABSTRACT

Objective: The purpose of this research was to identify the characteristics of post-natal Pakistani women with Chronic Apical Periodontitis (CAP).

Material and methods: This cross-sectional study was conducted among 150 post-natal women who suffered from CAP at the Gynaecology ward, Unit III, Civil Hospital Karachi (CHK). Data were collected from women who delivered babies on the day of data collection at the Gynae ward CHK and satisfied the criteria to be included in the study. Principal Investigator assessed radiographs for the presence of CAP.

Results: Mean age of participants was 26.61±4.83. Majority 104 (69.3%) were multigravida while 46 (30. %) were primigravida. The mean gestational period in weeks was 36.16± 2.31. The majority of the participants 115 (76.7%) had CAP in a single tooth, 32 (21.3%) had in 2 teeth and 3 (2%) had CAP in 3 teeth. Periapical index (PAI) score was significantly associated with the birth type (normal term and preterm). Baby weight significantly differed between PAI scores.

Conclusion: Results of this study indicate most of the study women were illiterate and belong to a low-income families. There was a higher percentage of multigravida and most of the deliveries were normal vaginal. CAP in a single tooth was found among the majority of the study women.

Keywords: Chronic Apical Periodontitis, Post natal, periapical index

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INTRODUCTION

Chronic Apical Periodontitis (CAP) has been reported to be a prevalent disease especially in adults[1,2]. Numerous researches showed that 24–61% of adults suffer from Chronic Apical Periodontitis[3]. Premature parturition difficulties are the key reason for death for children less than 5 years, resulting in more than 1 million mortality in 2015 alone. In Pakistan, approximately 17-24% of deliveries are low birth weight, regardless of time of delivery. Correspondingly, a Pakistani study reported that more than 80% of the new-borns weighted from 2100 to 2500 grams[4].There are various disabilities in children that are linked with preterm birth which consist of a motor and cognitive deficiency like Attention Deficit Hyperactivity Disorder (ADHD)[5]. Literature shows that out of 13 million children who survive, three percent develop moderate to severe impairments of the neurons with an additional 4.4% develops mild neurodevelopmental disabilities and around 77 million Disability Adjusted Life Years (DALYs)[6]. When compared to babies born full-term, these disabilities are two to threefolds more usual in preterm babies[7].

Researches accomplished in the field of periodontal medicine advocate that during pregnancy the periodontitis is potentially a marker for LBWPT[8,9], and regardless of considerable differences between the endodontic pathology and periodontitis, there are distinct resemblances, like the constant relation with anaerobic gram-negative

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microorganisms and the discharge of increased levels of cytokines[10]. Moreover, oral cavity infections may result in the existence of bacterial products like Lipopolysaccharide or endotoxin from gram-negative microorganisms and encourage the production of cytokines, with TNF-α, IL 1- and IL-6, escalating the release of prostaglandins that may result in LBWPT[9]. Chronic Apical Periodontitis (CAP) is a condition in which an apical portion of the root of tooth is inflamed chronically which is commonly not painful. Newly, Chronic Apical Periodontitis (CAP) has been identified as one of the potential risk factors associated with LBWPT births[11-13]. Epidemiological researches exhibited the burden of CAP around the globe such as Spain, Canada, Japan, Turkey and USA[14] that a substantial number of adults are facing this situation. The burden varies from 7 to 20%[15]. The burden of CAP especially with bone lesions (mild- severe) is greater among general population particularly females, though the findings are from shorter scale studies[16-19].

Endodontics and periapical status are significant indicators that can estimate tooth survival and further requirements for dental treatment[20]. But research on the prevalence of CAP has not been conducted in the Pakistani population specifically among post-natal women so the exact burden of CAP, which is generally an asymptomatic condition, is still not known in post-natal Pakistani women. Given its relationship with low birth weight babies and premature birth, it is substantial to measure its magnitude. The lack of an adequate number of evidence warrants research on the topic especially in settings like Pakistan where both the burden of CAP and incidence of LBWPT births is high. The purpose of the current research study was to identify the characteristics of post-natal Pakistani women with Chronic Apical Periodontitis.

MATERIAL AND METHODS

This cross-sectional study was conducted at the Gynaecology ward, Unit III Civil Hospital Karachi (CHK), from September 2016 to November 2017. A total of 150 post-natal women who had Chronic Apical Periodontitis (CAP) were recruited in this study. Data were collected from women who delivered babies on that day at the Gynae ward CHK. Mothers with age group 18-49 years with healthy gums and periodontium, singleton pregnancy, delivering either through C-section or normal vaginal delivery were included in this study. Informed consent was also obtained from all study participants. As noted previously, women with following conditions, such as gestational diabetes, preterm birth, twin pregnancy, pre-eclampsia, eclampsia, post-delivery BMI less than 18.5 Kg/m2 , using antibiotics in last 4 weeks, have less than 18 teeth, are smokers, used alcohol and illegal drugs were excluded. Participants were examined for the Periodontitis by the examiner and excluded if had unhealthy gums and periodontium (Periodontitis).

CAP was labelled using Peri Apical Index (PAI) by Orstavik for the assessment of radiographs which consist of scores ranged from 1 (healthy) through 5 (severe Periodontitis).[21] Both cases and controls underwent radiography between 24-48 hours of delivery. Women having scores of 3 or more will be labelled as having CAP. Periapical radiographs of the suspected teeth (untreated caries, unsatisfactory treated and necrosed teeth) were taken for the diagnosis of CAP (except third molars) within 24-48 hours of delivery. Radiographs were assessed for the presence of CAP by the principal investigator.

Institutional Review Board of Dow University of Health Sciences granted ethical approval letter No: (IRB-730/DUHS/Approval/2016/243) to the study. For the sake of the privacy of patients, confidentiality and anonymity were made sure. The sample size was calculated through the statistical software (Sample size determination in health studies WHO). By using the prevalence of CAP as 54.5% among post-natal women with 8% Confidence limits and a 95% confidence interval.[22] The calculated required sample size was 149, however, data were taken from 150 post-natal women.

After the baby's birth and mother shifted to the room, data had been collected through questionnaires to record the information regarding demographic, pregnancy history, and new-borns data. Periapical radiographs of the suspected teeth (unsatisfactory treated, untreated caries, and necrosed teeth) were obtained for CAP diagnosis (other than third molars) within two days of delivery. Principal investigator examined radiographs for the presence of CAP. SPSS version 21.0 was used to enter and analyzed the study data. For all categorical variables frequencies and percentages were mentioned (education, age, family size, income, gravida, parity, CAP, BMI and number of teeth having CAP) and mean and the standard deviation was estimated for the quantitative variable such as age. The association between CAP and participants' characteristics were obtained with the level of significance as 5%.

RESULTS

Table 1 depicts the demographic characteristics of participants. The mean age of the study women was 26.61±4.83. Among all participants 63 (42%) were unable to read or write, 53 (35.3%) were primary, 28 (18.7%) were matric and 6 (4%) were intermediate educated. There were 137 (91.3%) participants who had monthly income less than or equal 15,000 rupees and 13 (8.7%) had monthly

income more than 15,000 rupees. The majority of the participants had less than or equal to 6 members in the family while 53 (35.3%) had more than 6 family members.

Table 2 shows the gestational characteristics of enrolled women of study. Majority 104 (69.3%) were multigravida while 46 (30%) were primigravida. The mean gestational period in weeks was 36.16±2.31. The average height and weight of participating mothers were 157.24±8.86 cm and 55.26±5.45 kg respectively. The average BMI of participants was 22.42±2.35 kg/m2. The majority of women 135 (90%) had spontaneous vaginal delivery while 15 (10%) had a caesarean section. There were 72 (48%) participants who had low birth weight infants and 75(50%) were baby boys. The mean birth weight of infants was 2459.33±593.93 grams. Table 3 presented the distribution of the number of teeth having CAP and PAI scores among study participants. The majority of the participants 115 (76.7%) had CAP in single teeth, 32 (21.3%) participants had2 teeth,and 3 (2%) had3 teeth affected by CAP. About 97 (64.7%) postnatal women had mild CAP (score 3), 45 (30%) had moderate (score 4) while 8 (5.3%) had severe CAP (score 5). Table 4 depicts the association of PAI (Mild/Moderate/Severe) score with the type of birth, mode of delivery, number of teeth having CAP, and baby weight. Chi-square test confirmed that there PAI score was significantly associated with the type of birth (normal term and pre-term). Whereas the mode of delivery and number of teeth having CAP did not show any significance with PAI scores. Two-sample independent t-test exhibited that baby weight significantly differed between PAI scores (P-value < 0.05).

Table 1: Characteristics of post-natal Pakistani women with Chronic Apical Periodontitis (CAP)

Characteristics	Frequency (n)	Percentage (%)
Age	26.61 ± 4.83	
Education		
Unable to read or write	63	42.0
Primary	53	35.3
Matric	28	18.7
Intermediate	06	04.0
Monthly household income in Rupees	12526.66 ± 2813.43	
Income		
≤15,000 Rupees	137	91.3
> 15,000 Rupees	13	8.7
No of family members	6.34 ± 1.03	
Family size		
≤ 6 members	97	64.7
> 6 member	53	35.3

DISCUSSION

The study was conducted to assess the characteristics of Chronic Apical Periodontitis (CAP) among post-natal Pakistani women. The evaluation of CAP was dependent on standard periapical radiographs, scored by two distinct assessors therefore there were minimal chances of examiner under-reporting because periapical radiographs give fine and minute details. The PAI index can also be used on panoramic radiographs, where an increased rate of CAP is present.[22,23] Irrespective of this usual usage of the index, research reported that it can underestimate the occurrence of CAP as compared to periapical radiographs[11]. In our study, periapical radiographs are the investigation of choice compared to panoramic examination due to the better visualization of the periapi-

Table 2: Gestational characteristics of post-natal Pakistani women with Chronic Apical Periodontitis (CAP)

Characteristics	Frequency (n)	Percentage (%)
Gravida		
Primrigravida	46	30.7
Multigravida	104	69.3
Gestational period in weeks	2.31±36.16	
Mother height (cm)	8.86±157.24	
Mother weight (Kg)	5.45±55.26	
BMI (kg/m2)	2.35±22.42	
Mode of delivery		
Normal vaginal delivery	135	90.0
Caesarean	15	10.0
Baby gender		
Male	75	50.0
Female	75	50.0
Low birth weight		
No	78	52.0
Yes	72	48.0
Baby weight (grams)	593.93±2459.33	

Table 3: Gestational characteristics of post-natal Pakistani women with Chronic Apical Periodontitis (CAP)

No of teeth having CAP	Frequency (n)	Percentage(%)
1 toothhaving CAP	115	76.7
2 teeth having CAP	32	21.3
3 teeth having CAP	3	2.0
PAI Score		
3 Mild CAP (Change in bone structure with mineral loss)	97	64.7
4 Moderate CAP (well defined radiolucent area)	45	30.0
5 Severe CAP (exacerbating features)	8	5.3

Table 4: Association of PAI Score with term birth, mode of delivery, Baby weight and No. of Teeth having CAP

	PAI Score				P-value
	Mild CAP		Moderate/ Severe CAP		
	Frequency(n)	Percentage (%)	Frequency(n)	Percentage (%)	
Type of birth					
Normal term birth	57	73.10	21	26.90	0.025
Preterm birth	40	55.60	32	44.40	
Mode of delivery					
Normal vaginal delivery	88	65.20	47	34.80	0.609
Caesarean	9	60.00	6	40.00	
No of Teeth having CAP					
One tooth	77	67.00	38	33.00	0.288
>1 teeth	20	57.10	15	42.90	
Baby weight (grams)	585.44±2529.89		593.09±2330.18		0.045

cal anatomy. Moreover, this radiography procedure creates the best precision to break down apical structures of all dental gathering, specifically in the anterior district of mouth, where the radiopaque projection of the spine confuses the examination of this district[11].

Interpretation of radiographs, either panoramic or periapical or in combination, is the only method that can be employed in an epidemiological study while assessing CAP. Some research studies also incorporate clinical examination and or interview[24].

Most of the women participants (42%) in our study were unable to read and write, two-third of study women belonged to a low-income family and had a family size up to six members.

Our study showed that most of the women were illiterate. The reason behind this finding might be lack of education which leads to lower nutritional state and lack of knowledge on oral care, malpractice, and prenatal care increases the risk of low birth weight neonates. Small family size (≤ 6 members) was found to be prevalent in our study, this result was found to be consistent with the results of studies conducted in Germany and Sri Lanka[25, 26]. Our study showed that the majority of the women 104 (69.3%) were multigravida and the mean gestational period was 36.6±2.31 weeks. The majority of the deliveries (90%) was a normal vaginal delivery. Sex of the baby was evenly distributed. Furthermore, there were 48% of babies born with low birth weight. In our study, 3/4th of participants had CAP in single teeth whereas nearly two-third patients had PAI score 3 (mild CAP). PAI score was significantly associated with the type of birth (normal term and preterm). Furthermore, baby weight significantly differed between PAI scores. These findings were consistent with the study 8 that showed preterm birth and baby weight were significantly associated with periodontitis.

CONCLUSION

The results of this study indicate most of the study women were illiterate and belong to a low-income family. There was a higher percentage of multigravida and most of the deliveries were normal vaginal. CAP in a single tooth was found among the majority of the study women.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Shah H: Conceptualized the study, acquisition, collection, statistical analysis & interpretation of data, manuscript writing.

Nisar N: Proof Reading and final approval

Butt S: Data collection and editing manuscript

Ali AH: 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.

ORIGINAL ARTICLE

EFFECTIVENESS OF CONVENTIONAL ANTIBIOTICS IN SALMONELLA TYPHI POSITIVE BLOOD CULTURES

Aftab Ahmad Khan, Rizwan Uppal, Gul E Rehan, Farhat Khurshid, Khurshid Ahmad, Hina Zaib

Islamabad Diagnostic Centre, Islamabad - Pakistan

ABSTRACT

Objective: To determine the pattern of resistance of Salmonella Typhi strains to multiple antibiotics in Islamabad and adjoining areas.

Material and Methods: A retrospective study conducted from audit of 15 months (Jan' 2018 to March' 2019), recruiting those patients whose blood cultures were found positive for Salmonella Typhi at Islamabad Diagnostic Center. We analyzed 100 samples and positive cultures were then assessed for sensitivity by using various antibiotics and pattern of resistance was analyzed.

Results: Majority of positive patients were male (63%) and children (65%). Sensitivity to the conventional antibiotics was found to be more in children. In all the positive isolates, 89% were sensitive to the first line treatment options.Among them, 96.6%were showing sensitivity to third generation Cephalosporins. However, a few cases were having Extensively Drug Resistant (XDR) patterns.

Conclusion: Despite the fact that XDR are emerging and indicating an alarming situation, more than 80% patients were responding to the conventional therapy, making it a dire need for up-gradation of antibiograms, so that the side effects of second line and advanced antibiotic can be avoided, especiallyin pediatric population.

Keywords: Non-resistant typhoid fever, sensitivity patterns

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INTRODUCTION

Bacteria Salmonella enterica serovar Typhi (S. Typhi) causes Typhoidal fever and transmission occurs via the orofecal route.[1,2,3] Approximately 17 million cases of enteric fever occurred globally in 2015,mostly in Asia and sub-Saharan Africa where the largest burden and incidence was found in South Asia. In 2015, 178,000 deaths were reported worldwide due to Typhoid fever.[4,5] Asia has the highest frequency rate of 274 cases per 100,000 population and is five times greater than the second highest, Latin America. Pakistan has the highest incidence (451.7 per 100,000 persons/year) of typhoid fever followed by India (214.2 per 100,000 persons/year).[6] Before the introduction of antimicrobials, death occurred in about 33% of patients having typhoid fever in developing countries and up-to 10% of cases in developed countries.[7] With the advent of antimicrobialsin 1950s, the fatalities were reduced to less than 2% but the emergence of resistant strains in high-burden countries has been a daunting concern in recent years.[8]

Several mechanisms are involved in S. Typhi antibiotic resistance including inactivation of drug, alteration of the target site and active efflux. These occur due to multiple reasons which include injudicious use of antibiotics, use of antibiotics in animal feed to promote the growth of animals and in veterinary medicine to treat bacterial infections in those animals[9].

Emergence of decreased susceptibility to conventional therapies has also begun in high-burden regions such as South and Southeast Asia.[10] Cases of XDR Typhoidal Salmonella are also emerging in these areas, which is defined as strains resistant to Ampicillin, Chloramphenicol, Trimethoprim Sulfamethoxazole, third generation Cephalosporins and Fluoroquinolones. Due to increasing resistance to standard therapies, new antimicrobials such as Carbapenems, Tigecycline, and Azithromycin are being monitored as potential treatment options.[11] Asia is one of the continents with a high isolation frequency of S.Typhi displaying XDR phenotype. In a surveillance study conducted in Hyderabad, Pakistan over a 10-month period between 2016 and 2017, health authorities detected more than 800 cases of extensively drug-resistant typhoid in this city alone.[12]

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Interesting fact found in a few studies is the re-emergence of the sensitivity of S.Typhi to the initial conventional therapy i.e. Chloramphenicol, Ciprofloxacin, Amikacin and Ampicillin was 96%, 88%, 84% and 48%respectively.[1]

MATERIALS AND METHODS

The data of blood cultures of patients referred to Islamabad Diagnostic Center from Jan' 2018 to March' 2019 was retrieved from medical record. Data included demographics, clinical presentation, investigations and diagnosis.

Blood culture samples were collected under aseptic measures and poured aseptically into blood culture bottles and incubated in Versa Trek Blood Culture System according to manufacturer's instructions. From the positive blood culture bottles, a few drops are withdrawn using strict aseptic precautions and sub cultured on Blood Agar and MacConkey Agar. Plates were incubated for overnight at 37 ºC. Oxidase test was done on non lactose fermenting (NLF) colonies and motility was checked microscopically. Motile, gram negative rods that were oxidase negative were then subjected to biochemical testing with Indole, Methyl red, VP and citrate (-,+,-,+ respectively). Final identification was done on Analytical Profile Index (API) strips.

Discrete S.Typhi isolates were tested for susceptibility to various antimicrobial agents by quality controlled disk diffusion techniqueon Mueller-Hinton Agar. The antibiotics (Oxoid Ltd., Basingstoke, United Kingdom) screened included; Ampicillin (10 µg), Amoxicillin-Clavulanic acid (30 µg), Cefotaxime (30 µg) ,Cefixime (5µg), Ciprofloxacin (5 µg), Levofloxacin , Moxifloxacin, Chloramphenicol (30 µg), Cotrimoxazole (25 µg) and Azithromycin (15µg). The results were interpreted as sensitive, intermediate or resistant in accordance withClinical & Laboratory Standards Institute (CLSI guidelines)2018.Data was collected with standardized forms and transferred daily to a server. The descriptive data was analyzed using SPSS version 25.0.

RESULTS

A total of 100 samples positive for S.Typhi were included in this study. About 63% patients were male and 37% were female (figure 1). Sixty five percent of patients of the study were below the age of 19 years and 35% were adults (figure 2).

Sensitivity patterns were analyzed as per WHO recommendations. According to WHO, (disease outbreak news) Non Resistant Typhoid fever is defined as the onewhich issensitive to the first line of treatment (Chloramphenicol, Ampicillin, Trimethoprim-Sulfamethoxazole) and third generation Cephalosporins, with or without resistance to second line drugs (Fluoroquinolones). Among all the isolates which were found positive for S. Typhi, 89% were sensitive to anyone or multiple of the first line treatment options (figure 3).

The sensitivity of the isolates was found to be more in children (64%) as compared to adults (36%). (figure 4). They were then assessed separately for each one of the first line of treatment options and it was discovered that most of them i.e. 86 (96.6%) out of the total 89 sensitive patients were showing sensitivity to third generation Cephalosporin. Sensitivitypercentages for Chloramphenicol, Ampicillin, Trimethoprim-Sulfamethoxazole were 51.7%, 64% and 56.2% respectively. (figure 5)

Sensitivity was also determined for their response to second line drugs (Fluoroquinolones) and was found out that 13 (14.6%) of total 89 patients, who were declared as having Non Resistant Typhoid fever were resistant to second line drugs (Fluoroquinolones)(figure 6).

As per definition by WHO, XDR is defined as the strains which are resistant to all of the recommended treatment options for S. Typhi (Chloramphenicol, Ampicillin, Trimethoprim-Sulfamethoxazole, third generation Cephalosporins, second line drugs) and our data analysis

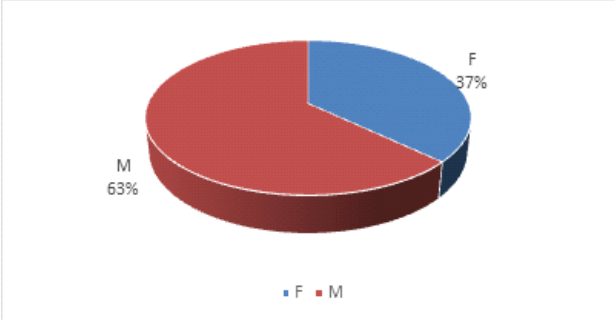

Fig 1: Gender wise distribution of disease

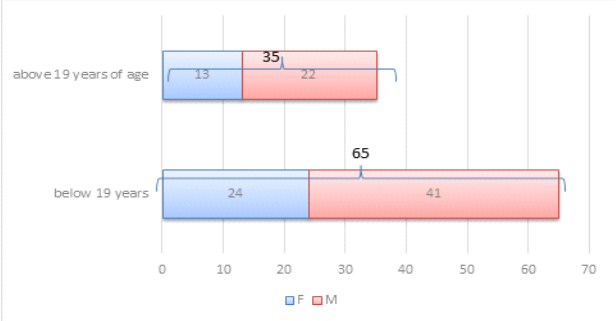

Fig 2: Age and gender wise distribution of disease

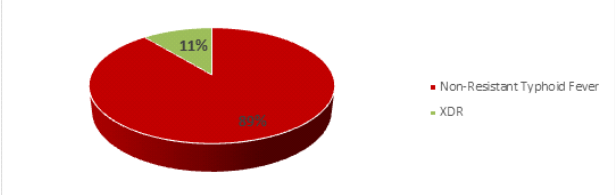

Fig 3: Pattern of response to conventional therapy

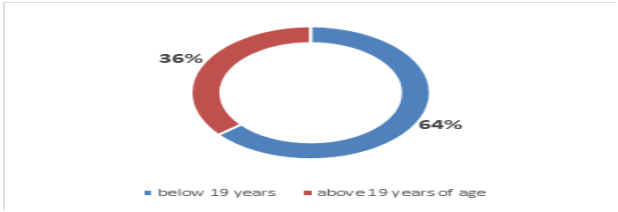

Fig 4: Age wise assessment of sensitivity to therapy

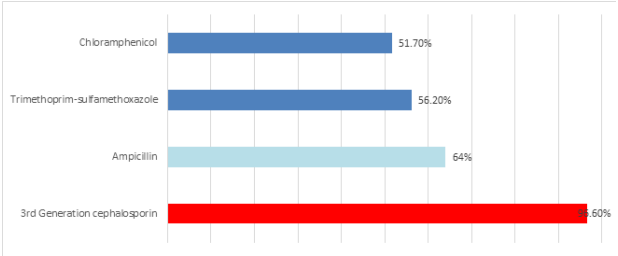

Fig 5: Assessment of sensitivity percentages of non resistant typhoid fever

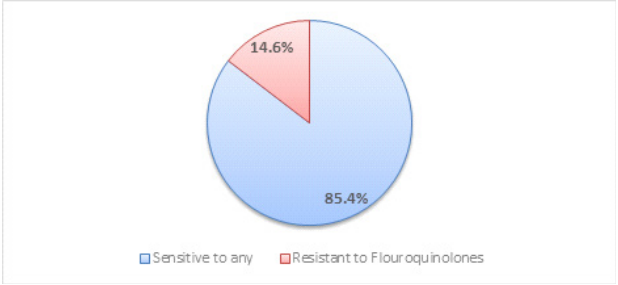

Fig 6: Percentage of non resistant typhoid fever, resistant to Fluoroquinolones

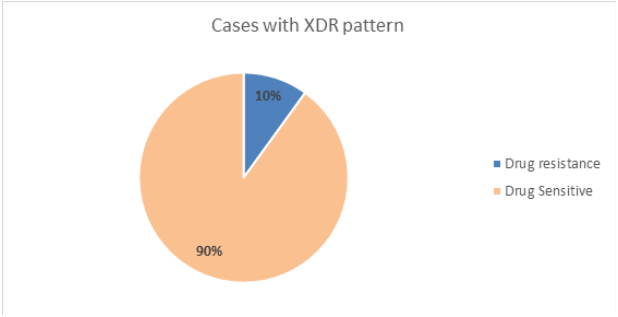

Fig 7: Percentage of cases with XDR

showed that 10% of cases were having XDR.(figure 7)

DISCUSSION

Typhoid fever continues to be a public health problem in Pakistan being exacerbated by emerging resistance to antibiotics that were effective earlier. Wide variation in the sensitivity pattern of various strains is circulating in different geographic regions in Pakistan making it a dire need to assess the sensitivity of typhoid bacilli to antibiotics before instituting therapy.

In our study majority of the patients positive for Salmonella Typhi were male and children and results are consistent with a study conducted at Agha Khan University Hospital, Pakistan[14] as well as those conducted in India and Bangladesh.[15]

According to the WHO criteria, 89 % of our positive blood culture samples were included in the category of non-resistant typhoid fever. These samples were sensitive to any one or more of the recommended therapies in this criterion.[11]

After assessing separately each of these drugs classes, it was revealed that 96.6% patients (86 out of the total 89 non resistant typhoid fever patients) were sensitive to third generation Cephalosporin. This result shows that the patients, majority of whom are children can be treated effectively by this class of drugs (third generation of Cephalosporin).This percentage is quite different from a study conducted recently in southern Pakistan which shows a sensitivity pattern of almost 60%.[16]

Although these non-resistant typhoid cases are sensitive to first line drugs and third generation Cephalosporins, our study found out that 13% of these were surprisingly resistant to second line drugs (Fluoroquinolones) which proves the erroneous use of this class of drug.[17] In corresponding to this finding, a systematic review conducted by Carl D. Britto et al shows that in Asia resistance to Fluoroquinolones continued to increase during 2001 to 2005 period by about 20%.[18] Fluoroquinolones use in children is recommended in limited conditions by FDA. However these are still widely used by general practitioners for Salmonella Typhi ultimately leading to long term side effects as well as emergence of further resistant strains.

The cost effectiveness and over all safety of third generation Cephalosporins make them the preferred medicine, especially in children.This way the devastating side effects of quinolones like arthropathy and cartilaginous damage can be avoided.[19,20] Moreover if initially a patient is given Fluoroquinolones, there will be a delay in treatment response as well as increase incidence of complications due to the presence of more than 10% resistant cases.

The other recommended drugs for non resistant typhoid fever are Ampicillin, Trimethoprim-Sulfamethoxazole and Chloramphenicol and the sensitivity percentages in our patients were 64%, 56.2% and 43% respectively. Chloramphenicol causes bone marrow aplasia in children

so its use is not encouraged in young population. Though Penicillin class and Trimethoprim-Sulfamethoxazole can be safely used but our study revealed significant percentage of resistance to them and there is an increased chance of treatment failure. Contrary to our study, another study conducted in India by JK Bhatia et al showed sensitivity of 96% to Chloramphenicol and 48% to Ampicillin.[21]

Another alarming situation, due to the misuse of drugs is the emergence of extended drug resistant strains and results show that those patients comprise almost 10% of the considered population. These patients only show sensitivity to Azithromycin.

Being a massively typhoid affected population of South Asia, immediate and sagacious steps are needed on national grounds to decrease the disease incidence by its prompt diagnosis and appropriate treatment strategies.

Interesting finding from our study is the recent re-emergence of the pattern of sensitivity of strains to the initially used drugs. These findings go in parallel with a study conducted for assessing the re emergence of susceptibility to conventionally used drugs for S.Typhi.[22]

Over the years, as the patients were switched to more extensive and advanced classes of drugs, the relatively cheaper and safer drugs are now again showing adequate and impressive sensitivity patterns. Compilation of data from different geographic zones of the country is required to further substantiate our findings for better disease management and avoidance of complications.

CONCLUSION

The conventional anti-typhoidal treatment, i.e. third-generation Cephalosporins can be used as an effective empirical therapy for treating typhoid fever cases in our setting. However the emergence of XDR pattern needs attention at national level so that the disease related morbidity and mortality can be reduced.Analysis of larger patient population from different epidemiological areas will be highly effective in formulation of policies for the management of typhoid fever cases in our country.

LIMITATIONS

Main limitation of the study is that it is conducted at a single center.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Khan AA: Concept, study design, discussion, man uscript writing, facilitation of the reagent and materials, critical review

Uppal R: Facilitation of the reagent and materials, critical review, interpretation.

Rehan GE: Analysis, interpretation, manuscript writing, study conduction.

Khurshid F: Critical review, study conduction.

Ahmad K: Planning, study conduction, critical review

Zaib H: Study conduction, discussion, manuscript writing

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.

PRIMARY PROCEDURE FOR RECTO-VESTIBULAR FISTULA IN FEMALE CHILDREN: AN EXPERIENCE AT KHYBER TEACHING HOSPITAL PESHAWAR

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ABSTRACT

Objective: The aim of this study was to evaluate the outcome of the alternative primary definitive surgical procedure without colostomy i.e. Posterior Sagittal anorectopexy (PSARP)/Anterior Sagittal anorectopexy (ASARP) in terms of cost effectiveness, mean hospital stay, complications, and short term functional outcome.

Material and method: This descriptive study was conducted in Khyber Teaching Hospital, Peshawar from June 2018 to May 2019. A total of 40 female children fulfilling inclusion criteria of the study were included. Exclusion criteria included patients with associated congenital anomalies. Cost of the surgical procedure was recorded in Pakistani Rupees from the receipts of surgical stuff needed; Operative time was measured in minutes and hospital stay in days. Parents' satisfaction was evaluated via Likert scale. Short term outcome was graded in terms of continence and incontinence by Kelley's criteria for fecal incontinence.

Results: These 40 patients fell in age range of 28 days to 8 months. No mortality noted during study period. Mean operative time was 50±15 minutes. Mean Hospital stay was 6.65 days. Procedure related complications were recorded as wound infection 5(12.5%), wound dehiscence 1 (2.5%), posterior vaginal wall injury 5(12.5%).Eighty percent parents were very satisfied with the surgical outcome,12.5 % were satisfied only and 7.5 % not satisfied.25% patients exhibited good continence, 60% fair and 15 % fair only.

Conclusion: Primary single stage procedure either PSARP (Posterior sagittal anorectopexy) or ASARP (Anterior sagittal anorectopexy) for the correction of Rectovestibular fistula in female children of ARM (Anorectal malformation) is less traumatic, acceptable and affordable surgical option for poor parents withpromising functional outcome.

Keywords: Anorectal Malformations, MRI, Posterior Sagittal Anorectoplasty

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INTRODUCTION

Anorectal malformations (ARMs) are birth imperfections in which the anus is absent or malformed. It affects both genders equally and its occurrence is 1 in 5000 births[1]. ARM requires immediate operative correction to open a passage for feces, unless a fistula is present or until corrective surgery takes place[2]. The most frequently encountered type of Anorectal Malformation in females is Recto-vestibular fistula (RVF)[3]. In these patients the opening of fistula lies in the vestibule between the hymen and the posterior fourchette [4].

The most striking feature of this anomaly that should be kept in mind is the shared common wall of rectum and vagina. The perineal sphincter muscle complex is adequately developed in these patients and they usually have normally developed sacrum and nerves. Proper management of this pathology results in a very good prognosis usually, in terms of bowel control[5]. Although the embryology of this anomaly along with the anatomy and physiology of fecal continence have been understood well, the occurrence of different pre-operative and post-operative complications have posed a challenged in the management of children born with RVF.[4-6].

There are numerous reasons for choosing one-stage repair of RVF, for example, decreased stress and insult for children as well as the parents, less psychological trauma for children, colostomy related complications can be avoided and decreasing risk of an adhesion obstruction in the future because of an abdominal opening, avoidance of multistage operations and decreasing time and costs. Pakistan is a developing country, having restricted medical resources, lack of trained pediatric surgeons, nursing and paramedical staff. Keeping in view poor socioeconomic status of the general public and fewer dedicated pediatric

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surgical tertiary care units with a heavy burden of elective and emergency cases, single stage surgical procedure for correction of recto-vestibular fistula in female children is an excellent option to address all these problems.

The purpose of conducting this research project was to determine the efficacy, safety and cost effectiveness of single surgical procedure for the correction of recto-vestibular fistula in female children with ARM.

MATERIAL AND MOTHDS

This case series was studied in the department of Pediatric Surgery, Khyber teaching hospital, Peshawar after formal approval from Institutional review and ethical board. Medical records of all the patients were recorded in a predesigned Performa. Study duration was one year commencing from the date of approval. All pediatric patients of female gender with ARM/RVF who presented to our department were included in the study. Those patients who were operated outside our unit, patients of common cloaca, those having major congenital heart disease, premature babies, patients having vertebral and spinal defects or other co-morbid conditions and patients who lost their follow-up visits were excluded from the study.

A total of 2892 admissions, ARM patients were 123 out of these patients 40 patients fulfill the study criteria. All these patients were admitted two days prior to surgical procedure. After informed written consent from parent/ care giver, baseline investigations were performed. Ultrasound abdomen to exclude other anomalies, spinal X-ray to evaluate sacral ratio and Echocardiography in selected cases was also done. Patients were given clear oral fluids until 4 to 6 hours prior to surgery. Bowel preparations were done by rectal irrigation 24 hours prior with normal saline @20ml/kg through feeding tube BD, before commencing surgery. I/v fluids and I/V metronidazole and I/V 3rd generation antibiotics were also administered before surgery. Under general Anesthesia patients were operated by either PSARP (posterior sagittal ano-rectoplasty) or ASARP (Anterior Sagittal Ano-rectoplasty) .Operative time and per op complications were recorded in the predesigned Performa.

Statistical analysis was done by SPSS version 20. Numerical data was calculated for age, hospital stay, and was calculated as percentages, mean and standard deviation while categorical data was calculated for cost effectiveness and bowel habits. Bowels habits were assessed by Kelly classification of incontinence, and parental satisfaction were assessed by Likertscale during the study period through a standardized questionnaire and was graded as very satisfied, satisfied and not satisfied. Frequencies and percentages were established.

RESULTS

Out of total 2892 admissions during this period, ARM patients were 123. Out of these 123 ARM patients 43 patients fulfilled the study criteria. Three patients lost follow up so they were excluded from the study. Minimum age at the time of surgery was 28 days and maximum age was 8 months, mean age in days was 90±10 days. Operative procedure time were noted to be minimum of 45 minutes while maximum time was 90 minutes, mean operative time was 50±15minutes.Hospital stay in days was in the range of 5 to 9 days and mean hospital stay was 6.65 days.

Per-operative complications were encountered and noted. Of these 5 patients (12.5%) had posterior vaginal wall injury inpatients whounderwent Posterior sagittal anorectoplasty, while no injury noted in patients who underwent Anterior sagittal anorectoplasty.

Total expenditure of the surgical procedure was minimum amount of 18,000PKR while maximum amount was 30,000PKR. This cost included the daily expenses of the care giver, surgical disposables, post-operative medicines and travelling costs of the patients and care giver to the hospital and back to their homes. This cost was mainly affected by the hospital stay duration and travelling distance.

No mortality noted during this study period. Follow up was done in OPD as well as through telephone. One patient underwent a redo surgery/anoplasty for severe anal stenosis which was not responding conservative management and had poor compliance to anal dilatation regimen.

Table 1: Comparison of complications rate with that reported in literature

Complications	Harjai MM et al	Naima Rasool et al	This study
1.Anal stenosis	3(11.11%)	2(5.5%)	1(2.5%)
2. Mucosal prolapse.	2(7.4%)	1(2.7%)	2(5%)
3.Anal retraction	Nil	Nil	Nil
4. Recurrent fistula.	Nil	Nil	Nil
5. Wound infection.	4(14.8%)	2(5.5%)	5(12.5%)
6. wound dehiscence.	2(7.4%)	2(5.5%)	1(2.5%)
7. Vaginal wall injury.	5(18.5%)	2(5.5%)	5(12.5%)

DISCUSSION

In our study we analyzed 40 patients of anorectal malformation with recto-vestibular fistula in female children. These patients were in the age range of 28 days to 8 months, mean age is 90±10 days. These results are similar to A.N. Gangopadhyayaa et al and HumamAlkhafaf and Naima Zameer et al which included 51 and 46 patients respectively.[4,7] The operative procedure performed in this study are ASARP and PSARP without colostomy. In a total of 40 patients thirty patients have undergone PSARP while

in 10 patients ASARP has been performed. Mean operative time is 50±15minutes, similar results are reported by K Hasina et al where the mean documented operative time was 57±13 minutes .8Complications of the operative procedure are comparable to the results of Naima zamir et al, Hasina K et al [4,8,9] (Table no 1). Mean hospital stay is 6.65 days maximum hospital stay is 9 days while minimum is 5 days in our series. Similar results were reported by Akshay et al and Pratap et al while. Humam S. Alkhaffaf study shows mean hospital stay of 3 days[10,11].

Keeping in view of the prevailing unstable economic condition of our country the single definitive primary procedure for the correction of ARM with RVF in female patient is a much attractive procedure to address these problems more rationally. Minimum amount of cost is 18000PKR, maximum cost of the procedure is 30000PKR. Cost includes admission charges, drugs, surgical disposables and daily expenses of the care giver alongwith travelling costs. Considering the cost of a conventional three procedures, primary single definitive procedure is a good alternative to conventional three stage procedures. Similar costs were documented by Hasina et al.

Kelly's criteria for fecal incontinence is the simplest of all scoring systems and is usable even in a 3-month infant. The results are interpreted on the basis of staining, accidental defecation and strength of sphincter squeeze on per-rectal examination for continence which has shown good results in 10(25%), fair in 24(60%) and poor in 6(15%). Our results can be compared to Kifayat khan good(30%), fair in (45%)and poor in (25%) and Mirshemirani et al (85%)[11,12].

In our study we have inquired about parental satisfaction regarding the primary definitive surgical procedure for the treatment of their children and have analyzed the results through Likert scale, 3(7.5%) parents were unsatisfied, while 17(42.5%) are satisfied and 20(50%) are highly satisfied with the surgical procedure. The results can be compared to D.A min off et al whose parental satisfaction were very satisfied 79% and 16% are unsatisfied[13,14]. G Lauriti and colleagues also considered similar variables in their meta-analysis and endorsed the primary repair.15 The recent over the clip proctology system may have promising results in the years to come.[16] Zamir N, and colleagues in their study found comparable results of ASARP.[17] However, results of primary repair in era of laparoscopy via minimal invasive intervention is subject to comparative studies.[18,19,20]

CONCLUSION

Primary single stage procedure without colostomy either by PSARP or ASARP for the definitive correction of recto-vestibular fistula in female children with Anorectal Malformation is a feasible procedure to address this anomaly. It has added benefits of modifying the traditional three stage surgery of recto-vestibular fistula into a single definitive surgery. The cost is affordable to the parents , procedure is less traumatic to the patients and has good early functional outcome. However a randomized control trial with traditional procedure and the long term outcome evaluation is needed to thoroughly asses the relative benefits of the procedure.

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Following authors have made substantial contributions to the manuscript as under

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Ali S:	Acquisition and critical review
Waheed T:	Analysis and intrepretation of data
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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.

CLINICAL OUTCOME OF LAPAROSCOPIC PARTIAL CHOLECYSTECTOMY: EXPERIENCE IN A TERTIARY CARE HOSPITAL SETTING

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ABSTRACT

Objectives: To determine the outcome of Laparoscopic Partial Cholecystectomy in cases where Laparoscopic Cholecystectomy is not possible safely.

Materials & Methods: The clinical records of patients who underwent Laparoscopic Cholecystectomy (LC) in our surgical unit (Surgical A Unit, Khyber Teaching Hospital Peshawar) between 1 January 2015 and 31 January 2019 were examined. Out of those cases where Laparoscopic Cholecystectomy could not be performed, and we had to resort to Laparoscopic Partial Cholecystectomy(LPC) were identified. The morbidity and mortality of this sub-group was analyzed.

Results: Records of total 48 patients were examined. Thirty one(65.6%) patients were female while 17(34.4%) were male. Mean age was 52.2±13.6(2SD) years. Forty one (85.4%) cases had acute cholecystitis, 5(10.4%) had chronic cholecystitis and 2(4.2%) had adenocarcinoma. No mortality was observed; while among the morbidities, bile leak was observed in 5(10.4%) cases and 3(6.2%) patients developed sub hepatic collections. The hospital stay was 3.44±1.2 (Mean ± 2SD; range 1-5) days.

Conclusion: Laparoscopic Partial Cholecystectomy is a safe option where Laparoscopic Cholecystectomy cannot be completed safely due to intraoperative difficulty.

Key Words: Laparoscopic Partial Cholecystectomy, Laparoscopic, Cholecystectomy

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INTRODUCTION

Laparoscopic cholecystectomy has become the gold-standard treatment for gallstone disease.[1,2] Its advantages include less postoperative pain, early recovery and early return to work.[3,4]

For majority of the patients, the safe operative approach is to ensure the 'critical view of safety' during the procedure. This means dissection of the cholecysto-hepatic area to identify the anatomy of the area clearly before doing any irreversible clipping or transection. The cystic duct and artery are exposed and lower 1/3 of the gall bladder is freed from the liver bed.[5–7]

In certain circumstances like acutely inflamed gall bladder where the area is extremely edematous, and chronically inflamed gallbladder where fibrosis in the area would make the identification of the above-mentioned structures extremely difficult. In such situations, insistence on dissecting into the Calot's triangle would result in misinterpretation of the anatomy and hence inadvertent injury.[5] The resultant complications are potentially disastrous.

In such situations the safety exits are twofold: first to convert the case into open cholecystectomy, also known as conversion cholecystectomy and second to remove a portion of the gallbladder, described as `partial`, `subtotal` or `fenestrating` cholecystectomy.[8–10] Laparoscopic Partial Cholecystectomy (LPC) is a safe option where Laparoscopic Cholecystectomy(LC) cannot be completed because of anatomical difficulty.[11,12] In this study we evaluated the results of the cases where laparoscopic partial cholecystectomy was performed.

MATERIALS AND METHODS

Clinical and operative data of patients who underwent Laparoscopic Cholecystectomy during the period 1 January 2015 to 31 December 2019 was obtained from the medical records. All the surgeries were performed by author (having full consultant level clinical privileges) in Khyber Teaching Hospital Peshawar. Data of all the cases who underwent Laparoscopic Cholecystectomy, includ-

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ing those in which conversion to another procedure was done, was examined. All the cases were operated under General Anaesthesia in supine position. Standard four trocars were used for surgery; 10 mm optical infra-umbilical port, 10 mm epigastric port, 5 mm port in right hypochondrium in midclavicular line and 5 mm port in right hypochondrium in anterior axillary line. After initial inspection and dissection if it was found difficult to appreciate the anatomy properly and obtain the 'critical view of safety', an early decision was made to convert the case to Laparoscopic Partial Cholecystectomy as an alternative to the conventional conversion to open cholecystectomy. In LPC part of the wall of the gallbladder from the fundus to the infundibulum along with the stones was removed and extracted in an endo-bag. The mucosa of the remaining gallbladder was cauterized with diathermy. Drain was placed in all the cases.

All the cases where the procedure was converted to Laparoscopic Partial Cholecystectomy(LPC) were included in the study. The patients lost to follow up were excluded from the study. Data was recorded in SPSS® for windows. In addition to age and gender distribution; the variables studied were hospital stay, biliary leak, bile duct injuries, intraabdominal collections and 30-day mortality.

RESULTS

Retrospective data of 788 patients was examined. In 54 cases the procedure was converted to Laparoscopic Partial Cholecystectomy. A total number of 48 cases were qualified to be included in the analysis. The mean age was 52.2±13.6 (mean±2SD) years, 64.6 %(n=31) among them were female and 35.4 %(n=17) were male. The spectrum of the intraoperative and histopathology findings were as described in Table 1.

The hospital stay was 3.44±1.2 (mean±2SD; range 1-5) days. Bile leakage was the most common complication, observed in 5(10.4%) cases. In 4 cases out of those, the leak stopped spontaneously within 14 days(-median 5) days post operatively. One patient required ERCP assisted sphincterotomy and biliary stenting for drainage. 3(6.2%) patients developed sub-hepatic fluid collections(mean 26.6 ml, range 20-40 ml). No other major postoperative complications were noted. No mortality was observed in our case series.

Table 1: Intraoperative/ Histopathological Findings

Findings	n	%
Acute Edematous Cholecystitis without empyema	21	43.5
Acute Edematous Cholecystitis with empyema	14	29.2
Gangrenous gallbladder	6	12.5
Malignancy	2	4.2
Chronic cholecystitis with dense fibrosis	5	10.4

DISCUSSION

Laparoscopic Cholecystectomy, a procedure with a documented safety profile,[3,4] has become the gold standard treatment for gallstone disease. Over the period of time numerous mechanisms have been devised to ensure safety of hepatic and sub hepatic structures including the bile duct system and the vascular supply in the area.[7,13] Any inadvertent injury if occurs may result in definitive morbidity and probably mortality as well.[1] One of the techniques to ensure safety is to identify the structures within the area of cholecysto-hepatic area clearly before clipping or ligating any.[6] But in certain circumstances, it is not always possible to identify the structures to a reasonable extent and an effort to dissect the area may lead to injury.[14,15]

For this reason, various techniques of safe-escape have been described. One is conversion of the case to open cholecystectomy[16] in a bid to ensure safety; a second option is doing partial cholecystectomy,[6,-9,11-8] also known as damage-control cholecystectomy. With the advent of high definition visual systems and good haemostatic techniques, LPC has been evaluated over the past two decades for its safety profile. Technically in this procedure, the surgeon avoids going into the dangerous zone of possible iatrogenic injury.

Numerous review articles and original studies have been performed to evaluate the outcome of LPC in terms of safety and adequacy of symptomatic relief.[8,10–12,18,19] The conversion rate to LPC has been variable, one review study reported that in 10.4% of patients LPC had to be adopted as a safe measure.[10] In our study, we reviewed the data of 788 cases in total, and hence our conversion rate to LPC was 6.1%. Hospital stay or more precisely postoperative hospital stay has been of concern in such cases. We have found that postoperative hospital stay was 3.44±1.2 (mean±2SD range 1-5) days, comparable to similar findings described in other studies.[9,17]

The reasons for conversions to LPC are many fold, however the vast majority of cases are due to acute inflammation or the spectrum of presentations that follow like acute phlegmonous cholecystitis, empyema gallbladder, gangrene of gallbladder etc. In our study 85.2% of the cases belonged to this group though many studies fail to provide the indication or intraoperative appearance of the gallbladder. In many studies the LPC is mentioned only in the context of acute cholecystitis implying it to be the commonest indication.[8,9]

In all the patients included in our study, an external biliary drain was placed following LPC. A systematic review by Henneman et al,[10] referencing multiple studies favour the idea of routine placement of drain, however, Chowbey et al[19] and Nakajima et al[18] didn't use drain routinely in all their series. Placement of drain in the opinion of many authors has the advantage of diverting drainage of free bile from the peritoneal cavity to the exterior and

hence act a 'safety valve' to protect against biliary peritonitis.

The ultimate success of gallbladder surgery is determined by the absence of bile duct injuries and LPC is an attempt to minimize it, however, after removal of part of gallbladder the risk of bile leak remains which is quantified as the effluent from the drain placed. As most of the cases are of leak from cystic duct stump (Strasberg type A)[1,2,13] and is considered to be a self limiting phenomenon ultimately stopping by itself or in persistent cases, by sphincterotomy and stent placement via ERCP. In our series 10.4 %(n=5) cases developed bile leak observed in external biliary drainage bag; 80 %(n=4) stopped spontaneously over the next two weeks. Only one case required an ERCP; sphincterotomy and stenting. The literature reports a variable spectrum of bile leakage after LPC,[8,11,12,17] a review study in this context reports a mean leakage rate around 10.5%.[10] In our study no major biliary injury requiring reconstructive surgery was noted.

Sub hepatic collections are a concern after every type of gallbladder surgery and in case of partial or fenestrating type of cholecystectomy where a stretch of redundant mucosa is left behind and there is a common presumption to expect some degree of bile/pus collection. In our series 6.2% cases developed sub hepatic collections and all of those improved with conservative treatment. In the literature the rates of sub hepatic or intra abdominal pus collections are very low.[8- 10, 12]

CONCLUSION

Laparoscopic Partial Cholecystectomy is a safe option in situations where Laparoscopic Cholecystectomy cannot be completed safely. In this regard, large scale multicenter studies would be highly recommended.

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Ahmed N: Study design, data collection, manuscript writting

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.

RELATIONSHIP OF BLOOD PRESSURE RESPONSES TO ISOMETRIC EXERCISE IN NON-HYPERTENSIVE MEDICAL STUDENTS WITH FAMILIAL HYPERTENSION

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ABSTRACT

Objectives: This study aims to find out whether there is a significant relationship between blood pressure responses due to handgrip (HG) exercise in non-hypertensive young adults, and family history of hypertension.

Material & Methods: This is a cross-sectional study conducted in Khyber Medical College on healthy students of first and second-year MBBS, after obtaining ethical approval from the institutional ethical committee. 140 (70 males and 70 females) out of 500 students were selected via using a random number generating website. After taking informed consent and history, the students were made to perform the handgrip exercise for 5 minutes at 30 % of their maximum pressure. BP was recorded before during and after the procedure via an electronic BP measuring device. The data was then analyzed using SPSS version 20.0.

Results: There was a significant difference between groups A and B in terms of change in SBP (ΔSBP) both during ($p=0.024$) and after ($p=0.033$) handgrip exercise. The correlation between 30% of the maximum pressure applied and change in SBP (ΔSBP) and change in DBP (ΔDBP) during the application of pressure on handgrip device is significant ($p<0.001$) in the familial hypertension present group only.

Conclusion: There was a significant change in systolic blood pressure in response to handgrip exercise in the group of subjects with familial hypertension positive. Decline was noted in SBP and DBP during and after the hand grip exercise. This change in systolic and diastolic blood pressure only during HG exercise was positively associated with hand exercise in subjects with history of familial hypertension. In subjects without history of familial hypertension only change in DBP after exercise was positively related HG exercise. Hence concluded that relation does exist between blood pressure responses to handgrip exercise and familial hypertension.

Key Words: Blood pressure; hypertension; family history; isometric exercise; medical students.

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INTRODUCTION

An isometric exercise is a form of static exercise in which force is applied against an object, which does not move, and muscle length remains the same (does not decrease). An example is force applied during lifting weights or handgrip exercises. In contrast, isotonic or dynamic exercise is the one in which skeletal muscle length changes when force is exerted.[1] A handgrip test is a form of isometric exercise. During this type of exercise, the total peripheral resistance increases as a result of increased sympathetic stimulation, and as a result blood pressure rises.

According to a study conducted in India isometric exercise can be used to diagnose underlying prehypertension in children and young adults with familial hypertension history.[2]

Among the non-modifiable risk factors for hypertension, family history bears the foremost importance.[3] People with hypertensive parents have an increased probability of developing hypertension. This may also be linked with a deranged metabolic profile or biomarkers of inflammation.[4] Other theories suggest the following reasons for raised BP: increased sodium reabsorption in proximal tubules of nephrons, high sodium-lithium counter-transport, elevated uric acid level, high fasting plasma insulin concentration, high LDL, oxidative stress and raised body mass index (BMI).[3] One of the important modifiable factors is a sedentary lifestyle and has a role in the development

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of hypertension. The sedentary lifestyle when combined with familial hypertension, doubles the risk for the development of hypertension.[5]

Recent research in the field suggests that isometric exercise of a particular duration and intensity can reduce average blood pressure, and in particular systolic blood pressure when done on a routine basis.[6] Another study showed that all forms of exercise; in particular, a combination of dynamic and static exercises resulted in not only weight maintenance but also good blood pressure control.[7] Majority of studies show that blood pressure both Systolic and diastolic rises momentarily as a result of handgrip test.[8] Other studies suggest that handgrip test increases afterload and hence total peripheral resistance during the exercise up till a few minutes after exercise, and also increases the Diastolic Blood Pressure (D.B.P).[8,9]

The current study aims to find out whether there is a significant relationship between isometric exercise and blood pressure in non-hypertensive Pakistani young people, and, whether subjects with familial hypertension show a greater rise in BP during the activity.

MATERIALS AND METHODS

This is a cross-sectional study conducted in the Physiology Department, Khyber Medical College, Peshawar, on students of first years and second-year MBBS. Ethical approval with document number 081/KTH/ERB was obtained from the Ethical Committee of the institute where research was conducted. A total of 140 students without hypertension with ages 19-23 years were included in the study, with a male-female ratio of 1:1. This study was conducted from June 2017 to April 2018 and the sampling technique was simple random sampling, the class roll numbers of students were fed in a random number generating website and 140 selected out of 500 students. Students who were taking medications which modified the functions of CVS, having a medical condition such as diabetes mellitus, hypertension, thyroid disorders, cardiac disorders, respiratory diseases, and local hand pathologies and giving a history of smoking were excluded from the study. Relevant clinical and family history was recorded on a predesigned proforma and baseline blood pressure and heart rate were recorded in a sitting posture. Blood pressure and heart rate were recorded using Omron M2 Basic, which fulfills the ESH international protocol, and its 2010 revision requirements. Other baseline parameters such as age height weight were measured and BMI calculated using the WHO formula (weight in kg/ (height in meters2). The subjects were divided into two groups, Group A with any (mother, father) of the hypertensive parents (n=67) and Group B without familial hypertension (n=73). Subjects of both the groups performed the handgrip test with the help of a dynamometer (Model: T.K.K. 5401).

Procedure for performing the Hand Grip Test: First, the maximum voluntary contraction (MVC) was determined by asking the subject to apply maximum possible pressure to a dynamometer, and then the subject was asked to apply 30% of MVC and maintain it for 5 minutes with the right hand. Blood pressure was measured in the left arm at rest, during (4 min into the test), and after 1 minute of the handgrip test. The left arm was chosen as the right arm was used to apply pressure on the dynamometer, so that would have interfered with the functioning of the B.P apparatus. The participants applied pressure with the dominant hand and their BP was checked on the other hand.

Statistical Analysis:

The data was analyzed using SPSS version 20 and continuous variables were presented as mean ±SD. Independent sample t test was used to compare mean of SBP and DBP between both groups (with and without history of familial hypertension). Pearson correlation was used to check if Maximum pressure and 30% of maximum pressure were related to each other. Univariate and multivariate regression analysis were used to check if 30% of maximum pressure was related to systolic and diastolic blood pressure during and after handgrip exercise. The results of regression analysis were presented as beta coefficient.

$P \leq 0.05$ was considered as significant for analysis in this study.

RESULTS

Out of the 140 subjects, 70 were males and 70 females. Maximum hand grip pressure and 30% of maximum pressure and systolic and diastolic blood pressures during and after the handgrip test were almost similar in both the groups. Systolic blood pressure was reduced both during and after the exercise. And the change in SBP (an average fall in SBP) was significant for both during ($p=0.024$) and after ($p=0.033$) hand grip exercise in the Group A (table 1). Pearson correlation was done to check if maximum pressure and 30% of maximum pressure were related with anthropometric and blood pressure values for both the familial hypertension present and absent groups. The maximum pressure and 30% of max pressure were related with age, height and weight but not related with BMI in both groups.

Considering systolic and diastolic blood pressure during the handgrip exercise test they were only correlated with max pressure and 30% of max pressure in group A. Systolic blood pressure change after hand grip exercise, was negatively related with max pressure and 30% of max pressure in group B ($p<0.05$ for both). This relationship was further evaluated in the univariate and multivariate analysis. In the univariate analysis (table 3), age and height were significantly and positively related with 30% of max pressure in both the groups. However, in multivar-

iate analysis (table 3), both were related only in the group B and only height was significantly and positively related with 30% of max pressure in group A. During exercise change in SBP and DBP both were significantly and positively related in group A in both univariate and multivariate analysis after confounding for other variables. However, in group B only change diastolic blood pressure during handgrip test was positively related in the univariate analysis after confounding for other variables. Considering the post exercise SBP and DBP changes there was no relationship in group A. In group B only post exercise SBP change was negatively related, however, this relationship was not significant after confounding for other variables (table 3).

DISCUSSION

Both groups were almost similar in age, height, weight, and BMI. Baseline systolic and diastolic blood pressure and heart rate were also similar in both the groups. Handgrip strength was also positively correlated with age, height, and weight but not with BMI.

There was a more significant change (fall) in systolic blood pressure during hand grip maneuver in Group A (familial hypertension present) as compared to Group B (familial hypertension absent). The Pearson correlation and multivariate regression analysis showed that the change in systolic and diastolic blood pressure during the exercise were significantly related in Group A, otherwise, there was no significant relationship in Group B. A study conducted in Jaipur showed elevated sympathetic activity (heart rate variability) in healthy young subjects with hypertensive parents.[11] This autonomic derangement may lead to the development of hypertension earlier and it can be prevented by lifestyle modifications.[11] Evidence shows that isometric resistance training usually lowers both SBP and DBP when done long term.[12,13] A systematic review showed that SBP decreased by 80% in the studies and DBP decreased by 20% in the studies, following isometric handgrip training.[14]

Blood pressure rises in response to isometric exercise, this is to maintain blood supply to the contracting muscles. This rise in blood pressure is a result of raised cardiac output rather than peripheral vascular resistance unless the patient is diseased.[15] In young adults, if hypertension if reported it is attributed to raised cardiac output, heart rate, and total peripheral resistance.[16]

Various pathophysiological mechanisms that may lead to the development of hypertension are; cellular salt

Table 1: Descriptive statistics of various parameters in Group A and Group B

Parameters	Group A: Familial Hypertension present (n=67)	Group B: Familial Hypertension absent (n=73)	P value
	Mean ± SD	Mean ± SD	
Age (years)	1.14 ± 19.34	0.91 ± 19.01	0.059
Height (cm)	9.28 ± 166.16	7.97± 168.97	0.057
Weight (kg)	11.31 ± 59.46	8.94 ± 60.53	0.533
BMI	2.79 ± 21.56	2.91 ± 21.47	0.848
Baseline SBP	14.56 ± 124.33	14.38 ± 120.96	0.171
Baseline DBP	9.36 ± 81.72	9.82 ± 78.89	0.084
Baseline HR	13.58 ± 88.79	16.23 ± 88.04	0.768
Max Press applied during HG	10.14 ± 30.51	9.57 ± 31.8	0.440
%30 of Max Press	3.03 ± 9.16	2.87 ± 9.54	0.446
SBP during HG	16.58 ± 119.10	16.74 ± 119.44	0.906
DBP during HG	11.59 ± 79.15	10.64 ± 78.14	0.591
HR during HG	12.04 ± 90.93	13.75 ± 92.27	0.540
SBP after HG	16.52 ± 117.39	15.19 ± 114.60	0.301
DBP after HG	11.77 ± 77.18	10.57 ± 77.34	0.931
HR after HG	12.13 ± 88.39	14.86 ± 90.51	0.36
ΔSBP during HG	8.89 ± 5.22-	10.23 ± 1.52-	0.024
ΔDBP during HG	6.81 ± 2.57-	8.33 ± 0.75-	0.163
ΔSBP after HG	6.34 ± 1.72-	10.15 ± 4.84-	0.033
ΔDBP after HG	5.58 ± 1.97-	6.59 ± 0.79-	0.259

HG= Handgrip test, SBP= Systolic Blood Pressure, DBP= Diastolic Blood Pressure, HR= Heart Rate, Δ= Change, Max= Maximum, Press= Pressure, ΔSBP during HG= Baseline SBP- SBP during HG, ΔDBP during HG= Baseline DBP- DBP during HG, ΔSBP after HG= SBP during HG- SBP after HG, ΔDBP after HG= DBP during HG- DBP after HG.

Table 2: Correlation between pressure applied during HG, baselines and BP changes in terms of r values

Study groups	Parameters	%30 of Max Press	Age (years)	Height (cm)	Weight (kg)	BMI	ΔSBP	ΔDBP	Δ1SBP	Δ1DBP
Group B (n=73)	Max Press	1.000**	.414**	.559**	.561**	0.184	0.205	0.126	-.248*	0.213-
	%30 of Max Press	1	.414**	.558**	.561**	0.184	0.204	0.126	-.247*	0.213-
	Age (years)	-	1	0.122	.272*	0.195	0.004	0.106-	0.08-	0.042-
	Height (cm)	-	-	1	.398**	0.196-	0.042-	0.038-	0.073	0.195
	Weight (kg)	-	-	-	1	.730**	0.167	0.041-	0.075-	0.098
	BMI	-	-	-	-	1	0.123	0.029-	0.096-	0.012-
	ΔSBP	-	-	-	-	-	1	.497**	-.509**	-.298*
	ΔDBP	-	-	-	-	-	-	1	-.409**	-.509**
	Δ1SBP	-	-	-	-	-	-	-	1	.554**
	Δ1DBP	-	-	-	-	-	-	-	-	1
Group A (n=67)	**Parameters**	**%30 of Max Press**	**Age (years)**	**Height (cm)**	**Weight (kg)**	**BMI**	**ΔSBP**	**ΔDBP**	**Δ1SBP**	**Δ1DBP**
	Max Press	1.000**	.301*	.601**	.548**	0.193	.427**	.453**	0.175-	0.076-
	%30 of Max Press	1	.303*	.599**	.547**	0.193	.427**	.449**	0.175-	0.075-
	Age (years)	-	1	0.145	0.161	0.1	0.218	0.02	-.321**	0.116-
	Height (cm)	-	-	1	.703**	0.094	0.08	.251*	0.015-	0.081-
	Weight (kg)	-	-	-	1	.744**	0.089	0.14	0.1-	0.036
	BMI	-	-	-	-	1	0.072	0.03-	0.127-	0.087
	ΔSBP	-	-	-	-	-	1	.456**	0.036-	0.021-
	ΔDBP	-	-	-	-	-	-	1	0.019-	-.406**
	Δ1SBP	-	-	-	-	-	-	-	1	0.071
	Δ1DBP	-	-	-	-	-	-	-	-	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

HG= Handgrip test, SBP= Systolic Blood Pressure, DBP= Diastolic Blood Pressure, HR= Heart Rate, Max= Maximum, Press= Pressure, BMI= Body mass index, ΔSBP=Change in systolic BP during handgrip, ΔDBP=Change in diastolic BP during handgrip, Δ1SBP=Change in systolic BP after handgrip, Δ1DBP=Change in diastolic pressure after handgrip, - sign means that the value is decreasing.

transport mechanisms, renal involvement, cardiovascular morphology and physiology, and cardiovascular reactivity to stress. Muldoon et al revealed that there is strong evidence of left ventricular hypertrophy and altered peripheral vascular responses amongst individuals with a normal B.P and having a positive family history. In contrast, cardiac output, total plasma volume, and cardiovascular responses to isometric exercise and B.P on standing up do not differ in persons with and without familial hypertension.[17]

A study conducted on hypertensive patients showed that there were no uniform acute changes in systolic or diastolic blood pressure. Some subjects showed a rise and some showed a fall in BP. It further points out that the handgrip intensity may be the determining factor for various responses may it be 30%, 50%, or maximum.[18]

When an exercise is performed certain tissue metabolites such as lactic acid and adenosine rise, they then activate nerve endings which eventually make sympathetic activity go up. As alpha receptors are activated in peripheral vessels total peripheral resistance rises and B.P goes up.[2]

An experimental trial was conducted in India in which individuals were made to perform 3-min episodes of isometric Handgrip exercise at 30% of maximum voluntary contraction separated by 5 min intervals. The exercise was performed 3 times/week for 10 weeks. Blood pressure was measured before and after the exercise. After 10 weeks, both systolic and diastolic blood pressure were noted to have dropped in the majority of the subjects, ($p<0.001$). 8 This could be attributed to an attenuated sympathetic nerve response which results in a reduction of BP.[8] A fall

Table 3: Linear regression with 30% of Maximum pressure as dependent variable

Study groups	Parameters	Univariate		Multivariate	
		Beta coefficient	P value	Beta coefficient	P value
Group B (n=73)	Age (years)	0.414	<0.001	0.272	0.002
	Height (cm)	0.558	<0.001	0.632	<0.001
	BMI	0.184	0.120	0.232	0.007
	ΔSBP	0.204	0.084	0.105	0.297
	ΔDBP	0.126	<0.001	0.03-	0.772
	Δ1SBP	-.247	0.035	0.056-	0.6
	Δ1DBP	-.213	0.07	0.275-	0.011
Group A (n=67)	Age (years)	0.303	0.013	0.143	0.133
	Height (cm)	0.599	<0.001	0.492	<0.001
	BMI	0.193	0.118	0.103	0.236
	ΔSBP	0.427	<0.001	0.231	0.026
	ΔDBP	0.449	<0.001	0.255	0.025
	Δ1SBP	-.175	0.157	0.101-	0.264
	Δ1DBP	-.075	0.548	0.088	0.362

Dependent Variable: 30% of Maximum pressure

BMI= Body mass index, ΔSBP=Change in systolic BP during handgrip, ΔDBP=Change in diastolic BP during handgrip, Δ1SBP=Change in systolic BP after handgrip, Δ1DBP=Change in diastolic pressure after handgrip

was seen in SBP and DBP during the hand grip exercise in subjects with history of familial hypertension. In subjects without history of familial hypertension only fall in DBP after exercise was positively related to HG exercise.

Another study conducted in Australia recruited 40 white participants in a randomized trial, the participants conducted four sets of 2-minute handgrip exercise at 30% of maximum pressure, with 3-minute rest interval between each set. This resulted in a 7 mm Hg reduction of systolic blood pressure and a 4 mm Hg reduction of mean arterial pressure after eight weeks of exercise training.[6]

The 30% of maximum hand grip pressure applied was seen to have a significant relation with change in both systolic and diastolic blood pressures during hand grip exercise, after regression analysis was conducted, for the present study. A study conducted by Chao Ji, et al, showed that handgrip strength is positively related to diastolic blood pressure in both the gender groups.[19] Age, height, and weight in both groups were correlated with handgrip strength in the current study.

Limitations include that this study is focused on the effects of handgrip exercise on blood pressure rather than exploring the pathophysiology behind it. Moreover, it was a cross-sectional study and we did not check the effect of this 5 minutes exercise over time.

CONCLUSION

It can be concluded that in the group with familial hypertension history there was a significant change in systolic blood pressure in response to handgrip exercise. An average fall was seen in SBP both during and after handgrip exercise. As far as diastolic blood pressure is concerned it was significantly related to handgrip exercise during performing the test only and that too in familial hypertension present group. Further studies are needed to understand the mechanisms behind these correlations.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Zafar U:	Concept and design of study, Collection of data, statistcal analysis
Rehman SU:	Writting of manuscript, critical review of manuscript
Malik O:	Analysis and interpretation of data, statistical analysis
Salman H:	Data collection, biblograpy

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 FREQUENCY OF THROMBOCYTOPENIA IN PATIENT WITH MALARIA PRESENTING TO KHYBER TEACHING HOSPITAL PESHAWAR, PAKISTAN

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ABSTRACT

Objective: The aim of the current study is to determie the frequency of thrombocytopenia among patients with malaria presented to the Khyber Teaching Hospital, Peshawar.

Material and Methods: A descriptive cross-sectional study was conducted at the Medicine Department of Khyber Teaching Hospital, Peshawar from August 2018 to February 2019. A total of 95 malaria parasite (MP) positive cases were included in the study. The patients' demographic details and the hematological variables were recorded. Data was analyzed using SPSS Version 20.0.

Results: Among 95 MP positive patients, 88 had Plasmodium vivax infection while 7 patients were suffering from Plasmodium falciparum malaria. Moreover, 89 (93.6%) were found to have thrombocytopenia with majority having grade 1 thrombocytopenia (52.6%), while leukopenia was seen among 29.5% of the cases and only 5.3% presented with leukocytosis. The level of Hemoglobin (Hb) was normal in majority of the cases and only 27.4% had Hb<11.5g/dl.

Conclusion: Thrombocytopenia is a common hematological finding among the patients suffering from malaria. Our study findings favor the diagnostic implications of thrombocytopenia as an indicator of acute malaria.

Keywords: Malaria, Plasmodium falciparum, Plasmodium vivax, Thrombocytopenia, Leukopenia,

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INTRODUCTION

Malaria is a widespread protozoal infection, globally claiming the lives of more than 435,000 people each year[1]. On the basis of World Malaria Report 2018 published for the year 2017, a total of 219 million cases of malaria were estimated for the year 2017.[1] More recently, World Health Organization (WHO) reported 405,000 deaths due to malaria in 2018 and 67% of them were under-five children.[2] In view of the associated complications and the overall disease associated risk, timely diagnosis and treatment is essential.[3, 4] Microscopic examination of the blood smear remains the gold standard for malaria diagnosis. Though the procedure is inexpensive but it requires time and expertise, as the malaria parasites are mostly not visible at a glance and repeated examinations are required for accurate diagnosis. Other alternate diagnostic tests include polymerase chain reaction (PCR) and malarial antigen-based rapid diagnostic tests (RDTs) but these methods are expensive and they are not used in routine clinical practice.[5,6] Majority of the malaria patients have hematological abnormalities; thrombocytopenia, leukopenia and anemia being the most common.[7] Thrombocytopenia has been documented as the best-known indicator of malaria by several studies.[8-10] Kochar and colleagues in their study reported thrombocytopenia in 24.6% of malaria infected patients.[11] Although the interconnection of thrombocytopenia and malaria has long being studied but the exact pathogenic mechanism of the co-existence is not yet clear. Malaria associated thrombocytopenia is multifactorial i.e. increased bleeding, high platelet activation and apoptosis are the common etiologies.[12,13] Moreover, the malarial antigens generate immune complexes which remove the affected platelets by phagocytosis.[14, 15] The present study is aimed to determine the changes in the hematological parameters particularly the prevalence of thrombocytopenia among the patients with malaria who presented to the Department of Medicine Khyber Teaching Hospital, Peshawar.

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MATERIAL & METHODS

This descriptive, cross-sectional study was conducted at the Medicine Department of Khyber Teaching Hospital, Peshawar for duration of six months from 29th

August 2018 to 28th February 2019. A sample size of 95 was calculated using WHO sample size calculator (95% CI; 10% margin of error by using a frequency of 43.47% for smear positive malaria). Both male and female malaria positive patients, either presenting to the outpatient department (OPD) or admitted to the hospital were enrolled in the study. The age range was set for recruitment in the study; the upper age limit was 60 years for both genders while the lower age limit was 14 years for males and 12 years for females. All patients with negative malaria on the peripheral blood film or those with co-existing bacterial infections, diagnosed with acute febrile illness, dengue fever, chronic liver disease (CLD), sepsis, disseminated intravascular coagulation (DIC), viral hepatitis, systemic lupus erythematosus (SLE) and malignancies were excluded from the study. Moreover, patients with history of bleeding disorders, diagnosed thrombocytopenia (of other etiology) or those involved in active drug consumption (fansidar, quinine, salphonamides, septran, thiazides, heparin, etc) or antimalarial drugs were also excluded. The study was conducted after obtaining ethical approval from the institutional ethical review committee. The purpose of the study was explained to the patients and written informed consent was taken from each patient before enrollment. The patient data including demographic details and clinical history were recorded in a proforma. Clinical investigations were carried out for each enrolled patient with positive malaria parasite on blood smear. The hematological variables were computed through CBC via hematology analyzer. The obtained data was analyzed using a statistical software SPSS version 20.0. Mean and standard deviation (SD) were calculated for all quantitative variables while the categorical variables were presented as frequencies and percentages.

RESULTS

Out of the total 95 malaria patients, 56 (58.9%) were males and 39 (41.1%) were females, with majority between 12 to 30 years of age (67.4%) while 21.1% were 31 to 45 years of age and only 11.6% were 46 to 60 years old. Moreover, 50.5% of the enrolled patients belonged to Peshawar district while the remaining (49.5%) were from other areas like Mardan and Oghi etc. Out of the total 95 malaria cases, 88 (92.6%) were positive for Plasmodium vivax and 7 (7.4%) patients had Plasmodium falciparum malaria. The hematological parameters were examined in each case; platelet count, WBC and Hb levels were recorded and it was found that 93.6% of the cases were having co-existing thrombocytopenia. In patients with low platelets, 52.6% were suffering from grade 1 thrombocytopenia followed by 27.4% grade 2, 10.5% grade 3 and only 3.2% had grade 4 thrombocytopenia. The WBC count was also monitored to determine the frequency of leukopenia among malaria patients; 29.5% patients had < 4000 WBC's /mm3. The Hb levels were fairly normal among majority of the cases (72.6%) with only 27.4% had Hb< 11.5 g/dL

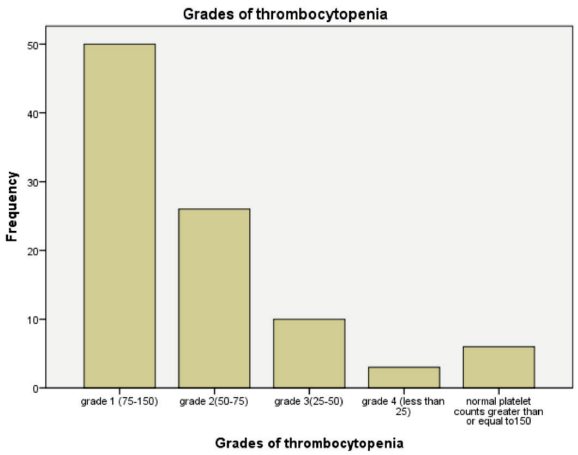

Fig 1: Showing frequency of thrombocytopenia

Table 1: Demographic characteristics of the study population (n=95)

Variables		n (%)
Gender	Male	56(58.9)
	female	39(41.1)
Residential Area	Peshawar	48(50.5)
	Others	47(49.5)
Age Group (Years)	12 -30	64(67.4)
	31-45	2(21.1)
	46-60	11(11.6)

Table 2: showing frequency of thrombocytopenia

Variables		n (%)
MP Positive Case Distribution	Plasmodium vivax	88 (92.6)
	Plasmodium falciparum	7 (7.4)
Grades of thrombocytopenia (Platelet count per mm3)	Grade 0 (>150,000)	6 (6.3)
	Grade 1 (75,000-150,000)	50 (52.6)
	Grade 2 (50,000-75000)	26 (27.4)
	Grade 3 (25000-50,000)	10 (10.5)
WBC count (Per mm3 or μl)	Grade 4 (<25,000)	3 (3.2)
	Normal (4000-11000)	62 (5.3)
Hemoglobin (g/dl)	Less than 4000	28 (29.5)
	Greater than 11000	5 (5.3)
	Normal (11.5-17.5)	69 (72.6)
	Less than 11.5	26 (27.4)

DISCUSSION

Malaria is one of the common causes of acute febrile illness in our country affecting almost all the blood components. Approximately 60% to 80% of the malaria cases have been reported with co-existing thrombocytopenia, while for anemia the association rate is 25%. [16,17] The hematological estimations and parameters including platelet count, WBC count and Hb has been effective-

ly used among malaria patients in order to identify the variations and frequencies among the above mentioned parameters (thrombocytopenia, leucopenia and anemia). High frequency of thrombocytopenia was observed (93.6%) by Patel and his colleagues among the enrolled MP positive patients.[18] Consistent with our results, a local study conducted by Qurban and his colleagues reported 80.6% MP positive patients with thrombocytopenia.[9] Moreover, the MP positive patients with vivax malaria are more likely to develop thrombocytopenia according to a Brazilian study.[19]

Thrombocytopenia was primarily thought to be associated with Plasmodium falciparum malaria but now the reported incidence rate is equal among both P. falciparum and P. vivax malaria or even more common in P. vivax malaria patients according to some authors.[20] Regardless of the fact that thrombocytopenia is described as a complication of malaria, it is not considered as a severe instability on its own and as such no mortality risk is associated with it.[20] An Indian study[21] reported higher incidence rate of thrombocytopenia among P. falciparum malaria cases (83.80%) as compared to P. vivax (74%), while a contradictory study by D.K. Kochar et al., reported more P. vivax cases with thrombocytopenia as compared to P. falciparum[11]. In comparison, our results also supported increased rate of thrombocytopenia among P. vivax malaria patients as majority of the enrolled malaria cases were of P. vivax (92.6%) than P. falciparum (7.4%). Similar results have been reported from Qatar and Venezuela[24, 25]. Besides thrombocytopenia, anemia and leukopenia were also observed among the study population. A total of 34.7% of the cases displayed changes in the WBC count, of which 29.5% being leukopenic while only 5.3% exhibited leukocytosis. The WBC decline rate is more pronounced in our study as compared to other parallel studies which reported 10% to 22.2% of leucopenia among malaria patients.[21, 22] Bashwari et al, from Saudi Arabia has reported anemia in 60% of the malaria cases,[23] while comparatively only 27.4% of our MP positive patients were anemic. The presence of thrombocytopenia is not a distinguishing feature between the different species of malaria. In our study it was found that the thrombocytopenia was seen both in P. vivax and P. falciparum though it is more common in P. vivax infection. The results show high frequency of thrombocytopenia of various grades among the studied MP positive cases. The presence of thrombocytopenia in acute febrile patients and considering malaria on the top differential diagnoses will help in the prompt management of these patients. Our study had several limitations that must be kept in mind. Firstly, we had a small sample size and specific study settings and secondly, no control group was available for comparative analysis.

CONCLUSION

The current study has drawn clinical inferences that the presence of thrombocytopenia among the patients with acute febrile illness increases the probability of malarial disease. Hence, it is concluded that the platelet count serves as an important initial screening tool among patients with acute febrile illness.

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Following authors have made substantial contributions to the manuscript as under

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EFFECTIVENESS OF TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION AND INTERFERENTIAL CURRENT IN PATIENTS WITH NON-SPECIFIC CHRONIC LOW BACK PAIN

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ABSTRACT

Objectives: To compare the effectiveness of Transcutaneous Electrical Nerve Stimulation (TENS) and Interferential Current (IF) in patients with nonspecific chronic low back pain.

Material and Methods: This quasi experimental study was performed in Khyber Teaching Hospital and Khyber Medical University Peshawar from August 2015 to January 2016. All patients were assessed before and after TENS and IF therapy using Visual Analogue Scale 0-10 (VAS) and Oswestry Disability Index (ODI). Thirty patients were divided into two groups. TENS (group I) & IF (group II). In group I, patients received 10 minutes session with heat therapy (hot pack) and 20 minutes session with TENS. In group II, the patients received 10 minutes session with heat therapy (hot pack) and 20 minutes session with IF current.

Results: Mean age of participants was 34.85±4.80 and 33.50±5.20 years in group I and group II respectully. The mean of pain before treatment in group I was 6.47±.29 and that of group II was 5.60±.33 in which the minimum pain on VAS was 4 and maximum pain was 8. A pair T test was done to identify the difference between pre and post treatment score on VAS in the intervention. The p values shows .000 which is less than .05 indicate that there is significant difference present between pre and post treatment pain on VAS. The pair T test for disability percentage on ODI was done to identify the difference between pre and post treatment in the interventions. The p value was less than .05 which shows that there is significant difference and reduction of disability percentage on ODI. Conclusion: The study concluded that both the treatment methods TENS and IF are effective in decreasing pain intensity and disability in low back pain patients.

Keywords: Transcutaneous electrical nerve stimulation, Interferential current, Non-specific chronic low back pain.

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INTRODUCTION

Low back pain (LBP) is a common condition that has been reported to affect many people of all ages every year[1]. The problem is evident from the fact that half of the world population, experience LBP during their life[2]. LBP has unfavorable effects on the peoples quality life, and influence on individuals everyday activities, physical health, mental health status and affects economic status of people[3].

The modes of treatment for radiating and non-radiating low back pain are pharmacological and non-pharmacological[4]. Electrotherapy is a noninvasive and non-pharmacological mode of treatment[5]. Studies conducted so far haven't shown clearer that electrotherapy modality, TENS, produces better effects as far as the pain in the lower back is concerned. Fewer studies are available on the effectiveness of IF, TENS and heat therapy as an adjunct in patients with chronic LBP. Our study has focused on

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comparing the effectiveness of IF, TENS and heat therapy as conservative treatment in both groups in patients with nonspecific chronic LBP.

MATERIAL AND METHODS

A quasi experimental study was conducted in Khyber Teaching Hospital and Physiotherapy Clinic of Khyber Medical University, (KMU) Peshawar from August 2015 to January 2016 after ethical approval from Research Ethics Board of KMU. 30 patients were included in the study, (15 in each group). Males were 20 (66.7%) and females were 10 (33.3%). Convenient sampling technique was used for data collection. In the first group TENS therapy was used for treatment and in the second group IF current was used. Heat therapy was used as an adjunct to groups i-e TENS therapy and to IF current. Patients aged over 18 years and below 60 years of both gender, having chronic low back pain (more than three months) were included in the study. Female patients having pregnancy, history of recent surgery of the spine, (less than six months), patients who had contraindications to the use of electrotherapy, (such as skin lesions, sensitivity changes, infectious diseases, bleeding and cardiac pacemaker), those with psychiatric disorders and patients who did not wish to participate were excluded from the study.

The data was collected through VAS 0-10 and ODI scales.[6,7] VAS was used for pain intensity and for functional ability ODI was used. These scales were used before and after the treatment sessions.

Portable TENS and device for IF current was used for treatment. The intensity of the current ranging from 0 to 80 milliamps (mA) was used. The four silicone self-adhesive electrodes pads, each 5 x 5 cm were place on patient back in the line from T12 and S1 level of spinal cord. The TENS machine was placed to the patient's back at a frequency of 20 Hz and the pulse width of 330 ms, with two channels of TENS. The IF Current was adjusted with a base frequency of 4000 Hz, with a modulation frequency having range of 20 Hz, and slope of 1/1, in Quadripolar mode.[8,9] For improving the inflow of current through the skin 10 minutes of heat therapy through hot pack was given to each patient in both groups. We used SPSS version 20 for data analysis and interpretation of results.

Patients were described about both treatment protocols and written consent form was taken. All patients were allowed to discontinue participation at any time and there was no risk to the patients participated in this study and at the end of the treatment session each patient has received a proper exercise plan for their home.

RESULTS

Total males were 20 (66.7%), and total females were 10 (33.3%). Cross tabulation showed that there were 9 males and 6 females in group one and 11 males and 4 females were in group two.

The ages of patients ranged from 34.85±4.80 to 33.50±5.20 with in group-I and group-II. The common ages were from 30 to 40. People involved in the study were having a diverse background of professions, which inluded housewives (20%) and the reaming percentage was policemen, office workers, drivers, teachers, students and other professions.

OCCUPATION CHART OF THE PATIENTS

The mean pain on VAS before treatment in group I showed 6.47±.29 and that of group II was 5.60±.33 in which the minimum pain on VAS was 4 and maximum pain was 8 having P value of 0.000 for group I and 0.001 for group II. The independent T test shows p value >.05 which determine no significant difference between each groups in pain on VAS before treatment. The disability percentage on ODI before treatment in group I showed a mean percentage of 42.66±10.11, and disability percentage of group II was 38.40±3.00 in which the minimum disability percentage was 18 and maximum pain was 64. The independent T test for disability percentage between groups showed a p value of .295 which shows homogeneousness between each group.

A pair T test was done to identify the difference between pre and post treatment score on VAS in the intervention. The p values shows .000 which is less than .05 which indicate that there is significant difference present between pre and post treatment pain on VAS. The pair T test for disability percentage on ODI was done to identify the difference between pre and post treatment percentage in the intervention. The p value was less than .05 which shows that there is significant difference and reduction of disability percentage on ODI.

The following table shows that P-Vale in both cases is higher than 0.05, which is not significant and indicates

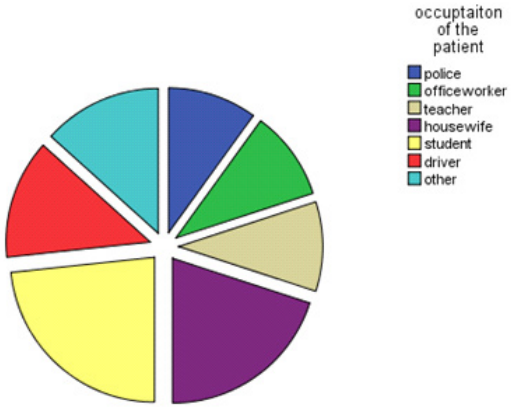

Fig 1: Occupation chart of the patients

Table 1: Pre and post intervention comparison

Comparison between pre and post intervention for disability percentage and hip ROM (Parametric test)				
Treatment Groups	Variables	Treatment session	Mean and Std.Dev	Value
TENS Group	Pain on VAS	Pre	6.47+1.25	0.000
		Post	4.20+1.20	
	Disability on ODI	Pre	42.66+10.1	0.000
		Post	18.80+4.64	
IF Group	Pain on VAS	Pre	5.60+1.29	0.001
		Post	3.39+1.75	
	Disability on ODI	Pre	38.4+11.64	0.002
		Post	21.73+6.58	

Table 2: Between group analysis of both interventions

Between group analysis of parametric variable (Disability, ROM)				
	Groups	Mean	Std. Deviation	P value
ODI scale	TENS Group	18.5625	4.58939	0.103
	IF Group	22.5625	7.17374	
ROM angle	TENS Group	82.94	6.728	0.413
	IF Group	77.69	7.454	

strong evidence for the null hypothesis. This means that there is no relationship between the two variables.

DISCUSSION

The results showed that there is no significance difference between the two modalities of treatment i.e. TENS and IF current. Both modalities showed the significant drop in pain intensity, and reduction in disability due to lower back pain on VAS and ODI.

Some recent studies have found positive effects of TENS and IF in chronic low back pain reduction with no significant difference in both modalities[10]. A meta-analysis has concluded that TENS and IF both have similar effect on pain[11].

A study conducted by Keskin divided pregnant women with LBP into 4 groups. One control group and 3 treatment groups (TENS, exercise and acetaminophen), concluded that TENS is an effective and safe treatment for LBP during pregnancy[12]. Renata Zaniewska analyzed quality of life in patients of LBP treated with TENS concluding that if combined with other treatment methods, may improve quality of life in patients of LBP[13].

A single-blind randomized controlled trial conducted in physiotherapy department of Centro Universitário de Maringá found no difference between TENS and IF current for chronic low back pain treatment which is compatible to our results[14]. According to Korelo, TENS in combination with other therapeutic exercises is much more effective in patients with LBP[15].

A randomized clinical trial was conducted on patients with chronic non-specific LBP, 62 patients were assigned to 2 groups an experimental and control group. Experimental group underwent massage with IF current and the control group received superficial lower back massage. Improvement was noted in patients with acute LBP with IF current electro-massage as compared to superficial massage[16]. A recent Systematic review done by Sukhyanti Kerai, suggest that still further studies are required to compare effect of TENS with other modalities.[17] Our study has found reduction in pain intensity and overall this study used different therapies, different scales and questionnaires.

The findings showed that TENS and IF current both are effective modalities of treatment in patients with chronic pain in the lower back and there is no difference in both modalities in reduction of pain intensity and decreasing disability due to low back pain. TENS and IF current both are effective mode of treatment but in combination with conservative treatment such as hot pack, produces more significant effect in treating lower back pain, reducing pain intensity and disability. This study is conducted in a single town with small sample size therefore, large scale trails are recommended to authenticate the effectiveness of TENS and IF in patients with LBP.

CONCLUSION

The results from this study found that TENS and IF current both are effective modalities in reducing pain intensity and decreasing disability in LBP patients. Therefore the use of TENS and IF current along with heating pads should be encouraged in patients with nonspecific low back pain.

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CLINICAL OUTCOME OF RIGID BRONCHOSCOPY IN PATIENTS WITH FOREIGN BODY TRACHEOBRONCHIAL INHALATION

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ABSTRACT

Objective: To determine the clinical outcome of Rigid Bronchoscopy in patients with Tracheobronchial Foreign Body inhalation.

Material and Methods: This study was conducted in Otolaryngology department, Khyber teaching hospital, Peshawar of one year duration from January 2018 to December 2019. Total 90 Patients of age 4 months to 14 years on clinical suspicion of foreign body bronchus were included, while patients with history of bronchial asthma, pulmonary tuberculosis and radio opaque foreign body bronchus were excluded.

Results: Among 90 patients 60 (66.66 %) were males and 30 (33.33 %), were female patients. Confirmed foreign body bronchus was found in 80 (88.89%), in which male were 53 and female patients were 27. Foreign body was found more common in 35 (39%) of cases in less than 3 years of age.

Conclusion: Rigid bronchoscopy is gold standard in treating foreign body Tracheobronchial tree.

Keywords: Rigid bronchoscopy, Foreign body, Bronchus

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INTRODUCTION

Foreign body in tracheobronchial tree is a common presenting emergency condition to otolaryngology[1]. Most of the patients need prompt intervention in the form of therapeutic bronchoscopy otherwise delay in proper management, results in mortality[2]. Early clinical diagnosis and in time emergency bronchoscopy can save patients life[3]. Vegetative foreign bodies are radiolucent, the patient usually presents with recurrent chest infections, and it makes delay in proper diagnosis[4]. Research work has shown that incidence of radiolucent foreign body bronchus is 82.6% in suspected cases[5]. Patient's early clinical presentation, with foreign body aspiration, like chocking, cyanosis, and difficulty in breathing can help in diagnosis[6]. On auscultation, decreased air entry and hyperinflation on chest x ray may help in diagnosis[7]. This surgical procedure is not without complications. Experience of the surgeon and anaesthesia team is the requirement of all time for a successful outcome. Children remain uncooperative for flexible bronchoscopy, so they need general anaesthesia for rigid bronchoscopy[8]. Even in good surgical hands the success rate is 80% while in some rare situations, complications can occur[9]. Some time, the patient may need tracheostomy to reduce the dead space and help in ventilation. Complication of the procedure like cardiopulmonary arrest, pneumothorax, and vocal cord injury can occur[10]. Patients on strong clinical suspicion of foreign body aspiration must undergo rigid bronchoscopy. It is both diagnostic and lifesaving, and early intervention greatly reduces morbidity and mortality.

The current study will show the outcome and importance of early rigid bronchoscopy in patients with foreign body inhalation, which has direct impact on mortality and morbidity of these patients. Rigid bronchoscopy is the procedure of choice in pediatric population with foreign body bronchus. Our experience will be shared with other health professional.

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MATERIAL AND METHODS

This retrospective chart review was conducted in the Department of Otorhinolaryngology, Khyber Teaching Hospital, Peshawar from January 2018 to December 2019. A total 90 suspected cases of foreign body aspiration referred from ENT OPD, emergency department, paediatric department and from private hospitals were included. Patients with history of foreign body aspiration, chocking, coughing, cyanosis, difficulty in breathing and reduced air entry on clinical examination were included while patients with history of asthma, tuberculosis, ischemic heart diseases, tracheobronchitis and radio opaque foreign body

bronchus were excluded. Approval from hospital ethical and research committee was taken. Diagnosis of foreign body tracheobronchial tree was based on the clinical and radiological examinations of patient.

Information including name, age, gender and address were recorded in the study Proforma. Data was collected and analyzed in SPSS version 22. Mean ± SD were calculated for continuous variable like age and clinical signs symptoms. Foreign body bronchus was stratified among both sexes and in all age groups. Results were presented in tables.

RESULTS

The results of the study are given in Tables 1, 2 and 3.

Table 1: Distribution of age

Age	No. of Patients %
4 months to 3 years	35 (39%)
3 years to 6 years	20 (22%)
7 years to 9 years	15 (17%)
10 years to 12 years	10 (11%)
13 years and above	10 (11%)

Table 2: The distribution of gender

Gender	Percentages of Patients with Foreign body bronchus	Percentages of Patients with no foreign body bronchus
Male patients	53 (58.89%)	7 (7.78%)
Female patients	27 (30.00%)	3 (3.33%)

Table 2: The distribution of gender

Suspected Patients with foreign body bronchus	foreign body bronchus retrieved	%age
Yes	80	88.89%
No	10	11.11%

DISCUSSION

Foreign body bronchus is quite common in children with different clinical signs and symptoms. In all situations, rigid bronchoscopy is needed as lifesaving procedure. Delay in treatment results in complications and increases mortality[12]. Foreign body, most of the times lodges in right main bronchus, rarely in trachea and left main bronchus. Foreign body bronchus was more common in children [13]. Male patients were more in our study as compare to international literature[14]. The procedure needs highly trained surgeons and anaesthesia team[15]. Diagnosing radiolucent foreign body bronchus always remains a challenge but we can take the help of detail clinical history, examination and imaging facilities[16]. Some systemic diseases, like cardiovascular, lung diseases and oesophgeal conditions can present like foreign body bronchus and must be dealt with great care as team work[17]. Vegetative foreign body bronchus in our study was 88.89% compare to a local study 63.3% [18]. Peanuts, nuts, pulses, and beans were among the most common foreign bodies retrieved with a diverse clinical presentation to emergency department as 68% in a study[19]. Robert CA, and his colleagues has shown foreign body retrieval in 80.5% cases closer to our study[20]. In children we must use rigid bronchoscope due to lack cooperation. In adult patients flexible bronchoscopy is preferable to minimize hospital stay[21]. Good clinical examination and investigation increases accuracy of bronchoscopy as has shown in the study of Divarci E, et al foreign body in 91.3% patients, much nearer to our findings[22]. Delay in proper treatment can further decreases positive results. Clinician can take the help of CT scan but again radiolucent materials need surgical intervention, Gibbons AT, and his colleagues has found foreign body on suspicion in 94.4% cases similar to our findings[23]. To increase the outcome of bronchoscopy pre-operative antibiotics, steroids and nebulization must be administered. Which decreases oedema, inflammation and reduces the rate of complications.[24]

CONCLUSION

The study sums up to show that 80 patients were confirmed with a foreign body in bronchus among the 90 cases with suspected foreign body and this turns up to be 88.89% of the study subjects.

RECOMMENDATIONS

Foreign body bronchial inhalation is a common clinical condition, bronchoscopy must be performed in all suspected patients. To decrease negative results of this procedure it must be supported by relevant investigations.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Din IU:	Main Idea data collection Manuscript writing
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ORIGINAL ARTICLE

CLINICAL AND HEMATOLOGICAL FEATURES OF LEISHMANIASIS IN A TERTIARY CARE HOSPITAL OF PESHAWAR

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ABSTRACT

Objective: To evaluate the hematological and clinical features of Visceral and Cutaneous Leishmaniasis.

Materials and Methods: This was hospital-based retrospective study which included all cases of Cutaneous and Visceral leishmaniasis that were diagnosed from Jan 2018 till December 2019 at Pathology Department, Rehman Medical Institute, Peshawar. The cases were analyzed for clinical and laboratory parameters in detail, including complete blood count, demographic information and physical signs at presentation were noted along with bone marrow aspirations were analyzed for LD bodies.

Results: Out of 104 cases, 36 (34.61%) visceral leishmaniasis and 68 (65.38%) cutaneous leishmaniasis were observed during the study period, in which 82 (78.85%) were male and 22 (21.15%) were females. Age range was from 03-40 years with mean SD of 23 ± 4.21 years. Intermittent fever was observed in almost all the cases of visceral leishmaniasis and 52 (76.47%) of cutaneous leishmaniasis. All patients with visceral leishmaniasis had hepatomegaly and splenomegaly. Patients with CL presented as lesions on face and foot region. In VL all patients were male, while in CL 46 were males and only 22 were females. Majority (83.33%) of patients in VL were children (age group 1-10 years), in cutaneous leishmaniasis 34 (50%) were in age group 31-40 years. Anemia and thrombocytopenia were most common hematological parameters.

Conclusion: Our study concludes that leishmaniasis mainly affecting age group 10-20 years. Patients with visceral Leishmaniasis presented with pallor, weight loss fever and splenomegaly while those with cutaneous leishmaniasis presented with lesions on the foot and face especially nose. It is essential that the Public Health authorities be more aware of the condition in order to improve environmental sanitation and personal protective measures and to establish diagnostic facilities for early and correct diagnosis and treatment.

Keywords: Leishmania donovani, cutaneous leishmaniasis, visceral leishmaniasis, bicytopenia, kalazaar.

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INTRODUCTION

In tropical countries, Leishmaniasis is approximated to be ninth on the list of burden disease.[1] There are two main types of Leishmaniasis, Visceral Leishmaniasis (VL) and cutaneous leishmaniasis (CL) caused by the Leishmania tropicana and Leishmania donovani respectively[2]. Leishmania is thought to be endemic in 88 countries throughout the world. The WHO estimate of newly diagnosed cases is approximately 0.4 million globally with people at risk being approximately 400 million. The global prevalence of Leishmania is 12 million.[3]

Leishmaniasis is a vector borne disease caused by female sand fly.[4] Visceral Leishmaniasis (VL) usually presents with gross splenomegaly and pancytopenia and is thought to be endemic in North East region of Indian subcontinent and certain parts of Africa along with the few parts of Latin America.[5] Cutaneous Leishmania (CL) is very common in north east region of subcontinent, Ghana, parts of Iran and Afghanistan.[6-8] Leishmaniasis in Pakistan both cutaneous and visceral is commonly found in Azad Kashmir, Baluchistan, Multan and in Afghan refugees camps in KP.[9-13]

Due to the increasing number of Afghan refugees in KP, during the past few decades, a study was conducted to observe the trends in prevalence of leishmaniasis in Afghan refugees that is an emerging heath problem for the residents in the North West region of KP. The aim of our study was to assess the demographic diversity and clinicopathological manifestations of leishmaniasis and its serlogical types in North West region of Khyber Pakhtunkhwa (KP).

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MATERIAL AND METHODS

This study was an observational cross-sectional study conducted in Pathology department, Rehman medical institute, Peshawar. All cases of Cutaneous Leishmaniasis (CL) and Visceral Leishmaniasis (VL) presenting from January 2018 till December 2018 in histopathology/ hematology archives were included in the study. The diagnosis of VL was established by demonstrating amastigote forms of the parasites in bone marrow and in case of cutaneous by skin biopsy. All other patients presenting with bicytopenia / pancytopenia, caused by conditions other than leishmaniasis, patients with history of any other hematological disorder such as myeloproliferative diseases, myelodysplasia and CML were excluded from the study. In all cases 2.5 ml EDTA blood was collected in commercially available vacutainer tubes and analyzed on hematology analyzer- Sysmex KX 21 with daily quality control. Peripheral blood slides were prepared and stained for smear examination. Bone marrow aspiration was performed under local anesthesia, Slides were prepared and stained with Giemsa. Marrow aspirate slides were scanned for intracellular / extracellular amastigote forms of Leishmania Donovan (LD) bodies. Clinical and laboratory profile of the diagnosed cases were analyzed in detail. All care was taken to maintain the confidentiality of the patients. This was a retrospective analysis of records and therefore, consent could not be taken. The confidentiality of the subjects was maintained while analyzing the data. The study was approved by Ethics Committee of Rehman medical Institute, Peshawar and data was analyzed using SPSS version 19.

RESULTS

Overall, 104 cases, 36 (34.61%) visceral leishmaniasis and 68 (65.38%) cutaneous leishmaniasis were observed during the study period, in which 82(78.85%) were male and 22(21.25%) were females. Age range was from 03-40 years with mean of 23 + 4.21 years. Age distribution is shown in table 1. Intermittent fever was observed in almost all the cases of visceral leishmaniasis and 52 (76.47%) of cutaneous leishmaniasis. All patients with visceral leishmaniasis had hepatomegaly and splenomegaly. Patients with CL presented as lesions on cheeks, foot or nose. Clinical features are shown in figure 1. In VL all patients were male, while in CL 46 were males and only 22 were females. Majority (83.33%) of patients in VL were children (age group 1-10 years), in cutaneous leishmaniasis majority 34 (50%) were in age group 31-40 years. Hematological parameters are shown in Table: 1.

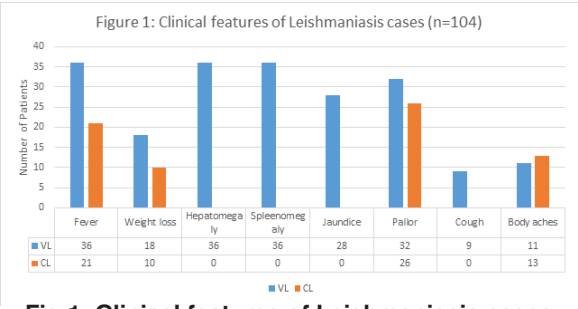

Fig 1: Clinical features of Leishmaniasis cases (n=104)

Table 1: Hematological parameters of patients. (n=104)

Parameters	Visceral Leishmaniasis (n=36)	Cutaneous Leishmaniasis (n=68)
Gender		
Male	36 (100%)	46 (67.64%)
Female	00	22 (32.35%)
Age group		
1-10 years	29 (83.33%)	00
11-20 years	04 (11.11%)	9 (13%)
21-30 years	03 (8.3%)	25 (37%)
31-40 years	00	34 (50%)
Hematological parameters		
Hemoglobin (mean SD)	8.7±1.5	9.1±2.1
Total Leucocyte count (mean SD)	5365±964	5689±541
Platelets (mean SD)	75000±4210	174000±7209
Anemia (Hb <12g/dl)	36 (100%)	25 (37%)
Thrombocytopenia	36 (100%)	42 (62%)
Leucopenia	12 (33.33%)	00
Pancytopenia	12 (33.33%)	00
Bicytopenia	36 (100%)	00
Lymphocytosis	6 (16.66%)	25 (38%)

DISCUSSION

According to the World Health Organization (WHO), leishmaniasis affects around two million people annually, 500,000 cases of which are of the visceral form. It is estimated that 350 million people are exposed to the risk of infection, with a global prevalence of 12 million infected individuals.[14]

This study was conducted to find out the clinical and hematological changes associated with visceral and cutaneous leishmaniasis in tertiary care hospital of Peshawar. Majority 78.85% of patients in our study were males. Predominance of males in our study could be due to gender bias in the male dominant society or it may be due to greater exposure of our males than females. In our cases, fever, hepatomegaly and splenomegaly was also seen in all the cases of VL (100%), jaundice in 5 (83.33%) cases. Weight loss in 18 (50%) VL, 10 (14.7 %) (CL) and pallor in 32 (88.9%) VL, 26 (38.2%) CL cases. In a study by Rai et al,15 majority of the patients (98%) presented with fe-

ver followed by Pallor (44%), weight loss (43%), diarrhea (17%), vomiting (15%) and hepatosplenomegaly (83%). In the same study lymphadenopathy (20%), purpura (13%) and peripheral edema (11%) was reported, which was not seen in our cases. Dhingra et al[16] reported fever in 70% of cases and splenomegaly in 100% of cases with VL. Another study showed pyrexia in 100% of cases in VL, which was same as our findings.[17]

Anemia and thrombocytopenia were the most common hematological disorders in this study as evident in other studies.[18,19] On peripheral blood smear, RBC showed microcytic hypochromic blood picture in majority of cases similar to studies conducted by Hamid et al.[20] Pancytopenia was also a common hematological abnormality similar to other study done by Splenic sequestration of the blood cell is the major cause of Pancytopenia in Kala-azar.[6] Suppression of the bone marrow due to high burden of the infection is relatively rare. Bicytopenia were also observed in VL cases, whereas it was reported in 77% of patients and pancytopenia in 23% of cases in a local study.[21] This is consistent with our study, as 33.33% of the patients had pancytopenia, 100% of VL had bicytopenia, and none of CL cases had bicytopenia or pancytopenia. Most of the patients of cutaneous leishmaniasis had single lesion on the foot (50%), cheek (28%) and 22% were on the nasal tip. This is similar to a study carried out in KP during 2016, where more than 40% of the lesions were found on the lower extremity.[22] Limitation of our study was that it was a single centered study and should be duplicated in other centers for further research on Leishmaniasis.

CONCLUSION

Patients with visceral Leishmaniasis presented with pallor, weight loss fever and splenomegaly while those with cutaneous leishmaniasis presented with lesions on the foot, cheek and nasal tip. The common age group of presentation was 10-20 years, with anemia and thrombocytopenia as the most common hematological parameters. It is essential that the Public Health authorities be more aware of the condition in order to improve environmental sanitation and personal protective measures and to establish diagnostic laboratories for early and correct diagnosis and treatment

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Following authors have made substantial contributions to the manuscript as under

Batool Z:	Conceptualized and designed the study
Basharat S:	Methodology, data collection
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Khattak MT:	Data collection
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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.

ORIGINAL ARTICLE

ASSESSMENT OF HIDDEN CURRICULUM DURING CLINICAL ROTATIONS OF YEAR 4 MBBS STUDENTS USING HIDDEN INFORMAL CURRICULUM ASSESSMENT TOOL (HICAT)

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ABSTRACT

Objective: This study was aimed to assess the hidden curriculum for year-4 undergraduate medical students during one of their clinical rotation using Hidden Informal Curriculum Assessment Tool (HICAT).

Material and Methods: This cross-sectional survey was conducted amongst two hundred, year 4 medical students (using HICAT questionnaire) who had undergone clinical rotation in the department of Gynecology and Obstetrics of Khyber Teaching Hospital Peshawar over a period of three months (January to march 2020).

Results: Two hundred students participated in the survey. Out of those 110 were male and 90 were female with mean age 22 ± 1. Highly valued items in the minds of students included positive doctor patients relaitionship, exhibiting high professional standards and exhibiting positive role modeling. The negative experience which was the commonest and also had a significant influence on the students was competition with peers, lack of confidence and experience of being disadvantaged due to gender. Males felt more disadvantaged as compared to females. Also, students belonging to rural areas felt more disadvantaged than the students of urban areas.

Conclusion: Positive doctor patient relationship, exhibiting high professional standards and positive role modelling are considered significant parts of hidden curriculum. Negative experiences included competition with peers, lack of confidence and gender discrimination.

Keywords: Hidden curriculum, Informal curriculum, HICAT tool

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INTRODUCTION

Hidden curriculum is defined as a set of unwritten, informal and involuntary lessons, which includes attitudes, perceptions and behaviors that students learn in medical school along with more formal aspects of education[1]. The students learning and their socialization to professional attitudes and behaviors, is described by the term hidden and informal curriculum, focusing on the interpersonal processes, organizational structures and culture.[2] Though, not a part of formal syllabus, yet it plays an integral role in the personality development of medical students.[3] Using the analogy of an iceberg- the hidden curriculum is not visualized as it is below the surface, yet it acts as a major force in the learning environment.[4] Components of this iceberg include social norms and concealed rules to survive in a system, interpersonal relationships with teachers and peers, interaction with patients and involvement in clinical settings.[5] Students may encounter both positive and negative experiences, when exposed to the hidden/ informal curriculum. For example, watching a skilled clinician work with a distressed patient or being a member of a well-functioning multidisciplinary team. Conversely, the student may witness a staff member behave in a discriminatory fashion to a patient, or be made to feel unwelcome in a clinical placement.[6] The hidden curriculum cannot be excluded, but it may be designed to maximize its' positive role along with the achievement and strengthening of the desired goals of the formal curriculum. However, to transform something, one must first be able to assess it. Based on our review of the medical education literature in this area, we could only find a few validated tools for measuring both the potential positive and negative aspects of the hidden/ informal curriculum. One of that, developed by Dianne Carmody, Lexie Tregonning and Paul McGurgan, is called HICAT, which comprises of 20 items targeting areas i.e. gender, background, role model and exposure to the hidden curriculum.[7] Hidden curriculum, being part of the attitudes training in medical schools has

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neither been assessed nor explicitly emphasized over in our medical schools.[8] This study aims to assess the frequency of positive and negative aspects of the hidden / informal curriculum for medical students during fourth year clinical rotation using a validated tool (HICAT). Identifying these components will sensitize the faculty, curriculum implementers and policy makers to appreciate the existence, magnitude and impact of hidden curriculum in our medical schools.

MATERIALS AND METHODS

This cross-sectional survey was conducted in Khyber Teaching hospital, Peshawar amongst students of year-4 MBBS from January to March 2020 using HICAT. This tool comprises of twenty questions with Likert scale responses having ten questions regarding positive aspects of the hidden curriculum and ten responses related to the negative aspects of it. Two modifications were made to the survey tool i.e. the five-point Likert scale responses were reduced from 5 to 3 by conjoining the number 1 and 2 as 1 and no 4 and 5 as no 3. Question addressing the ethnic background of students was taken as urban vs. rural where urban was defined as students belonging to settled districts of the province and rural as students belonging to remote areas of the province. Permission was taken through Email correspondence from the originator of HICAT, Prof Paul McGurgan in the University of Western Australia. The survey was conducted during a self-directed learning session of year-4 students including only those students who have already completed their rotation in Obstetrics and Gynecology department. After the issuance of ethical approval by Institutional research and ethical review board (IREB) of KTH, an introductory session about the hidden curriculum was arranged with year-4 students. Students who had completed rotations in Gynecology and obstetrics were included in the study. Students who failed in the previous end of the year assessment were not included. After the clinical rotation ended, the survey forms were distributed amongst 215 students. Amongst these 200 forms were returned. The results of the survey forms were analyzed using SPSS version 23.

Table 1: The frequency of responses for the medical students to the 10 positive hidden curriculum items

Question	N	Always	Occasionally	Never
I have observed high professional standards in my learning environment.	200	156(78%)	24(12%)	20(10%)
I have observed positive patient-doctor consultations	200	134(67%)	36(18%)	30(15%)
I have encountered health professionals I consider were positive role models	200	154(77%)	30(15%)	16(8%)
I was inspired to develop my doctor-patient skills	200	164(82%)	16(8%)	20(10%)
I have observed health professionals dealing with complex cases in a positive manner	200	124(62%)	40(20%)	36(18%)
I felt supported during my placements	200	128(64%)	46(23%)	26(13%)
I have observed patients being treated as unique individuals	200	138(69%)	50(25%)	12(6%)
I have observed health professionals educating patients about their condition	200	140(70%)	26(13%)	34(17%)
I have witnessed health professionals going out of their way to assist colleagues	200	120(60%)	30(15%)	50(25%)
I have witnessed staff acknowledging their limitations	200	106(53%)	68(34%)	26(13%)

Table 2: The frequency of responses for the medical students to the 10 negative hidden curriculum items

Question	N	Always	Occasionally	Never
I heard judgmental remarks about a patient in the clinical workplace	200	24(12%)	156(78%)	20(10%)
I needed to compete with other medical students	200	134(67%)	36(18%)	30(15%)
I was troubled with the experiences I encountered during my placements	200	30(15%)	154(77%)	16(8%)
I felt disadvantaged because of my gender	200	68(34%)	112(56%)	20(10%)
I have witnessed discriminatory attitudes in learning environments	200	40(20%)	124(62%)	36(18%)
I have encountered health professionals I consider were negative role models	200	46(23%)	128(64%)	26(13%)
I have felt humiliated by a supervisor	200	50(25%)	138(69%)	12(6%)
I felt disadvantaged because of my background	200	26(13%)	140(70%)	34(17%)
I have observed poor interprofessional team work	200	30(15%)	120(60%)	50(25%)
I was asked to undertake a task I was not confident to perform unsupervised	200	68(34%)	106(53%)	26(13%)

Table 3: Demographic variables and the effect on frequency of responses to hidden curriculum:

Question	Male (N=110)	Female (N=90)	P-value
I felt disadvantaged because of my gender	40	28	<0.001
I felt disadvantaged because of my background	16	10	0.003
I was troubled with the experiences I encountered during my placements	34	32	0.004

RESULTS

Out of 200 medical students who participated in the survey 110 were males and 90 were female with mean age 22 ± 1. Highly valued items in the minds of students included positive doctor patients Relaitionship (82 %), exhibiting high professional standards (78 %) and exhibiting role modeling attitude (77 %). See table 1 for details. Competition with peers (67 %), lack of confidence (34 %) and gender bias towards students (34 %) was reported by students as negative aspects of hidden curriculum (see table 2 for further details). Table 3 shows that male students felt more disadvantaged by their gender ($p<0.001$) and rural background ($p=0.003$) than females. Females were more often troubled by the experiences they encountered ($p=0.004$) than males during their clinical rotation.

DISCUSSION

The results obtained by this study can be seen to be useful in determining the strengths and weaknesses within an educational and health care environment for medical students. [11] The HICAT included items related to positive and negative aspects of the hidden curriculum. More than two third of the students highlighted positive role modeling, doctor patient relationship , high professional standards , dealing each patient as unique individual and the role of counseling as important components of hidden curriculum.[12] Similar kinds of results were shown by a study done in Iran in which it was shown that positive role modeling and high professional standards were considered as highly important constituents of the informal curriculum.[13]

Competition with peers was considered to be one of the negative aspects of hidden curriculum in one third of students' responses. Only one fourth of students highlighted humiliating attitude by the faculty and negative role modeling as important aspects of hidden curriculum.[14] One third of students reported gender discrimination and lack of confidence during clinical performance as negative aspects of the curriculum. Males felt more discriminated because of their gender possibly because of the environment of the Obstetrics department in Muslim and local culture. A study conducted by Wilkinson revealed that about 20 to 25 percent of students experience gender discrimination during their medical training.[15] The data published by Wilkinson which showed that more than two third of women and one third of men in the whole medical course experienced gender discrimination.[16] The discrepancy in terms of which gender experiences the discrimination fits with the expectation that male students are more likely to experience gender discrimination during their obstetrics and gynecology rotation. Despite the fact that this gender discrimination might be expected, the HICAT quantified it in our setup.[17,18] This study is limited to a single department rotation and needs to be replicated in multiple departments and multiple institutes to signify its impact.

CONCLUSION

Some of the most important positive aspects of the hidden curriculum were identified as high professional standards, positive role modeling, inspirational doctor patient relationship and counseling by the clinical faculty. Negative aspects of the curriculum highlighted in the study included competition with peers, lack of confidence during clinical performance, gender discrimination and negative role modeling by clinical faculty. Incorporating the concepts of hidden curriculum into the explicit curriculum and training the faculty as well as students about the concepts will go a long way in producing medical professionals exhibiting highest professional standards and proper attitudes during patient and students encounter.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Afridi A: conducted the study, analyzed the data and was the lead author of the manuscript.

Sethi A: Review and supervision.

Ahmed F: helped in selecting the topic, formulating the methodology, ethical approval to conduct the study and critical review of the article.

kashif L: helped in collection of data and introduction of the topic to the students.

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.

Appendix 1: Hidden Informal Curriculum Assessment Tool (HICAT)

Question	Always	Occasionally	Never
I have encountered health professionals I consider were positive role models			
I have observed patients being treated as unique individuals			
I needed to compete with other medical students			
I was asked to undertake a task I was not confident to perform unsupervised			
I have observed poor inter professional team work			
I was inspired to develop my doctor-patient skills			
I heard judgmental remarks about a patient in the clinical workplace			
I have witnessed staff acknowledging their limitations			
I have observed positive patient-doctor consultations			
I have witnessed discriminatory attitudes in learning environments			
I have felt humiliated by a supervisor			
I have encountered health professionals I consider were negative role models			
I felt disadvantaged because of my gender			
I felt disadvantaged because of my ethnic background			
I was troubled with the experiences I encountered during my placements			
I have observed health professionals educating patients about their condition			
I have observed high professional standards in my learning environments			
I have witnessed health professionals going out of their way to assist colleagues			
I have observed health professionals dealing with complex cases in a positive manner			
I felt supported during my placements			

Impact rating: List which of the three experiences from above list (1-20) that had the most impact for you during clinical rotation (these do not necessarily need to be those which you experienced most frequently).

Please use the tick box to describe how often you relate to the statements about your experience in the Hidden and informal curriculum in clinical rotations.

Options: Always: A Occasionally: B Never: C

ORIGINAL ARTICLE

COMPARISON OF DEXMEDETOMIDINE AND ONDANSETRON FOR PREVENTION OF SHIVERING IN LOWER LIMB SURGERIES AFTER SPINAL ANAESTHESIA

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ABSTRACT

Objective: The purpose of the study was to compare the effectiveness of dexmedetomidine and ondansetron to prevent shivering in patients undergoing lower limb surgeries after spinal anaesthesia .

Material & Methods: This randomised double-blind and placebo-control study trial was held in orthopaedic operation theatre of Lahore General Hospital, Lahore from February 2020 to July 2020. Total of 120 adult patients who underwent elective orthopaedic surgery of lower limbs after spinal anaesthesia were divided into 3 batches. In Batch S, saline was given as placebo, in Batch O ondansetron and in Batch D dexmedetomidine was administered and shivering score were assessed for 45 min. A shivering score of ≥ 3 was considered as primary outcome.

Results: There is statistically considerable difference, in the incidence of significant shivering (grade 3 & 4), among batches, as established by one way ANOVA. The significance value is 0.004 (i.e. p=0.004). There was no significant difference statistically between batch D and batch O (p=0.878)

Conclusion: The incidence of shivering in batch S was considerably higher than that of both Batch O and batch D while no significant relationship could be proved in between batch D and batch O

Keywords: Dexmedetomedine, Ondansetron, Shivering, Spinal Anaesthesia

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INTRODUCTION

Shivering is the main factor of distress for patients undergoing spinal anaesthesia. It not only causes emotional trauma for the patient but also causes 200–500% increase in O2 consumption leading to increase in production of carbon dioxide.[1] This phenomenon is more pronounced in patients with inadequate respiratory reserve, cardiac patients with fixed cardiac output and with those with intrapulmonary shunts.[1] Shivering also causes raised intraocular pressure, raised intracranial pressure, hypoxemia as well as it also hinders with basic monitoring like electrocardiogram (ECG), oxygen saturation and non- invasive blood pressure monitoring.[2] The precise pathogenesis for the origin of shivering is still not completely understood. Numerous mechanisms are suggested for its pathogenesis like various non-thermoregulatory and hindrance with thermoregulation.[3] One of the main reason is inhibition of thermoregulatory mechanism by anaesthetics. Vasodilation of skin, uninhibited spinal reflexes and pain are the further proposed mechanisms. Various receptors like serotonin, opioid and α2 receptors are also involved.[3] In the recent years, because of increased understanding of adverse effects of shivering, its prevention has become an essential part of anaesthesia care.

Different methods like administering warm intravenous fluids and warming the skin surfaces are described to prevent shivering but none of them proved to be beneficial. However, many drugs like α2-agonists, corticosteroids, anticholinergics and CNS stimulants have shown to be useful but their use is limited due to various side effects.[4] Ondansetron, which is commonly used as an antiemetic in the perioperative period, is an antagonist of 5HT3 receptor. It is also used safely for the prevention of shivering and is quite effective too. The mechanism of its anti-shivering property might be due to inhibition of reuptake of serotonin in pre-optic anterior hypothalamic area. 5-5HT3 receptors also effect heat loss and production pathways.[5] Dexomedetomidine decreases the threshold of shivering and vasoconstriction; therefore it acts on the central mechanism of thermoregulatory system and do not inhibit shivering peripherally. It also blocks α2 receptors at the level of spinal cord and brain stem and so

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it also causes analgesia and sedation.[6] The goal of the trial was to compare the efficacy of dexmedetomidine and ondansetron to prevent shivering in patients undergoing lower limb surgeries after spinal anaesthesia.

MATERIAL AND METHODS

This randomised double-blind and placebo-control study was performed in Lahore General Hospital for the period of 6 months from February 2020 to July 2020. After taking permission from ethical committee, 120 patients of both genders undergoing elective orthopaedic surgery of lower limbs were included. All patients underwent spinal anaesthesia. Other inclusion criteria includes age 20 to 60 years and American Society of Anaesthesiologist (ASA) I and II patients. Patients with any co morbid disease, reduced cardiopulmonary reserve, requirement of blood transfusion during surgery, pregnancy and history of allergies were excluded from the study. The sample size of 120 (40 in each batch) was calculated at 80% power of test and 95% confidence interval and taking expected percentage of shivering as 57.5% in batch S, 17.5% in batch O and 27.5% in batch D7. After taking informed consent, patients were randomized using computer generated method with closed envelopes into 3 batches i.e. Saline batch (Batch S), Dexmedetomidine batch (Batch D) and Ondansetron batch (Batch O) each with 40 patients .

After taking informed consent, standard monitoring was used i.e. non-invasive blood pressure (NIBP), oxygen saturation, heart rate, ECG, and body temperature through axillary probe. Temperature of the operation theatre was maintained at 24°C–26°C. Ringer lactate @ 10ml/kg was infused. Spinal anaesthesia with injection bupivacaine 15mg at level of L 4-5 with Quincke's needle 25 gauge was given with standard protocols. Blockade up to the level of dermatome T10 was attained . All patients were administered 3L/min of oxygen via face mask. No active rewarming used and all fluids were given at room temperature. After spinal anaesthesia, one of the study drug was given intravenously.

Batch S patients were given saline as placebo, Batch O were administered ondansetron 8 mg, and Batch D patients were administered dexmedetomidine in dose of 1 µg/kg intravenously. The anaesthesiologists was kept blinded about the preparation of the drug. After every 5 minutes, shivering score were assessed for 45 min and classified using a scale validated by Tsai and Chu.[8] (Grade 0: when no shivering is observed, Grade 1: when piloerection is observed but no visible shivering is present, Grade 2: muscular activity is observed in only one group of muscle, Grade 3: muscular activity is observed in more than one group of muscle but it is not generalised and Grade 4: generalised shivering is present in entire body). A shivering score of ≥ 3 in 45 minutes after spinal anaesthesia was considered as primary outcome. Bradycardia, hypotension, sedation, nausea and vomiting were also noted which were considered as secondary outcomes. Rescue drug injection tramadol 0.5mg/kg intravenously was given for control of shivering. Demographic details as gender, age, height and weight were also recorded.

RESULTS

All batches were comparable in terms of age, sex, height, weight, and duration of surgery ($P > 0.05$) as shown in Table 1. Secondary outcomes i.e. sedation, hypotension, nausea & vomiting and bradycardia were also comparable with no significant differences (Table 2). The frequency of shivering in batch S (55%) was considerably more than that of both Batch O (22.5%) batch D (27.5%). There was a significant difference in the prevalence of significant shivering (grade 3 & 4) between batches as determined by one way ANOVA test. The significance value is 0.004 (i.e. $p=0.004$) which is below 0.05.

To know which of the specific batch differed, Turkey post hoc test was applied. It revealed that incidence of shivering was statistically higher in batch S (which is a control batch) as compared to batch O ($p=0.006$) and batch D ($p=0.023$). There was no statistically significant difference between batch O and batch D ($p=0.878$). See Table 4 for details.

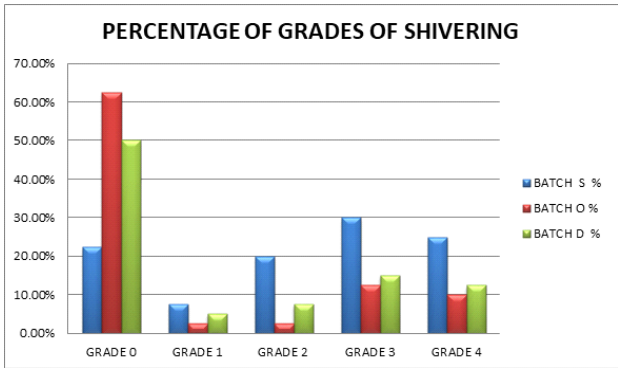

Fig 1: Percentage of Grades of Shivering

DISCUSSION

The outcome of the present study proves the efficacy and safe use of prophylactic administration of drugs, dexmedetomidine and ondansetron, in decreasing the occurrence as well as severity of shivering that may occur after spinal anaesthesia when it was compared with saline as placebo. The adverse effects associated with these drugs were temporary and easily tolerable by majority of the patients. Our results are comparable with the study carried out by Botros et al. who established prophylactic use ondansetron or dexmedetomidine effectively reduces the severity and incidence of shivering after intrathecal block when it was compared with placebo with bearable side effects.[7] The exact mechanism by which shivering occurs in spinal anaesthesia is still not fully understood. Pharmacologic preparations remain the most common

Table 1: Demographic data of Batches

Parameter	Batch S Mean ±SD	Batch O Mean ±SD	Batch D Mean ±SD	P Value
Age	41.8 ±9.8	39.35±11.47	43.7±9.91	0.179
Weight (kg)	60.33±11.07	58.6±9.9	57.8±10.1	0.535
Height(cm)	155.55±5.787	154.97±5.855	155.13±5.750	0.854
Duration of Surgry (min)	85.95±18.47	80.08±20.46	87.05±17.917	0.214
Gender (N) %				
Male	23 (57.5%)	25 (62.5%)	21 (52.5%)	0.670
female	17 (42.5%)	15 (37.5%)	19 (47.5%)	

Table 2: Secondary Outcomes of Study Batches

Parameter	Batch S N (%)	Batch O N (%)	Batch D N (%)	P Value
Sedation	0 (0%)	0 (0%)	1 (2.5%)	0.371
Hypotension	12 (25%)	13 (32.5%)	12 (30%)	0.759
Bradycardia	9 (22.5%)	8 (20 %)	8 (20%)	0.952
Nausea & Vomiting	9 (22.5%)	3 (7.5%)	6 (15%)	0.174

Table 3: Percentage of Grades of Shivering

Grades	Batch S % (N)	Batch O % (N)	Batch D % (N)
Grade 0	22.5% (9)	62.5% (25)	50% (20)
Grade 1	7.5% (3)	2.5% (1)	5% (2)
Grade 2	20% (8)	2.5% (1)	7.5% (3)
Grade 3	30% (12)	12.5% (5)	15% (6)
Grade 4	25% (10)	10 % (4)	12.5% (5)

Table 4: Percentage of Grades of Shivering

SHIVERING	Batch S N (%)	Batch O N (%)	Batch D N (%)	P Value	P Value		
					S/O	S/D	O/D
GRADE III/IV	22 (55%)	9 (22.5%)	11 (27.5%)	0.004*	0.006*	0.023*	0.878

ANOVA followed by post Hoc test to compare the three batches.

S/O: Batch S versus Batch O.

S/D: Batch S versus Batch D.

O/D: Batch O versus Batch D.

approach for treatment and prevention of shivering [8]. The action of dexmedetomidine on prevention of shivering seems to be because of inhibition of central thermoregulation. It lowers the shivering threshold temperature by increasing the range of temperature thereby not stimulating the thermoregulatory defence mechanism of the body.[9] Ondansetron, which is 5-HT3 antagonist, is a common anti-emetic, and can be used to prevent post spinal shivering. Reduced incidence of shivering is attributed to inhibition of 5-hydroxytryptamine- 3 (5- HT3) system[10]. Noaman et al. concluded in their study that in comparison to pethidine, ondansetron was as effective in prevention of postoperative shivering yet it was quite more safer than pethidine as there is less incidence of sedation and nausea and vomiting.[10] Shakya et al. proved the safety and efficacy of ondansetron and ketamine in low dose for prevention of shivering after anaesthesia when it was compared with placebo.[11] Badawy AA and Mokhtar AM. also observed in their study, that by using Ondansetron, there is significant reduction in terms of the positive shivering (score ≥ 3) in comparison to placebo in obstetric patients having caesarean section delivery after spinal anesthesia.[12]

Bajwa, et al , in their clinical trial , verified that that dexmedetomidine act as an anti shivering drug in a dose of 1 μg/kg. Although some of the adverse effects like dry mouth and sedation are upsetting for the patient but they were easily tolerable and did not affect overall clinical outcome.[13]

In our trial, although dexmedetomidine caused a statistically non-significant hypotension and bradycardia, it did not produce any major adverse event in patients.

Insignificant hypotension and bradycardia was also observed with ondansetron which was transitory and self-limited in most of the patients. Sharma, et al. when compared ondansetron with saline, they found complications were higher in saline batch as compared to the ondansetron batch.[14] The incidence of nausea in saline

batch was found to be 40% and was greater to ondansetron batch. The frequency of hypotension was also higher in saline batch as compared to ondansetron batch.[14]

Kundra, et al when compared dexmetomidine with tramadol observed more adverse effects in tramadol group as compared to dexmedetomidine group[15] while Chowdhury, et al. proves Ondansetron as more haemodynamically stable and lessens the occurrence of postoperative nausea and vomiting when compared with tramadol.[16]

Callaway CW et al. ,in their study, proves that dexmedetomidine in dose of 1.0 µg/kg ,in normal patients, decreases the average threshold of temperature for shivering by at least 0.8°C.[17] Shivering during a regional anaesthesia could have possibly unfavourable effects and it may lead to exaggerated pain in wounds.[18]

In the present study, efficacy of both drugs is established for control of shivering when given prophylactically while no significant adverse effects were seen in both the study batches.

One of the limitations of the current trial was that standard anti-shivering medicine like meperidine was not used as a control . Also validity of results might not be appropriate in general anaesthesia and complicated surgeries requiring large volume intravenous fluids. The study was limited to (ASA) I and II patient.

CONCLUSION

The current study highlighted that use of ondansetron or dexmedetomidine prophylactically reduces the incidence as well as severity of shivering after intrathecal block when compared to saline as a placebo with non significant side effects.

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Dodhy AA: Concept, Data collection, writing manuscript, analysis, biblography

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SENSORINEURAL HEARING LOSS IN CHRONIC OTITIS MEDIA: A CROSS SECTIONAL DESCRIPTIVE STUDY AT TERTIARY CARE HOSPITAL

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ABSTRACT

Objective: To find the prevalence of sensorineural hearing loss (SNHL) in chronic otitis media (COM).

Material and Methods: Study was done at Otorhinolaryngology-B unit of Hayatabad Medical Complex (HMC), Peshawar, from March 2016 to September 2016. It was a cross sectional descriptive study in which a total of 174 patients were included by using 5% error margin and 95% confidence interval with expected frequency of SNHL 13% in cases with COM using WHO formula for sample size.

Results: In our study mean age was 26 years with standard deviation ± 11.62. Male and female patients were 45% and 55% respectively. The prevalence of SNHL was found to be 18% in patients with COM.

Conclusion: Eighteen percent patients had SNHL associated with COM.

Keywords: Bacteriology, antibiotic sensitivity, chronic otitis media, SNHL.

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INTRODUCTION

Chronic otitis media (COM) is inflammation of mastoid air cells and/ or middle ear, clinically present as ear discharge and decrease hearing.[1] Approximately 2% of the population is affected by COM.[2] In 2004 worldwide prevalence of COM mentioned by WHO in 65-330 million people and 39-200 million suffered from significant clinical hearing impairment.[1]

The most common cause of hearing impairment is still COM.[3] The hearing loss is due to chronic inflammatory process which is mostly conductive as a result of tympanic membrane perforation and/ or ossicular chain fixation or erosion.[4] Recent studies have shown that the disease also affects inner ear and patients may have sensorineural deafness as well.[15] Some circulatory disturbance is produced by chronic inflammatory process i.e. vasodilation and vasoconstriction of vessels of mucosa in the round window membrane which affects the inner ear.[5] Irreversible cochlear hair cell loss is caused by toxins that cross round window membrane and effects the cochlear basal turn.[6] SNHL due to COM is documented as a definitive pathologic entity, but the incidence remain debatable.[7] Patients having COM, lower frequencies were less effected as compared to higher ones, but period of ear discharge and age, seems not to be related with the degree of hearing loss (HL).[8,16] In one study, it was found that, 34.56% of school going children had different grades of hearing impairment and 16.95% with COM had mild to moderate HL (41-60 dB).[1] Kamaljit Kaur et al[17] in a study reported 24% prevalence of SNHL in COM. The relationship between COM and SNHL remains a debatable issue.[8] The rational of our study is to find the prevalence of SNHL in COM because it is a common problem and mostly patients are young. If diagnosed early and treated promptly, gives good results in terms of eradicating the problem, minimizing risks of hearing handicap. If missed in such patients, can lead to deafness.

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MATERIAL AND METHODS

A cross-sectional descriptive study was conducted at otorhinolaryngology, Head and Neck Surgery unit

of HMC, Peshawar for a period of 6 months, from March 2016 to Sep 2016. Sample size was 174 and sampling technique was non-probability consecutive sampling. Patients with ear discharge and perforated tympanic membrane for at least 12 weeks either persistent or intermittent along with hearing loss of both genders were included. Age range was 18 to 50 years. Patients with history of head injury, meningitis, previous ear surgery, chronic noise exposure, systemic ototoxic drug therapy and other causes of SNHL were all excluded. The patients satisfying the inclusion criteria were included after informed consent through the outpatient and indoor. All patients with chronic otitis media having hearing loss was examined by tuning fork tests and pure tone audiometric testing.

RESULTS

A total of 174 patients were observed to determine the frequency of SNHL in COM. Eighty-seven (50%) patients were <20 years, 52 (30%) were in age ranged 21-30 years, 26(15%) in age ranged 31-40 years, 9 (5%) 41-50 years. Mean-age was 26 years, with SD ±11.62. (Table 1) Seventy-eight (45%) patients were male while 96 (55%) were female. (Table 2)

One hundred and eight (62%) patients had chronic otitis media from 3-8 months while 66 (38%) had it from 9-12 month. Mean duration of symptoms was 5 months with SD ± 1.58. (Table 3) SNHL was analyzed as 31 (18%) patients had it while 143 (82%) didn't have SNHL. (Table 4) Stratification of sensorineural hearing loss with age and gender is given in table 5,6

Table 1: Age Distribution (n=174)

Age	Frequency	Percentage
<20 years	87	50%
21-30 years	52	30%
31-40 years	26	15%
41- 50 years	9	5%
Total	174	100%

Mean age was 26 years with standard deviation ± 11.62

Table 2: Gender Distribution (n=174)

Gender	Frequency	Percentage
Male	78	45%
Female	96	55%
Total	174	100%

Table 3: Duration of Symptoms (n=174)

Duration	Frequency	Percentage
3-8 month	108	62%
9-12 month	66	38%
Total	174	100%

Mean age was 5 weeks with standard deviation ± 1.58

Table 4: Sensorineural Hearing Loss (n=174)

SHL	Frequency	Percentage
Yes	31	18%
No	143	82%
Total	174	100%

Table 5: Stratification of Sensorineural Hearing Loss with Age (n=174)

SHL	<20 years	21-30 years	40-31 years	50-41 years	Total
Yes	15	9	5	2	31
No	72	43	21	7	143
Total	87	52	26	9	174

Chi Square test was applied in which P value was 0.997

Table 6: Stratification of Sensorineural Hearing Loss with Gemder (n=174)

SHL	Male	Female	Total
Yes	14	17	31
No	64	79	143
Total	78	96	174

Chi Square test was applied in which P value was 0.874

DISCUSSION

Chronic otitis media is a serious healthcare problem throughout the world. It causes distress to the patient and their family and puts economic burden on the health care system. According to previous publications race and socio-economic factors are responsible for the incidence of this disease and is reported mostly in Eskimos, Australian aboriginal children, American Indians, and among black South Africans[13]. In developing countries, poor living conditions, poor hygiene, nutrition and overcrowding have been considered as basis for the widespread incidence of COM. It was noted that pediatric age group has high occurrence of the disease which constituted more than 50% participants. Male to female ratio is approximately equal i.e. 1.2 :1.0, similar to other studies done in same region, these findings shows that it is not related to age and no propensity of disease towards gender[16].

Chronic otitis media (COM) affects approximately 2% of population.[2] In 2004, WHO mentioned worldwide prevalence of COM as 65 to 330 million people and 39 to 200 million suffer from significant clinical hearing impairment.[1] Chronic otitis media is still the most common cause of hearing loss.[3] The hearing loss is commonly due to tympanic membrane perforation and/ or ossicular chain erosion or fixation caused by chronic inflammation.[4] Our study demonstrate that mean age was 26 years with standard deviation ± 11.62. Male and female patients were 45% and 55% respectively. The prevalence of SNHL was found to be 18% in patients with COM. Similar results were found in another study done by Yasir Et al in which COM frequency of SNHL is 13% (P<0.05).[6] It is likely that SNHL

associated with COM is highly prevalent in lower socioeconomic status. This can be corroborated by the hypothesis that there is difficulty to afford and access treatment, follow up issues, poor hygiene and education in low socioeconomic group.[6] Kolo ES et al stated that higher frequencies were more effected in patients with COM who had a significant degree of SNHL[18]. In patients with COM higher frequencies were more effected than the lower ones, but the patient's age and duration of otorrhea has no correlation with the degree of SNHL.[8] A study demonstrated that 34.56% of school going children had different grades of hearing impairment and 16.95% had COM, who had mild to moderate degree hearing loss (41-60 dB).[1] Kamaljit Kaur et al in a study reported 24% prevalence of SNHL in patients with COM[17]. Amin Amali and colleagues in a study demonstrated that COM is related to some degree of SNHL and cochlear damage[15], which is similar to findings of current study.

CONCLUSION

The study concluded that 18% of patients with chronic otitis media had sensorineural hearing loss.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Ali S:	Main idea, Data collection, Manuscript
Junaid M:	Writing of manuscript, Proofreading
Khan AR:	Data analysis, Proof reading
Khan AA:	Manuscript writeup
Muhammad N:	Biblography
Khan A:	Supervision, 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

ETIOLOGY OF LIVER CIRRHOSIS IN DISTRICT BUNER, KHYBER PAKHTUNKHWA

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ABSTRACT

Objective: The aim of our study was to determine the most common cause of liver cirrhosis in district Buner.

Material and Method: This was retrospective data review of patients record. Data was collected from patient's record register from January 2016 till December 2018. A total of 203 patients were included in this study. Data was collected and entered and analyzed in IBM SPSS 23.

Results: Out of 203 cases, 135(66.5%) were males and 68 (33.5%) were females. The main cause of cirrhosis was HCV (n=163, 80.3%) and HBV (n=27, 13.3%). Cryptogenic cirrhosis occurred in 9 cases (4.4%) while others were only 1% (n=2). HCV positivity was more in males (n=108, 66.25%) than in females (n=55, 33.7%) with a p value .022.

Conclusion: HCV is major cause of Liver Cirrhosis in our patients. HCV is more common in males than in females. Cirrhosis occurs most commonly in 4th, 5th and 6th decades of life after being infected with HBV and HCV.

Keywords: Liver cirrhosis, Hepatitis C virus, Hepatitis B virus, Pakistan.

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INTRODUCTION

Liver cirrhosis is rising globally at an alarming rate. Around 2 million deaths occur each year worldwide due to liver diseases. Approximately half of these are due to viral hepatitis and hepatocellular carcinoma. Currently, cirrhosis is on 11th position in causing deaths globally, and liver cancer is in the 16th position. Both of these diseases together are causing around 3.5% deaths globally. Cirrhosis is amongst the top 20 causes of disability-adjusted life years and years of life lost, accounting for 1.6% and 2.1%, respectively of the global burden[1].

Cirrhosis is defined as a diffuse process characterized by fibrosis that leads to the conversion of normal liver parenchyma into structurally abnormal nodules that results in progressive loss of function[2].

In the early disease process, there are very few symptoms, but as liver disease progresses, liver loses its ability to function. Signs and symptoms tend to develop, which include fatigue, weakness, itching, frequent infections, jaundice, palmar erythema, spider naevi, peripheral edema, congestive splenomegaly, bleeding tendency and decrease in cognitive function. In untreated later stages, the disease progresses slowly and gradually to severe complications such as hepatic encephalopathy, ascites, GIT bleeding, multiorgan failure, diabetes mellitus, and hepatocellular carcinoma[3].

The epidemiology of liver cirrhosis has great diversity when it comes to gender, ethnic groups, and geographic regions. Multiple causative factors explain the variation in the nature, frequency, and time of acquiring the disease[4]. Liver cirrhosis is an end-stage disease resulting from long-term infection by the hepatitis B virus, hepatitis C virus, and alcohol[5]. As the prevalence of obesity and diabetes is on the rise, NASH (non-alcoholic steatohepatitis) is also becoming one of the major causes. Other less common causes are metabolic liver diseases (Wilsons disease, hemochromatosis, alpha-1 antitrypsin deficiency, cystic fibrosis, glycogen storage diseases), cholestatic (biliary cirrhosis. primary sclerosing cholangitis), autoimmune hepatitis, venous outflow obstruction (veno-occlusive disease, Budd-Chiari syndrome), toxins and drugs (e.g., pyrrolizidine, alkaloids, methotrexate, oxyphenisatin methyldopa) and cryptogenic. Yet some causes are still debatable, including autoimmunity, mycotoxins, schistosomiasis and malnutrition.[2,6]

Liver cirrhosis is one of the principal causes of mortality and morbidity worldwide. The Prevalence of cirrhosis is likely to be underestimated as almost a third of the patients remain asymptomatic[6]. The worldwide prev-

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alence of CLDs (chronic liver disease) induced cirrhosis is 4.5 to 9%, with 633000 patients affected[7], resulting in 1 million deaths per year. It makes decompensated cirrhosis the 14th most common global cause of death[6].

Pakistan has the 2nd highest estimated prevalence of hepatitis C worldwide. In Pakistan, liver cirrhosis and its complications are frequent causes of hospital admissions. Liver pathologies, especially liver cirrhosis, is the chief liability on our health care institutions, reaching an epidemic level, and a significant cause of mortality in our setting[8]. There is an increase in the incidence and prevalence of liver cirrhosis in Pakistan, with HBV and HCV the leading cause in patients (90%) with chronic liver disease[9].

MATERIAL AND METHODS

This research was conducted as a retrospective data review. Data were collected from the patient's record register from January 2016 till December 2018. Data was recorded on proforma especially designed for this study. The research reported here was conducted in Bilal Medical Trust Hospital, a private hospital in District Buner. Buner is a district in the Malakand division of Khyber Pakhtunkhwa province in Pakistan. This hospital is a trust hospital and provides healthcare to different social classes of people all over Buner.

Patients having evidence of liver cirrhosis on ultrasound examination of the abdomen and those who were above the age of 10 years were included in the study.

Data was collected from record registers and entered in the proforma. The diagnosis of viral hepatitis (B and C) was considered when there was positivity for HBsAg and Anti-HCV antibodies. Liver cirrhosis was considered to be from alcohol consumption when there was a positive history of alcohol abuse and negative viral and autoimmune profile. When clinical history and laboratory data failed to identify any recognizable cause of liver cirrhosis, cryptogenic liver cirrhosis was considered. When the result for autoimmune markers such as anti-mitochondrial antibodies, were positive, primary biliary cirrhosis (PBC) was considered. In the group of 'other causes,' patients with hemochromatosis, autoimmune, and metabolic diseases were included.

Ethical approval was obtained from the Ethical Review Board of Prime Foundation, Peshawar Medical College, Warsak Road Peshawar. Data was entered and analyzed in SPSS 23. Chi-square test and 95% confidence intervals were calculated for percentages of cases for etiology and compared. A p-value of <0.01 was considered statistically significant.

RESULTS

Out of the total of 203 cases that were included in this study, 135 (66.5%) were males, and 68 (33.5%) were females. Figure 1 shows the distribution by age groups and etiology. A higher number of male patients were HCV positive (n=108, 66.25%) than female patients (n=55, 33.7%); this was statistically significant with a p-value of .022.

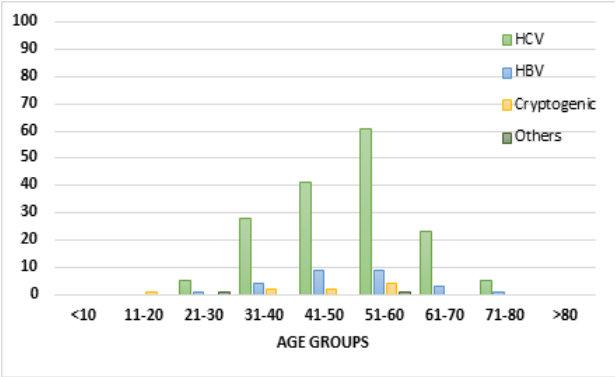

Fig 1: Etiology Vs. Age groups

DISCUSSION

Liver cirrhosis is becoming a burden on the global economy. For example, in the US alone, Razavi et al. estimated that the total healthcare cost associated with HCV infection may be as high as $6.5 billion annually[10]. Similarly, the cumulative healthcare cost associated with HBV infection is around $1.5 billion annually in the US and is rising annually[11].

According to the estimate of Pakistan Medical Research Council, HBV prevalence is around 2.5% or 5.6 million individuals[12]. Similarly, the council estimated HCV prevalence to be 4.9% or 8.8 million people[12]. Furthermore, the number of patients is increasing with each passing year. In our study, male cirrhotics were more than females (66.5% > 33.5%). A similar study conducted in district Swat also showed that males were more affected than females[13]. The travel of men to foreign countries to seek jobs[14], abuse of IV drugs, use of unsafe needles, blood transfusion, community barbershops, dental and surgical procedures by quacks (e.g., circumcision), ear-piercing tattooing and dialysis are the factors for the transmission of HCV and HBV in Pakistan[15].

Our study shows that HCV is more common than HBV in this region (80.3% > 13.3%). These results coincide with several studies conducted in Pakistan [13, 16]. Khan P et al. reported that the Swat district has higher number of HCV patients than HBV patients. In our study, we found that 4.4% of the cases were cryptogenic, with the extreme occurring at the age of 12. Another study conducted in Pakistan confirmed our findings by reporting 5% cryptogenic liver cirrhosis in their results[4].

HCV was more commonly present in age groups of 51-60 years (61%) and 41-50 years (41%). These findings correlate with the results reported by Raja NS et al.

They found that more than two-thirds of the individuals infected with HCV were between the ages of 40 and 50[15]. HBV was commonly present in age groups of 41-50 (9%) and 51-60 years (9%). A cohort study conducted on the IDPs (internally displaced persons) of the Malakand Division yielded similar results, in which the prevalence of HBV infection was more common in older individuals who were between the age of 46 and 60[17]. In our study, HCV was more common in males (66.25%) than in females (33.7%). Almani SA et al. concluded similar results. In their study, they reported that the number of male patients infected with HCV was double as compared to females[4]. A prospective study in the United States conducted between 1999 and 2002 also had similar results that the number of male individuals infected with HCV were higher than the female patients[18]. The main reasons being the abuse of IV drugs, sexual transmission, tattooing, barbers as stated by Raja NS et al.[15].

CONCLUSION

We conclude from this study that the hepatitis C virus is the significant cause of liver cirrhosis in our setting. HCV is more common in males than in females. Cirrhosis occurs mostly in the 4th, 5th and 6th decades of life after being infected with HBV and HCV.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Muhammad N:	Study concept, data collection and analysis
Khan MH:	Data collection, writting and Correspondance
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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.

THE EFFECTIVENESS OF INSERTION OF IMMEDIATE POSTPARTUM INTRAUTERINE CONTRACEPTIVE DEVICE (IPP-IUCD) IN TERMS OF MODES OF DELIVERY

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ABSTRACT

Objective: The objective of the study is to compare the effectiveness of IPP-IUCD in terms of mode of delivery

Methods: This observational study was conducted at Gynaecology and Obstetrics units of Lady Reading Hospital Peshawar of Khyber Pakhtunkhwa, Pakistan, where 200 patients, in whom postpartum IUCD was inserted within 10 minutes of delivery of placenta after normal vaginal delivery (group 1) or c/section (group 2), were included. These patients were grouped into 100 cases of vaginal and 100 cases of intra-cesarean IPP-IUCD insertions. Record of follow up of these 200 (19.9%) patients was maintained and analyzed at 6 weeks to 12 weeks` post-insertion follow up visits.

Results: No life-threatening complications such as perforation was recorded in both groups. Most common complications observed between vaginal vs intra-cesarean insertions were irregular vaginal bleeding in (11% vs 5%), abdominal pain (6% vs 9%), vaginal discharge (8% vs 5%), spontaneous expulsions (8% vs 2%) and lost strings (14% vs 1%). Statistically significant difference was found between two groups with respect to lost strings (P=0.0006).

Conclusion: IPP-IUCD is an acceptable, safe (in terms of complications) and effective contraceptive option after both vaginal and intra-cesarean insertions. Early follow up examinations are helpful in identifying spontaneous expulsions and dealing common problem.

Keywords: Immediate postpartum IUCD, mode of delivery

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INTRODUCTION

Pakistan is sixth populous country in the world, making child spacing an unmet need especially in the first year of childbirth. Undesired pregnancy in this period is mainly because sexual activity is resumed earlier and ovulation is unpredictable.[1, 2] Pakistani population was estimated as 207.77 million in 2018, a growth rate of 1.89%, one of the highest fertility rates in the region second only to Afghanistan, hampering socioeconomic development[3,4]. The prevalence of unintended pregnancy is 38-46% while that for use of modern methods of contraception is 26% in Pakistan[5]. This in turn leads to increased rates of induced abortion, maternal morbidity and mortality. A study observed that nonuse of contraception in postpartum period leads to unplanned pregnancies in 86% women and this ends up in 88% of induced abortions[6].

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Most of the women are not clear about contraceptive use in postpartum period. The ideal time to motivate patients for engagement in contraception is intra and postpartum period i.e. after exhaustion of pregnancy and labor. In Pakistan, facility based births are 52%, rendering PPIUCD an effective and excellent choice in reducing population burden of low resource countries like ours. All these facts emphasize the importance of provision of contraception in this sensitive period. According to world health organization "postpartum family planning (PPFP) program focuses on prevention of unwanted and closely spaced pregnancies in the first 12 months following childbirth.[7,8] The Cu T 380A (IPPIUCD) in terms of efficacy is on the top of contraceptive devices with a failure rate of less than one per 100 women in the first year of use[9]. It is coitus independent, easy to insert and does not affect breastfeeding. Both care provider and clients are available in the same setting, securing time and cost of interval IUD insertion. A survey conducted from 2015-16 in Pakistan showed the highest reported (334) IUD insertions in KP while contraceptive prevalence rate was 46% compared to 81.8% for Islamabad[10]. There are 160 million IUCD users worldwide i.e.14.3% of contraception users, so it is most widely used amongst modern methods of contraception[11, 12]. However, high expulsion rates are reported by other

studies (10.4–16.4%) [13]. PPIUCD is associated with primary complications like pregnancy and secondary ones as irregular vaginal bleeding, abdominal pain, infection, expulsion and uterine perforation. These risks can be minimized by using standard technique and improved insertors. This fact is supported by an extensive literature review of Canadian Contraceptive Consensus [14].

The changes in menstrual bleeding pattern encountered after immediate PPIUCD are distressing for patient. Reassurance of patients with mild symptoms is sufficient i.e. mild changes are due to postpartum involuting uterus. Mild cramping pain can occur in the first few weeks of insertion. IUCD removal is an option for heavy and prolonged bleeding and constant abdominal pain. The upper genital tract infection risk is highest within first 15 to 20 days of insertion due to pre-existing infection and improper infection prevention practices[15]. Absent strings, most common in intra-cesarean insertion, at 6 weeks postpartum must be investigated via ultrasonography to ensure proper placement of IUCD. IPPIUCD counselling services regarding its common side effects and complications are important. Complications can be prevented by ensuring high quality training, follow up of training quality, infection prevention practices and training monitoring. Pros and cons of immediate postpartum contraception inserted via different routes need follow up in order to scale up PPIUCD program. There is minimal research comparing follow up outcomes between vaginal and caesarean insertions. This study is intended to compare outcomes of IPP-IUCD as a factor of route of insertion. The information gained will be utilized to provide evidence based counseling of the clients and to help them make informed choice regarding use of PPIUCD.

MATERIAL AND METHODS

This observational study was conducted in the Gynecology and Obstetrics department of Lady reading Hospital Peshawar that is a tertiary care hospital of the KP province of Pakistan, from October 2018 to September 2019, with two follow-up visits scheduled at six weeks for all the rest of outcomes and 12 weeks for irregular bleeding outcome. Ethical approval was obtained from hospital ethical committee. All patients fulfilling the inclusion criteria delivered vaginally or via c/section were included in study (consecutive sampling) i.e. clients in whom IUCD was inserted immediately after delivery of placenta. Post-insertion counselling was done by the person who inserted the device. Patients were given dates of their follow up on discharge card. For all the clients who got discharged uneventfully, follow ups were scheduled at 6th and 12th weeks. Telephonic contact was made with clients who did not return to health facility for follow up visit. Two hundred postpartum patients with IPP-IUCD insertion were included in study. Patients were grouped into two categories (A): first 100 cases of PPIUCD insertion following vaginal deliveries (B): first 100 cases of PPIUCD insertions, intra cesarean. Patients with post abortion PPIUCD insertion were excluded from study. At 6th week visit, information regarding primary follow up outcomes like abdominal pain, abnormal vaginal discharge, lost strings and spontaneous expulsion, as a factor of route of insertion, was gathered and recorded on a proforma. At 12th week information on menstrual irregularity was collected. Abdominal pain was defined as constant crampy ache in the lower abdomen in the absence of urinary or bowel problem and relieved with or requiring painkiller use more than twice a week. Menstrual irregularity was defined as unpredictable, unscheduled vaginal bleeding occurring beyond six weeks postpartum. Pelvic examination was performed for abnormal vaginal discharge indicative of infection (foul smelling yellowish discharge), strings (which were trimmed if long) and presence of IUCD. If no threads were visible, ultrasonography was done to check for presence of IUCD and confirmation of its location. In case of complications the women were given treatment and reassurance. Data was analyzed on SPSS version 20 and chi square tests were used for comparison of qualitative data. Probability value of <0.05 was considered significant.

RESULTS

A total of 6283 deliveries occurred in our unit and 1005 (15.9%) women opted for PPIUCD insertion over study period i.e. about 156 (15.5%) intra-cesarean and 849 (84.4%) after vaginal delivery. First 100 cases of vaginal and first 100 intra-cesarean (total 200) insertions were included in study. Most women (61.8%) belonged to age group of 25-35 years, with multipara, para 4 or more (62%). Of 200 patients, 103 (51.5%) women came physically for follow up at 6 and 12 weeks after delivery while telephonic contact was made with 97 (48.5%) cases (Table 1). Most of the complications were seen in insertions after vaginal delivery than cesarean section. Table-2 shows details of complications associated with 2 groups of women. Ultrasound was done for all women with undescended strings to confirm intrauterine position. No unplanned pregnancy or uterine perforation was recorded during the study. Patients with irregular bleeding were reassured that it will settle in further 2-3 months and Mefenemic acid and Tranexamic acid was advised. Medical treatment was not effective in 4% of vaginal and 1% of intra-cesarean insertion group ($P=0.368$) and so removal of IUCD was the result. Total 10 IUCDs were expelled out of which 3 (1.5%) IUCDs had partial expulsion, with a loop in cervical os. These were counted in expulsion group and removed . IUCD was removed in 14 (7%) cases, the most common reason was irregular vaginal bleeding in vaginal group and abdominal pain (2%) in intra-cesarean insertion group. Two percent of vaginal and 1% of intra-cesarean group underwent removal due to excessive vaginal discharge.

Table 1: Demographic variables of patients

Variables	Groups	Number	%age
Age (Yrs)	18 – 24	36	18
	25 -35	123	61.8
	>35	41	20.9
Parity	P1 – P2	23	11.5
	P3 – P4	103	51.5
	>P5	74	37
Follow up	Physical	103	51.5
	Telephonic	97	48.5

Table 2: Risk of complications with insertions after vaginal vs C/section

Complaints	Vaginal delivery Group	%age	Cesarean section Group	%age	Total	P Value
NO Complaints	66	66.0	65	65.0	131	1.0
Abdominal pain	6	6.0	9	9.0%	15	0.6
Menstrual irregularity	11	11.0	5	5.0	16	0.2
Vaginal discharge	8	8.0	5	5.0	13	0.50
Expulsion	8	8.0	2	2.0	10	0.1
Lost strings	1	1	14	14	15	0.0006

DISCUSSION

A WHO report suggests that birth spacing can prevent 32% of all maternal deaths and over one million deaths of children below 5 years, thus, achieving positive maternal health outcome irrespective of contraceptive method.[7] Postpartum women have a higher acceptability for contraception due to post-delivery conception fear. Postpartum IUCD can reduce expenditure of subsequent pregnancy particularly in developing countries as reported in study by Rodreiguz et al [16]. In this study, most (62%) clients were multipara as they suffer ill health more due to morbidity associated with repeated pregnancies, consistent with a Taiwan study with 57% clients having four or more children.[17] Although statistically insignificant but higher number of women followed up after intra-caesarean insertions as compared to vaginal insertions, probably due to fear of complications.

In our study, the common discomforts with PPIUCD insertion were abdominal pain, irregular vaginal bleeding, abnormal vaginal discharge and lost strings. The symptoms of irregular vaginal bleeding, lower abdominal pain and abnormal vaginal discharge were not influenced by route of insertion i.e. no statistically significant difference was found between the two groups. Our results are comparable with those of Welkovic S et al and Urmila T reporting abdominal pain in 8% of vaginal vs 10% of cesarean insertions.[18,19] Another study showed comparable results i.e. excessive and continuous bleeding in 2% of vaginal and 5 % of intra-cesarean insertions, respectively.[2]

In the study, no statistically significant difference was found between the two groups regarding vaginal discharge and expulsion rate[12]. The increased expulsion risk after vaginal compared to cesarean deliveries of 8% vs 2% comparable to 6.7% vs 4.8% reported by Tayyiba.[20] The reason could be widely open os after vaginal delivery. A study by Abhijit reported expulsion rate of 4 % and 2% respectively ($p = 0.651$).[2]

All patients were examined for visibility of threads at follow-up visit. Threads were visible among 99% of vaginal insertion clients as compared to 84% of intra-cesarean clients at follow up visit of 6 weeks. Our findings were consistent with that of an Indian study i.e. strings visible, at the end of 6 weeks, in 81% of vaginal and 65% of intra-cesarean insertions [2].

In the study, statistically significant difference ($p = 0.0006$) was found between the two groups regarding visibility of threads at 6 weeks of follow-up i.e. no threads visible in 14% of intra-cesarean insertions. Most of lost strings were confirmed by ultrasound, lying curled up in endocervical canal. The study results are consistent with those of Abhijit i.e. missing strings in 16 % of vaginal and 30% of intra-cesarean insertions, a statistically significant difference ($p = 0.028$).[2] In a study by Nelson A et al strings were visible in all the 7 intra-cesarean insertions at follow up.[21]

In the study, IUCD was removed in 7% of clients (p = 0.028) due to bleeding problems, abdominal pain, vaginal discharge and incomplete expulsion. Celen reported removal of IUCD in 6 - 8% of clients while Tayyiba W reported in 16.8% [13]. In an Indian study, removal was reported in 9% of vaginal vs 5% of intra-cesarean insertions.[18] In the study, IUCD continuation rate was 89.5% compared to 90.6% of that reported by Reetu.[22]

Although, this study adds additional knowledge to the existing indication of use of IUCD practices, but further large scale studies of this kind are needed to enhance our understanding about the complications of insertion of IUCD in immediate postpartum period.

CONCLUSION

Postpartum IUCD insertions, both vaginal and intra-cesarean, are efficacious for contraception and safe in terms of complications. The postpartum IUCD is associated with low rates of abdominal pain, irregular vaginal bleeding, vaginal discharge and expulsion. Strings of IUCD are less visible after cesarean section in comparison to vaginal insertions at follow-up.

Proper timing of insertion, trained service providers and fundal placement using long Kellys forceps are fundamental in reducing expulsions and other complications. Media awareness and effective counselling of women about benefits versus risks is required to make such programs effective.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Qazi Q:	Main idea, Data collection, Manuscript
Liaqat N:	Writing of manuscript, Proofreading, data collection
Hussain SS:	Data analysis, Proof reading
Khattak S:	Manuscript writeup

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

CLINICAL EFFECTIVENESS OF AZITHROMYCIN VERSUS CIPROFLOXACIN IN THE TREATMENT OF UNCOMPLICATED ENTERIC FEVER IN CHILDREN; A COMPARATIVE STUDY CONDUCTED IN A TERTIARY CARE HOSPITAL OF PESHAWAR

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ABSTRACT

Objective: To compare the clinical effectiveness of oral azithromycin with oral ciprofloxacin in the treatment of uncomplicated enteric fever in children.

Material and Methods: A Quasi experimental study was carried out in the Pediatric department of Khyber Teaching Hospital for which a sample size of 282 patients was determined using WHO calculator with 5% level of significance and 80% power of test (Two sided). Children of both genders and age between 6 to 18 years were included in the study using simple random sampling. Eligible patients were randomly divided in two equal groups of 141 subjects where Group A was treated with oral azithromycin while Group B with oral ciprofloxacin for 7 days and difference in clinical cure between two groups were determined.

Results: A total of 282 patients were observed where majority were in age group of 13-18 years with male predominance. In azithromycin treated group, 128 (90.78%) while in ciprofloxacin treated group, 105 (74.46%) children were cured. Both groups responded to the study drugs having mean defervescence time of 4.5 ± 1.3 days and 3.8 ± 1.6 days with azithromycin and ciprofloxacin therapy, respectively.

Conclusion: Oral azithromycin is more effective than oral ciprofloxacin in the treatment of typhoid fever in children.

Keywords: Azithromycin, Ciprofloxacin, Enteric Fever

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INTRODUCTION

Enteric fever, caused by Salmonella typhi and para-typhi is a common and sometimes fatal infectious disease. It is mostly observed in the developing countries due to poor sanitation and its feco-oral route of transmission. An estimated 17 million cases of typhoid and paratyphoid fever occurred globally in 2015, mostly in South Asian countries. Left untreated, it may be fatal with estimated 178,000 deaths worldwide in 2015.[1]

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In addition to preventive strategies that target the risk factors, interventions focusing on timely diagnosis and appropriate clinical management can improve the outcomes of enteric fever. For decades, ampicillin, chloramphenicol and co-trimoxazole were the drugs of choice for enteric fever but the emergence of multi drug resistant strains of S. typhi and para typhi restricted their use. Later, fluoroquinolones turned out to be good alternative. However, 15-36% resistance to fluoroquinolones was reported from several parts of the world by 2011.[2] Currently, recommend therapy for enteric fever includes extended spectrum cephalosporins (ceftriaxone, cefixime) and azithromycin.[2-5] In cases of treatment failure to single therapy, combination of these drugs is needed to broaden the antimicrobial spectrum through potential drug synergism.[6] Several trials have demonstrated azithromycin efficacy better with reduction of relapse, duration of hospital

stay, clinical failure rate and well tolerated than many other competitive drugs.[7-9]

In our region, though azithromycin and ciprofloxacin are amongst most commonly prescribed oral antibiotics in uncomplicated enteric fever as an empirical therapy but concerns persist regarding variations in response to treatment which is evident from a huge study carried out in Bangladesh.[10] Recently, many cases have been reported in Pakistan regarding extensively drug resistant strains of Salmonella typhi, responsible for a large typhoid outbreak.[11] In addition to resistance, azithromycin and quinolones are reported to be associated with variable fever clearance time (FCT) averaging 4-5 days, resulting in sub-optimal treatment response, increased morbidity, treatment cost and healthcare burden.[12-15]

Due to this ever changing pattern of microbial resistance and variable drug responses, the choice of oral anti-microbial regimen for uncomplicated typhoid fever is unclear. To our knowledge, currently there is no data available regarding comparative efficacy between azithromycin and ciprofloxacin in terms of fever clearance time in our local population of children with uncomplicated enteric fever, so this study was an attempt to explore it.

MATERIAL AND METHODS

A Quasi experimental study was carried out at the Pediatric department of Khyber Teaching Hospital, Peshawar from February to October, 2016 after taking ethical approval from the committee. A sample size of 282 patients was calculated using WHO calculator, based on 77.78% efficacy of ciprofloxacin, 90% efficacy of azithromycin, 5% level of significance and 80% power of test (Two sided). Patients of both genders and age 6-18 years presented to OPD and/or admitted to pediatric unit were included in the study by simple random sampling. The diagnostic criteria for enteric fever was high grade continuous fever of ≥38°C for ≥5 days without a focus of infection plus physical examination to determine at least two of the following signs: abdominal tenderness, splenomegaly, hepatomegaly, rose spots and coated tongue plus laboratory tests like CBC and blood/stool culture for Salmonella typhi.[16,17]

Patients who were unable to swallow oral medication, allergic to study drugs, treated with study drugs or co-trimoxazole and ampicillin within last 48 hours, presented with major complications of enteric fever or other comorbidities like heart disease, asthma, or immune-deficiencies were excluded from the study.

After written informed consent from parents/guardians, patients fulfilling the inclusion criteria were randomly divided in two equal groups of 141 subjects. Group A was treated with oral azithromycin (10 mg/kg/day to maximum 500 mg/day) once daily while Group B was treated with oral Ciprofloxacin (15 mg/kg/day) twice daily for 7 days.

The patient's temperature was monitored three times a day from the day of admission till discharge and response to treatment was assessed strictly on clinical parameters i.e. fever defervescence (patient become afebrile and remain so for more than 48 hours without taking antipyretics) and resolution of associated signs and symptoms. A clinical treatment failure was defined as the persistence of fever and associated signs and symptoms for more than 5 days after the end of treatment or the development of severe complications during treatment, requiring an alternative therapy. Patients who became clinically cured were called for follow up visit one month after discharge (or earlier if signs and symptoms reappear) to identify the incidence of clinical relapses. Data was documented in a pre-designed proforma.

Data was analyzed in SPSS version 20. Percentages and Frequencies were calculated for qualitative variables like gender and patients showing clinical response. Mean ± SD was calculated for quantitative variables like age. Post stratification Chi Square test was applied among different groups and P value less than 0.05 was considered significant.

RESULTS

Two-eighty two patients ranging from 6 to 18 years were enrolled in the study and randomly assigned to one of the two treatment groups to compare the efficacy of ciprofloxacin and azithromycin in uncomplicated typhoid fever and results were analyzed. Distribution of age and gender is mentioned in Figure 1, displaying the male predominance in both the study groups (205 males versus 77 females). The mean age of subjects was 12.48 ± 3.48 years while 12.42 ± 3.48 years in azithromycin group and ciprofloxacin group, respectively.

Among clinical markers of Typhoid fever, a history of continuous fever ranging from 3-20 days with mean duration of 9.8 ± 4.1 days was found in all of the subjects. At the time of presentation, 102 (36%) patients had hepatomegaly, 35 (12.4%) had splenomegaly and 87 (31%) had abdominal pain or distension. Among associated symptoms, most common was diarrhea i.e. 118 (41.8%) followed by nausea and vomiting 94 (33.4%).

Figure 2 depicts the efficacy of study drugs where 128 (90.78%) patients in azithromycin group while 105 (74.46%) patients in ciprofloxacin group met the criteria of clinical cure within 7 days having a significant statistical difference between the results of two groups (p value=0.0003). Patients in both groups responded quickly to therapy with mean defervescence time of 4.5 ± 1.3 days and 3.8 ± 1.6 days with azithromycin and ciprofloxacin, respectively. For post treatment follow up, 101/128 subjects in azithromycin treated group and 56/105 subjects in ciprofloxacin treated group visited hospital. All the subjects were clinically well with no incidence of relapse in either

group. The response of study drugs was also analyzed at different age groups and genders where azithromycin was found significantly effective than ciprofloxacin in both age groups i.e. 6-12 years and 13-18 years with p value 0.020 and 0.005, respectively. Similarly, azithromycin was more effective than ciprofloxacin in males (p value=0.001) but no significant difference was observed between the response of study drugs in female gender with p value 0.401. (Table 1)

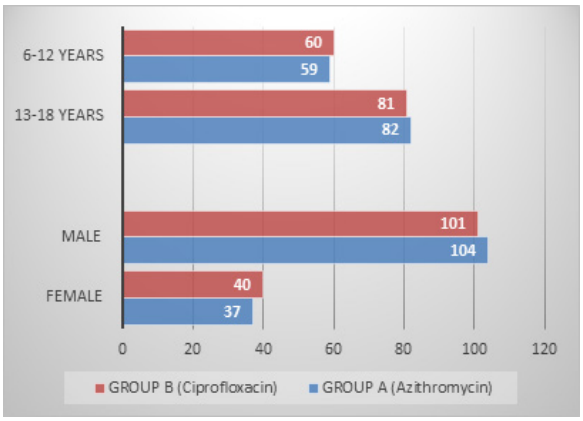

Fig 1: Distribution of Age and Gender

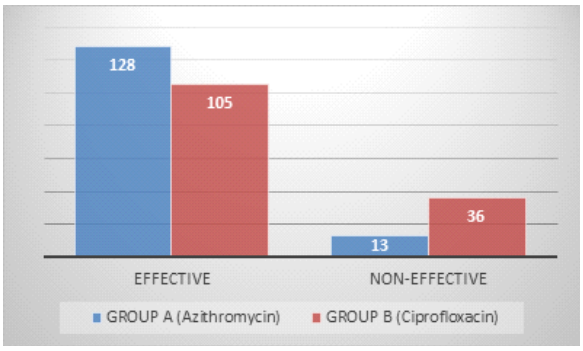

Fig 2: Comparative Efficacy of Azithromycin versus Ciprofloxacin

DISCUSSION

Enteric fever is a significant health problem in the developing countries like Pakistan and need treatment option which is not only efficacious but also cost effective to be used readily in our limited available resources. This comparative study between azithromycin and ciprofloxacin for uncomplicated enteric fever in children displayed high responsiveness of azithromycin with clinical efficacy more than 90%, resembling the results of many studies done previously.[8,18,19]

Few studies reported the efficacy of azithromycin therapy in adults but not significant enough in children, contrary to our results where majority responded well to azithromycin.[20,21]

The optimal dosing regimen of azithromycin for the treatment of enteric fever is yet to be determined. Like in this study, most studies used a regimen of 10-20 mg/kg/day for 5 to 7 days.[22] Some trials have used a loading dose of 1 gram azithromycin at day 1 followed by 6 days of treatment with 500 mg/day. But significant differences in fever clearance time was not observed when it was compared with quinolones treatment.[23]

In this study, clinical cure of 90.78% and 74.46% was achieved by day 7 in the azithromycin and ciprofloxacin group, respectively. This high responsiveness of azithromycin could be due to its remarkable intracellular penetration causing effective therapeutic activity against predominantly intracellular S. typhi. On the other hand, the non-responsiveness in the remaining patients of same group could be explained by the fact that approximately one-third of S. Typhi in the blood of patients are extracellular. As a consequence, the organisms may be exposed to inadequate drug concentrations resulting in prolonged fever clearance time due to slow clearance of bacteremia.[21] Moreover, emergence of resistant strains, genetic mutations in genes like msr A, msr D, ere A[24] or a recently

Table 1: Stratification of Efficacy with Age & Gender Distribution

Age		Group A	Group B	P value
6-12 year	Effective	53	44	0.020
	Not Effective	06	16	
Total		59	60	
13-18 years	Effective	75	61	0.005
	Not Effective	07	20	
Total		82	81	
Age		Group A	Group B	P value
Male	Effective	96	72	0.001
	Not Effective	08	29	
Total		104	101	
Female	Effective	33	33	0.401
	Not Effective	04	07	
Total		37	40	

discovered mutation in an efflux pump encoding gene acr B may also contribute to this non-responsiveness.[25]

Though, the clinical cure rate of azithromycin treated patients was higher than ciprofloxacin in our study but patients treated with ciprofloxacin showed a slightly shorter mean time to defervescence than did patients treated with azithromycin (difference was statistically insignificant with P value >0.05). The reason could be that while azithromycin appears to target only the intracellular bacteria when used at standard clinical doses, ciprofloxacin may simultaneously target both intracellular and extracellular populations.

We have also attempted to evaluate the clinical relapses of typhoid fever through scheduled follow-up visits. The absence of relapse in either study group is similar to the results reported previously.[21] This could be due to long half-lives of these drugs in addition to high intracellular concentrations.

Having said that, azithromycin seems to be a better alternative than ciprofloxacin due to its cost and clinical effectiveness and also better safety profile i.e. well established association of quinolones usage with damage to cartilage and growing bones in children.

One of the major limitations of the 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, fever defervescence along with resolution of associated signs and symptoms was taken as criteria for clinical cure in this study. However, drug efficacy can be evaluated more accurately by determining the bacteriological cure in addition to clinical cure by performing sequential blood and stool cultures.

CONCLUSION

It is concluded that oral azithromycin in a dose of 10mg/kg/day to maximum 500mg/day, once daily for 7 days appears to have clinical efficacy more than oral ciprofloxacin in the treatment of uncomplicated enteric fever in children.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

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Khan A:	Data collection
Jamal A:	Statistical analysis, Critical review & Bibliography
Hayat W:	Statistical analysis, Critical review & Bibliography
Faisal MS:	Manuscript writing

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.

QUALITY ASSESSMENT OF HEALTH SERVICES PROVISION OF BASIC HEALTH UNITS OF DISTRICT PESHAWAR

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ABSTRACT

Objective: To assess the quality of services provision of different Basic Health Units of district Peshawar.

Material and Methods: It was a cross-sectional descriptive study that was carried out in 08 Basic health units (BHU) of district Peshawar using convenient sampling technique. Data was collected through a semi structured questionnaire, which was developed and validated in the department of Public Health, Khyber Medical College Peshawar before the start of research. The data collection through field visits continued for about 03 months. The results were analyzed through SPSS version 22.

Results: The study was designed in the department of Public health and after approval from ethical board of Khyber Medical College, a questionnaire (having 15 items) for data collection was developed and validated with the help of subject experts. A total of 8 BHUs were selected in the outskirts of Peshawar. Questionnaire were distributed among 100 patients or their accompanying persons. Amongst them, 55 were female patients. The educational status of all of them was below 5th grade. Quality of BHU was assessed in three domains which were staff attitude, availability of essential drugs and facilities available in BHUs. For staff attitude Likert scale was used and 89% of Patients were satisfied with the attitude of staff. When asked about availability of essential drugs, 67% patients said that they do not receive any medicines. When asked about availability of facilities, 75% of patients said that there is supply of clean drinking water at BHU, 50% of patients said that there was no electricity during their stay at BHU. Regarding availability of doctors, 63% claimed that doctor was present during their visit. About 92% of patients said that BHU is easily accessible. However, 91% agreed that there is still room for improvement.

Conclusion: It is concluded from this study that most of Basic health units are accessible to the users and they are satisfied with the attitude of staff but all of BHUs had problem of essential drugs availability.

Key words: BHU, quality assessment, service provisionr

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INTRODUCTION

The role of BHUs in treating common diseases among local population cannot be ignored. BHUs are the first level care facilities to provide healthcare to local communities. Pakistan having population of more than 200 million people has extensive network of BHUs.[1,2,3] Pakistan is a nation that has made progress towards economic development but is struggling towards sustainable development. Most of these BHUs have not been fully utilized with average number of only 10 to 20 patient reporting per day due to reasons like administrative, infrastructure problems, non-availability of medicine,[4-6] problems with attitudes of health professionals and inaccessible locations.[7,8] Health system now focuses on their primary health services through clinical and financial aspects to get better results and in turn whole health system becomes sustainable.[10] For provision of high quality of primary health care services there is a dire need to develop methods for quality assessment and monitoring system.[11] Physical structure of these centers should incorporate availability of all required equipment and continuous supply of drugs to meet needs of population. In addition to this, availability of staff and their behavior is also important to strengthen the role of these facilities in provision of health services.[12] China has made large investment in health by upgrading its primary health care level by making it more affordable, accessible and according to needs of people. Patient's experience at health facility is major determinant of trust and satisfaction with services provided. Countries having strong primary health care system have reduced morbidity, increased longevity of people and increased equity in health outcomes.[13]

This study is aimed to assess the service provisions of Basic health units of Peshawar district. This will improve our understanding about the service provision in these facilities and will alert the governmental agencies

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about the deficiencies identified.

MATERIAL AND METHODS

A cross-sectional descriptive study was carried out to assess the quality of 08 BHUs out of total 25 BHUs of district Peshawar, BHUs were selected through convenient sampling technique in outskirts of Peshawar. A total of 100 respondents participated in the study and data was collected during a period of three months. A thorough analysis of BHUs was done in three domains which were staff attitude, availability of essential drugs and facilities available at these health centers. Likert scale was used to assess these domains and questionnaire was filled by patients or their attendants in the presence of 4th year MBBS students. Statistical analysis was performed using SPSS version 22. P value of less than 0.05 was considered significant. The research process was approved by Research Ethics Committee of KMC.

RESULTS

Regarding availability of water, 75% of the patients said that clean drinking water was available during their stay at health unit, while 50% of patients said that there was no electricity at BHU during their visit. The number of patients per day was calculated (during working hours from 8 am to 2 pm) after consulting the respondents and by taking record of medical registers and average number of patients was 15 to 20 per day. Regarding the staff, results were mostly positive with 90% of respondents claiming that their appointment was on time and 89% claiming that the staff was cordial and welcoming. seventy Six Percent of patients were satisfied with the care they received at health unit. When asked about availability of medicines, 65% claimed that they did not receive any medicines. According to 92% of patients, BHU was accessible to them.

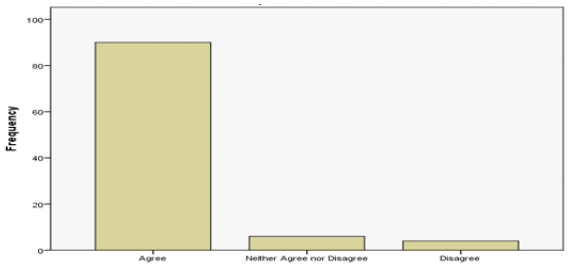

Fig 1: Views about cooperation of staff

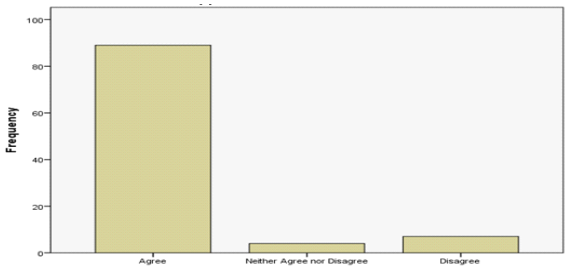

Fig 2: Views about timely appointment

Table 1: Number of Patients satisfied with care

Response	Frequency	Percent
Yes	76	76.0
No	24	24.0
Total	100	100.0

Table 2: Availability of medicines

Response	Frequency	Percent
Yes	33	33.0
No	67	67.0
Total	100	100.0

Table 3: Accessibility of BHU

Response	Frequency	Percent
Yes	92	92.0
No	08	8.0
Total	100	100.0

DISCUSSION

In Pakistan infrastructure of Basic health units is in good condition but services are not provided according to the needs of people. In a previous study conducted in Pakistan, to assess the infrastructure of BHUs, it was found that out of 992 BHUs of country, 67% were in better condition out of which 89% were in Punjab, 64% in KPK to 15% in Baluchistan.[14] While in this study most of facilities were available in BHUs except for essential drugs. When compared with primary healthcare system of India, where manpower is found deficient to cater the large population of India.[15,16] The Primary health care structure of India was found to be rigid, making it unable to respond effectively to the needs of people. Patients also complained about rude behavior of medical staff towards female patients and minorities.[17]

In the UK, unlike many other countries, there is continuous supply of water and electricity and very well-maintained buildings but patient do not normally have direct access to hospital consultant and GP, controls access to secondary care.[18] These finding are contrary to our study, where there is easy access to health care facility and availability of water. In a study conducted in Nigeria, there was lack of infrastructure, non-availability of essential drugs at primary health care level and only 20% of facilities had minimum equipment. These findings are somewhat similar to our study.[19]

When compared with Iran, where more than 90% of the population has health insurance and the government has made universal health coverage by 2018, a priority but shortage of medicines and trained staff is also a problem in rural health centers of Iran.[20]

One of the important limitations of this study is its contextual nature, as it includes only localities of Pesha-

war, which limits its generalizations. However it is a good start in evaluating the basic health system of the province.

CONCLUSION

This study concludes that most of Basic health units are accessible to the users and they are satisfied with the attitude of staff, as most of staff is welcoming but the main problem found in all of BHUs is the availability of essential drugs. Due to this reason number of patients visiting these health facilities are also scarce.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Mustafa A:	Concept, Design, Review
Ayub R:	Concept, Design, Review
Khan BD:	Data Collection, Manuscript writing
Karam A:	Data Collection, Manuscript writing
Faizan:	Data Collection, Manuscript writing
Ahsan N:	Data Collection, Manuscript writing

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

STRESS, DEPRESSION, ANXIETY, AND COPING STRATEGIES OF PARENTS OF INTELLECTUALLY DISABLED AND NON-DISABLED CHILDREN

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ABSTRACT

Objectives: The current study was aimed to investigate the differences on stress, depression, anxiety, and coping strategies of parents of intellectually disabled and non-disabled children.

Material and Methods: Sample consisted of parents (N=300) that was further divided into two groups (parents of intellectually disabled children; n=150 and parents of non-disabled children; n=150). Data was collected from Peshawar, Islamabad, Rawalpindi, and Wah Cantt; for this purpose consent form, demographic information sheet, along with two standardized scales Depression Anxiety Stress Scale (DASS-42) and Brief COPE were given to the parents of disabled children and non-disabled children.

Results: The study shows that significant mean differences were observed on DASS; intellectually disabled children's parents reported higher stress, depression, and anxiety than non-disabled children's parents. Non-significant mean differences were observed in subscale of Brief COPE, except on self-blame in which parents of intellectually disabled children scores were higher as compared to the parents of non-disabled children.

Conclusion: The findings depicted that disability raises extra burden on the parents, which promoted stress, depression, and anxiety. After developing these psychopathologies, parents became over sensitive and got emotional and used emotion based coping patterns. They easily blame themselves for the disability and all the problems which are directly linked with it.

Keywords: Stress, Depression, Anxiety, Coping strategies, Intellectually disabled, Non-disabled

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INTRODUCTION

Birth of a child affects the overall family dynamics; it brings joy, happiness, hopes, and mixed feelings for the parents. In case of disabled children, disability and cognitive problems bring extra needs and demands for the parents; because of continuous pressures, parents develops stress, depression, and anxiety.[1,2] Most prevalent disorders are depression and anxiety in population; disability is linked with behavioral issues that can lead to distress in caregivers.[3,4] Psychiatric symptoms promote lower ability for dealing with stressors in the parents of disabled children as compared to those parents having non-disabled children.[5,6] Stress is a negative affective state that occurs after the threatful events which are uncontrollable and individuals identify problems how they respond and attempt to cope with.[7] Depression is the most prevalent disorder with multiple symptoms (sad mood, sleep problems, lack of concentration, loss of energy, and social life disturbance).[8] Anxiety is a negative affective state because of the disable children` parents develop the symptoms of excessive worries, anxiousness, and sleep related problems.[8] Coping is the ability of facing and managing the stressful situations. All parents (disabled children and non-disabled children) applies various techniques for dealing with such situations but it may varies according to the demands of their children. Strategies can be emotion-focused and/or problem-focused such as active coping, planning, social support, emotional support, acceptance, religion, positive reinterpretation, behavioral disengagement, and denial.[9]

Parenting is a tough process as previous studies results indicates that parents with special children having more stress, depression, and anxiety because of extra burden than parents of non-disabled children.[6,10] In Asian countries, as previous literature indicates that intellectually disabled children parents reported mores anxiety and depression.[11,12]

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A recent study was conducted in Pakistan, in which researchers approached the intellectually disabled children parents and investigate their coping patterns. The results of the study showed that mostly parents used self-distraction, behavioral disengagement, and venting of emotions. Most of the parents' uses emotion-based coping strategies (venting of emotions, self-blame, and denial for dealing with disabled children that increases psychiatric illnesses in them. When parents applied problem-focused patterns (behavioral disengagement, positive reframing, active coping, and planning), their level of burden or stressors decreases.[1,3] Supporting networks are of great concerning element in the lives of parents, as previous studies findings shows that supportive patterns (emotional, social, and financial) increases the parents' well-being (psychological, emotional, mental, and subjective).[14,15]

Keeping in view the higher prevalence of psychopathology in Pakistan, most of the studies focused on stress, depression, and anxiety in intellectually disabled children's parents. Literature indicated that intellectually disabled children's parents had higher level of psychiatric illnesses than parents of other disabilities (physical and chronic illnesses).[16] These psychopathologies (stress, depression, and anxiety) affects the parents badly and because of this, they are unable to handle the stressful conditions. This study focuses on coping strategies (emotion-focused and problem-focused) of such parents how they deal with such situations in our local context and compared with the parents of non-disabled children.

MATERIALS AND METHODS

The aim of this study was to investigate the differences in stress, depression, anxiety, and coping strategies among parents of intellectually disabled and non-disabled children. Purposive sampling technique was used in this study, total sample of the study was 300 parents (intellectually disabled children parents; n=150 and non-disabled children's parents; n=150); with age range of 20 to 60 years. Parents of those children who were admitted in special education institutes (mild and moderate level of intellectually disabled children) and main stream schools were approached. For this purpose, initially researcher took the permission from the authorities of special institutes and main stream schools. After the parents' consent, demographic sheet and standardized scales Depression Anxiety Stress Scale (DASS-42)[17] and Brief COPE[18] were administered on all parents. After the data collection, data was analyzed on SPSS 21. Descriptives statistics and t-test was computed on all study variables.

RESULTS

Parents age range between 20 to 60 years (intellectually disabled children parents; M=37.56 and non-disabled children parents; M=34.21).

Further, descriptive statistics (M, SD, α) of intellectually disabled children parents indicates on Depression Anxiety Stress Scale (Mean ± SD 76.85 ± 38.09, α=0.96) and on Brief COPE (Mean ± SD 12.71 ± 6.62, α=0.74). Non-disabled children parents descriptive statistics on Depression Anxiety Stress Scale (Mean ± SD 59.66 ± 37.21, α=0.90) and on Brief COPE (Mean ± SD 14.16 ± 8.03, α=0.75). Data is normally distributed and it is fulfilling the assumption of parametric testing.

Table 1 indicates that, on DASS dimensions values are significant (t (298) = depression, 3.48; anxiety, 4.03; stress, 3.44, p<.01). On all scales depression, anxiety, and stress of intellectually disabled children parents scores are higher than non-disabled children parents.

Further, Table 2 indicates the mean differences among the parents' of both groups and results indicates that on COPE dimension self-blame (t (298)= 2.62,p<.01) significant differences are observed. Disabled children parents have higher scores than non-disabled children parents on self-blame. On other dimensions of COPE, values are non-significant among both groups of parents.

DISCUSSION

Previous studies mainly focused on psychological problems while this study focused on how intellectually disabled children cope with these problems.[9] The findings of the study indicated that parents' of intellectually disabled children had more psychological distress (stress, depression, and anxiety) than non-disabled children's

Table 1: Means, Standard Deviations, and t-values on DASS dimensions among Non-disabled children parents (n=150) and Intellectually Disabled children parents (n=150)

Subscales	Non-disabled (n = 150)		Disabled (n = 150)		t(298)	p	CI %95		Cohen's d
	M	SD	M	SD			LL	UL	
Depression	19.60	13.25	25.41	13.11	3.48	.000	-8.79	-2.83	-.44
Anxiety	20.70	12.40	26.48	12.58	4.03	.000	-8.60	-2.96	-.46
Stress	19.36	13.70	24.95	14.58	3.44	.000	-8.70	-2.39	-.39

Note. CI = Confidence Interval; LL= Lower Limit; UL= Upper Limit

Table 2: Means, Standard Deviations, and t-values on Brief COPE dimensions among Parents of Non- Disabled (n=150) and Intellectually Disabled Children (n=150)

Subscales	Non-disabled (n = 150)		Disabled (n = 150)		t(298)	p	CI 95%		Cohen's d
	M	SD	M	SD			LL	UL	
Self -Distraction	3.95	1.62	4.18	1.70	1.20	.22	-.60	.14	.13
Active Coping	4.51	2.14	4.26	1.91	1.06	.29	-.21	.70	.12
Denial	4.01	1.80	4.06	1.81	.25	.80	-.46	.35	.02
Substance use	2.94	1.35	3.11	1.56	1.02	.30	-.50	.16	.11
Emotional Supp	4.53	1.45	4.42	1.74	.59	.55	-.47	.25	.06
Instrumental Supp	4.49	1.64	4.15	1.47	1.85	.06	-.02	.68	.21
BD	4.58	1.45	4.83	1.40	1.54	.12	-.57	.06	.17
VOE	4.45	1.68	4.15	1.60	1.58	.11	-.07	.67	.18
Positive Reframing	6.07	2.05	5.62	2.20	1.84	.06	-.93	.03	.21
Planning	5.39	1.93	5.37	1.59	.11	.91	-.37	.42	.01
Humor	5.21	1.84	4.85	2.10	1.56	.11	-.80	.09	.18
Acceptance	5.36	1.86	5.26	1.70	.49	.62	-.30	.50	.05
Religion	5.48	2.06	5.57	1.85	.42	.67	-.54	.34	.04
Self –Blame	4.51	1.99	5.08	1.77	2.62	.00	-1.0	-.14	-.30

Note.CI=Confidence Interval; LL=Lower Limit; UL=Upper Limit; BD=Behavioral disengagement; VOE=Venting of Emotions.

parents. Findings were in line with previous literature in which researchers concluded that parents of individuals with intellectual disabilities reported higher distress as compared to non-disabled children's parents.[5] In Asian countries, studies findings indicated that intellectually disabled children' parents reported more anxiety and depression.[11,12]

The findings of this study stipulate that on self-blame (emotion-focused) coping strategy, significant mean differences were found (t (298) =2.62, p<.01). Intellectually disabled children parents used self-blame for dealing with stress as compared to non-disabled children's parents. Previous studies showed mixed findings regarding the coping strategies (wishful thinking, self-blame, and distancing) of special needs children's parents; such parents scored higher on emotion-based coping patterns that promoted poor strengths and lower well-being.[19] This is an important aspect that such parents used blaming strategy most of the time that showed they had poor control on handling their children's conditions. Mostly parents' applied emotion-based coping styles and used supportive patterns.[13,15] Non-disabled children parents have had better patterns and opportunities in their surroundings and involved themselves in other positive activities than parents of disabled children.

Although, the present study was done with utmost input there are certain limitations that are noteworthy. Researcher focused on stress, depression, and anxiety and ignored the other psychopathologies; future researchers need to consider this for more findings. Due to time constraints, cross-sectional research design was used while further longitudinal designs should be planned for investigating in-depth knowledge regarding the disability. Literature is very limited with regard to coping patterns of such parents so this study tried to fill the gaps in knowledge within local context but further researches must add the role of specific coping styles and its relation to psychopathology. This study highlighted the role of coping strategies which are mostly implemented by the parents for handling the situations. Mental health professionals will plan strategies according to the coping styles which are predominantly prevailing in this society.

CONCLUSION

The parents of intellectually disabled children had more stress, depression, and anxiety as compared to non-disabled children's parents. Also they used emotion-focused coping strategy than non-disabled children parents. The other coping strategies in both group of parents reported no differences.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Arzeen N: Concept, Design, Review

Irshad: Concept, Design, Review

Arzeen S: Data Collection, Manuscript writing

Shah SM: Data Collection, Manuscript writing

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.

CASE REPORT

KLIPPEL-TRÉNAUNAY SYNDROME WITH BLEEDING PER RECTUM AS A MAJOR SURGICAL CONCERN; A CASE REPORT

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ABSTRACT

Objectives: This case of Klippel-Trénaunay syndrome (KTS) is being shared as a clinical experience for future reference regarding the presentation and management of bleeding per rectum in KTS. Bleeding per rectum is a potentially lethal complication due to the colorectal hemangiomas in rare cases of KTS. Decision making regarding the choice of treatment in these patients is subject to many variables and different methods of medical and surgical treatments have been attempted and published in the literature. We are sharing our experience of surgical treatment for bleeding per rectum in KTS with satisfactory early postoperative outcome.

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INTRODUCTION

The name "Klippel-Trénaunay syndrome" (KTS) was first coined by Klippel and Trenaunay in the early 20th century for a triad of congenital anomalous conditions including capillary, venous, and lymphatic malformations classically presenting with limb hypertrophy.[1] KTS is a rare anomaly with an incidence of 1 in 10,000. There is no gender predisposition.[2]

The genetic basis of this condition is sporadic and there are controversies regarding the genes involved.[3] The condition is compatible with life and commonly affects one of the lower limbs though the involvement of both lower limbs, trunk, and head has been reported in the literature.[4] KTS is sometimes confused with Parkes-Weber syndrome (PWS), which is a similar condition with the addition of arteriovenous fistulae.[5] We present here a case of KTS with a unique and life-threatening presentation of severe bleeding per rectum requiring blood transfusions.

CASE REPORT

A 25 years old male reported to the surgical department of Khyber Teaching hospital Peshawar with a prominent limp complaining of bleeding per rectum more pronounced after defecation since early adolescence. The patient had been to multiple health care centers with the same complaints where he was misdiagnosed with conditions like Ulcerative Colitis and hemorrhoids and was therefore mistreated. On careful inquiry of history, the patient revealed surgery for varicose veins in early childhood elsewhere. On Clinical examination, the patient was pale with otherwise normal vitals. Worth noticing was the obvious limb length discrepancy (Fig.1). The right lower limb was bulky above the knees and 3 cm longer than the left. On close inspection of the right lower limb, we found surgical scars consistent with the history of surgery for varicose veins in past. There were prominent veins, capillary malformations, and angiokeratomas on the limb. On perianal inspection, there were prominent warts around the anal orifice(Fig.2).

Multiple rectal hemangiomas were appreciated on Proctoscopy. Based on the above clinical findings diagnosis of KTS was made by a physician and a multidisciplinary approach was planned to address the issue of bleeding per rectum. Upper gastrointestinal (GI) endoscopy was done by a gastroenterologist which did not show any abnormality. Colonoscopy of the patient revealed anal warts and hemangiomas from the rectum up to the splenic flexure.

The rest of the colon was reported normal. Hence Colorectal Hemangiomas were declared as the cause of persistent bleeding per rectum and need of transfusions in this case. As vascular malformations, in this case, were part of KTS, therefore CT was planned to evaluate the pelvic anatomy. CT scan revealed a thick-walled rectosigmoid with tortuous structures (anomalous vessels) running along its left lateral wall and hypodense lesion in the same location abutting the left pelvic wall (possibly vascular malformation) (Fig.3). After the hemoglobin level of the patient was optimized, the departmental meeting developed a consensus to take an interventional radiol-

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ogist on board for consideration to chemo-embolize the anomalous vessels. The idea was declined by the radiology department on the ground that embolization may risk the colon as chances of ischemia were highly expected.

As all conservative measures had failed and minimal invasive radiological intervention was not possible, surgical option was discussed and planned. The patient was explored via midline laparotomy incision. Per operative, we found that the sigmoid and rectum were studded with hemangiomas (Fig.4).

Surgical interventions as per pre-op plan included ligation of inferior mesenteric and internal iliac arteries, Hartman procedure, and injection of phenol in almond oil into the rectal stump. The patient recovered uneventfully and the postoperative course was also uneventful.

The patient was mobilized and orally allowed on the first post-operative day. The catheter was removed on the third postoperative day. The only postoperative complication was surgical site infection which was managed conservatively.

The patient did not complain of any bleeding per rectum or stoma postoperatively and maintained an optimum hemoglobin level. Significant reduction in number and size of hemangiomas was noticed on examination under anesthesia after two weeks.

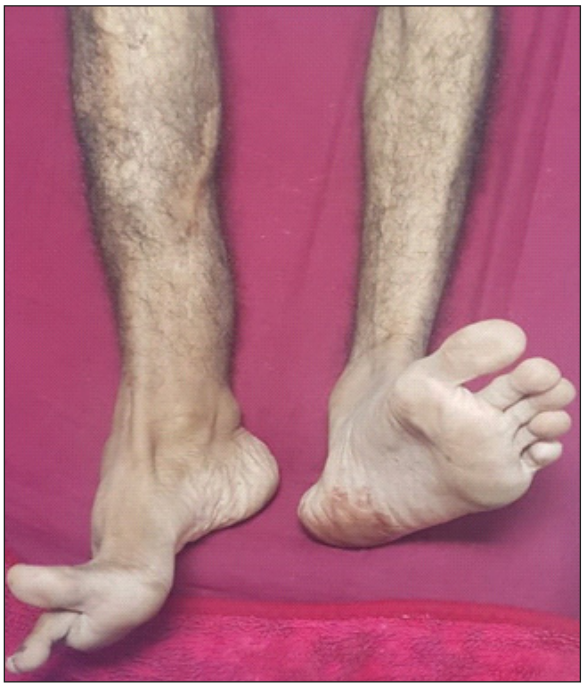

Fig 1: long and hypertrophied right lower limb with a prominent vein

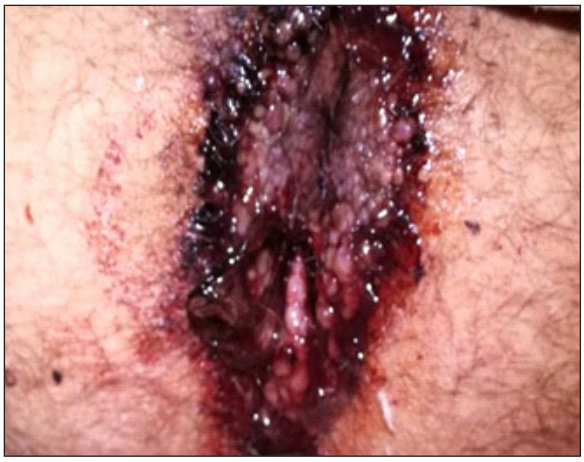

Fig 2: Perianal warts

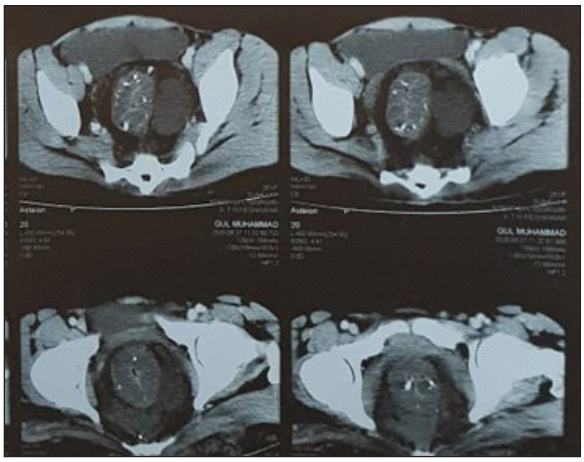

Fig 3: Vascular malformation along the rectal wall

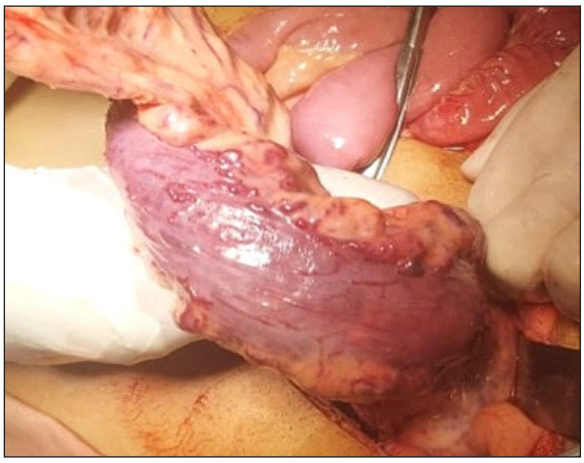

Fig 4: Preoperative image of Rectosigmoid hemangiomas

DISCUSSION

Besides the overlap of KTS with other vascular anomalies, the condition itself varies regarding the location and laterality. In 85 % cases KTS is unilateral, in 12.5 % cases it is bilateral and in 2.5 % cases it is reported crossed bilateral.[6] Our case comes in the commonest cat-

egory as right lower limb is involved sparing other limbs. As far the presentation is concerned, literature has reported different modes of presentation. Some patients report with limbs length disparity only while others come with few or multiple complaints as a direct consequence of the anomaly or its complications. More often the symptoms of varicose veins are annoying for patients. Serious presentations include per rectal bleeding and pulmonary embolism.[7] The primary concern in our case was persistent per rectal bleeding requiring frequent transfusions, though all the classical features were there. Like the majority of cases reported, our patient had developed signs of the syndrome in early life but the diagnosis was delayed when he presented in our tertiary care setup in adulthood with serious morbidity.

Treatment of KTS is symptoms centered. Debulking surgery for morbid limb hypertrophy has not shown satisfactory results. Majority of patients undergo surgery for symptomatic varicose veins in early life.[8,9] As far per rectum bleeding is concerned, different modalities of treatment have been tried with different results. Depending upon the amount and site of bleeding, feeding vessels anatomy, general health and age of patients, injection sclerotherapy, laser photocoagulation, surgical resection of involved rectum/colon and chemoembolization are the known modalities attempted for the cessation of bleeding.[10,11]

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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.

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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

AUTHORS` 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.

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

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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.
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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 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 at the time of submission of paper in the office of managing editor, and if the paper is rejected at any stage, and will be non-refundable.

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 ed-

itorial 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 Practical Approach to Clinical Audit

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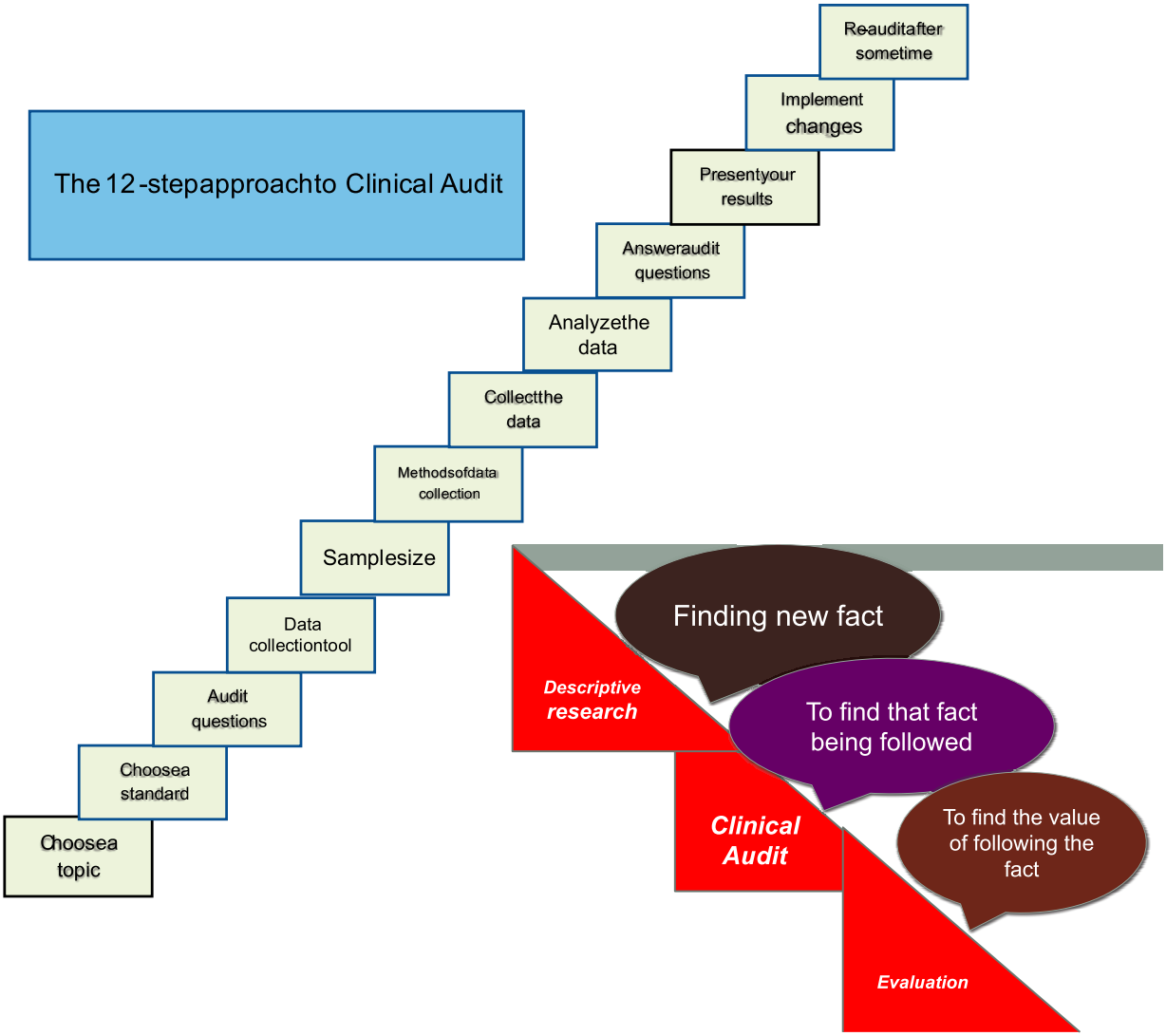
Definition

A clinical audit is a systematic and objective process used for reviewing clinical performance, refining practice as a result, and measuring the outcomes against agreed standards



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