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The Pakistan Armed Forces Medical Journal (PAFMJ) is an official journal of Army Medical Corps and is being published since 1956. The journal’s credibility is evidenced by:

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INTRODUCTION

Bell's palsy has been defined as an acute peripheral facial nerve palsy of unknown etiology. It is considered to be caused by an inflammatory reaction affecting the facial nerve in its bony canal. Although immune, infective and ischemic mechanisms may contribute to the development of Bell's palsy, the precise cause remains unclear. Increasing evidence suggests reactivation of herpes simplex virus in most cases of Bell's palsy.

Bell's palsy affects both sexes equally. It occurs at all times of the year. Its annual incidence is 20 to 30 cases per 100,000 people. Bell's palsy may occur at any age. However, the median age of onset is 40 years. The left and right facial nerves are affected with equal frequency.

Bell's palsy occurs acutely; about one-half of the patients develop maximum paralysis within 2 days and within 5 days almost all patients have maximum paralysis. There is complete recovery of facial weakness in most patients but some patients may have residual facial weakness resulting in permanent facial disfigurement.

Bell's palsy is a diagnosis of exclusion. This term is applied only when other causes of facial nerve lesion are ruled out. The diagnosis of Bell's palsy is made clinically. The neurologic examination is normal with the exception of facial palsy. Patients with typical presentation of Bell's palsy do not need further investigations. MRI scan is recommended if the clinical examination shows atypical physical signs, there is slow progression even after three weeks or if there is no improvement in facial weakness after six months. MRI often shows swelling and enhancement of the facial nerve in the facial canal.

Electromyography and nerve conduction studies show no changes in the first three days. If there is evidence of denervation after 10 days, there may be a long delay in the onset of recovery. The prognosis of Bell's palsy mostly depends on the severity of the lesion.
lesion is incomplete the chances of recovery are more. If some recovery is seen within the first 3 weeks of onset of facial palsy, the prognosis will be favorable.

The management of Bell’s palsy is controversial. About 60% of patients recover completely without treatment. Early administration of corticosteroids has been shown to influence the outcome in Bell’s palsy. One of the satisfactory regimens is oral prednisolone 1mg/kg/day (maximum 80mg/day), ideally started within 72 hours (maximum 7 days) after onset of symptoms. This is given for 5 days then the dose is tapered off over the next 7–10 days.

The purpose of our study was to determine

Table I: Age distribution of Bell’s palsy patients in the study group.

<table>
<thead>
<tr>
<th>Age Bracket (years)</th>
<th>No of Patients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11–20</td>
<td>6 (18.8%)</td>
</tr>
<tr>
<td>21–30</td>
<td>10 (31.2%)</td>
</tr>
<tr>
<td>31–40</td>
<td>9 (28.1%)</td>
</tr>
<tr>
<td>41–50</td>
<td>4 (12.5%)</td>
</tr>
<tr>
<td>51–60</td>
<td>3 (9.4%)</td>
</tr>
</tbody>
</table>

Table II: Duration of Bell’s palsy in patients at the time of reporting for second opinion in the study group.

<table>
<thead>
<tr>
<th>Duration of Symptoms</th>
<th>No of Patients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4–7 Days</td>
<td>3 (9.4%)</td>
</tr>
<tr>
<td>2nd Week</td>
<td>7 (21.9%)</td>
</tr>
<tr>
<td>3rd Week</td>
<td>9 (28.1%)</td>
</tr>
<tr>
<td>4th Week</td>
<td>6 (18.8%)</td>
</tr>
<tr>
<td>2nd Month</td>
<td>4 (12.5%)</td>
</tr>
<tr>
<td>3rd Month</td>
<td>3 (9.4%)</td>
</tr>
</tbody>
</table>

the frequency of Bell’s palsy patients getting recommended doses of steroids at their first consultation with a general physician within 72 hours after onset of their symptoms before seeking advice of a neurologist.

PATIENTS AND METHODS

This was a descriptive observational study conducted at Neurology Clinic of Combined Military Hospital (CMH) Lahore, form Nov 2014 to Feb 2015. Patients suffering from Bell’s palsy presenting consecutively to the Neurology clinic of CMH Lahore, treated previously by a general physician within 72 hours of onset of their symptoms, now seeking a second opinion of neurologist after more than 3 days, were included in the study. Patients suffering from traumatic facial palsy, otitis media and Ramsay Hunt syndrome were not included in the study. Patients suffering from Bell’s palsy who did not have their general physician’s first prescription were also excluded from the study.

A detailed history was taken at presentation and physical examination was done. Past medical record including laboratory tests and treatments advised by previous physicians in their prescriptions was reviewed. The first prescription of the general physician who saw the patient within 72 hours of onset of symptoms was perused and advice regarding steroid therapy was ascertained. A dose of prednisolone ≤0.5 mg/kg body weight daily for the initial 5 days was considered as sub optimal dose for treatment of Bell’s palsy in this study. Similarly, the optimal dose of prednisolone given for <5 days was also regarded as sub optimal dose for this purpose. SPSS version 17 was used for data analysis and descriptive statistics were used to describe the results.

RESULTS

Thirty two patients, 17 (53.12%) males and 15 (46.88%) females met the inclusion criteria of the
study. Their age range was 14 to 58 years, mean age 32 ± 12.26 (standard deviation) years (table-I). The duration of their illness ranged from 4 days to 3 months (table-II). Among them 18 (56.3%) had right sided Bell’s palsy while 14 (44.8%) had left sided Bell’s palsy. The most commonly prescribed steroid was prednisolone (tab Deltacortril of Pfizer). Overall, 78.1% (25) of patients received prednisolone; 34.4% (11) patients received recommended doses of steroids, 43.8% (14) received suboptimal doses and 21.9% (7) were not prescribed any steroids by their general physician within the first 72 hours of their presentation (fig).

Thus only 34% of the patients suffering from Bell’s palsy and presenting to a general physician within 72 hours of onset of their symptoms received recommended doses of prednisolone while majority of the patients (44 %) received suboptimal doses of prednisolone in our patients.

**DISCUSSION**

Bell’s palsy causes considerable psychological distress and restriction in social activities. Its natural history without treatment has been described by Peitersen. He observed that 84% of patients suffering from Bell’s palsy showed signs of recovery within the first three weeks, 71% had complete recovery while 13% had slight sequelae. His 16% patients had continuing facial disfigurement. Treatment of Bell’s palsy remained controversial and variable. Adour et al studied the role of steroids in arresting the progression of incomplete facial palsy to complete one. They compared 194 patients with incomplete facial palsy treated with prednisone and 110 untreated patients. No patient in the treated group showed progression to complete facial paralysis while 10% in the untreated group showed complete facial paralysis at followup.

Later on Austin et al, observed a higher rate of recovery among their 35 patients treated with prednisone as compared with 41 patients given placebo in their randomized, double-blind, placebo-controlled study. However, not all studies had shown a benefit of steroid therapy. May et al found no significant difference, after six months, in the rates of recovery between prednisone and placebo groups in their controlled double-blind study. Another study randomly assigned 239 patients with Bell’s palsy to receive either prednisone or placebo. It did not show any statistically significant difference between prednisone treated patients and control group. It had been a common practice to prescribe prednisolone and antiviral agents in combination and separately, although the evidence of their effectiveness had been weak.

In another study Adour and colleagues observed that 92% of their patients regained normal facial movements after a 10-day course of acyclovir (400mg orally five times daily) and prednisone (60mg/day by mouth for 5 days, then tapered off by 10mg/day for 5 days).

Sullivan et al found that prednisolone 25mg twice daily given by mouth, started within 72 hours of onset, and for a period of 10 days significantly improves the chances of complete recovery of facial palsy. They concluded that in Bell’s palsy, when the patient is treated with prednisolone early in the course of the disease, the chances of complete recovery at 3 and 9 months are significantly high. They also came to the conclusion that there was no benefit of acyclovir in Bell’s palsy whether given alone or in combination with prednisolone.
Hato et al., in their randomized and placebo-controlled study compared the outcome of a combination of valacyclovir (1000 mg/d for 5 days) and prednisolone with placebo and prednisolone in Bell’s palsy. They observed that valacyclovir may improve chances of recovery of facial palsy when given in combination with prednisolone. Bell's palsy should be treated with steroids at its onset. Early short term oral steroid treatment increases the chances of complete recovery which now has been established by many randomized and controlled trials. Our study was focused on determining the trend of general physicians in our population with regard to prescribing steroids when a patient with Bell’s palsy initially presents to them within 72 hours. We found that in our set up only 34% got recommended doses of steroid treatment. Majority of the patients (44%) were treated with sub optimal doses of steroids while 22% got no steroids. No similar data was found to compare with our study. When a patient with Bell’s palsy presents to a physician early in its course, he should be prescribed oral steroids preferably with in three days of onset of symptoms. There is no added benefit of acyclovir compared to prednisolone alone and the value of valacyclovir either alone or in combination with glucocorticoids is not known. Oral antiviral therapy alone should not be prescribed. Routine laboratory tests and MRI are not required in patients with typical presentation of Bell's palsy.

CONCLUSION

Majority of the patients suffering from Bell’s palsy did not receive their optimal doses of steroids when they first reported to a general physician after onset of their symptoms.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

REFERENCES


THE CORRELATION BETWEEN WITS AND ANB CEPHALOMETRIC LANDMARKS IN ORTHODONTIC PATIENTS

Abdullah Jan, Azhar Ali Bangash*, Saad Shinwari*

21 Military Dental Centre Quetta Pakistan, *Armed Forces Institute of Dentistry (AFID)/National University of Medical Sciences (NUMS) Rawalpindi Pakistan

ABSTRACT

Objective: To correlate cephalometric values of ANB angle and Wits appraisal in patients reporting to AFID.

Study Design: Cross sectional, comparative study.

Place and Duration of Study: The study was carried out in the Department of Orthodontics at AFID Rawalpindi. ANB and Wits values from Lateral cephalograms of patients, from Dec 2014 till May 2015 were recorded.

Material and Methods: On the basis of inclusion criteria; out of a total of 200 lateral cephalograms, 161 Lateral Cephalograms were selected. Their ANB values and Wits values were recorded. Correlation was found by Pearson correlation test. Bivariate analysis was done. A p-value of ≤0.05 was considered to be statistically significant. SPSS 22 was used for statistical analysis.

Results: Our results showed that 34.8% of the patients were males and 65.2% were females. Regarding class of malocclusion (I, II and III); 41% were class I, 44.1 were Class II and 14.9% were class III. The age range was from 9 to 33 years with a mean of 14.46 years.

Regarding the correlation, bivariate analysis showed that the ANB and Wits were significantly correlated with an “r” value of 0.469 and a p-value of 0.00 which was statistically significant.

Conclusion: ANB and Wits are significantly correlated.

Keywords: ANB, Correlation, Pakistani population, Wits.

INTRODUCTION

The subject of facial aesthetics is pre-eminently important to Orthodontists. The study of aesthetics by profile analysis dates back to Egyptian and the Greek era1. For malocclusions cephalograms are beneficial in quantifying skeletal and dental features2. Primarily malocclusions are classified on dental and skeletal characteristics. Skeletal discrepancies can be further classified whether the discrepancy is sagittal, transverse or vertical3. An accurate antero-posterior measurement of the jaw relationship is critically important in orthodontic diagnosis and treatment planning of these skeletal discrepancies.

For assessing the sagittal discrepancy, assessment by ANB angle was proposed4. The ANB angle is formed with the vertex at point N (nasion, the most anterior aspect of the frontonasal suture, located by visual inspection on the tracing) and two sides respectively extending to A point (the deepest point on the contour of the premaxilla) as well as B point (the deepest point on the contour of the mandible)5.

Wits appraisal was supposed to overcome the weaknesses of ANB, however, various studies have questioned the reliability of both the angle ANB and Wits appraisal. ANB angle has been found to be affected by rotation of the Sella-Nasion (S-N) plane, the relative length of the Sella-Nasion plane and the rotation of the jaws during growth and treatment6. As an alternative, it was suggested that perpendiculars be drawn from points A to B on the occlusal plane (Wits appraisal), but misinterpretation of Wits value was encountered due to variability in the occlusal plane, which was seen to be easily affected by tooth eruption and orthodontic treatment7.

Because both the measurements calculate the sagittal discrepancy, it seems reasonable that...
there should be a correlation between the two cephalometric values. This study was undertaken to know about the correlation of ANB and Wits value in a sample of Pakistani population reporting to Armed Forces Institute of Dentistry Rawalpindi, Pakistan.

**MATERIAL AND METHODS**

This study was conducted in the department of Orthodontics at AFID Rawalpindi. Patients reporting to AFID were considered for sampling. Ethical and administrative approval was sought from the concerned authorities before the commencement of this study. The study was conducted on patients reporting from Dec 2014 till May 2015.

**Table-I: Descriptive statistics of the patients.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>9</td>
<td>33</td>
<td>14.46</td>
<td>4.50</td>
</tr>
<tr>
<td>ANB</td>
<td>-8</td>
<td>10</td>
<td>3.57</td>
<td>3.66</td>
</tr>
<tr>
<td>WITS</td>
<td>-11</td>
<td>16</td>
<td>1.22</td>
<td>3.77</td>
</tr>
</tbody>
</table>

**Table-II: Frequency and percentage for gender and class of malocclusion among patients.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>161</td>
<td>100</td>
</tr>
<tr>
<td>Male</td>
<td>56</td>
<td>34.8</td>
</tr>
<tr>
<td>Female</td>
<td>105</td>
<td>65.2</td>
</tr>
<tr>
<td>Class I occlusion</td>
<td>66</td>
<td>41</td>
</tr>
<tr>
<td>Class II occlusion</td>
<td>71</td>
<td>44.1</td>
</tr>
<tr>
<td>Class III occlusion</td>
<td>24</td>
<td>14.9</td>
</tr>
</tbody>
</table>

This was a comparative cross sectional, retrospective study, with convenient sampling. 200 patients were selected and pre-treatment lateral cephalograms were recorded. Out of a total of 200 lateral cephalograms 161 lateral cephalograms were chosen for the study.

The inclusion criteria included patients who had not undergone orthodontic treatment. In case of presence of primary teeth only deciduous molars were to be presented. All the three classes of occlusion (Class I, Class II and Class III) of skeletal and dental malocclusion were also included in the sample.

The exclusion criteria was based on omitting supernumerary teeth, impacted teeth, extracted teeth, missing teeth, heavily restored teeth, malformed teeth and patients with repaired or unrepaird cleft lip and palate.

This study was based on tracing good quality pre-treatment lateral cephalograms of patients (with clearly visible anatomical landmarks, free from distortion and artefacts). The radiographs were taken with the lips relaxed and the head in natural head position. Tracing was done on a 0.003 matt acetate tracing sheet. The ANB angle was traced by connecting the bony point N with the deepest point on anterior maxilla and the anterior most border of chin. Wits analysis was done by first drawing the functional occlusal plane and then taking perpendicular from bony point A and the bony point B to the occlusal plane.

Frequencies and percentages were determined for gender and class of occlusion. Minimum value, mean value and maximum value was determined for age, ANB angle and Wits appraisal. Standard deviation was determined for angle ANB and the Wits value. Pearson correlation coefficient (r) was applied to know the correlation between the two variables. A Bivariate correlation analysis was done between Wits and ANB angle. A p-value of <0.05 was considered as statistically significant. SPSS 22 was used for statistical analysis.

**RESULTS**

Regarding age, ANB and Wits; our results for minimum, maximum, mean value and
standard deviation are summarized in table-I. For gender and class of malocclusion the frequency and percentage are given in table-II.

Pearson correlation coefficient along with bivariate analysis was done and it showed that the ANB and Wits were significantly correlated with each other with an r value of 0.469 and a p-value of 0.00 which was statistically significant.

**DISCUSSION**

Despite its shortcomings, the ANB angle (the difference between SNA and SNB angle)9 is the most commonly used measurement in appraising the antero posterior jaw discrepancy. The ANB angle; however, does not take into consideration the relative relationship of the denture bases to cranial reference planes. Due to these limitation the ANB angle was criticized and it was suggested that “Wits” appraisal overcomes this shortcoming. Many different analyses beside ANB and Wits have been proposed for assessing the sagittal discrepancy between maxilla and mandible10-12. AF-BF13 and Beta angle10 have been used effectively for the evaluation of antero-posterior discrepancies affecting the apical bases of the jaws14. Jacobson thought that ANB was not a good indicator of anteroposterior jaw disharmony9. According to him the ANB angle may give erroneous results due to rotation of the jaws or the spatial position of point N may affect the ANB reading15. Along with clockwise or anti clockwise rotational change in the jaw position and sagittal position of point N, the ANB may be affected by vertical position of point N, the upward or downward rotation of the Sella-Nasion plane, the age of the patient, the relation of Sella-Nasion plane to the occlusal plane, the degree of prognathism of jaws and the recording errors16.

Some attempts have been made in the past to find a correlation between Sella-Nasion and the ANB angle. This lead to the prediction of the Wits appraisal from the ANB angle. Godfrey K and Chandra PK, found that the relationship between angle ANB and Wits appraisal was significant. They were also able to predict angle ANB from Wits appraisal and Wits value from ANB angle17. Our study showed that ANB and Wits were correlated. Although the r value of 0.469 was not statistically significant but the correlation was significant at 95% confidence level with a p-value of 0.00. This means that clinical use of either ANB or Wits shall be useful and the proposed disadvantages of ANB are not clinically relevant. Our study however did not take into consideration the effects of palatal plane, occlusal plane, mandibular plane and the over jet. The concept that ANB value can be misleading was not evident in our study. It may be concluded that either ANB and/or Wits can be used and they can give accurate diagnosis.

Regarding Pakistani studies, a study was done to establish correlation between ANB, Wits value & palatal plane angle. It was found that statistically significant correlations were found between ANB angle & Wits appraisal, while statistically insignificant correlation was found between palatal plane angle, ANB & Wits value suggesting that rotational change in the palatal plane with reference to Sella-Nasion plane had no impact on the sagittal assessment parameters. Moreover a statistically significant correlation was found between mandibular plane and palatal plane18.

In another Pakistani study, a correlation between ANB angle and Wits appraisal was done. This study concluded that over jet is a good predictor for sagittal skeletal relationship only in class III malocclusion19. A study was done to evaluate the validity of newly introduced cephalometric analysis using W angle and YEN angle in Pakistani and Bangladeshi samples and to compare both populations with commonly used sagittal measurements. Bangladeshi and Pakistani sample lateral cephalograms were traced for ANB, Wits appraisal, Beta angle, W angle and YEN angle. These results suggested that all the performed analyses are valid and can be used to diagnose skeletal discrepancies and diagnosis based on single analysis is insufficient20.
A study was performed to check the prediction and reliability of Yen angle along with other sagittal discrepancy parameters and to discuss the correlation existing between them. It was suggested that instead of relying on one single parameter, others should also be viewed and should be correlated with clinical findings\textsuperscript{21}. Although ANB is widely used for assessment of Sagittal discrepancy, several authors, including Jacobson\textsuperscript{15}, showed that the anteroposterior position of point N relative to points A and B influences angle ANB, as does rotational growth of the upper and lower jaws\textsuperscript{22,23}.

A study was done to evaluate if palatal plane could be used as a skeletal plane of reference in lateral cephalometric radiographs to evaluate sagittal maxillomandibular relationship. According to this study the palatal plane is a better indicator than Wits and ANB\textsuperscript{24}.

In one study\textsuperscript{25} correlation coefficients showed that the ANB angle and the Wits appraisal are significantly correlated but the r values are relatively low. These findings explain the discrepancies that are present in some cases between the measured values of the ANB angle and the clinical judgment of the orthodontist. The conclusions derived from this investigation are as follows: (1) No significant differences were observed in the changes between male and female subjects for either the angle ANB or Wits between age of 5 years and adulthood. (2) The ANB angle changes significantly with age, while the Wits appraisal indicates that the relationship between points A and B does not change significantly with age. (3) Correlation coefficients showed that the ANB angle and the Wits appraisal were significantly correlated but the r-values are relatively low. Our study also confirm to the same findings with a low r-value and statistically significant p-value. These findings explain the discrepancies that are inherent in some cases between the measured values of the ANB angle and the clinical judgment of the orthodontist. For a more accurate diagnosis of the anteroposterior apical base relationship, both the ANB angle and Wits appraisal should be used.

In another study the results indicated that approximately 93% of the variation of the Wits appraisal could be explained by the variation of the ANB, Sella-Nasion line and SNA angles. The study also showed that the ANB angle and the Wits appraisal, cannot be directly compared. One study concluded that ANB and Wits must be included in 3D cephalometric analyses as both are necessary to undertake a more accurate diagnosis of the maxillo-mandibular relationship of the patients\textsuperscript{26}. To obtain comparable interpretations, one should correct the results of both measurements in relation to the variations in their reference systems. Our study finds a significant relation between Wits and ANB, but variation of Sella-Nasion and ANB was not considered in our study.

CONCLUSION

Our study shows that Wits and ANB are significantly correlated; ANB can be used instead of Wits and vice versa. This study however, did not take into consideration the effect of different planes on the outcome of the correlation of the two variables. It is suggested that the effects of occlusal, palatal, mandibular plane and overjet on ANB or Wits can be determined in other studies.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

REFERENCES

PATTERN OF NEONATAL MORBIDITY AND MORTALITY IN THE NEONATAL INTENSIVE CARE UNIT

Saeed Zaman, Suhail Shahzad, Sajid Ali Shah
Combined Military Hospital Quetta/National University of Medical Sciences (NUMS) Pakistan

ABSTRACT

Objective: To document the burden of different diseases, their pattern and outcome in neonates admitted to neonatal intensive care unit (NICU) of Combined Military Hospital (CMH) Malir Cantt, Karachi.

Study Design: A descriptive study.

Place and Duration of Study: The study was carried out in CMH Malir over a period of one year, from Jan 2011 to Dec 2011.

Patients and Methods: Data of all admitted patients during the study period was reviewed and analyzed in terms of age, sex, weight, place and mode of delivery, cause of admission and their outcome. Diagnosis was made on clinical basis, radiological findings and laboratory investigations. Data were analyzed using SPSS version 18.

Results: Total number of patients was 1020. Males were 556 (54.51%) and females were 464 (45.49%). The most common reason for admission was preterm/low birth weight (PT/LBW) i.e. 494 (48.43%) followed by neonatal sepsis which were 200 (19.61%), respiratory distress syndrome (RDS) 74 (7.25%), neonatal jaundice 65 (6.37%), meconium aspiration syndrome (MAS) 53 (5.20%), birth asphyxia (BAS) 51 (5%), transient tachypnea of newborn (TTN) 40 (3.92%), congenital malformations 27 (2.65%), infant of diabetic mother 9 (0.88%), neonatal seizures 6 (0.59%) and hemorrhagic disease of the newborn 1 (0.10%). The numbers of patients discharged were 947 (92.84%) and those patients who expired were 73 (7.16%). The commonest causes of death were PT/LBW 34 (46.57%) and neonatal sepsis 15 (20.55%).

Conclusion: In our study the commonest causes of admission were PT/LBW and neonatal sepsis. Mortality was more for PT/LBW and neonatal sepsis both of which can be reduced by proper antenatal care, safe reduction in lower segment caesarian section (LSCS) and improvement in NICU care.

Keywords: Lower segment caesarean section, Mortality, Neonatal sepsis, Preterm, Spontaneous vertex delivery.

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INTRODUCTION

Nearly 130 million babies are born each year and 4 million die in the first 4 weeks of life; the neonatal period is the most vulnerable period of life accounting for 37% of mortality under five years. Nearly 75% die in the first week of life and 40% die in the first 24 hours of life. In the developing countries the neonatal mortality is much more than that in the developed countries. Preterm birth, low birth weight and lethal congenital anomalies are major causes of neonatal mortality. Globally there has been a decline in infant and under five mortality rates in recent years, but neonatal mortality still remains the same. United Nations Millennium declaration was signed in 2000, since then there have been ever greater efforts to reduce mortality among children under five years of age. It will be difficult to reach the stated goal (to reduce the mortality rate by two-thirds by 2015) if we do not reduce the number of neonatal deaths.

Before 2000 there was given little importance in global policies to reduce the neonatal mortality but great attention has been made in recent years for the better neonatal outcomes by global organizations and local governments. By advancement in perinatal and neonatal care the neonatal mortality has been significantly reduced. The improvement in neonatal mortality has largely been attributed to improved obstetrical and perinatal care which results in higher APGAR score and improved birth weight of babies. Better outcome and early discharge is
possible by all these measures and result in better condition of the neonate. Good NICU care gives better results and good neonatal out comes. Neonatal mortality is still high in developing countries though most of the causes of neonatal mortality are preventable.

The aim of our study was to determine the major causes of mortality and morbidity in neonates admitted to our unit from Malir and surrounding areas.

**MATERIAL AND METHODS**

This descriptive study was performed in the neonatal unit of Combined Military Hospital (CMH) Malir cantt Karachi from January 2012 to December 2012. CMH Malir is a class A Hospital of Pakistan Armed Forces hospitals. All live born neonates delivered in obstetrical unit of CMH Malir and those delivered in outdoor were admitted in Neonatal Intensive Care Unit (NICU) and were included in the study. Only intra uterine deaths were excluded from study. Patients who needed surgical intervention were also admitted. CMH Malir has a well equipped NICU with warmer, incubators and mechanical ventilators. The patient-nurse ratio is 15 to 1.

Admission papers of all the patients were analyzed who were admitted in year 2012. Records taken from the papers was entered into prepared pro formas, which included information regarding age at admission, gestational age, place of delivery, mode of delivery, indication of admission, weight, sex, final diagnosis, and outcome. Diagnosis for prematurity and low birth weight was mainly clinical and was based on WHO definition for prematurity (live born neonates delivered before 37 weeks from 1st day of last menstrual period (LMP) and low birth weight (less than 2.5 kg). Intra uterine death was defined as birth of a baby after 28 completed weeks with no signs of life and were not included in study. Live birth was defined as baby delivered after 28 completed weeks with signs of life.

**Table-I: Patients age on admission.**

<table>
<thead>
<tr>
<th>Age of newborn on admission</th>
<th>No. of patients</th>
<th>% age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn &lt; 1day</td>
<td>867</td>
<td>85.00</td>
</tr>
<tr>
<td>Neonate 1-3 days</td>
<td>40</td>
<td>3.92</td>
</tr>
<tr>
<td>Neonate 3-7 days</td>
<td>28</td>
<td>2.75</td>
</tr>
<tr>
<td>Neonate 7-28 days</td>
<td>85</td>
<td>8.33</td>
</tr>
<tr>
<td>Total</td>
<td>1,020</td>
<td>100.00</td>
</tr>
</tbody>
</table>

**Table-II: Weight distribution of patients on admission.**

<table>
<thead>
<tr>
<th>Weight of newborn on admission</th>
<th>No. of patients</th>
<th>% age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 kg</td>
<td>3</td>
<td>0.29</td>
</tr>
<tr>
<td>1 - 1.5 kg</td>
<td>23</td>
<td>2.25</td>
</tr>
<tr>
<td>1.5 - 2.5 kg</td>
<td>203</td>
<td>19.90</td>
</tr>
<tr>
<td>2.5 - 3.5 kg</td>
<td>678</td>
<td>66.47</td>
</tr>
<tr>
<td>3.5 - 4.5 kg</td>
<td>113</td>
<td>11.08</td>
</tr>
<tr>
<td>Total</td>
<td>1020</td>
<td>100.00</td>
</tr>
</tbody>
</table>

The preterm babies were given the diagnosis of prematurity, even if they developed some complications during stay like anemia, neonatal jaundice, apnea, aspiration, sepsis or hemorrhage except for respiratory distress syndrome (RDS) which was included as a separate entity. Sepsis was diagnosed clinically and on blood culture. Birth asphyxia was diagnosed on clinical basis and according to Sarnats staging and RDS clinically and on the basis of chest x-ray. Sample size was calculated using WHO calculator and sampling technique used was consecutive non probability sampling.

Data were entered and interpreted in SPSS version 18. Frequency and cross tables were formulated.
RESULTS

Total number of patients was 1020. Males were 556 (54.51%) and females were 464 (45.49%) as shown in fig-1.

Most of the newborns were admitted on the first day of life as shown in table-I and most of the neonates weighed between 2500 to 3500 grams as shown in table-II.

TABLE-III: Incidence and outcome of different diseases.

<table>
<thead>
<tr>
<th>Preterm Babies</th>
<th>Discharge</th>
<th>Discharged %</th>
<th>Expired</th>
<th>Expired %</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT/LBW</td>
<td>460</td>
<td>93.12%</td>
<td>34</td>
<td>6.88%</td>
<td>494 (48.43%)</td>
</tr>
<tr>
<td>Multi organ failure/DIC Sepsis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspiration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IVH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apnea</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RDS</td>
<td>65</td>
<td>87.84%</td>
<td>9</td>
<td>12.16%</td>
<td>74 (7.25%)</td>
</tr>
<tr>
<td>Term Babies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NN Sepsis</td>
<td>185</td>
<td>92.50%</td>
<td>15</td>
<td>7.50%</td>
<td>200 (19.61%)</td>
</tr>
<tr>
<td>NN Jaundice</td>
<td>65</td>
<td>100.0%</td>
<td>0</td>
<td>0.0%</td>
<td>65 (6.37%)</td>
</tr>
<tr>
<td>TTN</td>
<td>40</td>
<td>100.0%</td>
<td>0</td>
<td>0.0%</td>
<td>40 (3.92%)</td>
</tr>
<tr>
<td>BAS</td>
<td>43</td>
<td>84.31%</td>
<td>8</td>
<td>15.69%</td>
<td>51 (5%)</td>
</tr>
<tr>
<td>MCA</td>
<td>23</td>
<td>85.19%</td>
<td>4</td>
<td>14.81%</td>
<td>27 (2.65%)</td>
</tr>
<tr>
<td>IDM</td>
<td>9</td>
<td>100.0%</td>
<td>0</td>
<td>0.0%</td>
<td>9 (0.88%)</td>
</tr>
<tr>
<td>MAS</td>
<td>50</td>
<td>94.34%</td>
<td>3</td>
<td>5.66%</td>
<td>53 (5.20%)</td>
</tr>
<tr>
<td>NN seizures</td>
<td>6</td>
<td>100.0%</td>
<td>0</td>
<td>0.0%</td>
<td>6 (0.59%)</td>
</tr>
<tr>
<td>HDN</td>
<td>1</td>
<td>100.0%</td>
<td>0</td>
<td>0.0%</td>
<td>1 (0.10%)</td>
</tr>
<tr>
<td>Total</td>
<td>947</td>
<td>92.84%</td>
<td>73</td>
<td>7.16%</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

Admission rate was more for patients delivered by lower segment caesarian section (LSCS) as compared to those delivered by spontaneous vertex delivery as shown in fig-2.

The most common reason for admission was preterm/low birth weight (PT/LBW 48.43%), followed by neonatal sepsis 19.61%, RDS 7.25%, neonatal jaundice 6.37%, meconium aspiration syndrome (MAS) 5.20%, birth asphyxia (BAS) 5%, transient tachypnea of newborn (TTN) 3.92%, congenital malformations 2.65%, infant of diabetic mother 0.88%, neonatal seizures 0.59% and hemorrhagic disease of newborn 0.10%. Among patients of congenital anomalies 8 (35%) were with central nervous system defects, 6 (26%) with cardiovascular defects, 4 (17%) were dysmorphic/Down syndrome, with gastrointestinal and musculoskeletal 2 (9%) each and with genito urinary anomalies were 1 (4%). The number of patients discharged was 92.84% and those patients who expired were 7.16% as given in table-III. The most common causes of death were PT/LBW 46.57% and in term babies it was neonatal sepsis 20.55%.

DISCUSSION

There is great variation in NICU admissions among different set ups. There are multiple factors which influence admission to NICU including individual NICU bonding. In our study there was male predominance and admission rate was more for those delivered by LSCS than by SVD. Study done by Shahid et al at Military Hospital Rawalpindi also showed more hospital admission for children delivered by LSCS as compared to those delivered by SVD but in contrast to our study that had female predominance. Another study carried out in
Nepal also showed male predominance\textsuperscript{12}. Results from Pakistan Institute of Medical Sciences also showed male predominance and more admission for babies born by LSCS\textsuperscript{13}. The male predominance may be due to the fact that males are given more importance than the female.

In developing countries LBW is one of the most common causes of admission. Prematurity masks the clinical picture of many diseases. Mortality and morbidity is high for LBW and PT babies due to their immature organ functions and some specific disorders of prematurity\textsuperscript{14}. The most common cause of admission in our study was also prematurity and low birth weight which accounted for about 48\% of total admission. Majority of the babies weighed between 2500 to 3599 gm with 3 babies less than 1000gm. Study from Karachi also reported LBW/PT to be the most common cause with the lowest weight about 800gm\textsuperscript{14}. Study by Shahid et al also reported same results (PT/LBW, 23\%)\textsuperscript{11}.

Neonatal sepsis (19.61\%), respiratory distress syndrome (7.25\%), neonatal jaundice (6.37\%), meconium aspiration syndrome (5.20\%), birth asphyxia (5\%), transient tachypnea of newborn (3.92\%) and congenital malformations (2.65\%) were the other important causes of admission in our study. Gauchan et al\textsuperscript{15} reported neonatal jaundice (24.7\%), sepsis (21.4\%) perinatal asphyxia (19.2\%), low birth weight (7.54\%), meconium aspiration syndrome (4.32\%) and Hyaline membrane disease (1.6\%) to be the most common causes of admissions. About 44\% newborn were admitted on the 1st day of life; whereas neonates admitted between 2nd to 5th day of life were about 30\% in their study\textsuperscript{15}. In our study too most of the babies were admitted during first to fifth day of life (88\%). Reports from Hyderabad (Pakistan) showed prematurity (28\%), neonatal sepsis (20\%), birth asphyxia (13\%) and neonatal jaundice (11\%) to be the most common causes of admission to NICU\textsuperscript{16}.

The overall mortality in our study was 7.16\% which is comparable to reports from Hyderabad (6.8\%)\textsuperscript{16} but is much lower than from study by Shahid et al\textsuperscript{11} which showed mortality of about 22\%. Mortality rates reported from other part of Pakistan is also much higher than our study like it is 38\% in Larkana\textsuperscript{17}, 15\% in Peshawar\textsuperscript{18}, 26\% in Karachi\textsuperscript{19} and 34\% in Lahore\textsuperscript{20}. The major causes of mortality in our study were PT/LBW (46.58\%), neonatal sepsis (20.55\%), respiratory distress syndrome (12.13\%) and birth asphyxia (10.96\%). The major causes of mortality reported from Hyderabad were PT/LBW (53\%), birth asphyxia (21\%) and neonatal sepsis (9\%)\textsuperscript{21}. Mortality rates from India showed PT 25\%, neonatal sepsis 21\%, birth asphyxia 19\% and respiratory distress syndrome 17\%.

CONCLUSION

In our study the commonest causes of admission were PT/LBW and neonatal sepsis. Mortality was more for PT/LBW and neonatal sepsis both of which can be reduced by proper antenatal care, safe reduction in LSCS and improvement in NICU care.
CONFLICT OF INTEREST
This study has no conflict of interest to declare by any author.

REFERENCES
ASSESSMENT OF THE KNOWLEDGE AND TREND OF HEARING PROTECTION DURING ROUTINE FIRING AMONG TROOPS AT BAHAWALPUR GARRISON

Muhammad Ahmed Khan, Muhammad Khan, Sumera Akram*

Combined Military Hospital Bahawalpur/National University of Medical Sciences (NUMS) Pakistan, *Bahawal Victoria Hospital Bahawalpur Pakistan

ABSTRACT

Objective: To assess the knowledge and trend of hearing protection during routine firing among troops at Bahawalpur garrison.

Study design: Cross sectional study.

Place and Duration of Study: The study was carried out at Bahawalpur in Aug 2015.

Material and Methods: This study was carried out in Bahawalpur Garrison in Aug 2015. Three hundred and eighty eight soldiers of an infantry unit were included in the study. Structured questionnaire were distributed among soldiers and information regarding the knowledge and trends of hearing protection during routine practice firing were gathered. The information included age, gender, education, use of ear protection measures during routine firing, types of hearing protection techniques, reasons for not using protection measures (if any), availability of ear protection measures, knowledge about hearing protection from noise of firearms and feeling decreased hearing & tinnitus. The data gathered were assessed and analyzed with help of SPSS version 20. Simple descriptive statistics were used to express results in terms of frequencies.

Results: Out of 388 individuals under study, 136 used hearing protective measures regularly during routine firing, 103 did not use any measures and 149 soldiers used protective measures off and on (irregularly). Three hundred and fifty five individuals knew the association between noise and hearing loss but remaining 33 did not know about it. When asked about the measures to protect hearing from noise trauma of firing, 151 individuals mentioned ear plugs/muffs and 237 mentioned cotton balls. When enquired about the efficacy of hearing protection during firing that whether they should be used or not, 316 responded in affirmative, 53 individuals replied in negative and 15 soldiers did not know about its efficacy. When enquired about the reasons of not using hearing protection, 264 soldiers said that they do not have the protectors, 96 individuals attributed it to inability to hear warning sounds, and 28 subjects said that it causes pain in ears.

Conclusion: The trend of hearing protection during routine firing was not satisfactory among troops, consequent to lack of adequate and optimum knowledge of fire arm noise induces hearing loss. Thus they should be educated to enhance their knowledge about hearing protection from fire arm noise and should be encouraged to use hearing protective measures during routine firing.

Keywords: Ear Muffs, Ear Plugs, Hearing protection devices.

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INTRODUCTION

Firearms are a common cause of hearing loss. Military persons are commonly exposed to firearm noise. Depending on the requirements, this noise exposure can be intermittent as in training or continuous as in deployed operational areas in our country. They can potentially damage the hearing organs.

The intensity of noise created by firearms is high enough to cause hearing impairment, for instance a Greek study showed sound intensity from firearms to reach 160.2 dBSPL. In a study carried out in Brazil, almost 20.8% of military persons had sensorineural hearing loss which is higher than civilians. The association between recreational firearm use and adult hearing loss has long been established as shown by study of
Exposure to loud noise causes initially a temporary threshold shift, which becomes permanent after repeated exposure to loud impulsive sounds as in case of fire-arms. The mechanism of hearing loss includes metabolic and mechanical factors. Noise causes cochlear hair cell damage and also causes hypoxia through noise induced capillary vasoconstriction. Audiometric findings of such noise induced hearing loss show an initial typical dip/notch at 4000dB, but later on adjacent frequencies are also involved. Pure tone audiometry is a very helpful modality which picks up and detects any hearing loss in adults. With advent of new technology, high frequency audiometry and otoacoustic emissions have been devised which pick up noise induced hearing impairment ever earlier than pure tone audiometry.

The treatment of noise induced hearing loss is limited to hearing aids for amplification of sound which is also quite unsatisfactory in presence of background noise. Hearing aids act through amplification of residual hearing ability; however the best hearing aids available are no match to natural hearing. Secondly, they are costly and require maintenance and great care. Hearing protection is of utmost importance. It is the single most effective method for hearing loss prevention. Hearing protection measures include ear muffs, ear plugs which are collectively called hearing protection devices. Ear plugs are the ear inserts which occlude external auditory meatus when fitted in it. Ear plugs are commercially available and are of different shapes and sizes to fit the individual external auditory meatus. Ear muffs cover the entire outer ear and make an ear tight seal to block the ear canals. If the noise exceeds 105dB then both of them should be used in combination. Simple cotton balls and tissue paper wads are very poor protectors as they only decrease the noise by around 7dB. In our present study we have assessed the knowledge of army personnel for hearing protection and the trends & rationale of use of hearing protective measures during firing.

MATERIAL AND METHODS

This study was carried out in Bahawalpur Cantt in Aug 2015. It is a cross sectional study. All the individuals of an infantry unit stationed at Bahawalpur, who were present in the unit and did regular practice firing exercise, were included in this study. Total 388 soldiers of that infantry unit were included in the study. Structured questionnaire were distributed among soldiers and information regarding the knowledge and trends of hearing protection during routine practice firing was gathered. The information included age, gender, education, use of ear protection measures during routine firing, types of hearing protection techniques, reasons for not using protection measures (if any), availability of ear protection measures, knowledge about hearing protection from noise of firearms and also about feeling decreased hearing & tinnitus. The data gathered were assessed and analyzed with help of SPSS version 20. Simple descriptive statistics were used to express results in terms of frequencies, percentages etc.

RESULTS

Total 388 individuals of an infantry battalion participated in the study. Age range of individuals was from 18 to 45 years. There were 28 (7.2%) individuals who were under matric, 252 were matriculate (64.9%), 84 (21.6%) were intermediate qualified and 24 (6.1%) were graduates (fig-1).

There were 52 (13.4%) smokers and rest 336 (86.6%) nonsmokers. Out of 388 individuals 136 (35.1%) used hearing protective measures regularly during routine firing, 103 (38.4%) did not use any measures and 149 (26.5%) soldiers used protective measures off and on (fig-2).

When enquired about the effect of noise on hearing ability, 355 knew it but remaining 33 did not know about it. When asked about the measures to protect hearing from noise trauma of firing, 151 mentioned ear plugs/muffs and 237 mentioned cotton balls. 75 individuals complained of tinnitus, 302 soldiers negated about tinnitus and rest 11 responded that they do not know. Upon asking about possession of ear
plugs/muffs, none of them had any. When enquired about the efficacy of hearing protection during firing that whether they should be used or not, 316 responded in affirmative, 53 replied in negative and 19 soldiers did not know about its effectiveness i.e. they were ignorant of the knowledge that use of hearing protection during routine practice firing saves them from early hearing impairment. When enquired about the reasons of not using hearing protection, 239 said...
any hearing loss, 81 responded in affirmative, 263 negated and 44 replied that they do not know. Upon enquiring that whether seniors advocate use of hearing protection during routine firing 267 replied in affirmative and 121 refuted it. The response of soldiers to all the questions has been shown in the table, along with frequencies and percentages of different types of responses.

**DISCUSSION**

Soldiers are routinely employed on sentry duties and few also are employed at sensitive communication, therefore sound hearing is a pre-requisite to all these. Secondly post retirement compensation for hearing loss also adds to the economical burden on the institution. It is also established through studies that hearing impairment adds up chances of injuries eg during driving, crossing roads as the individual is unable to hear horns, sirens and warning shouts. Hearing impairment results in both physical and psychological stress as it affects their daily life, modes of entertainment are reduced and post retirement employment is also affected. In severe cases, it can cause social isolation and ultimately depression.

To prevent noise induced hearing loss, hearing protection usage should be improved. The use of such hearing protection measures is under influence of factors like education, work experience and perceived hearing loss. Other studies also have shown that practice firing during professional training causes hearing loss. Once noise induced hearing loss sets in there is no significant treatment except providing hearing aids which are not at all substitute to normal natural hearing. Secondly hearing aids add significantly to the economic burden on the country and society.

Pakistan Army is exposed to various operations throughout the country and noise during active operations can not be prevented however during routine practice firing, care can be taken and hearing protection can be helpful to great extent. In the subject study 91.5% soldiers were aware of the association between noise and hearing loss. But the knowledge about the measures to protect hearing from noise caused by firing was poor showing that 61.1% indicated cotton balls as the right measure and only 38.9% indicated ear plugs/ear muffs as the right measure. In present study, only 31.5% soldiers used hearing protection regularly, and 38.4% use them irregularly. In a study by Heupa et al in Brazil showed around 91.5% of study subjects used hearing protection which is quite high as compared to our study. Heupa also showed that 32.3 % of study subjects were never taught how to use hearing protection measures which is similar to that in our study. When enquired about the reasons of not using hearing protection, 239 (61.6%) said that they do not have/possess the hearing protectors, 96 (24.7%) attributed it to inability to hear warning sounds, 53 (13.6%) said that it causes pain in ears.

These findings show that hearing protection education is vital for hearing conservation in
Knowledge And Trend of Hearing Protection


soldiers. These protective devices including ear muffs and ear plugs attenuate the impulse noise reaching the middle and inner ears. Various modes of educating troops in the subject purpose include lectures, seminars and provision of hearing protective devices including ear plugs and muffs to all soldiers. Such ear plugs and muffs should ideally be included in the compulsory soldier kit at all the military units. Seniors especially officers are role models for young soldiers; they should practice the routine use of hearing protection themselves and should advise the young soldiers and others the same. In the present study, upon enquiring that whether seniors advocate use of hearing protection during routine firing 267 (68.8%) replied in affirmative and 121 (31.1%) refuted it. Needless to say the seniors should be asked to be vigilant and should ensure their use during routine practice firing. Regular training and demonstrations for correct use of hearing protection devices, ear plugs and ear muffs should be carried out, imparting practical knowledge to the troops about their use. Each soldier should be trained on how to use and fit hearing protection device. As mentioned above, the main excuses for not using hearing protection were unavailability, inability to hear warning sounds, discomfort in ears. But adequate education and regular emphasis can make the individuals realize the utmost importance of hearing protectors.

CONCLUSION

The trend of hearing protection during routine firing was not satisfactory among troops, consequent to lack of adequate and optimum knowledge of fire arm noise induced hearing loss. Thus they should be educated to enhance their knowledge about hearing protection from fire arm noise and should be encouraged to use hearing protective measures during routine firing.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

REFERENCES

OUTCOME OF MOTIVATION IN THE LIGHT OF QURANIC TEACHINGS IN POST STROKE PATIENTS WISHING FOR DEATH

Muhammad Tariq, Muhammad Tahir Ibrahim, Amer Ahmad Khan, Faiza Kanwal

Combined Military Hospital Lahore/ National University of Medical Sciences (NUMS) Pakistan

ABSTRACT

Objective: To determine the outcome of motivation in the light of Quranic teachings in post stroke patients praying to Allah to take them from this world (wishing for death).

Study Design: A descriptive study.

Place and Duration of Study: Combined Military Hospital (CMH) Lahore form 1 Jan 2015 to 30 June 2016.

Material and Methods: Post stroke Muslim patients visiting Neurology clinic of CMH Lahore and praying to Allah to take them from this world (wishing for death). They were motivated in the light of Quranic teachings and outcome was determined during subsequent visits.

Results: A total of 30 patients, all of them male Muslims, were studied; 23.3% showed some motivation, 66.7% were fairly motivated and 10% were highly motivated.

Conclusion: In post stroke Muslim patients motivation in the light of Quranic guidance had change their attitudes towards their disability and wish for death.

Keywords: Motivation, Post stroke patients, Quranic teachings.

INTRODUCTION

Stroke is one of the leading causes of major disability in the world. It can cause significant physical, emotional and cognitive impairments among the survivors. After a stroke, most of the hemiplegic patients regain some of their ability to walk within 3 to 6 months; aphasia, dysarthria, cerebellar ataxia. Walking may improve for more than a year in some patients. However, in majority of the patients motor and language deficits remain permanent after 6 months1.

Persistent post stroke neurologic deficits can cause enormous impact not only on the patient and his family but also on the society as well. After a disabling stroke the patient and his caregivers have to accept a need for profound adaptation. The disabilities associated with stroke often result in depression in stroke patients2. The prevalence of post stroke depression ranges from 17 to 61 percent3. It has been observed that treatment of depression after a stroke sometimes improves functional outcome4.

Recent studies have indicated that religion and spirituality may promote mental health5. Religious beliefs can change the attitudes of the patients to their disease as faith and trust in God can provide them a source of comfort and support. It has been observed that as compared to healthy controls, individuals with chronic diseases including cancer, traumatic brain injury and stroke rely on their spiritual beliefs to assist them in adjusting emotionally to their disease6. People with positive religious beliefs having psychological support through spiritual guidance may have reduction in psychological stress. This can enhance the immune system and reduce symptoms associated with disease7.

Although exact incidence of stroke is not known in Pakistan, it is estimated to be 250/100,000, of which 60% survive with residual disabilities8. The prevalence is reported to be twice the highest reported in the world9. Majority of the people of Pakistan are practicing Muslims and they recite the Holy Quran for spiritual gains. Very few of them understand the message contained in it. However, most of them turn to...
spiritual practices when confronted with some serious problem in their life. Religious and spiritual coping strategies such as looking to a higher power for strength, support and guidance can provide peace and happiness.

Stroke patients who are believers can also use their spiritual, religious and congregational support to assist them in emotionally coping with their disease, although it may not alter the course of the disease and improve their physical health. Belief in a mighty and merciful power, prayers, reading of scriptures and religious congregations may give a sense of meaning to life. Teachings of scriptures may give a deep sense of responsibility for other human beings and may give the patient a sense of mission in his own life.

There are many depression scales which can be used to assess the degree of depression after a stroke. Depression in post stroke patients can easily be screened with a single question "Do you often feel sad or depressed?" This has been found to have a sensitivity of 86 percent and specificity of 78 percent when used against one of the common depression rating scales.10

Despite the impact of modern science and technology and western culture on our society, the influence of religion remains very strong among our Muslim population. The aim of this study was to determine the outcome of motivation in the light of Quranic teachings in our post stroke patients with the hope that these findings may be used as a reference for further studies on this subject.

**PATIENTS AND METHODS**

This is a descriptive observational study conducted at Neurology Clinic of CMH Lahore from 1 Jan 2015 to 30 June 2016. Patients having stroke duration of ≥ 6 months having functional disability visiting Neurology clinic of CMH Lahore consecutively for follow up and expressing in Urdu that they are praying to Allah to take them from this world or equivalent.

<table>
<thead>
<tr>
<th>Table-I: Modified Rankin Scale.</th>
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<tbody>
<tr>
<td>0</td>
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<tr>
<td>1</td>
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<tr>
<td>2</td>
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<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table-II: Some key aspects of Quranic teachings (Ayah: Surah).</th>
</tr>
</thead>
<tbody>
<tr>
<td>We shall surely test (your steadfastness) with fear and famine, with loss of property, life and produce. Give good news to those who endure with patience. [155:2]</td>
</tr>
<tr>
<td>No affliction can ever befall except by the leave of Allah. He that believes in Allah, his heart is guided to the right way. Allah has the knowledge of everything. [11:64]</td>
</tr>
<tr>
<td>Never give up hope of Allah’s mercy; in fact none despairs of Allah’s mercy except the unbelieving people. [87:12]</td>
</tr>
<tr>
<td>Surely, those who recite the Book of Allah, establish Salah (prayers), spend out of what We have given them, secretly and openly, may hope for imperishable gain. [29:35]</td>
</tr>
<tr>
<td>For all, there will be ranks according to their deeds, so that He may reward them fully for what they have done and they shall not be wronged. [19:46]</td>
</tr>
<tr>
<td>(O believers), give what is due to your relatives, the needy and the traveler in need. That is best for those who seek the pleasure of Allah and it is they who will attain felicity. [38:30]</td>
</tr>
</tbody>
</table>
phrases in response to query about their health were included in this study. Their expression in Urdu was interpreted as their wish for death. Patients with cognitive impairment and inability to express themselves were excluded from the study. Patients who reported that they feel depressed or showed symptoms of depression other than their explicit wish for death were also excluded from the study.

Their functional status was ascertained from patient interview and their physical examination and their degree of disability was measured using Modified Rankin Scale (table-I)\(^11\).

The patients were engaged in discussions about purpose of life and life after death in the light of teachings of the Holy Quran to give them a mission in their remaining life (table-II)\(^12\).

They were encouraged to study and understand the Holy Quran in addition to their customary prayers, read religious literature, watch religious programs in television, engage in Zikr (to recite glorification of Allah) and Durud (to pay homage to the Prophet PBUH), spend in charity and attend religious congregations to give a sense of meaning to their life. They were assured that they had been given a chance by their Rabb (Lord) to improve their score card of good deeds to qualify for a higher rank in life after death.

During the next follow up visits the outcome of their motivation, for the purpose of this study, was arbitrarily stratified as:

- Motivation level 0: No change.
- Motivation level 1: Feels better but still having occasional ideas of death.
- Motivation level 2: Stopped thinking about death but did not change his routine.
- Motivation level 3: Stopped thinking about death and striving to change his routine in the light of previous discussion.

Data were analyzed using statistical package for social sciences (SPSS) version 17 and descriptive statistics were used to describe results. Numerical values i.e. age and time duration were expressed as mean ± SD (standard deviations). Distribution of categorical variable i.e. motivation level was expressed in percentage.

**RESULTS**

A total of 30 stroke patients, all of them males and Muslims, with age range of 64 to 86 years; mean age 73 years (SD=5.85); were recruited during the period of data collection. All of them were educated (≥ graduation), married and being looked after by their family members or servants. They were financially well off and had been living a very active and social life before their stroke. All of them could recite the Holy Quran and able to understand it with Urdu or...
English translation. The reason for their wish for death was their feeling of being useless and being a burden on others.

The mean duration of stroke was 11.8 months (SD = 5.15); range 6 to 24 months; and the modified Rankin scale was graded as 3 in 26.7% (8) and 4 in 73.3% (22).

All the post stroke patients in our study population responded to motivation in the light of Quranic guidance to varying extent; 23.3% (7) achieved Motivation level-1, 66.7% (20) Motivation level-2 and 10% (3) Motivation level-3 (figure).

**DISCUSSION**

Although modern medicine has increased the survival rate of stroke patients, their psychosocial adaptation after stroke is related to their residual neurologic deficits. Their post stroke physical disabilities and cognitive impairment has been associated with depression in these patients. Linden et al found, in their case controlled study, that 34% of elderly stroke survivors suffered depression as compared to only 13% of age matched population control. Remission of depression in these patients is associated with a better functional outcome at three and six months than continued depression.

The benefits of interventions for prevention of post stroke depression are not clear. Some studies suggest that pharmacological therapy alone gives no clear benefit but psychotherapy can play a role in prevention of post stroke depression. In a controlled study of 176 patients, escitalopram was found to be superior to placebo for prevention of post stroke depression when given within three months of acute stroke.

In post stroke depression the effectiveness of pharmacotherapy, psychotherapy or combination of both is not well established but accumulating evidence suggests that these interventions are beneficial. Mitchell et al have reported that in severe depression within four months of ischemic stroke, eight week psychosocial and behavioral intervention plus antidepressant therapy was superior to antidepressant treatment alone for reduction in depressive symptom at 12 months of follow up.

Our study suggest that psychotherapy based on the teachings of the Holy Quran can reduce sadness and cause peace and happiness in religious minded post stroke patients.

It has been found that patients who have religious beliefs also have a greater tendency to accept their disability than those who do not turn to religion. Bonelli et al concluded, after examining original research on religion and spirituality published in some of the top psychiatry and neurology journals, that religious involvement is correlated with better mental health in depression and stress related disorders. Koenig also concluded, after review of the literature on the subject, that religious beliefs and practices can represent a powerful source of comfort in depression and anxiety.

**CONCLUSION**

In post stroke Muslim patients motivation in the light of Quranic guidance had change their attitudes towards their disability and wish for death.

**CONFLICT OF INTEREST**

This study has no conflict of interest to declare by any author.

**REFERENCES**

Introduction

Acute appendicitis is still one of the most common surgical abdominal emergencies\(^1\). Because of overlap with other clinical conditions and associated significant morbidity, no single sign, symptom, or diagnostic test accurately confirms the diagnosis of appendicular inflammation in all cases\(^2\). However, the overall appendectomy rate has fallen over time due to availability of modern investigative tools like ultrasonography, computerized tomography scan, and magnetic resonance imaging\(^3\). The ultrasonography is quick, readily available, cost-effective, non-invasive, and end-user safe investigation that yields relatively clearer diagnosis thereby reducing the negative appendectomy rates\(^3\). The purpose of this study was to evaluate the accuracy of ultrasonography in the diagnosis of acute appendicitis by evaluating its sensitivity, specificity, positive and negative predictive values in patients with suspected acute appendicitis presenting in Sheikh Khalifa Bin Zaid Al Nahyan (SKBZN) Hospital, Muzaffarabad, Azad Jammu and Kashmir. This study would add further information to the national statistics and help in better

Sensitivity and Specificity of Ultrasonography in Cases of Suspected Acute Appendicitis; Results of a Cross-Sectional Survey

Hussain Rashid Ihsan, Saeed Bin Ayaz*, Muhammad Farooq**, Muhammad Saeed***, Sohail Aslam*

Sheikh Khalifa Bin Zaid Al Nahyan Hospital Muzaffarabad, Pakistan, *Combined Military Hospital Okara/National University of Medical Sciences (NUMS) Pakistan, **Poonch Medical College Rawalakot Pakistan, ***Combined Military Hospital Kharian/National University of Medical Sciences (NUMS) Pakistan

ABSTRACT

Objective: To evaluate the accuracy of ultrasonography in the diagnosis of acute appendicitis.

Study Design: A cross-sectional validation study.


Material and Methods: Patients, >18 years of age, who were clinically suspected to have acute appendicitis and scored 5 or higher on Modified Alvarado Scoring System were included through consecutive sampling. All participants underwent ultrasonographic examination while using graded-compression technique. The sonographically positive patients for acute appendicitis underwent surgery and the removed appendix was examined for the signs of inflammation. The sonographically negative patients for acute appendicitis were kept on conservative management. They were operated later if they did not show improvement with conservative management and their appendix was re-examined for signs of inflammation.

Results: Out of 100 patients, 64 were male and 36 were female (mean age: 30 ± 7 years). Ultrasonographic evaluation was positive in 72 patients and negative in 28 patients. Sixty-four sonographically positive patients had positive operative findings while 12 out of 28 sonographically negative patients for acute appendicitis had to be operated because they did not show improvement with conservative management. The sensitivity of ultrasonography was 84%, while specificity was 67% with positive predictive value of 89%, negative predictive value of 57%, and accuracy rate of 80%.

Conclusion: Ultrasonography, with a diagnostic accuracy of 80% was found effective in the diagnosis of acute appendicitis, and recommended as a screening tool in suspected cases of acute appendicitis.

Keywords: Abdominal pain, Accuracy, Appendicitis, Modified Alvarado scoring system, Negative predictive value, Positive predictive value, Sensitivity, Specificity, Ultrasonography.

INTRODUCTION

Acute appendicitis is still one of the most common surgical abdominal emergencies\(^1\). Because of overlap with other clinical conditions and associated significant morbidity, no single sign, symptom, or diagnostic test accurately confirms the diagnosis of appendicular inflammation in all cases\(^2\). However, the overall appendectomy rate has fallen over time due to availability of modern investigative tools like ultrasonography, computerized tomography scan, and magnetic resonance imaging\(^3\). The ultrasonography is quick, readily available, cost-effective, non-invasive, and end-user safe investigation that yields relatively clearer diagnosis thereby reducing the negative appendectomy rates\(^3\). The purpose of this study was to evaluate the accuracy of ultrasonography in the diagnosis of acute appendicitis by evaluating its sensitivity, specificity, positive and negative predictive values in patients with suspected acute appendicitis presenting in Sheikh Khalifa Bin Zaid Al Nahyan (SKBZN) Hospital, Muzaffarabad, Azad Jammu and Kashmir. This study would add further information to the national statistics and help in better
understanding the role of ultrasonography in our patients suspected of acute appendicitis.

**MATERIAL AND METHODS**

This was a descriptive cross-sectional validation study conducted at the SKBZN Hospital, Muzaffarabad, Azad Jammu and Kashmir, over a period of 6 months i.e. from October 2015 to April 2016. Following approval from the hospital ethical committee, all patients, >18 years of age, who were clinically suspected to have acute appendicitis and were admitted to the surgical department of SKBZN hospital during the study period, were included through non-probability consecutive sampling after informed consent. All the included patients were required to score 5 or higher on the Modified Alvarado Scoring System; the system developed by Kalan et al.\(^4\) for the clinical diagnosis of acute appendicitis, and effectively used by Jan et al.\(^5\), Malik et al.\(^6\), Nasiri et al.\(^7\), and Gujar et al.\(^8\). It included scoring on account of migration of pain to the right iliac fossa, anorexia, nausea or vomiting, tenderness in the right iliac fossa, rebound tenderness in the right iliac fossa, temperature > 37.3°C, and white cell count of >10 x 10\(^9\)/L. Patients with diagnosed pregnancy, chronic infectious diseases like ileo-caecal tuberculosis, carcinoid tumours, and other neoplastic lesions of the appendix were excluded.

All studies were performed by a senior consultant radiologist using ultrasonography machine “My Lab Seven” (Esaote, Genova, Italy), first with 3.5 megahertz curvilinear transducer and then with 12 megahertz linear transducer. The patients were initially examined in the conventional supine position, followed by the left posterior oblique position at an angle of 45° with the horizontal and then in a “second look” supine position. The ultrasonographic criteria for the diagnosis of acute appendicitis given by Maher and Dixon\(^9\) was followed. The criteria included:

- Outer diameter of the appendix ≥ 7mm
- Lack of compressibility

### Table-I: Positive and negative predictive values.

<table>
<thead>
<tr>
<th>Groups based on sonographic findings</th>
<th>Positive on per-operative observation</th>
<th>Negative on per-operative observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sonographically positive</td>
<td>64 (TP(^*))</td>
<td>8 (FP(^**))</td>
</tr>
<tr>
<td>Sonographically negative</td>
<td>12 (FN(^***))</td>
<td>16 (TN(^****))</td>
</tr>
</tbody>
</table>

\(^*\)True positive, \(^**\)False positive, \(^***\)False negative, \(^****\)True negative

### Table-II: Findings of sonographically positive patients for acute appendicitis (n=72).

<table>
<thead>
<tr>
<th>Sonographic findings</th>
<th>Number of patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressibility</td>
<td>60</td>
<td>83.3%</td>
</tr>
<tr>
<td>Diameter ≥ 7mm</td>
<td>40</td>
<td>55.6%</td>
</tr>
<tr>
<td>Appendicolith</td>
<td>10</td>
<td>13.9%</td>
</tr>
<tr>
<td>Omental thickening</td>
<td>58</td>
<td>80.6%</td>
</tr>
<tr>
<td>Surrounding fluid</td>
<td>46</td>
<td>63.9%</td>
</tr>
<tr>
<td>Probe tenderness</td>
<td>66</td>
<td>91.7%</td>
</tr>
</tbody>
</table>

- Appendicolith
- Omental thickening
- Surrounding fluid or abscess
- Maximum tenderness over the appendix with probe

In general, ultrasonography was considered positive when at least two or more criteria were met and negative if the appendix could not be visualized, or a normal looking appendix was seen or another definite pathology not affecting the appendix was noted.

The study was performed in both transverse and longitudinal planes with a technique referred
to as "graded compression" i.e. the radiologist exerted gentle pressure in the right iliac fossa to decrease the distance between the transducer and the retrocecal or retrocolic spaces, potentially increasing the resolution of the appendix. The ultrasonographic findings were recorded in a structured proforma. After ultrasonographic evaluation, the patients with a positive scan were sent for surgery and the removed appendix was observed for signs of inflammation. Patients in whom ultrasonography did not show signs of acute appendicitis, were kept on conservative treatment, and were operated later only if the symptoms did not resolve with conservative treatment.

For analysing sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV), we used the statistical software “MedCalc” (MedCalc Software, Ostend, Belgium). The accuracy of ultrasonography for acute appendicitis was estimated through following formula

\[
\text{Accuracy} = \frac{\text{TP} + \text{TN}}{\text{TP} + \text{TN} + \text{FP} + \text{FN}} \times 100\%
\]

Where:
- TP: True positive (Positive on ultrasonography and per-operative observation)
- FP: False positive (Positive on ultrasonography and negative on per-operative observation)
- TN: True negative (Negative on ultrasonography and did not require operation)
- FN: False negative (Negative on ultrasonography but needed operation after failure of conservative management)

**RESULTS**

Out of a total of 101 included patients, one patient dropped out as she refused treatment at the hospital after ultrasonographic evaluation. From the remaining 100 patients, there were 64 males and 36 females. The age of patients ranged from 15 to 45 years with a mean age of 30 ± 7 years. The age distribution of the patients has been shown in fig-1. The ultrasonographic results of acute appendicitis were positive in 72 patients and negative in 28. The findings on ultrasonography have been shown in table-I. Sixty-four sonographically positive patients had positive operative findings while eight had a normal appendix on per-operative observation (table-II). All sonographically negative patients were kept on conservative treatment. Sixteen patients, later on, recovered fully, while twelve patients had to be operated upon as they did not
improve conservatively. All operated patients in this group had positive per-operative findings.

After analysis through MedCalc, the sensitivity of ultrasonography in the diagnosis of appendicitis was 84.21% (95% CI 74.04% to 91.57%), while specificity was 66.67% (95% CI 44.68% to 84.37%), with PPV of 88.89% (95% CI 81.84% to 93.42%), and NPV of 57.14% (95% CI 42.47% to 70.66%). The accuracy rate calculated through the above-mentioned formula was 80%. The receiver operating characteristic curve interpreting sensitivity and specificity levels has been given as fig-2.

DISCUSSION

Ultrasonography with its lack of ionizing radiations and effectiveness should be the investigation of choice in patients suspected of acute appendicitis. Puylaert JB was the pioneer investigator to promote graded-compression sonographic technique for diagnosing acute appendicitis in 1986. The overall sensitivity of ultrasonography varies in different studies, but usually lies within the range of 75-95%, however, values as low as 44% have been reported. The specificity of ultrasonography is usually reported to lie within the range of 90-95%, though substantially low values have been reported. We have observed the sensitivity of ultrasonography in the diagnosis of acute appendicitis as 84%, the specificity as 67%, PPV as 89%, NPV as 57%, and accuracy rate as 80%. The results can be compared to previous studies carried out in Pakistan. Hussain et al reported sensitivity of 88%, specificity of 92%, PPV of 94%, NPV of 86%, and diagnostic accuracy of 90%. Arooj et al reported overall sensitivity of 94% and specificity of 84%. Alia et al reported an overall specificity of 89.74% and the sensitivity of 96.72%, PPV of 93.65%, and NPV of 94.59%.

The results given by ultrasonography in diagnosis of acute appendicitis improve when the procedure is performed through graded compression technique, a technique endorsed by Ramachandran et al. and Zielke et al. With this technique, we found some findings that were highly supportive for the diagnosis of acute appendicitis. These findings were non-compressibility (83%), appendicular tube (55%), appendicolith (13%), omental thickening (80.5%), surrounding free fluid (63.8%), and the probe tenderness (91.7%). Borushok et al also worked on the sensitivity of ultrasonography in the diagnosis of acute appendicitis. His findings showed results similar to our findings. He found non-compressibility in 85%, appendicular tube in
Ultrasonography has gained widespread acceptance as a reliable, highly accurate, and highly sensitive modality in evaluation of patients with acute appendicitis. It may clearly outline those patients who require surgery or other forms of intervention, as it can provide rapid and effective diagnostic information to guide appropriate clinical management. The usage of ultrasonography in examination is very useful to detect unclear clinical diagnosis of acute appendicitis in most patients especially females. In experienced hands, graded compression sonography has more than 80% accuracy for diagnosing acute appendicitis. It is suggested that all the patients with pain in the right lower quadrant of the abdomen must be evaluated by ultrasonography so as to decreases the rate of negative appendectomies.

CONCLUSION

Ultrasonography, with a diagnostic accuracy of 80% was found effective in the diagnosis of acute appendicitis, and recommended as a screening tool in suspected cases of acute appendicitis.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

REFERENCES


PREDICTIVE VALUE OF LEUKOCYTOSIS FOR DIAGNOSING ACUTE APPENDICITIS

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ABSTRACT

Objective: To determine the predictive value of leukocytosis in the diagnosis of acute appendicitis using histopathology as gold standard. 

Study Design: Cross-sectional validation study.

Place and Duration of Study: Department of general surgery Combined Military Hospital Bahawalpur, from Jan 2015 to Dec 2015.

Material and Methods: A total of 180 patients were included in this study. Leukocyte count was done in each patient on presentation in emergency department. Following open appendectomy, resected specimens were sent for histopathological examination. Sensitivity analysis was done using two by two tables.

Results: Out of 180 patients, 132 (73.3%) were male while remaining 48 (26.7%) were female with mean age of 27.2 ± 8.5 years. Sensitivity of leukocyte count in diagnosing acute appendicitis was 93.5%, specificity 64.3%, positive predictive value 89.6%, negative predictive value 75.1% and diagnostic accuracy was 86.7%.

Conclusion: Raised leukocyte count was found to have high sensitivity but low specificity for diagnosing acute appendicitis. It is a poor sole inflammatory diagnostic marker for acute appendicitis necessitating additional investigations in certain cases.

Keywords: Acute appendicitis, Histopathology, Leukocyte count.

INTRODUCTION

Acute appendicitis is the most common cause of acute abdomen worldwide1. Lifetime prevalence of acute appendicitis is approximately 7% with peak incidence between the age of 10 and 30 years2. Appendectomy is the most commonly performed operation worldwide with life time risk of 12% for males and 25% for females3. Acute appendicitis has morbidity of approximately 10% and mortality of approximately 1-5% even after advancements in diagnosis and treatment4. Attempts have always been made to enhance the diagnostic accuracy of acute appendicitis to prevent negative appendectomies which cause significant post-operative morbidity5.

Acute appendicitis being an inflammatory disorder is associated with raised leukocyte count6. Leukocyte count estimation is one of the most helpful and first line investigations for patients presenting with acute abdomen. It is an easily available, simple and economical laboratory investigation that can be performed in all patients presenting with right lower quadrant abdominal pain mimicking acute appendicitis7. Sensitivity and specificity of raised leukocyte count range from 70% to 80% and 60% to 68% respectively for diagnosing acute appendicitis8. Leukocyte count is also integral component of various scoring systems used for diagnosis of acute appendicitis.

A normal pre-operative leukocyte count in patients presenting with suspected acute appendicitis is most likely associated with a normal appendix. Deferring surgery in this group of patients and/or further investigation into other possible causes might reduce the rate of negative appendectomies9. This could reduce the morbidity associated with negative exploration and might be cost effective by reducing both the negative appendectomy rate and length of hospital stay. Appendectomy is one of the most
commonly performed emergency surgical procedure accounting upto 10% of all abdominal surgeries\(^\text{10}\). About 20-33% of the patients having acute appendicitis present with atypical clinical findings in the emergency department\(^\text{11}\). Atypical clinical presentations impose diagnostic dilemmas which have led to devise different scoring systems, imaging modalities, laparoscopy and laboratory tests to help in making the diagnosis. Leukocyte count estimation is one of the initial investigations performed in emergency department for evaluation of acute abdomen. Elevated leukocyte count not only helps in complementing the diagnosis of acute appendicitis but its levels also help in predicting the severity and natural history of disease. Keeping all this in view, we conducted this study to detect the efficacy of raised leukocyte count in complementing the diagnosis of acute appendicitis in our set up.

**PATIENTS AND METHODS**

This cross-sectional validation study was carried out at Combined Military Hospital, Bahawalpur from 1st Jan 2015 to 31st Dec 2015. Life time incidence of acute appendicitis is 50%\(^\text{12}\), so anticipated population proportion (p) was 0.5, confidence level was 95% and absolute precision required (d) was 0.08, so calculated sample size was 180 by using WHO sample size calculator.

Both male and female patients between 10 to 50 years of age who presented with right iliac fossa (RIF) pain of less than 2 days duration suspected to have acute appendicitis were included in the study by non-probability consecutive sampling. Patients presenting with non-right iliac fossa pain, pregnant, patients having appendicular mass or appendicular abscess and patients who underwent incidental appendicectomy were excluded from the study.

All the patients were initially assessed by adequate history, thorough examination and investigations (total leukocyte count and urine examination) were done. Other investigations such as those required for evaluation of fitness for general anesthesia were also carried out. Leukocyte count of over 10,000/mm\(^3\) was considered elevated. After confirming the diagnosis, informed written consent was obtained for surgery. Pre-operatively, the patients were kept nil by mouth for 6 hours, received intravenous fluids/antibiotics and analgesics. Open appendectomy was performed in all patients. Resected specimens were sent for histopathological examination.

All the data collected through the proforma were entered into the Statistical Package for Social Sciences (SPSS) version 18.0 and analyzed through its statistical package. Mean and standard deviation was used for quantitative data

Table-I: Comparisons of leukocytosis and histopathology.

<table>
<thead>
<tr>
<th>Leukocyte Count</th>
<th>Histopathology of Appendix</th>
<th>Inflamed appendix</th>
<th>Normal appendix</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;10,000/mm(^3)</td>
<td>True Positive (a)</td>
<td>(129)</td>
<td>False Positive (b)</td>
<td>(15)</td>
</tr>
<tr>
<td>≤10,000/mm(^3)</td>
<td>False Negative (c)</td>
<td>(09)</td>
<td>True Negative (d)</td>
<td>(27)</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>138</td>
<td>42</td>
<td>180</td>
</tr>
</tbody>
</table>

Table-II: Statistical pattern of leukocytosis for diagnosing acute appendicitis.

<table>
<thead>
<tr>
<th>Statistical Parameter</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>a / a +c x 100</td>
</tr>
<tr>
<td>Specificity</td>
<td>d / b + d x 100</td>
</tr>
<tr>
<td>Positive Predictive Value</td>
<td>a / a + b x 100</td>
</tr>
<tr>
<td>Negative Predictive Value</td>
<td>d / c + d x 100</td>
</tr>
<tr>
<td>Diagnostic Accuracy</td>
<td>a + d/ a + b + c + d x 100</td>
</tr>
</tbody>
</table>
like age while frequency and percentage was calculated for qualitative data like gender. 2 x 2 table was used to determine sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of raised leukocyte count in acute appendicitis.

RESULTS
A total of 180 patients were included in this study during the period of 1 year from January 2015 to December 2015. Regarding age distribution, 121 patients (67.2%) were between 11-30 years of age, while 48 patients (32.8%) were between 31-50 years of age. Age distribution ranged from 12-50 years, mean ± SD was calculated as 27.2 ± 8.5. In our study, range of leukocyte count was 4500/mm$^3$ to 26400/mm$^3$ with a mean of 12363.89 ± 3285.54/mm$^3$. There were 144 patients with elevated leukocyte counts (range 10200/mm$^3$ to 26400/mm$^3$) with a mean of 13589.58 ± 2355.82/mm$^3$ while there were 36 patients with <10,000/mm$^3$ leukocyte counts, ranging from 4500/mm$^3$ to 9400/mm$^3$ with a mean of 7461.11/mm$^3$ ± 1275.76/mm$^3$. Out of 180 patients, 132 (73.3%) were male while remaining 48 (26.7%) were female. True positive were 129, false positive 15, false negative 09 and true negative were 27 (table-I). Sensitivity of raised leukocyte count in diagnosing acute appendicitis was 93.5%, specificity 64.3%, positive predictive value 89.6%, negative predictive value 75.1% and diagnostic accuracy was 86.7% (table-II). Receiver operating characteristic (ROC) curve was drawn (figure).

DISCUSSION
One hundred and twenty one patients (67.2%) out of a total of 180 patients in our study were in 2nd and 3rd decade of life, which is in accordance to other study conducted by Ramachandra et al$^{13}$. In our study, acute appendicitis was more frequent among males than females which is in conformity with published literature$^{14}$. Elevated leukocyte count was found in 71.6% (n=129) patients with macroscopically confirmed acute appendicitis in our study which is in accordance with studies conducted by Saaqi$^{15}$ and Ahmed et al$^{16}$.

Sensitivity of raised leukocyte count in diagnosing acute appendicitis was found to be 93.5%, specificity 64.3%, positive predictive value 89.6%, negative predictive value 75.1% and diagnostic accuracy was 86.7% in our study. Our result of 93.5% sensitivity of raised leukocyte count for acute appendicitis is comparable with findings of Shafi$^{17}$. Similarly specificity of raised leukocyte count in our study was found to be 64.3% which is comparable to 67% and 73.3% reported by Gulzaret al$^{18}$ and Kamran et al$^{19}$ respectively. However, various studies have
reported different results about the specificity of raised leukocyte count for acute appendicitis, as lower as 38% specificity had been reported in literature making leukocyte count alone a poor inflammatory predictor of disease\textsuperscript{17}. Because of the inherent problem of low specificity, leukocyte count may mislead the diagnosis at times because other acute abdominal conditions are also frequently associated with raised leukocyte count.

In our study, 76.7% of cases (n=138) were confirmed positive on histopathology, giving the overall negative appendectomy rate of 23.3% which is in concordance to 17.3% mentioned in literature\textsuperscript{20}. The reason for this slightly higher negative appendectomy rate could be that all patients in our study were managed by surgical intervention and conservative non operative management was not done in any patient considering open appendectomy as gold standard treatment in our set up.

Leukocytosis is a basic supportive laboratory finding in the diagnosis of acute appendicitis. The usefulness of leukocyte count estimation for excluding acute appendicitis has been supported by previous studies showing that at a cutoff value of $<10,000 \text{ cell/mm}^3$ is highly sensitive for ruling out acute appendicitis\textsuperscript{21}. Schellekens et al\textsuperscript{22} conducted a study comparing the role of various inflammatory markers in diagnosing acute appendicitis. Sensitivity and specificity of leukocyte count was 78% and 71% respectively with area under the curve in ROC being 0.79 (0.73–0.85). Sensitivity of leukocyte count was found to be better in our study but specificity and area under the curve in ROC in this study are highly comparable with our study. They also concluded that leukocyte count has excellent sensitivity for acute appendicitis, equivalent to or better than that of other biomarkers making it a preferred biomarker for patients suspected of having acute appendicitis. In another study conducted by Andersson\textsuperscript{23} sensitivity and specificity of leukocyte count $>10,000 \text{ cell/mm}^3$ was found to be 83% and 67% respectively with area under the curve in ROC being 0.72 showing modest discriminatory power for acute appendicitis, findings which are comparable to our study.

There are certain limitations in our study. Firstly, we use leukocyte count alone as inflammatory marker for acute appendicitis. However various studies have shown that diagnostic accuracy of leukocyte count can be markedly increased if it is combined with other inflammatory markers for acute appendicitis such as C-reactive protein\textsuperscript{7} and Interleukin 6\textsuperscript{24}. Secondly, single measurement of leukocyte count in patients of acute abdomen represents the snapshot of the condition at that particular time only. Serial measurement of leukocyte count is what is required to enhance not only its diagnostic accuracy but also its role in clinical decision making.

**CONCLUSION**

Raised leukocyte count was found to have high sensitivity but low specificity for diagnosing acute appendicitis. It is a poor sole inflammatory diagnostic marker for acute appendicitis necessitating additional investigations in certain cases.

**CONFLICT OF INTEREST**

This study has no conflict of interest to declare by any author.

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Leukocytosis For Diagnosing Acute Appendicitis


FEEDBACK ANALYSIS OF PATIENTS IN A TERTIARY CARE HOSPITAL


Combined Military Hospital Malir Karachi/National University of Medical Sciences (NUMS) Pakistan, *Army Medical College/National University of Medical Sciences (NUMS) Rawalpindi Pakistan, **Combined Military Hospital Badin/National University of Medical Sciences (NUMS) Pakistan

ABSTRACT

Objective: To analyze feedback and pattern of response by patients over a period of two years in a tertiary care hospital.

Study Design: Descriptive study.

Place and Duration of Study: Quality Assurance Department of Combined Military Hospital Malir, from Jan 2014 till Dec 2015.

Material and Methods: Combined Military Hospital Malir is a quality management System/International organization of standardization 9001-2008 certified since 2013 and has a well-established quality assurance department. Before conducting this study it was ensured that every department of the hospital has a prominently placed complaint/suggestion register along with the pre-designed feedback proformas. Patients feedbacks submitted spontaneously were collected from all 40 departments of the hospital on regular basis. All the data collected were then analyzed at the quality assurance department. Patients’ responses were broadly grouped into three major categories which were: Complaints, Suggestions and Compliments. These three major categories of feedbacks were analyzed in terms of frequency and percentages which were further analyzed against six parameters depending upon their relation. These parameters were hospital staff, hospital environment, medicine & treatment, infrastructure, hospital comforts and basic amenities. All the data were analyzed on SPSS 20.

Results: In the year 2014, Combined Military Hospital received 1528 patients’ feedback from all the departments. A total of 1071 (70%) out of these were complaints, 153 (10%) were compliments and 304 (20%) were suggestions. In the year 2015, we received 593 patients’ feedback constituting 187 (32%) complaints, 258 (43%) compliments and 148 (25%) suggestions. Out of 1071 complaints majority 244 (23%) were related to basic amenities followed by 213 (20%) related to hospital environment. Complaints pertaining to staff behavior were 195 (18%) while 178 (17%) were directed towards medicines and treatment. About 170 (16%) people were not satisfied with the infrastructure of the hospital while only 71 (7%) people showed dissatisfaction towards hospital comforts. On comparing the results of year 2014 to 2015, we found that there was a reduction of 62% in total number of feedbacks (1528 to 593). Complaints declined by 82% (1071 to 187) while compliments increased from 10% to 43%. Most of the complaints were regarding basic amenities 41% (76) followed by 19% (35), 17% (31) and 16% (29) related to hospital comforts, medicines/treatment and staff respectively.

Conclusion: In a public hospital set up most of the complaints are generated towards basic amenities like provision of quality food, clean drinking water and hygienic washrooms followed by hospital general environment and staff behavior. Simultaneously it is also found that timely action taken by board of doctors and administration on patients feedback and complaints minimize chances of their recurrence and increase the confidence of the patients towards an organisation in the form of compliments.

Keywords: Health care facilities, Patient satisfaction, Quality of health care.

INTRODUCTION

Access to health care is a basic human right and cannot be denied legally or morally in any society. Provision of this basic facility in a respectful and dignified manner is the responsibility of the government1.

Health sector is one of the major service sectors of a country needed to develop and maintain a healthy human capital for
achievement of national goals. Unfortunately in a developing country like Pakistan, this facility is inadequate not only in terms of infrastructure but also in quality.

Similar to all developing countries of the world, the public and private health sectors in Pakistan co-exist both complimenting and conflicting with each other. Health care sector has become a highly competitive and fast growing service industry where patients are the customers and key evaluators in measuring the quality of service provided by the hospital. Public hospitals are owned and run by the government while private hospitals operate independently are generally more profit oriented. In the recent past, private hospitals have gained popularity in middle and upper class because of their focus toward providing customer satisfaction.

Health care services are intangible in nature and hence it is onerous to assess and measure their quality. Patients satisfaction is mostly dependent upon their sagacity and the perception of quality health care services provided which is further influenced by their culture and taboos. Ahmed et al reported that diversity in patient’s demographics molds their perceptions about hospital facilities and services. Their study measures the changes brought in the patient satisfaction of admitted patients in different wards of the public sector hospitals in the D.I. Khan district.

Patient satisfaction serves as an important tool for self-evaluation for an organization. Unfortunately public hospitals are not only deficient in provision of basic health facilities in the form of lack of man power, medicines and diagnostics but are also least focused towards patient feedback. According to Chakraborty, Rezaei, Aniza and Chaaker satisfaction is a psychological concept, which is defined in different ways. The satisfaction of a patient should be addressed in a continuous manner for organizational growth.

Aim of this study was to analyze patient’s feedback on the working of this hospital, type and area generating complaints, along with appreciations and suggestions. This study helped the administration in identifying weak areas that required attention and timely implementation of appropriate corrective measures for quality health care. Analyzing feedback gave a direct insight into the working of the hospital and changes required for improvement.

**MATERIAL AND METHODS**

This descriptive study was carried out in Quality Assurance Department (QAD) of Combined Military Hospital (CMH) Malir which is a 500 hundred bedded tertiary care hospital with average bed occupancy of 65-70% and approximate daily outdoor sick report of 1200 patients. CMH Malir is QMS ISO 9001-2008 certified since 2013 and has a well-established Quality Assurance Department comprising of QMR (Quality Management Representative), DQMR (Deputy Quality Management Representative), DCR (Document Control Representative) and Clerical staff. The period of study was from January 2014 till Dec 2015.

Prior permission from the hospital ethical committee was acquired before the commencement of the study and it was ensured that all departments had complaint/suggestion registers along with pre designed patient feedback proformas placed at a prominent and accessible place. Only written responses were included in this study to keep the traceability and objectivity. Verbal and anonymous complaints and suggestions were not included.

Patient’s response was gathered on these complaint registers and on predesigned feedback proformas. Quality Assurance Department pro-actively encouraged all the departments to get feedback from patients to determine their satisfaction level in five major departments of the hospital including Pathology, Radiology, Pharmacy, Outdoor and Indoor of the hospital. As per laid down policy each complaint/feedback was presented to the hospital administration for prompt and propitious action. Furthermore each feedback
was routed to QAD for its documentation, analysis and verification. Finally feedback analysis was presented to the top management of the hospital including all heads of departments.

All the data were collected and analyzed in Quality Assurance Department. The patient response was broadly categorized in three major categories as complaints, suggestions and compliments which were analyzed in terms of their number and frequency. Moreover six broad parameters regarding each category were formulated for analysis. These included Hospital staff, Hospital environment, Medicine & treatment, Infrastructure, Hospital comforts and Basic amenities.

Various components were included in each parameter for better understanding table-I. Major categories were further analyzed as per the given parameters. Number of complaints, suggestions and compliments were calculated as frequency and percentages on SPSS version 20.

RESULTS

In year 2014 Combined Military Hospital received a total of 1528 patient feedback from patients from all the departments. Out of these 70% (1071) were complaints, 10% (153) were compliments and 20% (304) were suggestions (fig-1).

For year 2014 monthly disposition of these feedbacks by departments to QAD was also analyzed and it was revealed that this was more in the initial months of year rising to its peak in the month of April (215) and then there a gradual
decline in its number. Minimum feedbacks (52) were received in the month of November.

Complaints were further analyzed on various parameters mentioned in table-I. Out of 1071 complaints majority of the complaints 23% (244) were related to basic amenities followed by 20% (213) related to hospital environment. Staff behavior raised 18% (195) complaints while 17% (178) were towards medicines and treatment. About 16% (170) people were not happy about the infrastructure of hospital. Only 7% (71) people showed dissatisfaction towards hospital comforts table-II.

Out of 304 compliments, most of them were towards staff 67% (206) followed by 30% (92) in relation to hospital environment. Suggestions showed mixed pattern with maximum number of 31% (48) regarding medicines and treatment followed by 23% (35), 20% (31) and 12% related to hospital infrastructure, hospital environment and hospital comforts respectively table-II.

In the year 2015 we received 593 feedbacks constituting 32% (187) complaints, 44% (258) compliments and 25% (148) suggestions (fig-2). Monthly distribution of these feedback revealed its peak of 90 in May and lowest of 26 in August 2015 (fig-3).

Analysis of complaints revealed an 82% reduction in total number (1071 to 187) as compared to previous year but its ratio against different parameters did not change much. About 41% (76) complaints were towards basic amenities followed by 19% (35), 17% (31) and 16% (29) towards hospital comforts, medicines & treatment and staff respectively. Hospital infrastructure raised only 6% (12) complaints while there were only 2% (4) complaints regarding hospital environment.

Out of 258 compliments maximum number 77% (199) were about staff behavior and strength followed by 14% (35) related to hospital environment. Suggestions were mostly towards basic amenities 30% (44) followed by 27% (40) and 16% (24) regarding hospital comforts and staff behavior respectively.

On comparing the results of year 2014 with 2015, we found that there was 62% reduction in total number of feedbacks (1528 to 593). Complaints were markedly reduced by 82% (1070 to 187) in year 2015. Although there was reduction in number of compliments in year 2015 by 15% (304 to 258) but its proportion increased more than 100% out of total collected feedbacks, that is from 20% to 43%. Proporation of suggestions was also more in year 2015 making 25% from 10% of total feedbacks as compared to year 2014 (table-II).

DISCUSSION

Pakistan being the 6th most populous country in the world with a population of 191.71 million and a fertility rate of 3.65 faces immense problems in the health care sector. In the year 2015-16 only 20.88 billion rupees have been allocated for health issues.
With increasing population of the country in the recent past the health load has enormously increased affecting the Armed Forces Hospitals equally with an increase in the doctor patient ratio.

Currently there are two health care systems running in Pakistan, Public and Private. Public hospitals are owned and run by government while private hospitals are commercially based set ups. Irfan et al\(^1\) and Nizar et al\(^{11}\) have reported that public hospitals in Pakistan are not focused primarily on quality treatment due to several reasons including low priority for patients satisfaction, poor education, benightedness, in science of patients and above all limited budget allocation to heath sector by the Government. Reciprocally private institutes including hospitals regularly monitor feedback and acquire insight into their clientele satisfaction for continual improvement and provision of better health care services in addition to earn money in this era of challenging market competition\(^{1,2}\).

Contrary to this study systematic review of Basu et al\(^{12}\) does not support this claim that private hospitals are doing a better job than public hospitals. Berendes et al\(^{13}\) reported that both private and public hospitals are poor in quality treatment except that private sector is more client oriented. It is a proven fact that receipt of patient complaints in military hospitals is also inevitable, because it is virtually not possible to satisfy all patients and their relatives at all times.

Our study was aimed to identify the type and number of feedback delineated by the patients. It was found that regular monitoring and actions taken in time against the irritants can markedly reduce its recurrence.

There is a general perception that most of the complaints and dissatisfaction among patients is generated because of poor attitude of doctors and medical staff\(^{14}\). But our study revealed an entirely different perspective where most of the

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**Figure-3: Monthly distribution of feedback from Jan 2014-Dec 2015.**
compliments and positive feedbacks (67% and 77%) were in the favor of staff behavior with only 18% and 16% complaints against them. These results are also comparable with study of Ahmed et al15 and Lagu et al16 showing 86% positive feedback towards doctors and staff. Ahmed reported satisfaction level of approximately 72% in admitted patients in seven private hospitals of Karachi. Mario et al17 reported 60.88% satisfaction index in a set of four Portuguese primary healthcare centers.

Although we could not find many local studies similar to our research in literature but one study done at a public hospital of Khyber Pakhtunkhwa by Ahmed11 and his team has revealed mixed results. According to their study (72.7%) patients were satisfied with the attitude of doctors except their partiality towards acquaintances (96%). Lower staff behavior was harsh and derogatory (56.4%) towards patients. Most of their patients were not satisfied with the type of treatment (72.7%) in contrast to our study where treatment dissatisfaction was only 17%.

Our results are comparable to the study of Khursheed et al18 conducted in one of the leading tertiary care private hospitals of Pakistan showing patient satisfaction ratio of 84.6%. Various studies have highlighted the importance of brand image of hospital on attitude and feedback of the patient towards the hospital as reported by Wu19, Mekoth et al20 and Hansen et al21. Their study suggests that brand image directly or indirectly influence the response and satisfaction level in patients. Draper et al22, Goldstein et al23 and Umar et al24 have done different surveys on the same subject reporting that quality healthcare services always influences the patient satisfaction and retention in the long-run.

The study showed a remarkable reduction in complaints registered in second year. The results were better than public hospitals and even comparable to private hospitals because of multiple factors.

Armed Forces established hospitals have their own system of management, discipline, monitoring and accountability where hospital administration is more focused towards patient satisfaction and quality care treatment leaving minimum space for dissatisfaction. Patient complaints in these hospitals cannot be left unnoticed because of proper record keeping and appraisal by the top management.

Furthermore our particular hospital is also conducting regular monthly meetings including the top management and all Heads of departments. Patients feedback and complaints are highlighted and discussed in these meetings to resolve them in time for better health care delivery. Presentation of monthly analysis of patient feedback is a mandatory component of these meetings.

It is also a proven fact that concerns raised by most of the patients and their NOK can be alleviated simply by listening and acknowledging the complaint and ameliorating the irritant in time. This will not only abolish the complaint but also prevent its recurrence22. Patients’ satisfaction for a health care service is also dependent upon the duration of treatment, and empathy of service provider.

Heather et al25 reports that although patient satisfaction is an important element of patient experience, it should not be misinterpreted as the only tool to measure quality treatment.

Appropriate measurement of patient experience, rather than patient satisfaction, is important for improving health care as it allows targeted intervention where necessary. Using a mixed-method approach allows findings to be comparable and permits a more comprehensive understanding of the issues that are important to patients.

CONCLUSION

In a public hospital set up most of the complaints are generated towards basic amenities like provision of quality food, clean drinking water and hygienic washrooms followed by
hospital general environment and staff behaviour. Simultaneously it is also found that timely action taken by board of doctors and administration on patients feedback and complaints minimize chances of their recurrence and increase the confidence of the patients towards an organisation in the form of compliments.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

REFERENCES

COMPARISON OF COMBINED ORAL & TOPICAL VERSUS TOPICAL CORTICOSTEROIDS AFTER FUNCTIONAL ENDOSCOPIC SINUS SURGERY OF NASAL POLYPOSIS

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ABSTRACT

Objective: To compare combined oral and topical corticosteroids versus only topical corticosteroids after functional endoscopic sinus surgery in cases of chronic rhinosinusitis with nasal polyps.

Study Design: Randomized controlled trials.

Place and Duration of Study: The study was carried out at Combined Military Hospital (CMH) Quetta and Combined Military Hospital (CMH) Okara, from Apr 2014 to Apr 2016.

Material and Methods: Total 150 cases of chronic rhinosinusitis with nasal polyps were selected. The cases were randomly divided into two groups. All the cases were operated via functional endoscopic sinus surgery. In group A, patients were given oral corticosteroids after the surgery (for one month duration, deltacortil 1mg/kg body weight for two weeks and tapering off in the next two weeks followed by local corticosteroid) and Group B individuals were put on topical corticosteroids soon after the surgery. All the cases were observed for any signs of recurrence. Recurrence of disease was defined as evidence of nasal polyposis on nasal endoscopy.

Results: Mean age of patients was 39.22 ± 13.9 years and there were total 72 (48%) males and 78 (52%) females among all cases. There were 14 cases of recurrence of disease in group B while in group A, only 5 cases of recurrences were seen (p=0.047). It shows that group A patients had significantly less recurrence than cases of group B.

Conclusion: Combination of oral and topical corticosteroids was significantly better with decrease recurrence as compared to topical steroids only in cases of chronic rhinosinusitis who were operated with functional endoscopic sinus surgery.

Keywords: Chronic rhinosinusitis, Functional endoscopic sinus surgery (FESS), Nasal polyps.

INTRODUCTION

Chronic rhinosinusitis is a major public health disorder which has a significant socioeconomic effect. The prevalence of chronic rhinosinusitis varies from 5-15%. Chronic rhinosinusitis with nasal polyps (CRSwNP) afflicts 0.5% to 4% of population worldwide and nasal polyps are present in around 20% of individuals with chronic rhinosinusitis. Chronic rhinosinusitis with nasal polyps (CRSwNP) is defined as presence of at least two of five symptoms (facial congestion, facial pain/pressure/fullness, nasal obstruction, purulent anterior/posterior nasal discharge and anosmia/hyposmia), inflammation (discolored mucosa, edema of middle meatus, or ethmoid area) documented by endoscopy and nasal polyps in middle meatus (documented by endoscopy or computed tomograms).

Etiology of chronic rhinosinusitis is multifactorial with nasal allergy and infection being the top most culprits. Environmental allergens, infectious agents (bacteria, fungi and viruses) and air pollutants cause chronic inflammation and edema of local mucosa leading to ostial obstruction, retention of debris, purulent discharge and polypoidal changes in mucosa. Medical therapy including antibiotics and steroids are of utmost importance in all these patients.
Functional endoscopic sinus surgery is the standard surgical practice to treat the cases of chronic rhinosinusitis with nasal polyps. It is recommended that postoperatively medical therapy including topical corticosteroids should be continuously used in all the operated cases to achieve successful outcome. Soon after nasal surgery, nasal mucosa is under process of healing with excessive crusting. The healing phase may take a month or so. During this phase, theoretically oral corticosteroids should be more appropriate than topical steroids. However once the mucosa has healed properly, topical corticosteroids are definitely of optimum use.

In the present study we have compared topical corticosteroids alone with combination of initial oral and later topical corticosteroids in all the cases of chronic rhinosinusitis with nasal polyps who were operated via functional endoscopic sinus surgery (FESS).

**MATERIAL AND METHODS**

It was a randomized controlled trial carried out in Combined Military Hospital (CMH) Quetta and (CMH) Okara, from Apr 2014 to Apr 2016. All the cases fulfilling inclusion criteria were included in the study. The sample size was calculated using Rao software online, desired precision at 0.03 and 95% confidence interval. The calculated sample size was 163. Sampling technique used was nonprobability convenient sampling. Adults more than 12 years of age belonging to any gender having chronic rhinosinusitis with nasal polyposis (unilateral or bilateral) were included in the study. Thirteen cases did not fill in inclusion criteria so 150 cases were selected for the subject study.

Previously operated individuals with same disease or individuals who had any contraindication to corticosteroids like hypertension, diabetes mellitus, diabetes insipidus and glaucoma were excluded. Individuals who had been using corticosteroids during previous 6 months, having chronic illnesses like chronic liver disease or chronic renal disease, ischemic heart disease or malignant nasal diseases were excluded.

The cases were randomly divided into two groups using random numbers table (75 cases in each group). Group A patients were given oral corticosteroids after the surgery (for one month duration, deltacortil 1mg/kg body weight for two weeks and tapering off in the next two weeks followed by local corticosteroid) and group B individuals were put on topical corticosteroids soon after the surgery. Topical corticosteroid given was Beclomethasone Dipropionate "Rinoclenil" nasal spray, two puffs twice a day.

Both the groups were followed up monthly for one year after surgery for recurrence of the disease. Recurrence of disease was defined as evidence of nasal polyposis on nasal endoscopy or recurrence of sinonasal symptoms. On every follow up, endoscopic examination was carried out under local anesthesia to see any sign of recurrent disease. Any case that had developed even small nasal polypoidal mass, seen on endoscopic examination was termed as recurrent disease.

Data had been analyzed using statistical package for social sciences (SPSS) version 20. Frequency and percentage were calculated for qualitative variables while mean and standard deviation (SD) were calculated for quantitative variable. Chi square was used to compare qualitative variable between the two groups. A p-value <0.05 was considered significant.

**RESULTS**

There were 75 cases in each group. Mean age of patients was 39.22 ± 13.9 years. There were total 72 (48%) males and 78 (52%) females. Mean age of patients in group A was 39.81 ± 14.7 years and mean age of patients in group B was 38.63 ± 13.2 years. Both groups were comparable in terms of age and gender as shown in tables-I,II. There were 14 cases of recurrence of disease in group B while in group A, only 5 cases of recurrences were seen (p=0.027). It shows that group A patients had significantly less recurrence than
cases of group B i.e. treatment of group A was significantly better (table-III).

DISCUSSION

Chronic rhinosinusitis with nasal polyps is a life long illness. Functional endoscopic sinus surgery is the procedure of choice to relieve nasal obstruction, removal of diseased mucosa and establish aeration of paranasal sinuses. The etiology of chronic rhinosinusitis with nasal polyps is multifactorial, with nasal allergy and infection being the main culprits. After nasal surgery, nasal mucosa is under process of healing and there is excessive crusting and nasal discharge which hurdle the proper delivery of topically applied steroids. During this phase of healing, topical corticosteroids would not be much effective for subject purpose and may even negatively affect the healing process of the middle meatus. The healing phase may take a month or so. Once the mucosa has healed properly, topical corticosteroids are definitely of optimum use. European position paper on rhinosinusitis 2012 has recommended both oral and topical steroids in cases of chronic rhinosinusitis with nasal polyposis because of same reason.

In the present study, we compared cases who used oral corticosteroids in the immediate post operative period followed by topical corticosteroids with those cases who used only topical corticosteroids post-op. We found significantly better results in those who had used oral plus local corticosteroids. Our study is the only one of its kind. There are no studies in literature which have compared oral plus topical with only topical after functional endoscopic sinus surgery. However our results are similar to those shown by Head et al who used a short course of oral steroids in chronic rhinosinusitis and found improvement in symptom severity and size of nasal polyps. But they failed to show whether the effect of this short course sustained beyond the short follow up period. On the other hand Umar et al compared oral versus topical steroids in nasal polyps and studied their effect which is in contradiction to our results. They showed topical corticosteroids to be significantly better than oral steroids for nasal polyps. However the subjects of above mentioned studies were cases of nasal polyps only unlike our cases of chronic rhinosinusitis with polyps, who were operated with functional endoscopic sinus surgery.

Table-I: Age wise distribution among the group.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>75</td>
<td>39.81</td>
<td>14.722</td>
<td>1.700</td>
</tr>
<tr>
<td>Group B</td>
<td>75</td>
<td>38.63</td>
<td>13.293</td>
<td>1.535</td>
</tr>
</tbody>
</table>

\[ p=0.605 \]

Table-II: Group wise gender distribution among the groups.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Groups</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group A</td>
<td>Group B</td>
</tr>
<tr>
<td>Male</td>
<td>34 (45.3%)</td>
<td>38 (50.6%)</td>
</tr>
<tr>
<td>Females</td>
<td>41 (54.6%)</td>
<td>37 (49.4%)</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>

\[ p=0.513 \]

Table-III: Recurrence of disease in the study groups.

<table>
<thead>
<tr>
<th>Recurrence</th>
<th>Groups</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group A</td>
<td>Group B</td>
</tr>
<tr>
<td>Positive recurrence</td>
<td>5 (6.6%)</td>
<td>14 (18.6%)</td>
</tr>
<tr>
<td>No recurrence</td>
<td>70 (93.3%)</td>
<td>61 (81.3%)</td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>

\[ p=0.027 \]
CONCLUSION

Combination of oral and topical corticosteroids was significantly better with to decrease recurrence as compared to topical steroids only in cases of chronic rhinosinusitis who were operated with functional endoscopic sinus surgery.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

REFERENCES

CASE REPORT: CERVICAL HYDATID DISEASE

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ABSTRACT

A 24 years old female presented with complaints of neck pain and progressive paraparesis. Her MRI cervical spine showed multiple cystic lesions in prevertebral regions at C1 and C2 levels with extension into neural foramina bilaterally. This proved to be hydatid disease based on per-operative and serological findings. Although hydatid disease is a common condition but it rarely involves cervical spinal cord. High index of suspicion is necessary for prompt diagnosis and early management of a treatable cause of spinal cord compression.

Keywords: Hydatid disease, Cervical, Echinococcus, MRI.

INTRODUCTION

Hydatid disease due to Echinococcus granulosus involves bone in about 1% of all cases. Neural compression is common in vertebral hydatidosis in the form of paraplegia or nerve root compression with relatively good prognosis if treated early. Isolated occurrence of cervical hydatid disease without any evidence of visceral disease is very rare. A search of the literature revealed only 12 cases of isolated cervical hydatid disease. Due to its uncommon prevalence the diagnosis is often overlooked in the differential diagnosis for paraplegia. However, by performing neuroimaging this potentially curable disease can be picked up. In some patients the spinal hydatid cysts can grow to enormous sizes but clinically remain asymptomatic for years.

A case of 24 years old female is being presented here who was referred to us for MRI neck by a clinician of CMH Multan with complaints of pain in neck and paraparesis.

CASE REPORT

The patient had a history of pain in nape of neck and progressive paraparesis for 15 days, with off and on history of fever.

Her contrast-enhanced magnetic resonance imaging of cervical spine was done which revealed a large bunch of cystic, multiloculated, walled off lesions collectively and approximately measuring 71 x 17 x 77mm (CC x AP x T) in size (figure). They were predominantly located in the prevertebral regions with extension into bilateral neural foramina at C1 and C2 level with mild cord compression.

Figure: Sagittal and axial T1W and T2W MRI images showing large bunch of multiloculated cystic lesions, predominantly involving prevertebral regions with extension into bilateral neural foramina at C1 and C2 level with mild cord compression.
Involving left longissimus capitus muscle inferiorly and close to the left parotid gland superiorly. The right prevertebral extent of the disease was causing compression of right laryngeal inlet from behind.

On the basis of MRI findings differential diagnosis of lymphangiectasia, caries spine and extradural intraspinal cervical hydatid disease type 3 (Braithwaik and Lees) was suggested. However, on follow up per-operative and serological reports, the diagnosis of hydatid disease was confirmed.

**DISCUSSION**

Echinococcus affecting spine was first described by Churrier in 1807. Primary spinal hydatid disease is rare and represents an uncommon but significant manifestation of hydatid disease. It is caused by parasite echinococcus granulosus helminth belonging to the cestode group.

Hydatidosis spreads to spine by direct extension of pulmonary or abdominal infestation and rarely involves spine primarily. Thoracic spine is involved in 50% of cases of spinal hydatid cyst followed by 20% each in lumber and sacral spine. Cervical spine is involved in 10% cases. It is a common cause of spinal cord compression in endemic areas. Preoperative diagnosis by imaging is essential because the rupture and dissemination may result in anaphylaxis.

Primary extradural hydatid disease is rare. Initially hydatidosis involves soft tissue and then spreads to bones. Braithwaik and Lees classified these lesions in five types:

- Primary intramedullary hydatid cyst.
- Intradural extramedullary hydatid cyst.
- Extradural intraspinal hydatid cyst.
- Hydatid disease of vertebrae.
- Paravertebral hydatid disease.

Among these 1st three types are common.

The diagnosis of hydatidosis is based on clinical presentation, pervious history of hydatid cyst and radiological imaging with final confirmation by histopathological reports. MRI is the modality of choice due to superior soft tissue resolution. The lesion appears as a bunch of grapes or multiple cystic cavities. The MRI signal characteristics of the cystic content are similar to that of CSF. On T1-weighted images, the cystic wall appears slightly more hypointense to cystic content and enhances very slightly after administration of gadolinium. The initial treatment of choice is surgical decompression by laminectomy, debridement of the paravertebral lesions and removal of the entire cysts. The treatment for recurrent cyst is again repeated surgery with extensive resection and with more proper medical treatment with effective agents.

**CONFLICT OF INTEREST**

This study has no conflict of interest to declare by any author.

**REFERENCES**

ANESTHETIC MANAGEMENT OF A PATIENT WITH ANKYLOSING SPONDYLITIS PRESENTING WITH FRACTURE FEMUR - A CASE REPORT

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ABSTRACT

A patient with severe ankylosing spondylitis with fixed spine deformity was planned for hemi arthroplasty for fracture neck of femur. After failed attempts at regional anesthesia, patient was managed under general anesthesia with awake fiberoptic intubation technique and was successfully extubated at the end of surgical procedure.

Keywords: Ankylosing spondylitis, Awake fiber optic intubation, Failed intubation, Fixed spine deformity, Ultra sound guided.

INTRODUCTION

Ankylosing spondylitis (AS) is a chronic inflammatory disease affecting axial skeleton which progresses to involve whole spine forming a rigid “bamboo spine”1. Regional anesthesia (RA), is preferable for surgeries involving hip and lower limbs2. As patient, who has contraindications to or failed attempt at RA, has to be managed under general anesthesia (GA). AS offers a challenge in administering RA and also in maintaining a definitive airway during GA. Optimum care of AS patient requires careful patient positioning to avoid any postoperative complications3.

CASE REPORT

A 60 years old man, an employee at paper factory, presented for right hemi arthroplasty for fracture neck of femur. He was refered from a district level hospital where attempts to administer RA and GA were unsuccessful. He had limited spine mobility for last 10-15 years. He could walk without dyspnea, felt no restriction while lifting his arms and could squat as well. He used 4-5 pillows molded to support his upper back, neck and head. He had normal vital signs, respiratory and cardiovascular system (CVS). His mouth opening was adequate with no temporomandibular joint (TMJ) immobility. There was fixed kyphotic deformity of cervical spine (CS), thoracic and lumbar spine. He could neither look up nor down without moving all his trunk. His base line investigations were normal except for a positive test for hepatitis C. His X rays CS and thoraco lumbar spines (fig-1 & 2), were obtained which revealed CS had fused into a solid bony structure with no identifiable vertebral bodies. Similarly thoraco lumbar spine showed fibroed interspinous ligaments with limited intervertebral disc spaces.
Anaesthetic options were discussed with the patient and consensus to proceed as awake fiber optic intubation (FOI) and surgery under GA if RA remains unsuccessful. An ultra sonic graphic (USG) guided approach for RA was attempted. USG identified two planes to approach spinal canal, which was successful to a limited depth beyond which dense bony resistance were encountered, which were not negotiable despite multiple attempts.

Patient was premedicated with Inj glycopyrolate 0.2 mg I/V. His oral cavity was sprayed with local anesthetic (LA) inj lidocaine 4%. Inj lidocaine 2%, 3 ml intra tracheal (IT) was given followed by a violent cough. After ensuring adequate LA of airway, awake FOI, using PANTEX fiber optic scope (FOS) with size 7 armored endotracheal tube (ETT) from front was successfully placed. After securing airway, GA with volatile anesthetics and muscle relaxation was maintained. Careful left lateral patient’s positioning with appropriate support padding and surgery proceeded uneventfully. At the end of surgery patient was successfully extubated.

**DISCUSSION**

AS involves axial skeleton but peripheral joints including TMJ and arytenoid cartilages may also be affected making tracheal intubation impossible. The disease may deform heart valves. It can result in restrictive respiratory functions due to fused costo chondral joints and can even make cardiac resuscitation difficult. Our patient in his 6th decade of life, had good CVS, respiratory reserves and was functionally ambulant.

USG can often help in AS patients for RA. We attempted RA using curvilinear probe, but were not successful in median as well as in para median planes.

Chaitowitz and colleagues demonstrated successful RA using fluoroscopy. However this require C arm and experience.

Trivial trauma during laryngoscopy or positioning for surgery can cause CS fractures in these patients. Thus avoiding laryngoscopy is very important to prevent fractures and neurological complications. Our patient demonstrated his comfortable position with support padding both in supine and lateral position. His posture was more like a person sitting on a beach chair (fig-3).

RA has been advocated for AS patients undergoing hip and lower limbs surgeries but the chance to encounter a scenario in which definitive airway might be required is still there. In such circumstance not having a facility of FOS and use of laryngoscope can cause fractures, neurological complications and a fatal outcome in case of failed ventilation in patients with advance...
disease as chin to chest, making it impossible even to perform a tracheostomy.

**CONCLUSION**

As patient with fracture femur can be successfully managed under GA using awake FOI. However, anesthetic management of these patients under RA without the presence of backup FOS should not be attempted.

**ACKNOWLEDGEMENT**

The case is submitted for publishing after obtaining written permission from patient.

**CONFLICT OF INTEREST**

This study has no conflict of interest to declare by any author.

**REFERENCES**

GASTRIC SCHWANNOMA - A CASE REPORT

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ABSTRACT

Schwannomas are generally benign, slow growing tumors, which can originate from any nerve that has a schwann cell sheath. Digestive tract schwannomas are very rare. We will discuss the case of a 55 year-old man who was operated for gastrointestinal stromal tumour (GIST) but histopathology revealed gastric schwannoma. This case emphasized on the fact that for every exophytic submucosal gastric mass, gastric schwannomas must be considered as one of the differential diagnosis. Study at our institute of Armed Forces Institute of Rawalpindi diagnosed 46 gastric GIST for each gastric schwannoma.

Keywords: Schwannoma, Gastrointestinal stromal tumor.

INTRODUCTION

The mesenchymal tumors of upper and lower gastrointestinal (GI) tract mostly are composed of spindle cells which includes in order of priority the gastrointestinal stromal tumors (GISTs), then leiomyomas and leiomyosarcomas, and lastly schwannomas. Among them, GISTs are the most common tumours. Schwannomas, also named as neurinomas are rare in the digestive tract, however whenever found, the most common location is the stomach. They mostly present as asymptomatic tumours. It is necessary to differentiate them from other tumors located at submucosa. This is done by endoscopy. However, immunohistochemical studies are necessary for the definitive tissue diagnosis. We present the rare case of a 55 year old man with epigastric burning and significant weight loss, who had laproscopic wide surgical excision for GIST but histopathology revealed gastric schwannoma.

CASE REPORT

A 55 year old male resident of Rawalpindi presented to medical outpatient department (OPD) with complaints of gradually increasing epigastric burning for the last 7 month which was associated with meal intake but was not associated with any chest pain, palpitations or breathlessness and did not relieve despite the regular use of proton pump inhibitors. He also gave history of involuntary, weight loss of 10kg

Figure-1: High resolution computerized tomographic scanning of the chest demonstrating a hypodense area in the posterior wall of stomach.

Figure-2: Contrast enhanced magnetic resonance image of abdomen revealing neoplastic growth along lesser curvature.
over a period of 6 months which was not associated with any fever, cough or night sweats. He was advised baseline lab investigation and ultrasound abdomen which came out normal but due to persistence of symptoms despite treatment and significant weight loss further workup was planned. His upper gastrointestinal endoscopy revealed an oval shaped mass over anterior wall of stomach at cardia, along lesser curvature suggestive of GIST. High resolution computed tomography (HRCT) scan chest done revealed a hypodense area measuring 3×4.1cm along the posterior wall of stomach, bulging into the stomach lumen (fig-1). Contrast enhanced magnetic resonance imaging (MRI) of abdomen revealed a well defined round to oval shaped mass arising from the posterior wall along the lesser curvature of stomach abutting the left lobe of liver with intact liver capsule with no evidence of intraabdominal metastasis (fig-2). Submucosal tumor with the possibility of GIST was suspected and surgical intervention was recommended. Laparoscopic wide surgical resection was done, followed by smooth postoperative recovery. Specimen measuring 4x2.5x1.5 cm was sent to histopathology dept of Armed forces institute of pathology Rawalpindi, where it was formalin fixed and serially sliced (fig-3). Histopathology revealed a tumor composed of interlacing fascicles of spindle shaped cells having elongated to wavy nuclei with focal palisading. Lymphoid cuff was seen at the periphery of the lesion with no evidence of nuclear atypia, increased mitosis or necrosis (fig-4A). The tumor was strongly positive for S-100 protein (fig-4B) and non-reactive for CD117, DOG1, smooth muscle actin and desmin.

**DISCUSSION**

Schwannomas are defined as benign tumors with neurogenic origin that is they arise from schwann cells, which are present at the outer side of the axons of peripheral nerves. They can develop in any region along the peripheral course of any nerve1. These tumours are solitary and mostly arises at the site of the lesser curvature at stomach2. In digestive tract schwannomas are very rare while gastrointestinal mesenchymal tumors are more common. However in digestive system gastric schwannomas are most common. It is predominantly found in females in the 6th decade of life. It accounts for 0.2% of all gastric tumors while 4% of all benign gastric neoplasms3.

![Figure-3: The photomicrograph of the cut surface of the tumour.](image)

![Figure-4A: Elongated to wavy nuclei with focal palisading (H&E, X100).](image)

![Figure-4B: The tumor cells positive for S-100 protein (Immunostaining of S-100 protein, X100).](image)
uninodular, but can show a multifocal character. They are usually located at the lesser curvature of stomach. Majority of them principally involve the submucosa and muscularis propria and grow exophytically very slowly. If symptomatic epigastric pain can develop as well. It originates from the nerve sheath of myenteric plexus or less commonly from meissner plexus, with gradual increase in the size of the tumor compression symptoms appear.

Microtrabecular architecture, prominent lymphocyte infiltrate and frequent nuclear atypia are features of gastric schwannomas. Malignant type is very rare and only 8 cases have been reported. Psammomatous melanotic schwannoma, plexiform schwannoma, microcystic/reticular schwannoma are further variants of schwannoma.

The diagnosis of gastric schwannoma must be made using a combination of the clinical, endoscopic, radiological and pathological findings. Clinically it usually presents as a slow growing painless mass. However if symptomatic haematemesis is the most common symptom. Endoscopy reveals a submucosal mass and biopsy is easily taken. Radiology will reveal Homogenous attenuation on CT scan and degenerative changes are uncommon. Histopathologically gastrointestinal schwannoma are spindle shaped cells with a prominent lymphocytic cuff and are characterized by the absence of typical Verocay bodies, Antoni A and Antoni B areas. Differentials include gastrointestinal stromal tumours, leiomyoma and leiomyosarcoma as all of them are spindle cell lesions. GIST shares clinical, macroscopic, demographic and histologic features like nuclear palisading but perinuclear vaculization is not seen in gastric schwannoma. Immunohistochemistry plays a vital role in diagnosis. Schwannomas are S100 positive, GIST are CD 117 and DOG1 positive, leiomyoma and leiomyosarcoma shows positivity for Smooth muscle actin and desmin. FISH studies revealed multiple signals with BCR probe (chromosome 22) and centromeric probes for chromosomes 2 and 18 suggesting polyploidy. After proper surgical excision with clear margins, prognosis is excellent. Recurrence is very rare. Last 5 yrs Armed forces institute of Rawalpindi data reveals total 283 cases of schwannomas. Out of which 2 of them were located at colon while single cases of GI schwannomas was found at rectum, liver, esophagus and stomach. Armed forces institute of pathology Rawalpindi data reveals 46 gastric GISTs for each gastric schwannoma while study at Washington DC reveals that there are approximately 45 gastric GISTs for each gastric schwannoma. Another study has shown apparently higher frequencies that is 15 gastric GISTs for each gastric schwannoma.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

REFERENCES

POLICY OF THE JOURNAL

It is policy of the Pakistan Armed Forces Medical Journal (PAFMJ) to publish articles pertaining to different fields of medical sciences providing sufficient contribution to medical knowledge. The journal is presently being published bimonthly. The articles may include new experimental methods of medical importance; new results obtained experimentally; new interpretation of existing results or data pertaining to clinical problems; or epidemiological work giving substantial scientific information pertaining to medical sciences.

All such articles should aim for development of medical concepts rather than mere recording of facts. Incomplete studies will be discouraged.

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a. To publish original, well documented, peer reviewed clinical and basic sciences articles.
b. To inculcate the habit of medical writing.
c. To enable physicians to remain informed in multiple areas of medicine, including developments in fields other than their own.
d. To share the experience and knowledge for benefit of patients.
e. To document medical problems pertinent to military medicine like high altitude medicine, heat stroke, disaster management etc.
f. To achieve the highest level of ethical medical journalism and to produce a publication that is timely, credible, and enjoyable to read.

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Chief Editor has full authority over the editorial content of the journal. There is no interference in the evaluation; selection or editing of individual articles either directly or by creating an environment that strongly influences decisions.

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An “author” is generally considered to be someone who has made substantive intellectual contributions to a study. Authorship credit should be based on:

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2. Drafting the article or revising it critically for important intellectual content.
3. Final approval of the version to be published.

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b. All persons designated as authors should qualify for authorship, and all those who qualify should be listed.
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Upon the initial submission of the manuscript, the author is acknowledged and allocated a reference member for future correspondence. This process takes place within 2 days. The manuscript is categorized according to the type of article into Original, Review, Case Report and so forth. Each type of article has a special format and should comply with the updated PAFMJ Instruction to Authors, which are published in all issues. Normally an article is reviewed by at least two subject experts and the other member of the editorial committee. If the reviewer has not sent
Review within stipulated period, a first and second reminder letters are sent within 2-3 weeks. If after the 2nd reminder the reviewer fails to reply, the matter is referred to editor who assigns it for an urgent review by one of the members of Editorial Advisory Board. The usual delay is in the reviewing process owing to the reviewer's professional and academic commitments. The reviewer's comments are communicated to the author. The revised version of the article is sent back to the reviewers. A period of 2-4 months is set to finalize the process. Accepted manuscript is then handed to statistician and bibliographer for data analysis and verification of reference respectively. The editor, then critically goes through each of the article, get their order, pagination and is sent to press for printing.

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Unbiased, independent, critical assessment is an intrinsic part of all scholarly work, including the scientific process. Peer review is the critical assessment of manuscripts submitted to journals by experts who are not part of the editorial staff. Peer review can therefore be viewed as an important extension of the scientific process. It is the policy of PAFMJ that every article received for publication is peer reviewed by at least two senior specialists of the concerned specialty. The “double blind” process is strictly followed. In certain controversial cases, the opinion of a 3rd reviewer is also obtained. In case of conflict of opinion between the two reviewers, the matter is referred to the Chief-editor.

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When reporting experiments on human subjects, authors should indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on
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In case of any study involving clinical trial, taking of informed consent of patients is mandatory.

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The members of the editorial board are appointed keeping in view their professional competence (advisers) in different fields of medical sciences. The aim is to have members having wide experience in different fields of medical sciences. In addition to senior specialists from Armed Forces, senior professionals from civil sector as well as from foreign countries will be co-opted with approval of the editorial advisory board.

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An editorial committee consisting of chief editor, editor(s), joint editor, assistant editor(s) and the editorial secretaries meet at least once a month to expedite the business of the journal.

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Timelines for print and online publications are as under:-

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Each editorial is written by one member of the editorial board as solicited by the editor. The editorial is scientific review on one or two of the current topics pertaining to medical sciences (preference is given to subjects pertaining to Army health problems).

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Manuscript must be accompanied by a certificate signed by author and all coauthors that they have seen and approved the final version of the manuscript and they have not submitted the manuscript to any other journal. All manuscript should be typed in double spacing on A-4 paper (8.25” x 11.70” = 21.0 cms x 29.70 cms) white bond paper with one inch (2.5 cms) margin on both sides. The article submitted should not exceed 2500 words (excluding references and abstract) with maximum 18-25 references and 3-5 figures or tables. If prepared on a word processor/computer, a properly protected, CD should be sent with the manuscript. Each manuscript should include:

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   - Results
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   - Keywords 3 – 10 (Medical Subject Headings – MeSH) in alphabetical order
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   *Introduction:* This should summarize the purpose and the rationale for the study. It should neither review the subject extensively nor should it have data or conclusions of the study.

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When a large, multi-center group has conducted the work, the group should identify the individuals who accept direct responsibility for the manuscript. These individuals should fully meet the criteria for authorship defined above and editors will ask these individuals to complete journal-specific author and conflict of interest disclosure forms. When submitting a group author manuscript, the corresponding author should clearly indicate the preferred citation and should clearly identify all individual authors as well as the group name. Other members of the group should be listed in the acknowledgements. Addition and deletion of authors may not be permitted after submission with authorship proforma duly signed.

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Authors are required to send letter from Institutional Review Board / Biomedical Ethical Committee / Ethical Review Committee along with Original articles, Rapid communications and Case reports.

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Reference to GHQ letter no. 3543/242/DMS-5(b)-CPHPUJ dated 23 Aug 2017, the processing fee of Rs. 1500/- is to be paid at the time of submission of the article through demand/bank draft payable in the favour of PAFMJ-AMC account. It is further intimated that AMC/ADC officers have to pay Rs. 3500/- and the Civil authors’ will have to pay Rs. 7,000/- as publication charges/fee, if the
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<th>One Issue (Pak Rs)</th>
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<tr>
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