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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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ORIGINAL ARTICLES

CAUSES OF CHEST PAIN IN SOLDIERS EVACUATED FROM HIGH ALTITUDE

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ABSTRACT

Objective: To find out causes of non-traumatic chest pain in soldiers evacuated from high altitude.

Study Design: A descriptive observational study.

Place and Duration of Study: The study was carried out at Combined Military Hospital Skardu, from April 2010 to Oct 2011.

Material and Methods: A total of 68 soldiers, evacuated from height, 8000 feet or more, with non-traumatic chest pain being the dominant complaint, were included in the study and evaluated thoroughly with examination, investigations including serial ECGs, cardiac enzymes, blood CP, x-ray chest PA view, at CMH Skardu. Patients with ECG abnormalities, positive ETT or enlarged cardiac size on x-ray, were transferred to AFIC Rawalpindi for echocardiography, coronary/angiography, electrophysiological studies and patients with radiological evidence of High Altitude Pulmonary Edema (HAPE) or Pulmonary Infarction were transferred to department of pulmonology, Military Hospital Rawalpindi for further investigations like Lung perfusion studies, pulmonary angiography, CT/MRI studies.

Results: Out of 68 soldiers, 20(29.41%) were diagnosed as having non-specific chest pain, 17(25%) acute mountain sickness and 10 (14.71%) pulmonary hypertension, right atrial or ventricular dilatation. Three (4.4%) had cardiac arrhythmias, 2(2.94%) had Ischemic heart disease and 1 (1.5%) had vavular heart disease. While 6(8.82%) were having respiratory tract infection, 5(7.35%) acid peptic disease, 2(2.94%) HAPE and 1(1.5%) had adjustment disorder and pulmonary infarction each. One (1.5%) patient had tight muscle bridge on the left anterior descending (LAD) artery.

Conclusion: Soldiers evacuated from high altitude with chest pain should be evaluated thoroughly to exclude disorders of cardiovascular and respiratory system as considerable ratios acquire significant disability while at high altitude.

Keywords: Causes, Chest pain, High Altitude.

INTRODUCTION

Northern areas of Pakistan making border with India constitute the highest battle field in the history of mankind. Soldiers from both India and Pakistan actually reside at heights ranging up to 22000 feet throughout the year. At high altitude the composition of air remains same as at sea level but the barometric pressure falls, resulting in alveolar hypoxia and increased ventilation[1]. At high altitude cardiac output for a given work level is the same in acclimatized subjects as at sea level. Although the coronary blood flow is decreased but coronary arterial oxygen extraction is increased to maintain myocardial oxygen delivery[2]. Myocardial contractility is not impaired by severe hypoxia[3]. Due to alveolar hypoxia there is a decrease in systemic blood pressure while pulmonary arterial pressure is increased[4-6]. Hypobaric hypoxia causes vasoconstriction of pulmonary artery[7]. Polycythemia strenuous physical work and vaso-constrictive effects of cold further aggravate pulmonary hypertension leading to right atrial and right ventricular hypertrophy[8,9]. Prolonged stay at high altitude induces thickening of the pulmonary arteriolar walls[10].

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Living at very high altitudes (more than 17500 feet) at low PaO_2 brings changes in blood, cardiovascular system, respiratory system and emotional state, depending on multiple factors including age and ethnic origin of the individuals, duration of stay, altitude and associated illnesses. If individuals do not descend, most of the times it will make the body more vulnerable to develop thrombo-embolic phenomena, pulmonary hypertension, right heart failure, dilated cardiomyopathy, cardiac arrhythmias, polycythemia, progressive weight loss, psychological disturbances and anasarca. Evacuation from high altitude with chest pain is very common and this study was carried out to find frequency of various final diagnoses.

MATERIAL AND METHODS

This descriptive observational study was carried out at Combined Military Hospital Skardu, from April 2010 to Oct 2011. The study population, being serving soldiers, consisted of male only and was very heterogeneous as they belonged to all parts of the country.

Ethical Considerations

An informed consent was obtained from all the patients included in the study. All soldiers evacuated from altitude 8000 feet or more with major complaint of typical or atypical chest pain, alone or associated with other symptoms like shortness of breath, palpitation, headache, edema, pain epigastrium, nausea, vomiting, and dry or productive cough were included in the study. Soldiers with post trauma chest pain or major presenting complaints other than chest pain were excluded from the study.

On arrival at northern areas all the troops were physically evaluated. All these soldiers were physically healthy and their base line investigations including blood complete picture, Urine RE and ECG were normal. After acclimatization according to a set protocol they climbed to their respective posts at high altitude. They were evacuated from the posts to the field hospitals once they developed chest pain. At field hospitals (altitude between 2800-3000 meters) they were physically examined and investigated (CBC, urine RE, cardiac

Table-1: Description of x-ray chest, echocardiography and coronary angiography.

Investigation	Findings	No.	%
X-ray chest PA	Total	68	100%
	Normal	58	85.29%
	Cardio-magaly	5	7.35%
	Pulmonary Edema	2	2.94%
	Pneumonic Consolidation	2	2.94%
	Pulmonary Infarction	One	1.47%
Echocardiogram	Total	42	61.76%
	Normal	30	44.11%
	Pulmonary Hypertension or Rt Atrial or Ventricular Hypertrophy	10	14.70%
	Post MI moderate LV dysfunction	One	1.47%
	Anterior Mitral Leaflet Prolapsed with AR.	One	1.47%
Coronary Coronary Angiography	Total	25	36.76%
	Normal	21	30.88%
	Coronary Artery Disease	2	2.94%
	Aberrant origin of left coronary artery	One	1.47%
	Tight muscle bridge on the LAD and a systolic squeeze of 40%.	One	1.47%

enzymes, ECG and chest x-ray PA view) by the medical officer/medical specialist. After the initial management these patients were then evacuated to the base hospital at Skardu where a consultant physician evaluated them and additional tests (renal functions, blood sugar, lipid profile and plasma D-Dimer assays) were also done. Chest pain was diagnosed as "typical angina" if patient had all 3-criteria i.e., (1) the presence of sub-sternal chest pain (2) discomfort was provoked by exertion or emotional stress and (3) was relieved by rest and/or nitroglycerin. Chest pain was classified as atypical if 2 of the above criteria were present and non cardiac if it had ≤1 of the typical angina characteristics.

Patients with typical chest pain or persistent abnormalities in ECG or increased heart size in x-ray chest PA were transferred to Armed Forces Institute of Cardiology (AFIC) Rawalpindi for further evaluation by echocardiography, exercise tolerance test, coronary angiography and electrophysiological studies. All patients with pulmonary opacities on x-ray chest were transferred to Pulmonology Department of Military Hospital Rawalpindi for evaluation by lung CT or perfusion scan. Patients with retero-sternal burning or pain epigastrium aggravating on empty stomach or after meals with normal serial ECGs and x-ray chest were given trial of H_2 receptor blocker. If not relieved were evaluated by upper GI endoscopy. One patient required treatment by psychiatrist because of his non resolving symptoms in spite of symptomatic treatment with normal physical examination and investigations. All the observations including clinical features, investigation results and final outcome were recorded on already designed form.

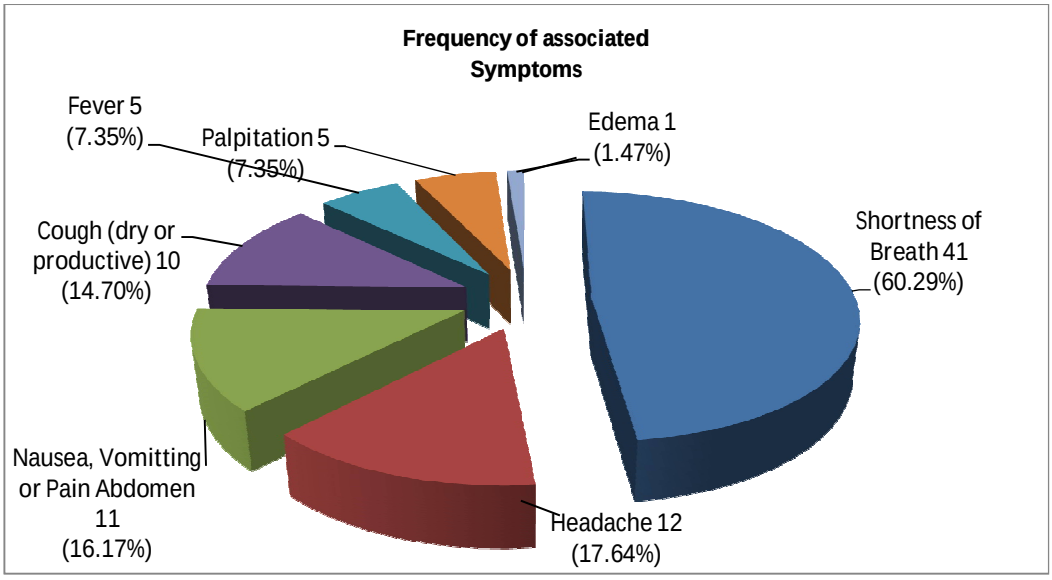

Figure-1: Frequency of associated symptoms.

Statistical Analysis

The data was compiled and analyzed by using SPSS software, version 20 and Microsoft Excel 2007.

RESULTS

Mean age of the patients was 29.81 (SD ± 7.18) years with a range of 20-50 years. The mean height at which the soldiers stayed was 13593.24 feet (SD ± 4260.931), with range from 8000 feet to 21000 feet. The mean stay of these soldiers at high altitude was 54.37 days (SD ± 57.011), range 4 to 210 days.

Out of 68 patients, 25 (36.76%) patients presented with typical chest pain while 43 (63.24%) patients presented with other than

typical chest pain. Detailed frequencies of other symptoms associated with chest pain are shown in fig-1.

The mean hemoglobin after evacuation from high altitude was 16.43 g/dl (SD ± 1.868), range being 11.60 to 23.10 g/dl. Cardiac enzymes and plasma D-Dimers were raised in 1 patient each. TLC was raised in 4 patients. ESR, peripheral blood film including platelets, fasting and random blood sugar, serum urea, creatinine, electrolytes and lipid profile were all within normal range.

A total of 28 (41.18%) out of 68 patients, had significant ECG changes. These changes were, (1) T-wave inversion in anterior or inferior leads or changes of right ventricular hypertrophy in 20(29.41%) patients, (2) a form of arrhythmia in 3 (4.41%) patients-atrial fibrillation with T inversion in inferior leads in 1, paroxysmal supra-ventricular tachycardia and right bundle branch block (RBBB) in 2nd and 1st degree atria ventricular (A-V) block with occasional premature atrial contractions in 3rd, (3) changes suggestive of acute anterior myocardial infarction in 2 (2.94%) patients, (4) 1 patient had $S_1Q_3T_3$ pattern in ECG.

Chest x-ray was done in all 68 patients. 9 (13.23%) patients had abnormal chest x-ray. details as shown in table-1.

ETT was done in 38 (55.88%) patients. It was normal in 21 (30.88% of total 68) and positive or inconclusive in 17 (25% of total 68) patients.

Echocardiogram was performed on 42(61.76%) and coronary angiogram was done in 25 (36.76%) patients. Details are shown in table-1.

Out of 68 soldiers, 20 (29.41%) were diagnosed as having non-specific/atypical chest pain and 17 (25%) had acute mountain sickness (AMS). Sixteen (23.53%) were found to have significant cardiac disease - and 9(13.23%) had disorders of respiratory system. Details of final diagnosis have been shown in fig-2.

DISCUSSION

High-altitude illnesses have profound consequences on the health of many unsuspecting and otherwise healthy individuals who sojourn to high altitude for recreation and work. The most common of these illnesses, which can present as low as 2,000 m, is AMS which is usually self-limited but can progress to the more severe and potentially fatal entities of high-altitude cerebral edema and high-altitude pulmonary edema[11]. Climbing up the mountains and daily activities at high altitude, where there is low partial pressure of O_2 in atmosphere, requires extreme exercise of muscles of respiration specially and other body muscles generally. This obviously causes fatigue and cramps of these muscles leading to myalgias and presentation as chest pain. The same was reflected in this study as non specific atypical chest pain most likely musculoskeletal is the most common outcome that is 29.4%.

The AMS is the most common presentation of high altitude sickness[11]. AMS affects 15 to 30% of Colorado resort skiers, 50% of climbers on Mount McKinley, 70% of climbers on Mount Rainier, and 25 to 50% of climbers who trek to the base of Mount Everest[12]. AMS in 17(25%) cases is the 2nd most frequent outcome in our study. Slightly lower ratio of AMS than non specific chest pain, in the present study, is the result of the sample characteristics.

Prolonged stay at high altitude leads to pulmonary hypertension and right ventricular hypertrophy, secondary polycythemia, finger clubbing, cyanosis and signs of right heart failure diagnosed as sub acute mountain sickness or chronic mountain sickness depending upon duration of stay and extent of changes[13]. Most commonly encountered ECG changes at high altitude include right-axis deviation and an R/S ratio equal to or greater than 1 in V1, with an R wave 0.5 mV or greater, right bundle branch conduction disturbances, increased T negativity in V1 and V2 and

increase in P wave amplitude in inferior leads[14,] Anand et al. reported T-wave inversions in leads V1-V6 in 21 patients due to pulmonary hypertension[16]. On the basis of these studies we consider that most of the ECG changes in our patients are due to pulmonary hypertension and right atrial or ventricular hypertrophy as also confirmed on echocardiography. This pulmonary hypertension and right atrial and ventricular hypertrophy comprises 3rd largest outcome in our study making 14.7% of the total.

Common problems of upper and lower respiratory tract infection and dyspepsia relieved by H_2 receptor blockers are also significant at higher altitude and were cause of chest pain in approximately 15% of patients. People at high altitude, especially those with AMS, show an increased incidence of infectious symptoms, such as coryza, cough, sore throat and diarrhea. But it is difficult to know if such symptoms represent a real increase in infection or just overlapping symptoms of high-altitude illness[17].

Another important outcome was diagnosis of cardiac arrhythmias and ischemic heart disease in 7.3% of cases. Arrhythmias may be a result of right atrial or ventricular hypertrophy and may become a cause of sudden death at high altitude.

HAPE is a serious and potentially life-threatening manifestation of altitude illness. Up to 15 % of travelers to altitudes over 2,500 m (8,202 ft) will develop HAPE, depending on the traveler's age and sex, and the rate of ascent[18]. It is more common in persons under 20 years of age[19]. The Lake Louise symposium proposed diagnostic criteria for HAPE. In the setting of a recent gain in altitude, at least two of the following symptoms must be present: dyspnea at rest, cough, weakness or decreased exercise performance, chest tightness or congestion. In addition, at least two of the following signs must be present: rales or wheezing in at least one lung field (usually the right middle lobe), central cyanosis, tachycardia or tachypnea[19,20]. A total of 2.9% of our patients who presented with chest pain were found to have HAPE.

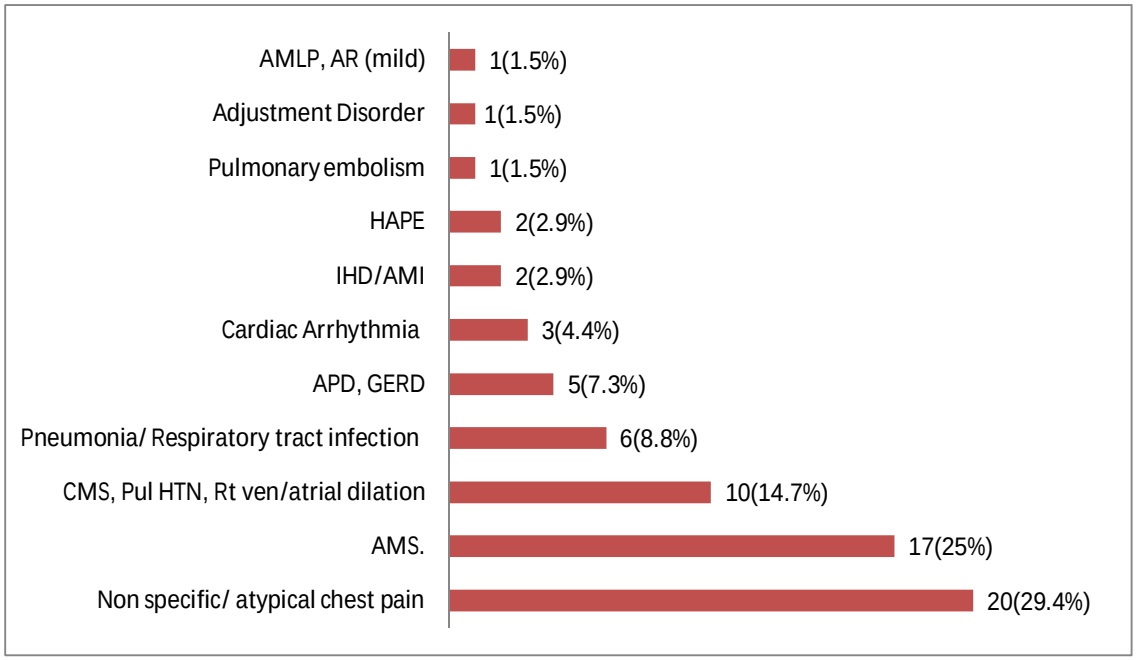

Figure- 2: Frequency of final diagnosis in patients evacuated from high altitude with chest pain.

Thrombotic events such as a pulmonary embolus, stroke and venous thrombosis are a greater danger at high altitudes than at sea level, probably because of the combination of dehydration, polycythemia, cold weather, constrictive clothing and prolonged periods of inactivity. At least one of our patients proved to be a case of pulmonary infarction. Doppler study of his leg veins showed thrombus in right femoral and popliteal veins which was the source of embolus.

One of our patients was diagnosed by a psychiatrist as having adjustment disorder. At 10000 to 14000 feet, many soldiers only experience feelings of diminished vigor, weariness, and increased sleepiness. However, clear psychiatric morbidity reflected as hostile behavior changes, thoughts of paranoia, depression, anxiety and obsessive-compulsiveness are more commonly observed at heights above 15000 feet[21]. High Altitude Medical Research Cell (HALMARC) studied psychiatric sequelae on high altitude exposure in soldiers deputed in Siachen area and observed that psycho-neurological changes were detected in "non-acclimatized" lowlanders after 96 hours ascent from 7600 feet to 14200 feet but cleared completely within 48 hours[22]. Similar high percentage of anxiety, depression and obsessive-compulsive disorder (OCD) amongst deployed soldiers has been reported in several other studies[23].

CONCLUSION

Soldiers evacuated from high altitude with chest pain very frequently have under lying significant medical disorder pertaining to cardio-vascular, respiratory and other body systems. Deployments after proper acclimatization according to protocols, education of the troops about high altitude illness and its prevention, can decrease the cases of acute high altitude illness. More over speedy evacuation to lower altitude at presentation along with early detailed evaluation and management at base hospital can decrease the morbidity and mortality in our troops due to high altitude illnesses.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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COMPARISON OF MEAN TOTAL CHOLESTEROL (TC), HIGH DENSITY LIPOPROTEIN CHOLESTEROL (HDL-C), LOW DENSITY LIPOPROTEIN CHOLESTEROL (LDL-C) LEVELS IN PATIENTS SUFFERING MAJOR DEPRESSIVE DISORDER AND IN HEALTHY CONTROLS

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ABSTRACT

Objective: To determine mean total cholesterol, high density lipoprotein cholesterol (HDL-C), low density lipoprotein cholesterol (LDL-C) levels in patients suffering major depressive disorder and in healthy controls.

Study Design: Case control study.

Place and Duration of Study: The study was conducted at Armed Forces Institute of Mental Health, Rawalpindi from October 2012 to March 2013.

Material and Methods: Consecutive non probability sampling technique was used in this case control study which included 60 patients with Major Depressive Disorder (MDD) who fulfilled the criteria of Diagnostic and Statistical Manual of mental disorder, fourth edition (DSM-1v) and 60 controls. After informed consent, relevant socio-demographic data was collected and Hamilton rating Scale for Depression (HAM-D) was administered. Overnight fasting blood samples were taken and sent to laboratory for measurement of total serum cholesterol, high density lipoprotein cholesterol (HDL-C) and low density lipoprotein cholesterol (LDL-C). Independent sample t-test was used to compare quantitative variables like total cholesterol, HDL-C and LDC-C. A p value < 0.05 was considered as significant.

Results: In our study levels of TC and LDL-C were significantly increased in patients of MDD while HDL-C was decreased in patients of MDD compared to healthy control.

Conclusion: Lipid profile parameters in patients suffering MDD are varied as compared to healthy controls, thus highlighting the screening of coronary heart disease risk factors like lipid profile in patients of major depressive disorder.

Keywords: High density lipoprotein cholesterol, Low density lipoprotein cholesterol, Major depressive disorder.

INTRODUCTION

Depressive disorders are a serious public health concern globally and are predicted to become the most common cause of disability after cardiac problems by the year 2020[1]. A community study carried out in Northern part of Pakistan revealed high prevalence of depression[2].

Major depressive disorder not only puts the patient in psychological distress but evidence has been found that it also make the sufferer vulnerable to many chronic physical disorders like diabetes mellitus and cardiovascular diseases[3]. The mechanisms are yet not known exactly, but it is proposed that depressed people have a sedentary life style, neglected self-care and have compromised compliance with medical treatment resulting in poor outcome of chronic medical illnesses like diabetes[4].

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MDD not only affects the life style of the patient but it appears to profoundly affect the metabolic variables such as high density lipoprotein-cholesterol (HDL-C) and low density lipoprotein-cholesterol (LDL-C) and serum total cholesterol (TC) that are risk factors for diabetes and heart disease[5]. Increased levels of LDL-C, TC and reduced concentrations of HDL-C are linked with cardiovascular disease because these promote atheroma in arteries leading to chronic physical disorders such as stroke, myocardial infarction, and peripheral vascular disease[6].Currently association has been observed among MDD and serum levels of lipoproteins, which enhance the risk of obesity and cardiovascular diseases in depressed patients[7]. One theory describes an alteration in function of the serotonergic system possibly due to genetic mutations in coding of serum lipoproteins[8]. Various other theories describe changes in number of total T-cells, melatonin, interleukin 2 and other cytokines in depressed patients[9].

A review of literature revealed controversial results of lipid profile parameters in patients suffering MDD and in controls. An Iranian case control study found lower serum levels of HDL-C which is considered good cholesterol and higher serum levels of LDL–C, which is atherogenic, along with high TC levels in depressed individuals[10]. Onuegbu in his study in African population revealed that plasma TC was not associated with depression. Similarly, mean LDL-C and HDL-C concentrations were not significantly altered in patients of major depressive disorder when compared to the respective values in the controls[11].

The search of local data base found controversial results of previous studies and lack of evidence betwen MDD and dyslipidemia led us to design this study to compare mean TC, HDL-C and LDL-C among patients of MDD and in healthy individual.

MATERIAL AND METHODS

This case control study was conducted in out-patient department of Armed Forces Institute of Mental Health Rawalpindi (AFIMH). The sample size was calculated by WHO sample size calculator[10]. A population of 60 newly diagnosed patients with MDD (22 women, 38 men aged 20-60 years) was included in this case-control study. All the patients were diagnosed with MDD according to the Structured Clinical Interview (SCID-I) for Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). Sixty voluntary relatives of hospitalized patients and hospital staff matched with cases in age and BMI comprised the control group (25 women, 35 men, aged 20-60 years).

Exclusion criteria for control and patients include the presence of diseases such as hypertension, diabetes mellitus, cardiovascular, hepatic and, use of lipid lowering agents prior to suffering from depression, current use of psychotropic medication or illicit substance/drug use, and any grief or major bereavement in past one year and BMI of more than 30. The patient recruitment was completed from October 2012 to march 2013. Approval was taken from Hospital Ethical Committee and the patients were educated regarding the nature of the study and its significance in the detection and management of coronary heart disease risk factors in patients suffering depressive disorder. Written informed consent was taken from those patients who showed willingness to participate and they were included in this research after fulfilling the set criteria.

The demographic details of the patients participating in the research were entered in a specially designed proforma. The researcher then administered HAM-D to the patients which is the most commonly used depressive symptoms rating scale. The range of the 17 scale was 0-50 with 14 cut off score taken as significant major depressive disorder[12]. For the assessment of lipid profile, subjects were

requested to come next day with overnight fasting and then the blood sample was drawn. The sample was sent to hospital laboratory where readings were taken in miligrams (mg) using Hitachi 912 auto-analyzers. Rocheassay kits were used for analysis. Results of TC, LDL-C, HDL-C of both cases and controls were entered in the performa. All the data collected was entered in a computer software programme called Statistical Package for Social Sciences (SPSS) version 20.0 and analyzed through it. Descriptive statistics were used to calculate mean and standard deviation (SD) for age, BMI, LDL-C HDL-C, and total cholesterol. Frequency (%) was calculated for gender and smoking. Independent sample's t-test was used to compare quantitative variables like TC, HDL-C, and LDL-C. Chi square test was used to determine *p* value for categorical variables. A *p*-value <0.05 was considered as significant.

RESULTS

There was no statistically significant difference in age, sex, marital status, smoking habits and BMI of patients of MDD and in healthy control shown in table-1.

The mean age of patients of MDD was 33.21 ± 10.36 years and 32.93 ± 10.23 years of group consisting of healthy individuals.

Gender distribution of the patients was done which showed that 63.33% (n=38) in depression and 58.33% (n=35) in control group were male while 36.67% (n=22) in depression and 41.67% (n=25) in control group were females.

The mean BMI in depressed patients was 24.71 ± 2.27 and was 25.26 ± 2.04 of control group which was statistically not significant.

Comparison of serum TC in both groups was recorded which showed 178.93 ± 38.96 mg/dl in depressed group while 148.73 ± 25.19 mg/dl in control group, *p* value was recorded as <0.001, which showed significant difference. (table-1).

Comparison of LDL-C in both groups was done which showed that mean LDL-C in depression group was recorded as 120.88 ± 43.36. While in control group, it was recorded

Table-1: Sociodemographic details of patients and controls.

Characteristic		MDD group	Control group	*p* value
Age (Years)		33.21 ± 10.36	32.93 ± 10.23	0.881
Gender	Male	38 (63.33%)	35 (58.33%)	0.575
	Female	22 (36.67%)	25 (41.67%)	
Marital status	Married	46 (76.67%)	49 (81.67%)	0.5
	Unmarried	14 (23.33%)	11 (18.33%)	
Smoking	Yes	10 (16.66%)	8 (13.33%)	0.609
	No	50 (83.33%)	52 (86.66%)	
Weight (kg)		68.00 ± 10.38	69.21 ± 10.45	0.5258
Height (cm)		163.96 ± 8.35	163.50 ± 7.64	0.753
BMI		24.71 ± 2.27	25.26 ± 2.04	0.1654
HMD Score		21.46 ± 3.81	4.90 ± 1.06	<0.001

Table-2: Mean TC, HDL-C, AND LDL-C in MDD and healthy individuals.

	Case group Mean + SD	Control group Mean + SD	*p* value
Total cholesterol(TC) (mg/dl)	178.93 + 38.96	148.73 + 25.19	<0.001
LDL-C (mg/dl)	120.88 + 43.36	92.00 + 22.55	<0.001
HDL-C (mg/dl)	42.21 + 15.84	49.11 + 8.95	<0.001

as 92.00 ± 22.55 (mg/dl), *p* value was calculated as <0.05 which showed significant difference between the two groups.

Comparison of HDL-C in both groups was done which showed that mean HDL-C in depression group was recorded as 42.21 ± 15.84 while in control group, it was recorded as 49.11 ±8.95 (mg/dl), *p* value was calculated as <0.05 which shows significant difference between the two groups. (table-2).

In our study atherogenic lipid parameters like TC and LDL-C were significantly raised in patients of MDD as compared to healthy controls (*p* value <0.05), while cardio friendly lipid parameter HDL-C was vice versa *p* value < 0.05.

DISCUSSION

Psychiatric disorders such as major depressive disorder and their relation to cardiovascular disease (CVD) has been a subject for research but as yet their relation is yet to be determined[13]. Few studies showed that MDD is related with abnormal lipid metabolism. Composition of serum lipid is characteristically changed in patients of major depressive disorder which is associated with high risk of coronary heart disease[14].

The main finding of our study is that the patients of MDD have significantly increased mean serum TC and LDL-C (atherogenic) as compared to healthy control subjects. The findings of the study are in line with an Iranian study which found higher levels of serum TC, and LDL-C and lower levels of HDL-C in patients suffering MDD vs healthy controls[10]. In our study, there was also significant difference in HDL-C between the case group and the control group having same BMI. Our study differs from an Indian study, which showed that serum HDL-C was not significantly lower in subjects with major depression than normal controls[15].The results ofour study are also different from a Nigerian study which found that plasma TC was not associated with depressive disorder and also mean LDL-C and HDL-C levels were not significantly changed in patients of MDD when compared to the respective values in the controls[11]. Momin et al studied 50 patients with major depressive disorder and found decreased levels of serum cholesterol which is contrary to the results of our study, but HDL-C mean values were similar to our results[16].

Nakao and Yano showed significant direct association between hypercholesterolemia and patients with MDD in Japanese men[17],these findings are also in agreement with this study, In our study mean LDL was found higher inMDD as compared to controls, similarly HDL-C levels were reduced in case group as compared to controls and it was also statistically significant.

Few studies have suggested that both elevated and low cholesterol levels may be related with serotonergic dysfunction. The positive association in major depressive disorder and coronary artery disease is well-established. Hypothalamo-pituitary-adrenal axis hyperactivity in MDD cause hypercortisolemia, which can further cause hypercholesterolemia and hypertension and thereby increasing the risk for coronary heart disease[18].

Factors could contribute to controversial results of lipid profile among patients of MDD: lack of standardization in terms of population studied, sample size, and dietary as well as exercise habits, though asked however not measured. The findings of our study are strengthened by use of WHO sample size calculator. The limitation of the study was that we did not remove other potential effect modifiers that may affect lipid profile such as dietary habits, exercise and alcohol use among patients of MDD and in healthy controls, because of the cross-sectional design of the study. Further studies should include larger sample and investigations of other confounding factors in measurable form that will help in the

authentication of the results of the current study.

The results are helpful for screening coronary heart disease risk factors in patients suffering major depressive disorder along with provision of treatment and rehabilitation plan.

CONCLUSION

It is concluded that MDD ssignificantly increases mean TC and LDL-C (both are atherogenic) and significantly lowers good cholesterol (HDL-C). So the levels should be monitored in patients of MDD for early detection of coronary heart disease risk factors.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

AUTHORS CONTRIBUTION

Muzafar Ahmed, Salim Jehangir and Syed Ali Raza Ali Shah, conception,design and analysis

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FREQUENCY OF DEPRESSION IN PATIENTS RECEIVING CHEMOTHERAPY

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ABSTRACT

Objective: To determine the frequency of depression in patients undergoing chemotherapy.

Study Design: Descriptive cross sectional study.

Setting: The study was conducted at in-patient department of Oncology, Pakistan Navalship (PNS) Shifa Karachi.

Material and Methods: Consecutive non probability sampling. A total of 100 patients were selected on the basis of inclusion and exclusion criteria. After informed consent, socio demographic data was collected and Hamilton Rating Scale for Depression (HAM-D) was administered and clinically assessed for symptoms of depression.

Results: The mean age of patients was 48, where 55% were males and 45% were females. The mean total HAM-D score of 100 participants was 15.85 with standard deviation of 6.229. Out of 100 participants, 45/100 (45%) patients were not depressed whereas a total of 55/100 (55%) were depressed (14 patients of mild depression, 26 patients of moderate while 15 patients showed severe depression).

Conclusion: Patients undergoing chemotherapy suffer from considerable levels of depression, thus requiring specialized interventions.

Keywords: Chemotherapy, Depression.

INTRODUCTION

Cancer is a group of diseases that cause cells in the body to change and grow out of control[1]. It is a leading cause of death in economically developed countries and the second leading cause of death in developing countries[2]. There is little debate that cancer is a serious and potentially life-threatening illness which has an effect on physical and emotional well being of patients and their families[3].

In addition to this, the treatment modalities of cancer namely surgery, radiation and chemotherapy are also known to contribute towards psychological disturbances. Chemotherapy in particular is an intense and cyclic treatment and has many side-effects like hair loss, nausea, vomiting, and diarrhea, fatigue and infertility[4]. These effects contribute to emotional distress and mental health problems and together can lead to substantial social problems, such as the inability to work and reduced income. While acting as a burden for the patient and family, also cause decreased compliance to therapy and hence decreased response, and most importantly severe depression associated with an increased risk of suicide[5].

It is thus important to recognize depression in cancer patients, because a diagnosis of depression and higher levels of depressive symptoms lead to higher rates of non compliance to treatment plan, reduced chances of survival and may also predict early mortality[6]. Local database reveals a paucity of literature on psychiatric disorders in patients receiving chemotherapy. In one of the local studies, Dogar concludes that depression is a common psychiatric disorder among oncology patients[7]. Jadoon showed that compared with control group, adults with cancer have higher prevalence rates of depression[8]. Cancer-related fatigue (CRF) has been defined as a “persistent, subjective sense of tiredness related to cancer

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and cancer treatment that interferes with usual functioning"[9,10].

There is a consistent correlation between depression and CRF that has raised questions about a common etiology[11] thus presenting considerable challenges for patients, researchers, and clinicians[12] and causes greater impairment in quality of life[13]. As the cancer population ages, it is also important to assess and treat chronic pain that may lead towards the development of severe depression[14,15].

Women undergoing chemotherapy for breast cancer may struggle with fertility and pregnancy issues[16]. Adjuvant chemotherapy accelerates the rate of age-related ovarian follicle loss[17,18].

The objective of the study was to determine the frequency of depression in patients undergoing chemotherapy using Hamilton Depression Rating Scale (HAM-D) and by using the ICD-10 criteria for depression.

MATERIAL AND METHODS

It was a cross sectional study conducted at in-patient department of Oncology, Pakistan Navalship (PNS) Shifa Karachi. A total of 100 patients were selected by using consecutive non probability sampling. Patients of age (25-70 years), male or female, who had received at least 3 cycles of chemotherapy for solid tumors were included in the study Patients suffering from any psychiatric disorder prior to receiving chemotherapy, grief or major bereavement in last one year, currently on psychotropic medication and history of use of illicit substances/drugs were excluded from the study. All the patients from in-patient department of Oncology, PNS shifa were enrolled in this study. Permission was taken from Hospital Ethical Committee. Written informed consent was taken from willing patients.

The demographic details of the patients participating in the research were entered in a specially designed proforma. All the data collected was entered in a computer software programme called Statistical Package for Social Sciences (SPSS) version 14.0 and was analyzed through it. Descriptive statistics were used to calculate mean and standard deviation (SD) for age and overall HAM-D scores for Depression. Frequency (%) was calculated for depression, gender, marital status and type of solid tumor for which patient was receiving chemotherapy.

RESULTS

A total of 100 patients were taken and selected on the basis of inclusion and exclusion criteria. After taking written informed consent, all study participants (n=100) completed data collection procedure and none of the data forms was left incomplete.

After collecting the demographic details, HAM-D was administered to the participants and scores were calculated for assessing the levels of depression.

Total HAM-D Scores

The mean total HAM-D score of 100 participants was 15.85 with standard deviation of 6.229 as shown in table -I. Fourteen patients showed score between 9-14 (mild), 26 showed score between 14-17 (moderate) and 15 patients showed score >17 (severe). The ages of the patients ranged from the youngest being 29 years to the oldest being 67 years. The patient age was divided into three groups as follows: group 1 (less than 40 years), group 2 (41 to 54 years) and group 3 (greater than 55 years). The mean age of the patients was 48.25 years and standard deviation was 8.73 years (table-2). Out of 100 patients, 18 (18.%) had ages ranging

Table-: Mean and standard deviation of total ham-d scores.

	HAM-D Score		Mean	Std. Deviation
No of patients	Minimum	Maximum		
100	5	37	15.85	6.229

Table-2: Mean and standard deviation for patients' age.

N	Minimum	Maximum	Mean	Std. Deviation
100	29	67	48.0	8.73

less than 40 years, 42 (42%) had ages ranging from 41-54 years and 40 (40%) had ages greater than 55 years.

In table-3, it is illustrated that out of a total of 42 patients with age less than 40 years, 18 were not depressed while 24 were depressed. Therefore 57.14% patients less than age 40 years met the criteria for depression. On the other hand, out of a total of 18 patients between ages 41 to 54 years, 8 were not depressed whereas 10 patients were depressed. Thus 55.5% of patients between the ages of 41 to 54 years met the criteria for depression. Out of a total of 40 patients with age greater than 55 years, 19 were not depressed while 21 were depressed. Therefore 52.5% of patients greater than age 55 years met the criteria for depression.

DISCUSSION

This study was conducted to identify the frequency of depression amongst patients receiving chemotherapy. The main finding is the significant levels of depression in cancer patients receiving chemotherapy. In our study, 55% were found to have depression. Based on type of solid tumor, out of a total of 100 patients, 35 (35%) were receiving chemotherapy for breast cancer, 25 (25.%) for lung cancer, 10 (10%) for carcinoma liver, 14 (14%) for colorectal carcinoma and 16 (16%) for pancreatic cancer. The prevalence of significant psychological distress ranged from 29 to 43% for patients with the 14 most common types of cancer[19]. These rates are consistent with those found in subsequent studies of diverse populations with cancer that have reported high rates of psychological symptoms meeting criteria for depression, adjustment disorder, PTSD and anxiety[20,21]. Bultz et al. entitled emotional distress "the sixth vital sign in cancer care"[22]. Some cancer survivors report feelings of anger, isolation, and diminished self-esteem in response to such stress[23].

Depression has a substantial impact on health in patients with comorbid medical conditions[24] and is associated with increased symptom burden (e.g., pain, fatigue), decreased cognitive and physical functioning, decreased quality of life, impaired family functioning, decreased adherence to medical regimens and healthy behaviors, and potentially decreased immunity and increased mortality[25].

High prevalence rates were also reported in a study from Iran. The diagnoses were as follows: stomach (30%), esophagus (29%), colon (22%), rectum (16%), and small intestine (3%). The conclusion showed rates of 47.2% for depression in patients with gastrointestinal cancer. This is in agreement with previous studies by Dogar et al[7] as well as Jadoon et al[8] demonstrating that younger people and females are more prone to psychological distress when suffering from cancer.

Strengths of our study include appropriate sample size and use of standardized measure of HAM-D and ICD-10 criteria. This is a widely used valid questionnaire and international criteria to measure psychological distress/depression in cancer patients.

Regarding the limitations of this study, there could be additional confounding factors which need to be brought to light in order to explore the complex interaction between intrinsic and extrinsic factors that contribute to the depression in patients undergoing chemotherapy.

The possibility of information bias could not be ruled out. In Pakistani culture the patients may hesitate to declare that he or she is psychologically disturbed in order to avoid appearing 'weak'.

CONCLUSION

The present study that was conducted to determine the frequency of depression among patients receiving chemotherapy showed depression in 55/100 (55%) patients. This high prevalence of depression in oncology patients in Pakistan becomes an even more important issue as there is already lack of adequate infrastructure for provision of mental health services, thus making it more important for the general practitioners and oncologists to understand the importance of risks of untreated depression in oncology patients.

This study therefore emphasized the need to give awareness to the patients about the psychological sequelae of chemotherapy as well as provision of interventions for early detection

and treatment of these patients as an essential part of their comprehensive care plan.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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CLINICAL SPECTRUM, PROGRESS OF DISEASE, GRADES OF SEVERITY AND OUTCOME OF CHILDREN WITH DENGUE FEVER

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ABSTRACT

Objective: To study the clinical spectrum, progress of disease, grades of severity and outcome of children with dengue fever.

Study Design: A descriptive study.

Place and Duration of Study: Pakistan Naval Ship (PNS) Shifa Hospital, Karachi from August 2011 to November 2013.

Material and Method: A total of 50 children of either gender aged 5 months to 13 years having dengue infection admitted in child ward at PNS Shifa Naval Hospital Karachi gave consent to participate in the study.

All children with dengue IgM antibodies positive by ELISA test were included in the study. Dengue fever was classified according to WHO classification of dengue infections and they were managed according to the grading of severity.

Results: A total of 50 patients with dengue serology positive were studied. Mean age of children was 7.4 years with interquartile range 4.6 and majority were male (56%). Children commonly presented with fever 50(100%), tachycardia 35(70%), vomiting 24(48%), skin rashes 16(32%), headache 14(28%), abdominal pain 12(24%), hepatomegaly 12(24%), bleeding manifestations 10(20%) and myalgias/parasthesias 9(18%). Laboratory investigations revealed thrombocytopenia in 21(42%) patients, anemia 17(34%), leukopenia 13(26%), deranged prothrombin time/partial thromboplastin time (PT/PTT) 22(44%) and increased hematocrit 9(18%). Patients with dengue shock syndrome required supportive therapy with blood products and inotropic support and had a longer hospital stay. Mortality in the study was 4%.

Conclusion: Any child with fever, headache, vomiting, pain abdomen, significant bleeding manifestations, hepatomegaly, thrombocytopenia and raised hematocrit should be suspected to have dengue infection.

Keywords: Bleeding manifestations, Dengue, Leucopenia, Skin rashes, Thrombocytopenia, Vomiting.

INTRODUCTION

Dengue is emerging as an important mosquito-borne arboviral disease in the world. Once known to occur sporadically, epidemics of dengue have now become a regular occurrence. It is estimated that about 50–100 million individuals are infected with dengue worldwide per year with up to 500,000 people being admitted to hospital[1]. Estimates showed that approximately 3.5 billion people, 55% of the world's population live in countries at risk for dengue[2]. The global incidence has increased steadily over the last six decades, simultaneously with an increase in geographic distribution and a transition from epidemic-type dengue with long inter epidemic intervals to endemic-type with seasonal fluctuation[3-5].

The presence of dengue virus has been detected in local populations in Pakistan since the 1960s. Since 2006, dengue epidemics have occurred every year and the range has extended to most cities in Pakistan. It has become a major health problem in Pakistan, and it is likely to become an even greater health problem in the coming years[6]. Nieto et al studied to show that outbreaks of dengue hemorrhagic fever have been reported in the Khyber Pakhtunkhwa (KPK) and Federally Administered Tribal Area (FATA) regions of Pakistan which has followed the increased density of the rural population

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due to an influx of refugees from violent conflict in Afghanistan and is exacerbated by an already impoverished society and wide diversity of potential arthropod vectors[7].

Dengue virus (DENV) transmission primarily takes place through bites by the principal mosquito vectors, Aedes *ægypti*, which feed preferentially on human blood, and are often found in and around human dwellings[8]. Infection with any of the four dengue serotypes results in either asymptomatic infection, or a spectrum of clinically apparent disease ranging from mild nonspecific febrile illness to severe dengue of which dengue shock syndrome (DSS) is the most common life threatening manifestation in children[9]. Guzman et al studied to show that most cases present as classic dengue fever (DF) with high fever, retro-orbital pain, severe myalgia/arthralgia, and rash. However, in some cases, illness progresses to life-threatening dengue hemorrhagic fever/dengue shock syndrome (DHF/DSS), characterized by vascular leakage leading to hypovolemic shock and a case fatality rate up to 5%[10-11].

Hammond et al studied to show that pre-school children and infants have rather more often nonspecific febrile illnesses while pre-adolescent children often develop fever and moreover younger children with DHF are known to experience more severe clinical outcome (e.g. higher case fatality ratio) than adults[12]. Currently, no licensed vaccine or antiviral therapy exists for dengue. Early identification of patients at risk of developing severe dengue is critical to provide timely supportive care, which can reduce the risk of mortality to <1%[7]. Distinguishing dengue from other febrile illnesses (OFIs) early in illness is challenging, since symptoms are non-specific and common to other febrile illnesses such as malaria, leptospirosis, rickettsiosis, and typhoid fever in dengue-endemic countries[13].

Recent approaches have shown that petechiae, thrombocytopenia (platelet count ≤100,000 cells/mm3), positive tourniquet test, rash, and other signs and symptoms can distinguish dengue from OFIs[14-16]. Early diagnosis of dengue virus infection is important for treatment as well as aversion of complications like DSS and DHF. Treated DHF/DSS is associated with 3% mortality whereas untreated is associated with 20% mortality. Detection of dengue IgM antibodies is simple, easy, and a less time-consuming method of diagnosing DF as compared to other classical serological methods like hemagglutination inhibition, neutralization, and complement fixation tests[17].

The present study was done to analyze the trend of the disease over two years along with the common clinical features, investigation findings, paediatric intensive care unit monitoring, complications and outcome of cases admitted at the PNS Shifa Naval hospital Karachi. The prevention and control of the disease mainly depends upon the epidemiological surveillance that provides reliable estimate of the disease and thereby helping to implement effective vector control measures.

MATERIAL AND METHODS

This descriptive study was carried out at Paediatric Department of PNS Shifa Naval hospital Karachi which is a 200 bedded tertiary care hospital, from August 2011 to November 2013. The study population consisted of children of Army/Navy personnel and civilians reporting to PNS Shifa Naval hospital for medical treatment or those referred from primary or secondary care hospitals for evaluation of atypical febrile illness. All children of either gender from 5 months to 12 years of age with dengue IgM positive by Elisa were included in the study. Children with dengue serology negative were excluded from the study.

The study was approved by the PNS Shifa Hospital Research and Ethics Committee. All the patients meeting the inclusion criteria were evaluated after informed consent of the parents. Data was collected on a pre-tested proforma for each child. This included demographic data, symptoms, signs and laboratory investigations for blood counts, hematocrit, platelet count, coagulation profile, liver function tests and renal function tests. Every child was examined thoroughly from head to toe for signs of shock,

rash, haemorrhagic manifestations and any systemic involvement. All patients were kept in isolation in paediatirc intensive care unit and their vital signs especially blood pressure (B.P) was recorded and monitored every four hours.

Blood counts especially hemoglobin, hematocrit, platelet counts were checked and monitored daily. Children under study were categorized into DF, DHF or DSS according to WHO clinical case definitions and grading of severity of their illness was done on basis of WHO criteria for severity of dengue infection (table-1).

All children were managed according to severity and grading of illness. Children with leucopenia or thrombocytopenia were followed till their blood counts were within normal range. All data was analyzed using statistical package for social sciences (SPSS) version 15.0. Descriptive statistics like frequencies and percentages of various variables were calculated where required.

Table-1: WHO Criteria for grading of severity in dengue infections.

DF/ DHF	Grades	Signs and Symptoms	Laboratory
DF		Fever with 2 of following: • Headache • Retro-orbital pain • Myalgia • Arthralgia / bone pain • Rash • Haemorrhagic manifestations • No evidence of plasma leakage	• Leucopenia (WBC≤5000 cells/mm^3) • Thrombocytopenia(platelet count<150,000/mm^3) • Rising haematocrit (5%-10%) • No evidence of plasma leakage
DHF	I	Fever with non-specific symptoms with only positive tourniquet test or easy bruising	Thrombocytopenia < 100000/ mm^3 : HCT ≥20%
DHF	II	Spontaneous bleeding	Thrombocytopenia < 100000/ mm^3 : HCT ≥20%
DHF	III	Circulatory failure	Thrombocytopenia < 100000/ mm^3 : HCT ≥20%
DHF	IV	Profound shock	Thrombocytopenia < 100000/ mm^3 : HCT ≥20%

RESULTS

A total of 50 patients fulfilling the inclusion criteria were evaluated and it was observed that 3(6%) were 5 months to 1-year-old; 9(18%) were 1 to 5-year-old; and 38(76%) were 5 to 12-year-old. Mean age was 7.4 years with inter quartile range 4.6 (range 5 months to 12 years). Male children were 28(56%) and 22(44%) were female children with a male to female ratio of 1.2:1.

Common clinical findings in children presenting with dengue infection were fever 50(100%), tachycardia 35(70%), vomiting 24(48%), skin rashes 16(32%), headache 14(28%), abdominal pain 12(24%), hepatomegaly 12(24%) and significant bleeding manifestations 10(20%) (table-2).

Common laboratory findings were thrombocytopenia i.e. platelet < 100,000/mm^3 in 21(42%) patients, anemia 17(34%), leukopenia 13(26%) and deranged prothrombin time/partial thromboplastin time (PT/PTT) 22 (44%) (table-3).

WHO Criteria for grading of severity of dengue infections was used (table-1). It was observed that majority of children had DF 35 (70%) while 13(26%) had DHF grade I and only 2(4%) had DHF grade III. Children with DSS required supportive therapy with blood products i.e. platelet transfusion 17(34%), fresh frozen plasma 13(26%) and red cell concentrate 10 (20%). Majority of children remained

hospitalized for one week 29(58%) but children with DHF remained hospitalized more than a week. Two children expired 2(4%) because of disseminated intravascular coagulation (DIC) and circulatory collapse despite timely intervention and management.

DISCUSSION

Dengue is one of the major public health problems emerging these days in different areas of Pakistan. There is a significant addition to the number of cases every year as well as the severity of the disease and its geographical distribution[18]. Dengue infection is a life threatening condition requiring early diagnosis and prompt treatment before patients enter into bleeding or shock states. Among paediatric population, 5 to 10 years age group was most commonly affected[9]. The present study also showed that dengue infection was especially common (76%) in children from 5 to 12 years of age. Most of the patients (76%) were 5-13 years of age and they belonged to rural or peri-urban areas[19]. Dengue infection was more common in males (56%) in the present study as in other studies from Karachi[18-28].

Widespread infections are most commonly seen during the rainy season in endemic areas when the breeding habitat of the Aedes mosquito is most favorable[21,28]. Most of the patients started reporting to the child OPD from August till December (rainy season) every year in the present study. IgM and IgG antibodies were more frequently seen in the post-monsoon season (68.33%) than in the monsoon period (31.68%)[26]. The early symptoms/signs set of acute dengue virus infection is variable and it is difficult to distinguish it from other kinds of febrile illnesses[22,23]. Fever is the commonest clinical presentation in all paediatric patients including the present study[19,22,24]. Mittal et al observed that mean duration of fever was 6.3 days (SD ± 3.7) days in 135 patients with DF[25].

Table-2: Clinical findings of children.

S No.	Signs / Symptoms	Frequency (%)
1	Fever	50 (100)
2	Tachycardia	35 (70)
3	Vomiting	24 (48)
4	Rash	16 (32)
5	Headache	14 (28)
6	Abdominal pain	12 (24)
7	Hepatomegaly	12 (24)
8	Bleeding manifestations	10 (20)
9	Myalgia / parasthesias	9 (18)
10	Splenomegaly	8 (16)
11	Jaundice	4 (8)
12	Ascites	2 (4)

Table-3: Laboratory values.

S No.	Serum values	No of patients (%)
1	Anemia	17 (34)
2	Leucopenia	13 (26)
3	Thrombocytopenia	21 (42)
4	Increased Hematocrit	9 (18)
5	Deranged PT, PTTK	22 (44)
6	Prolonged ALT	4 (8)
7	IgM-Dengue	50 (100)
8	IgG-Dengue	4 (8)

Mean duration of fever was 6.5 days ± 3.4 days in the present study.

Fever, headache, skin rash, joint pains and fatigue were common presenting symptoms in patients with dengue fever[26]. These symptoms were also common in other studies from Karachi[18,20]. The present study also showed that children mostly presented with fever, vomiting, skin rashes, headache and abdominal pain. Similar study in India showed that fever was the most common presenting symptom 462 (99.1%) followed by abdominal pain 175 (37.5%), vomiting 222 (47.6%) and bleeding manifestation in the form of petechiae 84 (18%)[27].

Roy et al studied and observed that 80.8% patients had hepatomegaly which was more common in severe dengue (93.1%) and dengue with warning signs (84.4%) group than in dengue without warning signs group (13.3%). Jaundice was observed in (60%) of patients, most common in severe dengue (94.5%)[28]. Association of hepatomegaly in dengue has been reported in 43-100% of cases in children[29]. Hepatomegaly was found in 24% of children however, only 8% had jaundice and splenomegaly was present in 16% of patients in present study. Leukopenia was significantly more common in patients with DF while raised neutrophil and monocyte counts were more common in patients with DHF[30]. Laboratory findings in present study were also thrombocytopenia, anemia, leucopenia, deranged prothrombin time/partial thromboplastin time (PT/PTT) and increased hematocrit.

Leukopenia, thrombocytopenia, elevated aminotransferases, low C-reative protein (CRP) and prolonged aPTT were useful predictive markers for early diagnosis of dengue infection during a large outbreak[31]. The present study also showed shock, bleeding, thrombocytopenia, deranged PT/PTT and elevated ALT were predictors of severity of dengue.

According to the WHO classification, 42 (75 %) patients were classified as DF and 13 (23.2 %) as DHF/DSS while one patient was unclassifiable[32]. It was observed in the present study that majority of children had DF and DHF grade I. Only 2 patients went into DHF grade III and expired despite resuscitative measures due to circulatory collapse. Mortality in other studies in India was 3.5%[33].

CONCLUSION

Every child presenting with unresolving fever especially during the post-monsoon season in dengue endemic area should be suspected and screened for dengue infections. Early diagnosis and prompt management is necessary to prevent the morbidity and mortality associated with dengue fever in children. Shock, bleeding manifestations, thrombocytopenia, leucopenia, deranged PT/PTT and elevated ALT are predictors of severity of dengue. All patients with suspected DHF should be kept in isolation in PICU and their blood pressure should be monitored four hourly along with daily blood complete picture evaluation. This study has limitations as it is hospital record-based study, so meteorological and entomological data, information, education and communication strategies and vector control measures initiated by the Government are not correlated.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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INTENSITY OF NECK PAIN SECONDARY TO EXCESSIVE FLEXION POSTURING, ITS ASSOCIATION WITH STUDY ACTIVITIES AND DURATION OF POSTURING AND IMPACT ON SLEEP IN STUDENTS OF WOMEN MEDICAL COLLEGE, ABBOTTABAD

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ABSTRACT

Objective: To determine the intensity of neck pain in neck flexion posture, prevalence of neck pain radiation to arms and interference with sleep and association of pain development with duration of abnormal posture and study activities in female students of Women Medical College (WMC), Abbottabad.

Study Design: A cross-sectional descriptive study.

Place and Duration of Study: Women Medical College, Abbottabad from October 2012 to March 2013.

Material and Methods: Using nonprobability convenience sampling, we included students (all females) of WMC suffering from neck pain due to neck flexion posture. Those with a history of rheumatoid arthritis; trauma, disease or surgery of the neck or shoulders were excluded. The intensity of neck pain was described in subjective terms of "unbearable", "severe", "moderate", "mild" and "just discomfort". All the subjects were inquired if they developed neck pain during study activities and after keeping the neck flexion posture for ≥ 2 hours or < 2 hours and if the pain radiated to the arms or interfered with sleep. SPSS version 20 was used to analyze the data.

Results: Out of 83 subjects with mean age (23 ± 1 year), 4 (4.8%) had unbearable, 14 (16.9%) had severe, 33 (39.8%) had moderate and 13 (15.7%) had mild neck pain. Nineteen (22.9%) graded their pain as just discomforting. In 48.2% (n=40), the neck pain radiated to the arms. Majority of the subjects 61.4% (n=51) developed neck pain after flexion posturing for ≥ 2 hours and during study activities 92.8% (n=77). The neck pain affected sleep in 56 (67.5%) individuals.

Conclusion: The neck pain in neck flexion posturing in female students of WMC is primarily of moderate intensity more common during study time and affected their sleep. The individuals maintained neck flexion posture for ≥ 2 hours are more prone to develop neck pain than those who maintained it for < 2 hours.

Keywords: Neck flexion posture, Neck pain, Students.

INTRODUCTION

Neck pain is a common problem affecting 14-71% of adults at some point in their lifetime[1]. It causes considerable distress and disability, impairs quality of life and unfavorably affects working proficiency[2]. The economic costs of dealing with disabling neck pain are significant. In a study conducted at Netherlands, neck and upper limb pain accounted for a yearly costs of 2.1 billion Euros towards sick leave, medical disability compensation, decreased productivity and medical expenses[3].

The common causes of neck pain are improper posture, degenerative conditions and injuries; while infections,inflammatory conditions and tumors may occasionallybe the contributory agents[4-6]. Students make up a high-

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risk group for neck pain due to hours of reading, writing and computer work in certain postures[7,8]. The resulting neck pain affects concentration and ensues in a diminished academic performance[7].

Studies on neck pain in students of Pakistan are limited.Therefore, this study was aimed at ascertainingthe intensity of neck pain (with or without radiation to arms) due to abnormal neck flexion posture in students of Women Medical College (WMC), Abbottabad. Effect of neck pain on sleep and association of neck pain developmentwith study activities and the duration of the held neck flexion posture was also investigated.

MATERIAL AND METHODS

It was a descriptive cross-sectional study carried out in WMC, Abbottabad from October 2012 to March 2013. Using nonprobability convenience sampling, We included students (all females) of WMC suffering from neck pain due to neck flexion posture between the ages of 22 to 25 years. Subjects were excluded if they had a history of rheumatoid arthritis and trauma, disease orsurgery of the neck or shoulders. The data was collected through a structured self–reporting questionnaire. The intensity of neck pain was described in subjective terms of “unbearable”, “severe”, “moderate”, “mild” and “just discomfort”. All the subjects were inquired if they had developed pain during study activities and after keeping the neck flexion posture for ≥ 2 hours or < 2 hours and if the pain radiated to the arms or interfered with sleep.

Statistical package for social sciences (SPSS) version 20 was used to analyze the data. Frequencies and percentages were calculated for categorical variables. Means and central tendencies were calculated for quantitative variables.

RESULTS

Out of 83 subjects with mean age (23 ± 1 year), 4(4.8%) had unbearable, 14 (16.9%) had severe, 33(39.8%) had moderate and 13 (15.7%) had mild neck pain.(Fig-1)Nineteen (22.9%) graded their pain as just discomforting. (fig-1)In 48.2% (n=40), the neck pain radiated to the arms.

Majority of the subjects 61.4% (n=51) developed pain in neck after flexion posturing for ≥ 2 hours (table-1) and during study activities 92.8% (n=77) (table-1). The neck pain affected sleep in 56 (67.5%) individuals (table-).

Table-1: Showing presence of neck pain in relation to different variables.

Variables		
Pain during flexion posturing	**Flexion posturing ≥ 2 hours (%, n)**	**Flexion posturing < 2 hours (%, n)**
	61.4% (51)	38.6% (32)
Pain during study activities	Yes (%, n)	No (%, n)
	92.8% (77)	7.2% (6)
Pain affecting sleep	Yes (%, n)	No (%, n)
	67.5% (56)	32.5% (17)

DISCUSSION

Neck pain is becoming increasingly common worldwide and has a considerable impact on individuals and their families, communities, health-care systems and businesses[9-11].The estimated annual incidence of neck pain ranges between 10.4% and 21.3%[12]. Women are more liable to develop neck pain than men[12]. Evidence suggests that occupation, work postures, stress andnonconforming ergonomics (e.g., poor keyboard or mouse position) may be associated with the onset of

neck pain[12]. We tried to find out objectively the intensity of neck pain in women who tend to have risk factors of poor study posture and poor ergonomics.

We have found that the majority of our subjects had pain of moderate intensity (39.8 %). The next dominant group had pain felt as just a discomfort (22.9%).The severity of ongoing neck pain found in this study contradicts previous reports which stated that neck pain is mostly mild in intensity[13,14].

In bulk of the study group, the neck pain did not radiate to the arm, which supports the assumption that the neck pain was primarily mechanical in nature and not radicular. The literature on neck pain in students and office workers validates this assumption andaffirms that the neck pain in such occupations is chiefly mechanical in etiology and not caused by compression of nerve roots[15-17]. Mechanical neck pain is generally related to the posture of the individual. The normal posture for the neck is defined as the stance when the joints are not bent and the spine is aligned and not twisted[18]. The more abnormal and more prolonged the abnormal posture is, the more are the chances to develop neck pain.

The common abnormal stance that contributes to neck pain is forward head and shoulder posture with neck flexion[19,20]. This head position causes the muscles of the upper back to continually overwork to counterbalance the pull of gravity on the drooping head, putting undue stress on the vertebrae of the lower neck and contributing to the degenerative neck problems[19,20]. The more time spent with a neck flexed posture, the more likely it is that neck and shoulder problems would occur[19]. Individuals with jobs that require them to look down or forward most of the time are particularly vulnerable. Arienset al has indicated that holding the neck in a flexed posture for prolonged periods of time and repeatedly working in the same position over and over again were both significantly associated with neck pain[21]. In our study, we found that the students with neck pain who kept the forward bending posture for ≥2 hour were more in number (61.4%)than students who maintained the posture for <2 hours. Academic activities, especially of the medical education may contribute substantially to developing neck pain. This may owe to the abnormal posture, which the students assume during study and to the excessive mental concentration, emotional tasking and stress of exams[13,22].

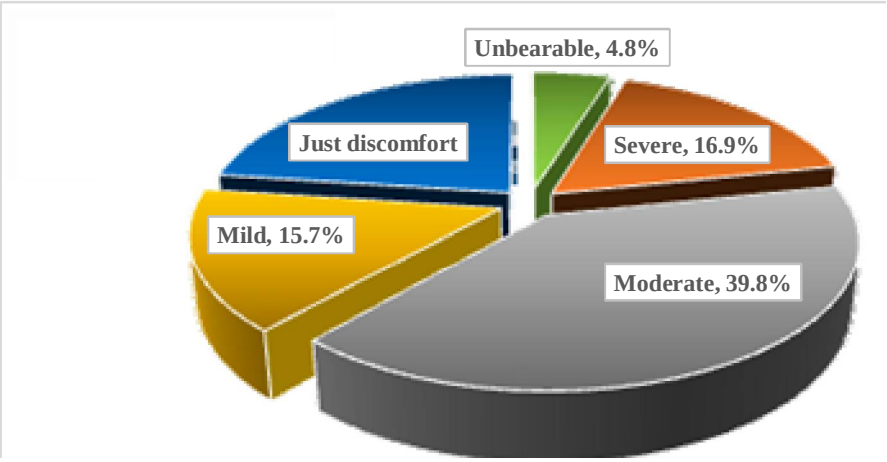

Figure-1: Showing relative frequencies of subjects based on pain intensity.

Individuals with neck pain may face difficulties with many activities of daily living, such as sleep, driving a car, turning the head and working on a computer[12]. They may also have a reduced ability to participate in work, social and sporting endeavors[11]. A Nigerian study on the student population found that the neck pain affected sleep (21.4%), reading (49.8%), concentration in schoolwork (27.9%), household work (13.9%) and social/recreational activities (21%)[13]. Few other studies have also reported association of neck pain with insomnia or trouble falling asleep and excessive sleeplessness during the day[23-25]. Our study corroborates previous research suggesting an association between neck pain and sleep impairment.

Our study had few limitations. First, it was a small sample study carried out in a single center.Second, the data was based on self-reports and was not validated by physical or psychiatric examination.

CONCLUSION

The neck pain in neck flexion posturing reported by female students of WMC was primarily of moderate intensity, is more common during study time and affected their sleep. The individuals who maintained neck flexion posture for ≥ 2 hours were more prone to develop neck pain than those who maintained it for < 2 hours.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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BREATH HOLDING SPELLS: DEMOGRAPHIC PROFILE AND EFFICACY OF IRON SUPPLEMENTATION IN CHILDREN WITH BREATH HOLDING SPELLS AND ANEMIA ON REDUCTION IN FREQUENCY OF THESE SPELLS

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ABSTRACT

Objective: The aim of this study was to evaluate the demographic profile of children with breath holding spells and anemia and efficacy of iron supplementation on reduction in frequency of these spells.

Study Design: Interventional, prospective hospital based.

Place and Duration of Study: Department of paediatrics Combined Military Hospital (CMH) Kharian from Oct 2011 to Sep 2012.

Material and Methods: A total number of 275 children aged between 6-60 months with iron deficiency anemia reporting in OPD were segregated for breath holding spells. Those with breath holding spells (BHS) were treated with oral iron polymaltose complex for three months. Then these children were assessed for improvement in their anemia by Hemoglobin (Hb%) estimation and its impact on reduction in the frequency of breath holding spells. Data was analyzed by SPSS version 16.

Results: Total 45(16.4%) children out of 275 were included in study. Amongst these 30 (66.7%) had cyanotic, 12 (26.7%) pallid and 3(6.7%) mixed type of the breath holding spells. After three months of oral iron therapy, the Hb% raised from a mean 8.12g/dl (SD ± 1.41) to 12.31g/dl (SD ± 1.22). Out of 45 those have BHS, 29 (64.4%) showed a complete response, 11(24.4%) good, 3(6.7%) partial and 2 (4.4%) no response to oral iron supplementation in reduction of frequency of breath holding spells.

Conclusion: We have concluded that if iron deficiency anemia is corrected in anemic children with BHS, then it has a significant effect in reducing the frequency of these spells.

Keywords: Anemia, Breath holding spells, Efficacy, Iron supplementation.

INTRODUCTION

Breath holding spells (BHS) are common frightening experience for the parents because children become lifeless and unresponsive for a short period of time[1]. BHS is an abrupt and involuntary episode that occurs in a healthy child[2]. They occur frequently between six months to five year of age[3,4]. These spells usually abate by the fifth or sixth year of life[1,2,4] . BHS are classified into three types- cyanotic, pallid and mixed[1]. Cyanotic breath holding spells are the most common type initiated by upsetting or scolding the child and are characterized by a brief shrill cry, a forceful expiration and then apnea. They can lead to cyanosis, clonic jerks and opisthotonus posturing[1,3,4]. Rearing up of children who have BHS is very bothersome for the parents[5]. Amongst the various theories postulated for the etiology of the BHS, like dysfunctional autonomic nervous system[6,7] iron deficiency anemia has also been associated with the development of BHS[8,9,10]. Anemia has also been documented to hamper the oxygen uptake in the lungs and decrease the amount of oxygen available for use in the central nervous system[11,12]. Several studies available in literature have proved that treating iron deficiency anemia has a significant effect in the reduction of the frequency of breath holding spells[13,14,15].

The purpose of this study was to find out demographic profile of children with BHS and

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iron deficiency anemia and whether treating the iron deficiency anemia has any significant effect on decreasing the frequency of BHS

MATERIAL AND METHODS

This quasi experimental study was conducted in paediatrics department of CMH Kharian from Oct 2011 to Sep 2012. Children reporting in OPD with iron deficiency anemia (IDA) were screened out for breath holding spells (BHS).

Table-1: Children with BHSN=45.

BHS	Number	Percent
Present	45	16.4
Not present	230	83.6
Total	275	100.0

Table-2: Demographic profile of children (n=45).

Parameters		Number	Percent
Sex	Male	30	66.7
	Female	15	33.3
Age of onset	6-12 months	14	31.1
	13-24 months	16	35.6
	25-36 months	10	22.2
	37-60 months	5	11.1
Family history	Yes	29	64.4
	No	16	35.6
Consanguinity	Yes	35	77.8
	No	10	22.2
Type of attack	Cyanotic	30	66.7
	Pallid	12	26.7
	Mixed	3	6.7
Triggering factors	Anger	19	42.2
	Pain	15	33.3
	Head bump	5	11.1
	Scolding	6	13.3
Family income	Rs.<20,000 / month	32	71.1
	Rs.20-40,000 / month	12	26.7
	Rs.>40,000 / month	1	2.2
Compliance	Yes	43	95.6
	No	2	4.4

Inclusion criteria:

(1) age from 6 months to 6 years and

(2) Hb % >5 gm / dl and <12gm / dl.

Exclusion criteria:

(1)Patients who were having Hb<5gm / dl

(2) Those suffering from chronic diseases like diabetes mellitus, chronic renal failure, congenital heart diseases and malabsorption,

(3) known epileptics and

(4) known cases of developmental delay.

A sample of 45(16.4%) patients collected by non probability (consecutive) sampling, was segregated from 275 IDA patients. This study was irrespective of sex, race, ethnicity, geographical distribution and socioeconomic status. Parents were explained about study and informed written consent was obtained for their children examination and intervention according to the guidelines of Helsinki Declaration. Permission was also obtained regarding use of data for research and publication. Demographic and laboratory data

was collected in a predesigned proforma. Complete blood picture and serum ferritin levels were performed in all children. IDA was diagnosed on the basis of hemoglobin (Hb%) and serum ferritin level. Cutoff value for Hb% was >5 and <12 gm/dl and serum ferritin levels < 7ng/ml. Anemic children with BHS were segregated and were sample of our study. After segregation history and physical examination was done. Variables like age, sex, family income, family history, parental consanguinity, types of spells, triggering factors were noted . BHS were classified into cyanotic, pallid and mixed according to the criteria available in literature.

Children having BHS were treated with oral iron polymaltose complex in recommended doses for 12 weeks. Parents were advised to keep a written record of BHS. We followed up these children for six months. Response of these patients to iron therapy, i.e. reduction in frequency of BHS, was classified into different groups. Complete response means no spells, good response means >50% reduction in frequency of BHS, poor response means 10-50% reduction in frequency and no response means no reduction in frequency [2,16].

All data has been analyzed using SPSS version 16. Descriptive statistics were used to describe data. Frequency and percentage were calculated for qualitative variables like age, sex, family history, consanguinity, family income, type of BHS, triggering factor and compliance. Mean and Standard Deviation (SD) was calculated for quantitative variable like Hb% and serum ferritin. Qualitative and quantitative variables were presented in the form of tables. Paired sample t-test was applied for the comparison of Hb% and ferritin pre and post iron supplementation. A *p*-value <0.05 was considered a significant.

RESULTS

Total 45 patients with IDA as well as BHS were included in this study. Age parameter revealed that out of these 45, 14 (31.1%) patients were between 6-12 month of age, 16 (35.6%) between 13-24 month, 10 (22.2%) were of 25-36 month and 5 (11.1%) were between 37-60 month of age. Thirty (66.7%) were males and 15(33.3%) females. Twenty nine (64.4%) had a positive family history for the occurrence of BHS while 16 (35.6%) were negative for family history. Parental consanguinity was positive in thirty five (77.8%) and negative in 10 (22.2%) children. Thirty two (71.1%) patients belonged to families having income of Pak rupees <20,000/month, 12 (26.7%) had income of Rs.20,000-40,000/month and 1(2.2%) was from a family whose monthly income was more than Rs.40,000/month. Thirty patients (66.7%) had cyanotic, 12 (26.7%) pallid and 3 (6.7%) mixed type of spells. Out of these 45 patients with BHS, 19 (42.2%) had anger as the initiating factor, 15 (33.3%) had pain, 5 (11.1%) had head bump and 6 (13.3%) had scolding as the initiating factor for the onset of the BHS. Forty three (95.6%) patients were compliant and only 2 (4.4%) were non compliant to the treatment (table-2). Our data for efficacy of iron

Table-3: Effect of iron supplementation on reduction in frequency of BHS (n=45).

Hemoglobin ***p*-value:< 0.05**	**Start**	**After treatment**	***p*-value**
	8.12gm/dl ± 1.41	12.31 ± 1.22	<0.001
Ferittin *p*-value: <0.05	3.38ng/ml ± 0.96	31.53 ± 6.06	<0.001
	Type	**Number**	**Percent**
Response	Complete	29	64.4
	Good	11	24.4
	Poor	3	6.7
	No (non compliant group)	2	4.4
Total Patients		45	100

supplementation on reduction of frequency of BHS will be for all these 45 patients.

Mean Hb% at the time of enrollment was 8.12g/dl (SD 1.41) and ferritin was 3.38 ng/ml (SD±0.96). After 12 weeks of treatment mean Hb rose to 12.31g/dl (SD±1.22) and serum ferritin was 31.53ng/ml (SD±6.06). Out of these 45 patients 29 (64.4%) showed a complete response, 11 (24.4%) a good response, 3 (6.7%) a partial response and 2 (4.4%) did not show any response to treatment (table-3).

DISCUSSION

Breath holding spells are a well known entity in the pediatric age group and have prevalence of about 4-5%[2]. This condition resembles epilepsy and is quite worrisome for the parents[5]. Association of iron deficiency anemia with BHS as etiological factor was described as early as in 1963 by Holowach et al in their study[17]. A number of theories have been postulated which have explained the increased frequency of BHS with iron deficiency anemia. It has been proposed that iron has a role in the metabolism of catecholamines and neurotransmitters in the central nervous system and their deficiency plays a part in the development of BHS[18]. It has also been hypothesized that clinical and hematological picture of BHS is related to interaction of cerebral erythropoietin, nitrous oxide and interleukin[1,19].

As documented by Ashrafi et al[4] and Tonekaboni et al[2] in their studies, we have also found a greater incidence of BHS in the male population i.e. 66.75% versus 33.3%. We report that 66.7% of the children were below age of two years when they experience first episode of BHS which is consistent with the findings of Lumbroso lerman et al[16] and Bridge study[20] . Parental consanguinity was found in 77.8% of children in our study which is contrast to that demonstrated by Ashrafi et al[4] i.e. 30.2%[4]. Family history was found to be present in 64.4% in our study as compared to 51.2% demonstrated by Ashrafi[4] and 14.3% shown by Tonekaboni[2]. We do not find any plausible explanation for these differences

We have found 66.7%, 26.7%, and 6.7% incidence of cyanotic, pallid and mixed type of BHS respectively while Tonekaboni et al[2] has demonstrated 88.5%, 8.5%, and 3% incidence for these types of BHS. This disparity may be attributed to genetic, racial and social factors

After 12 weeks therapy with oral iron polymaltose we have documented rise in level of hemoglobin by about > 4.0g/dl. This is consistent with the results shown by Afzal et al[21] in his study on treatment of iron deficiency anemia. Resultantly this rise in Hb level helped in decreasing the frequency of BHS in our study as also shown by Ashrafi et al[14], Tonekaboni et al[2], Ziaullah et al[3], and Hudaoghi et al1[4] in their studies. Poor response to treatment was seen in children belonging to families with less financial resources and those who were non compliant to treatment. This is in accordance with the results of studies done by Bhatia et al [12] and Tonekaboni et al[2].

CONCLUSION

More than 45% children suffer from iron deficiency anemia in our country due to many reasons including poverty, as shown by various nutritional surveys. A reasonable number of these anemic children are prone to develop BHS. Oral iron supplementation is a reliable and cheap mode of treating this condition and thus reducing the frequency of BHS in these children. Benign nature of BHS and effective treatment with oral iron supplementation can tremendously reduce agony of disturbed parents and suffering of children. This evidence based information will further augment confidence of parents and physicians. Physicians should be cautious in using anti epileptics for BHS.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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SERO-PREVALANCE, KNOWLEDGE AND RISK FACTORS ASSOCIATED WITH VIRAL HEPATITIS B AND C IN YOUNG HEALTHY LITERATE ADULTS OF CENTRAL PUNJAB

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ABSTRACT

Objective: To determine sero-prevalance, knowledge and risk factors associated with viral hepatitis B and C in young, healthy, literate adults of central Punjab.

Study Design: Crossectional observational study.

Place and Duration of Study: Study was conducted at Department of Pathology Combined Military Hospital Sargodha, in collaboration with Army selection and recruitment center Sargodha and Faisalabad from Jan 2014 to April 2015.

Material and Methods: A total of 3545 young male adults having matric as minimum qualification, belonging to Sargodha and Faisalabad division areas, found medically fit by medical officer were included in the study. After informed consent, samples were collected and first questionnaire regarding knowledge of transmission and prevention of viral hepatitis B and C was given. HBsAg and Anti HCV screening were carried out by Rapid Immuno-chromatographic method. Positive cases were confirmed by Enzyme linked Immuno sorbidant Assay (ELISA). Positive cases were given second questionnaire to enquire regarding risk factors associated with viral hepatitis B and C.

Results: Mean age of the patients was 20.7 years (median 20 years). Out of 3545 cases, 105 (2.96%) were positive for HBsAg, 127 (3.58%) were positive for Anti-HCV, 724 (20.4%) had adequate knowledge and 2821 (79.6%) either did not know or had misconception regarding transmission and prevention of viral hepatitis B and C. Out of total 232 positive cases, 222 (95.7%) had undergone circumcision, 199 (85.8%) had history of therapeutic injections, 136 (58.6%) routinely underwent shaving from community barber shop and 22 (9.5%) had under gone dental or surgical procedure in the past.

Conclusion: Prevalence of viral hepatitis B and C is high in young healthy literate adults of central Punjab. The most common risk factors are therapeutic injections, shaving from community barber shops, dental and surgical procedures. As majority of literate adults are ignorant about the disease, therefore efforts should be made to launch network of control interventions to decrease the burden of the disease.

Keywords: Prevalence, Risk factors, Viral hepatitis B, Viral hepatitis C.

INTRODUCTION

Viral hepatitis B and C is one of serious global public health problems with high burden in developing countries. According to WHO, annually an estimated 240 million people are infected with chronic HBV infection resulting in 780000 deaths and 130-150 million people with chronic HCV infection resulting in 500000 deaths worldwide[1,2]. Pakistan with its low physician density rate (0.83/1000) and hospital bed density rate (0.6/1000)[3], is one of developing countries carrying world's highest burdens of chronic hepatitis and mortality due to liver failure and hepatocellular carcinomas[4]. Billions of rupees are being expensed on the diagnosis and treatment of the disease and its complications with only little investment on preventive aspects.

Therapeutic injections from reused needles/syringes and improper sterilization of invasive devices are major routes of transmission in developing countries, while intravenous drug use, sexual intercourse, peri-natal infections, blood transfusions,

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haemodialysis, needle-stick injuries and tattooing are more common routes in developed countries[5]. Globally an estimated 8 to 16 million hepatitis B virus infections and 2 to 5 million hepatitis C virus infections are caused by overuse and unsafe injection practices[6] by leading to a high burden of chronic disease, disability and death.

This study was conducted to observe current status for sero-prevalance, risk factors and knowledge for hepatitis B and C virus specially in young literate population with short term exposure to risk factors. This study will provide valuable data for health professionals, planners and policy makers to review existing preventive programmatic actions to decrease the burden of the disease in future.

MATERIAL AND METHODS

This cros sectional observational study was conducted at Department of Pathology Combined Military Hospital Sargodha, in collaboration with Army selection and recruitment center Sargodha and Faisalabad, from Jan 2014 to April 2015. The study protocol was approved by medical ethics committee of CMH Sargodha. Young male adults having age between 18 to 25 years with matric as minimum qualification, belonging to Sargodha and Faisalabad division areas, having passed their written test, psychology/personality test, physical fitness test and also found medically fit by medical officer on general physical examination for recruitment were included in the study. A total of 3545 subjects were selected through purpose sampling. After informed consent, samples were collected and questionnaire was given to enquire regarding knowledge of transmission and prevention of viral hepatitis B and C. HBsAg and Anti HCV screening were carried out by Rapid Immuno-chromatographic method. Positive cases were confirmed by Enzyme linked Immuno sorbidant Assay (ELISA). Only ELISA confirmed cases were considered positive. Positive cases were also given second first questionnaire to enquire regarding risk factors associated with viral hepatitis B and C. The questionnaire included regarding history of surgery/dental surgery, tattooing, circumcision, therapeutic injections, blood transfusion, intravenous drug abuse, sharing of shaving razors, shaving at community barber shop and sexual contact with male or female other than life partner (if any). Data was analyzed using SPSS version 20. Descriptive statistics including frequencies were calculated for sero-positivity, literacy and risk factors, while Mean and SD were calculated for age.

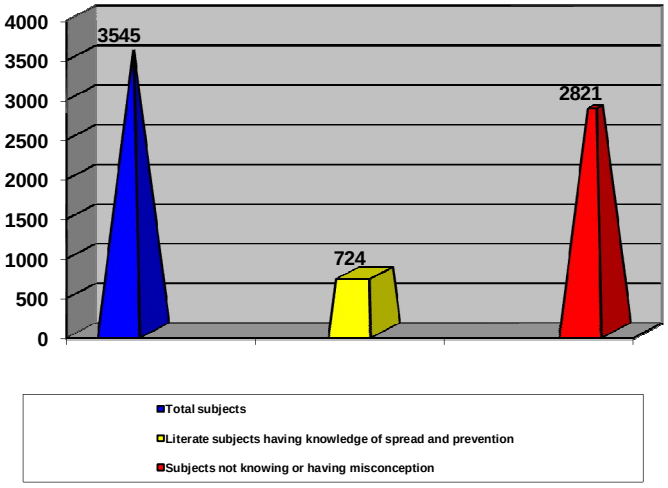

Figure-1: Knowledge of transmission and prevention of viral hepatitis B and C among young, healthy, literate adults of central Punjab (n=3545).

RESULTS

The total number of study subjects was 3545. The Mean age was 20.7 ± 1.7 years

(median 20 years). All were belonging to low socioeconomic group of both rural and urban areas of central Punjab. Out of 3545 cases, 105 (2.96%) were positive for HBsAg and 127 (3.58%) were positive for Anti-HCV. None was positive for both HBsAg and Anti HCV.

Out of 3545 cases, 724 (20.4%) subjects were literate having adequate knowledge for different ways of spread and prevention of Hepatitis B and C viral infection, while 2821 (79.6%) either did not know or had misconception regarding transmission and prevention of viral Hepatitis B and C (fig-1).

Out of total 232 positive cases for both HBsAg and Anti HCV, 222 (95.7%) had undergone circumcision, 199 (85.8%) had history of therapeutic injections, 136 (58.6%) routinely underwent shaving from community barber shop, 22 (9.5%) had undergone dental or surgical procedure in the past, 4 (1.7%) had underwent tattooing, 4 (1.7%) shared shaving blades, 3 (1.3%) gave history of sexual contacts other than life partner and only 1 (0.4%) gave history of IV drug abuse in the past (fig-2).

DISCUSSION

The present study aimed to determine the sero-prevalence as well as knowledge of transmission and prevention of HBV and HCV in young literate population. In our study, the prevalence for HBV infection was 2.96% and HCV infection was 3.58%, which was slightly higher than the study based on combined data by Syed Asad Ali etal[1], in which overall HBV and HCV sero-prevalence in adults in Pakistan was 2.4% and 3% respectively. Another study[7] (n=2038) carried out in general population at CMH Sargodha during 2006 showed prevalence of 5.3 % for HBV and 3% for HCV. Lower rate of HBV infection in our study as compared to above study at Sargodha may be due to availability of hepatitis B vaccine and its inoculation during early childhood as a part of National EPI program. Different studies carried out on young Army recruits in different parts of country showed variable prevalence for HBV and HCV as shown in table-1.

The prevalence of HBV and HCV is known to vary in different geographical areas due to variation in cultural and social factors that influence the transmission[13]. In Pakistan, un-necessary intramuscular/intra venous in-jections are commonly used for weakness/

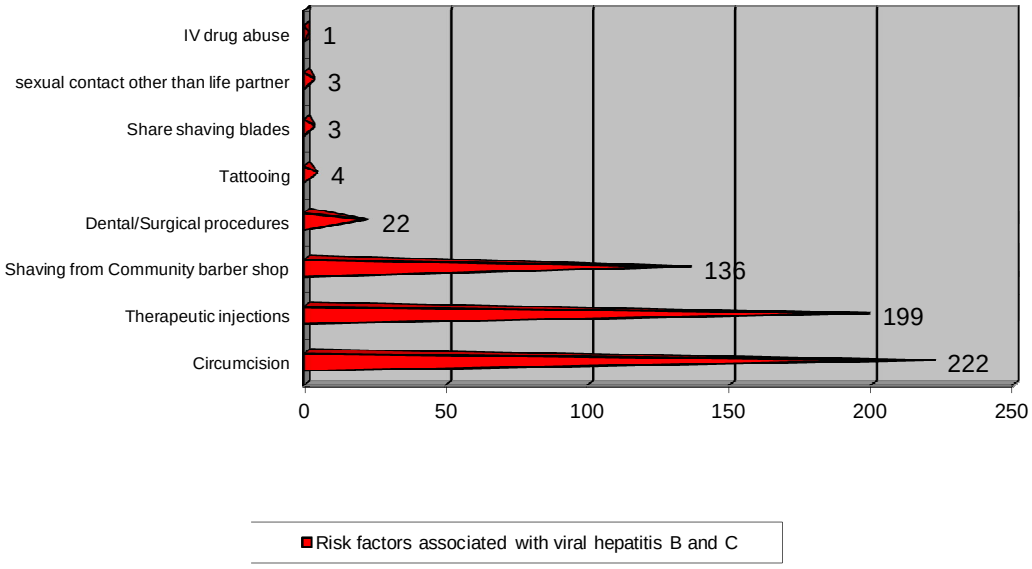

Figure- 2: Frequency of risk factors among HBsAg and Anti HCV positive cases (n= 232).

fever and IV drips for body cooling in summer. According to WHO, in South-east Asia, a person receives an estimated four injections per year, of which 75% are un-sterilized or re-used and most are unnecessary[14]. More over due to financial constraints and lack of risk awareness among general population, different occupational workers (barbers/beauty parlour workers) as well as health care workers, unsafe practices using unsterilized/reused instruments are routinely performed leading to easy transmission of many diseases including hepatitis B and C. In our study, the most common risk factors in positive cases were circumcision (95.7%), therapeutic injections (85.8%) and shaving from community barber shop (58.6%). In rural areas, circumcision, shaving/hair cutting is commonly performed by barbers using reused/unsterile/under-quality instruments. Dispensers, Quakes as well as doctors commonly use unnecessary unsterilized/under-quality disposable syringes, IV sets for intravenous therapy. More over common people have false belief that they can be more effectively and quickly treated by IV therapy as compared to oral therapy. Literature had shown that health care associated unsafe injections are still most common route for transmission of hepatitis B and C in developing countries and Pakistan has highest documented rate of injections[15]. Surveillance report from Pakistan also revealed an association between cases of acute infection and the number of injections received in the 6 months preceding diagnosis of viral hepatitis[16]. Less common risk factors among positive cases in our study were dental or surgical procedure (9.5%), tattooing (1.7%), sexual contacts other than life partner (1.3%) and IV drug abuse (0.4%). Study by Kazmi etal[17] conducted in north eastern Punjab, Pakistan also revealed IV drug abuse, tattooing, sexual intercourse, surgical procedures and sharing of shaving razors as less common risk factors, while circumcision, injections and dental procedures most common risk factors among positive cases (n=415). IV drug abuse, sexual intercourse and tattooing are leading causes of hepatitis B and C in developed countries[5], but due to change in social, cultural, behavioral and religious beliefs, these routes of transmission are less common in Pakistan.

Table-1: Prevalence of HBV and HCV in young Army recruits in Pakistan.

Year	Place	Number	%HBsAg Positive	%Anti HCV Positive	Ref. No
2000-02	Karachi	966	3.2	2.2	8
2002	Rawalpindi	5371	3.5	3.2	9
2004	Khuzdar	665	3	3.3	10
2005-06	Rawalpindi	-	2.8	3.4	11
2007	Centeral Sind	2835	7.3	5.2	12
2007-08	Mianwali	697	1.15	1.86	13

In our study all the subjects were literate having matric as a minimum qualification, but bulk (79.6%) of these literate subjects were ignorant regarding different ways of spread and prevention of HBV and HCV infection. They either did not know or had misconceptions; like using dirty water, sharing utensils / clothes / towels or eating together with known cases of hepatitis. Population based study conducted by Ministry of health, Brazil and study conducted in Brazilian blood donor revealed association between lower education and presence of hepatitis B and C[18,19]. Higher education (high school/college) was associated with lower prevalence of anti-HBc[19]. In our study, majority of college qualified subjects were unaware indicating lower standards of education in our country. This alarming situation also raises the question for the effectiveness of different preventive programs run by professionals and workers in the field.

CONCLUSION

Prevalence of viral hepatitis B and C was high in young healthy literate adults of central Punjab. The most common risk factors were therapeutic injections, shaving from community

barber shops, dental and surgical procedures. However majority of literate adults are ignorant about the disease, therefore efforts should be made by health professionals, planners and policy makers engaged in preventive programs to launch network of more effective control interventions including mass education by print and electronic media, to decrease burden of the disease and resulting burden on economy of this resource constraint country.

CONFLICT OF INTEREST

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

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FREQUENCY OF OBESITY AND HYPERTENSION IN ARMED FORCES: IT IS TIME TO FACE REALITY

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ABSTRACT

Objective: To determine the frequency of obesity and hypertension in healthy soldiers of Pakistan Army.

Study Design: Descriptive cross sectional study.

Place and Duration of Study: Medical Department Combined Military Hospital Okara, August 2012 to December 2012.

Material and Methods: A total of 2215 adult healthy males were selected. Age ranged from 18 to 52 years with mean age of 34.69 (± 7.501) years were selected by consecutive sampling from units of Okara Garrison. Weight, waist circumference (WC) and height measurement of each subject recorded. BMI (kg/m²) was calculated for each individual using formula weight / height². BMI between 18-22.9 kg/m² was taken to be normal. Individuals having BMI of 23-24.9 kg/m² were labeled as overweight while those having BMI more than 25 were considered obese. BP was taken in sitting position in left arm in a quiet warm room after five minutes of rest. BP >140/90 mmHg defined as hypertension. All the data was analyzed using SPSS version 16.

Results: BMI ranged from 16.9 to 32.9 kg/m² with mean of 23.7 ± 5.114 kg/m². Out of study group 763 subjects (34.4%) were overweight and 785 (35.4%) were obese. Out of study population 217 subjects (9.8%) were found to be hypertensive.

Conclusion: A large number of our apparently healthy soldiers are suffering from obesity and hypertension.

Keywords: Body mass index, Hypertension, Obesity.

INTRODUCTION

The term overweight means an excess of body weight, whereas "obesity" refers to deposition of fat in excess in the body. Obesity is now declared as a chronic disease and is increasing in prevalence in adults. There is global epidemic of obesity especially over the past 20 years. 50% of Americn population is prone to become overweight and 25% to become obese during their life[1]. Measuring body mass index (BMI) is the first step to determine the degree of fat in the body. The BMI is easy to measure, dependable, and reciprocate well with percentage of body adipose tissue and body fat mass. For Asians, overweight is a BMI between 23 and 24.9 kg/m², obesity is a BMI >25 kg/m² and abdominal obesity is WC >90 cm irrespective of BMI[3]. In general, greater BMI is associated with increased rate of death from all causes and from cardiovascular diseases[4]. Hypertension is one of the leading causes of morbidity and mortality among obese people[5]. In one study, overweight and obesity accounted for 26% cases of hypertension in men when followed up to 44 years of age[6]. Hypertension is a deluging global challenge which is third most common cause of disability-adjusted life-years[7]. Hypertension is linearly associated increase risk of death from Ischemic Heart Disease (IHD) and stroke. For every 20 mm Hg systolic or 10 mm Hg diastolic increase in BP, there is a two times rise in mortality from both ischemic heart disease and stroke[8]. Framingham Heart Study in 2001 even

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showed that a high normal BP having values from 130-139/85-89 mmHg increased relative

Risk of IHD by more than two folds when compared with BP<120/80 mmhg[9]. According to JNC-7 report, BP<120/80mmHg is normal, BP 120-139/80-89mmHg is prehypertension, BP 140-159/90-99mmHg is stage I hypertension and BP≥160/100mmHg is stage II hypertension[10].

With significant increase in obesity in last decade, prevalence of hypertension has also increased significantly. These obese men have BMI ≥ 30[14]. Similarly Pakistan is one of such countries where one in three individuals over the age of 45 years is hypertensive as revealed by the National Health Survey (NHS)[15]. Different studies have shown a linear relationship between weight gain and blood pressure. In these patients, weight reduction not only improves blood pressure control but also causes considerable reduction in incidence of above mentioned complications[16]. A reduction in the global

Table-1: Frequency of hypertension among study group (n=2215).

	Normal weight (n=667) BMI 18-22.9 kg/m²	Over weight (n=763) BMI 23-24.9 kg/m²	Obese (n=690) BMI 25-28kg/m²	Markedly obese (n=95) BMI > 28 kg/m²
Normotensive n (%)	637 (95.6%)	694 (90.9%)	619 (89.8%)	47 (49.5%)
Hypertensive n (%)	30 (4.4%)	69 (8.9%)	71 (10.2 %)	48 (50.5%)

Table-2: Characteristics of study group.

Characteristic	Total n=2215	Normotensive n=1998	Hypertensive n=217	*p*- value
Age (yrs) mean (SD)	34.69 (± 7.50)	30.52 ± 7.24	41.34 ± 5.29	0.003
Systolic BP mmHg mean(SD)	118 mmHg + 10.43	116.72 ± 10.31	146.43 ± 11.98	<0.001
Diastolic BP mmHg mean(SD)	81 mmHg + 9.522	74.42 ± 9.11	95.67 ± 8.75	0.01
BMI (kg/m²) mean (SD)	23.7 + 5.114	21.79 ± 5.32	24.11 ± 3.61	<0.001
Waist circumference (cm) mean (SD)	85.43 ± 8.244	83.67 ± 8.97	90.38 ±8.12	0.03
Smoking (%)	18.2	17.3	19.1	0.78

hypertensives are not only at risk of complications of hypertension but also associated illnesses like diabetes mellitus, Hyperlipidemia and coronary artery disease[11]. These patients are also at risk of developing resistant hypertension[12]. In Pakistan both obesity and hypertension are at large. National health survey of Pakistan conducted in 2006 concluded that 25% of Pakistani population was overweight/obese[13] whereas according to WHO 25.5 % of women and 18.8% of men in Pakistan have BMI ≥ 25 and 3.6% of women and 1 % of burden of overweight and obesity will lead to overall decrease in incidence of hypertension, cardiovascular diseases and other associated complications. The purpose of this study was to find out association of body mass index with hypertension in adult males of Pakistan Army.

MATERIAL AND METHODS

We conducted this cross sectional study in medical department, Combined Military Hospital Okara, from August 2012 to December 2012. Garrison headquarter Okara was

approached to send all healthy uncategorized soldiers for record of their weight, WC and BP. Written consent was taken from all participants of study. As per inclusion criteria, we included 2215 adult healthy males in age range of 18 years to 52 years by consecutive sampling. Those with chronic kidney disease, NSAIDS use, end ocrinopathies, on medication, and previous history of hypertension were excluded from study. Detailed history and examination of each individual done and data entered in predesigned Performa. Weight, WC and height measurement of each subject recorded. BMI (kg/m²) was calculated for each individual using formula weight / height². BMI between 18-22.9 kg/m² and WC < 90 cm were taken to be normal. Individuals having BMI of 23-24.9 kg/m² were considered as overweight while those having BMI more than 25 were considered obese. Reference point to measure waist circumference was midway between iliac crest and lower rib margin using a plastic flexible tape. We considered WC > 90 cm as abdominal obesity irrespective of BMI for purpose of study. To measure BP, each participant was made to sit quietly in a chair with his back supported for 5 minutes in quiet and warm room. Blood pressure was measured three times at 24 hour interval by the same physician with a table sphygmomanometer. We took mean of three values as BP recording. Width of cuff was kept equal to at least 40% of arm circumference .BP<120/80mmHg was considered normal. BP 120-139/80-89mmHg was defined as prehypertension, BP 140-159/90-99mmHg as stage I hypertension and BP≥160/100mmHg was labelled as stage II hypertension. Variables included in study were age, blood pressure recording, WC and BMI. We used mean and standard deviation for Continuous variables while categorical variables were expressed in percentages/frequencies. We applied Chi square test and student t test as appropriate to nature of variables. SPSS version 16 was used to analyse the data. *p* value of less than 0.05 was considered statistically significant.

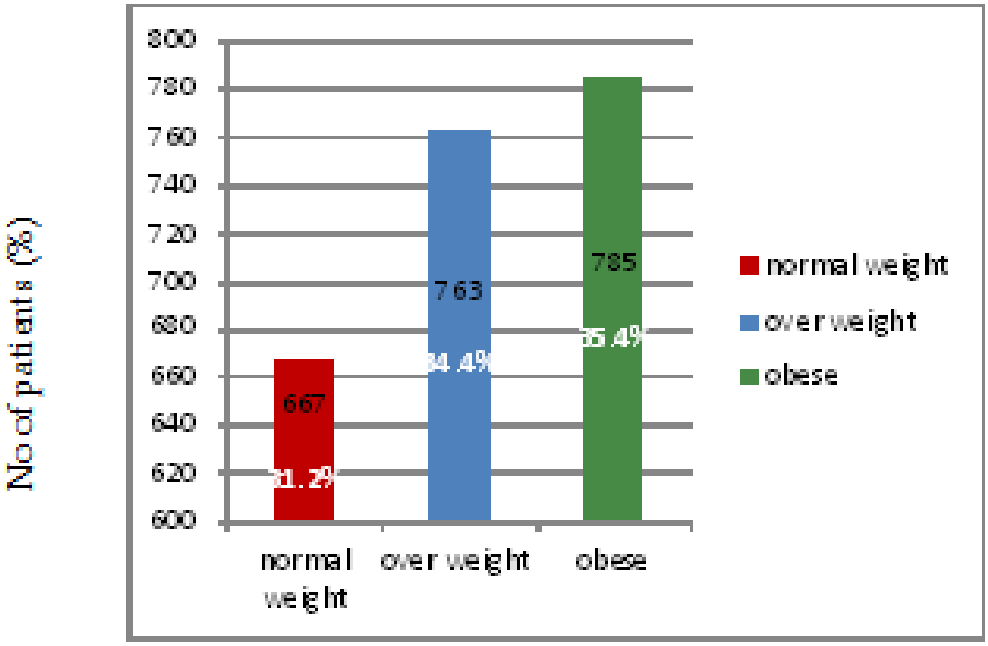

Figure-1: Frequency of obesity among study group (n=2215).

RESULTS

Out of total 2215 subjects, age ranged from 18 years to 52 years with mean age 34.69 (± 7.501) years. BMI ranged from 16.9 to 32.9

kg/m² with mean of 23.7 kg/m² (±5.114). Out of study group 763 subjects (34.4%) were overweight and 785 (35.4%) were obese (fig-1). Mean systolic blood pressure of study group was 118 mmHg ± 10.431 and mean diastolic blood pressure was 81 mmHg ± 9.522. Out of study population 217 soldiers (9.8%) were found to be hypertensive, 4.4%(30 out of 667) were normal weight hypertensive whereas frequency of hypertension among over weight individuals was 8.9% (69 out of 763) and among obese population was 15.1 % (119 out of 785) (table-1). Characteristics of study group are summarized in table-2.

DISCUSSION

Obesity is now considered a common chronic disease with significant morbidity and mortality, the fifth leading cause of death worldwide[17]. Without active screening, the obese people may silently foster diseases like hypertension, diabetes mellitus and metabolic syndrome and will not receive counseling about health risks, lifestyle changes, obesity treatment options, and risk factor reduction. The one of the aims of current study was to detect frequency of hypertension in overweight and obese population as compared to normal weight/BMI individuals. The rise in BP seen with obesity is associated with a relatively raised systemic vascular resistance (SVR) and increased activation of the renin-angiotensin aldoster one system. A directly proportional linear relationship between BMI and BP has been observed in current study that was independent of age. In this study 1548 male adults were found either overweight or obese (763 were overweight and 785 obese) which is quite alarming when we compare it with previous studies particularly NHS of Pakistan and WHO estimates. One of the reasons for this disparity may be the adoption of the more strict criteria of WHO for defining overweight and obesity in Asian countries in our study. The other reason may be a continuous upwards trend in obesity in our region[18].Similarly in our study relatively high proportion of overweight and obese population had high BP as compared to international studies like the Framingham experience published in 2002[6]. The unique feature of our study includes its larger sample size and the relatively high proportion of participants who were of normal weight (BMI <23kg/m² as compared to other studies on this subject in Pakistan[19]. Our results show that BMI was positively related to frequency of hypertension. The BMI effect on BP rise was statistically significant. Moreover further prospectively designed studies are needed to firmly establish this association and to determine effect of abdominal obesity in isolation over BP. Few studies are yet carried out in Pakistan to detect prevalence of hypertension in obese subjects. One of such study was carried out by Humayun A et al in Peshawar in 2009 with total subjects 1006 males and females and they found higher percentages of hypertension with increasing BMI[19]. Higher percentage in Peshawar study may be due to presence of many aged subjects and higher stress factor in the region. Our study also supported the proven fact that BP increases with increasing age as showed by a large survey in USA[20].Our study was exclusive for male gender although females are more prone to obesity as reported in many studies[21,22]. Secondly we did not exclude some confounders like cessation cigarette smoking[23],Alcohol drinking[24], birth weight[25] history which directly or indirectly associated with development of hypertension and obesity. Moreover, the intake of sodium/salt, potassium and macronutrient factors that might have an impact on blood pressure was not measured in our study[26]. Finally we also did not quantify physical activity levels of our subjects which are important confounder of our study as physical inactivity is strongly related with obesity whereas increased aerobic activity lowers blood pressure[27].

CONCLUSION

A significant proportion of our soldiers are suffering from obesity and hypertension. This epidemic is resulting in subsequently increased frequency of hypertension among obese and overweight male adults. Army training programs aimed at reducing the prevalence of overweight, obesity should be launched in all formations. The challenge of weight reduction combined with its costliness makes primary prevention of overweight and obesity a more feasible and cost-effective alternative for curbing the obesity epidemic.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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TREATMENT OF ACUTE MOUNTAIN SICKNESS: IS THE COMBINATION OF ACETAZOLAMIDE AND DEXAMETHASONE BETTER THAN ACETAZOLAMIDE ALONE?

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ABSTRACT

Objective: Acute Mountain Sickness is a common condition encountered at high altitude. Many treatment modalities have been used to treat it, including acetazolamide and dexamethasone. The data regarding any added benefit of combining the two drugs is scarce.

Study Design: Prospective randomized controlled trials.

Place and Duration of Study: To compare the response of patients of Acute Mountain Sickness (AMS) treated with acetazolamide and dexamethasone with those treated with acetazolamide alone.

Material and Methods: A total of 76 consecutive patients of AMS were included in the study at Goma (3300 meters). They were assigned randomly to two groups: group 1 treated with acetazolamide and dexamethasone, and group 2 treated with acetazolamide only. Their progress was noted at 12, 24, 36 and 48 hours.

Results: At 3300 meters, the rate of recovery of patients of AMS treated with Acetazolamide and Dexamethasone was not different from that of those treated with Acetazolamide alone.

Conclusion: The response of patients of AMS treated with acetazolamide and dexamethasone is the same as those treated with acetazolamide alone.

Keywords: Acetazolamide, Altitude, Altitude sickness, Dexamethasone.

INTRODUCTON

Mountaineers and trekkers going to high altitude are subjected to many hazards. They include many health related issues which impede their progress and may even compel them to abort their expedition. As the traveler ascends to high altitude, the atmospheric oxygen pressure gets progressively lower. Less amount of oxygen is available in each breath which may lead to decrease in cerebral perfusion[1]. The mountaineer may, as a consequence, develop a symptom complex characterized by headache, nausea, anorexia and vomiting[2]. This syndrome is known as Acute Mountain Sickness (AMS)[3]. AMS is the most common altitude sickness. It may occur at altitude above 2000 meters[4]. It affects up to 40-50% of people travelling to 3000 meters or above. Acute mountain sickness, if left untreated, may get complicated by the development of High Altitude Cerebral Edema (HACE)[5] which is potentially fatal. Keeping this in mind, effort should be put to try to prevent AMS.

AMS can be prevented by adopting a conservative approach to ascent[6]. It is recommended that a person should not ascend more than 300-500 meters in a day. Even then AMS can occur. If that is the case, further climb should be stopped until symptoms improve. AMS can be treated with conservative methods alone or with medicines, depending upon the severity of symptoms. If the individual descends, his symptoms are effectively

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regressed. Reduction in height of 500-1000 m is usually sufficient to abate the symptoms of AMS[7]. If that is not possible, further ascent should at least be stopped till the patient recovers. Supplementary oxygen also improves the symptoms of AMS[8]. Physical exertion should be minimized and simple analgesics like paracetamol taken for headache and antiemetics for nausea and vomiting[9]. Most patients' symptoms resolve within 48 hours on conservative treatment alone[10].

AMS cannot always be treated with conservative measures alone and drugs have to be used. The diuretic acetazolamide is the commonly used drug for the purpose. It is a carbonic anhydrase inhibitor. It causes increased bicarbonate excretion in the urine. This results in metabolic acidosis and as a consequence, stimulates ventilation. Better ventilation results in better oxygenation. Dexamethasone is the other drug used to treat AMS. Its mechanism of action in high altitude illness is not completely understood[11].

Although both acetazolamide and dexamethasone are used for treating AMS, it is not established whether their administration as a combination yields any added benefit. This clinical trial was performed to answer this particular question.

MATERIAL AND METHODS

These single blind, randomized controlled trials were conducted in Goma Hospital from September, 2010 to March 2011. Goma Hospital is a tertiary care hospital situated at 3300 meters in the Baltistan region in the north of Pakistan. Baltistan is home to Karakoram Mountains and some of the world's highest peaks[12]. Pakistan army is deployed over a large area of these mountain ranges and maintains its presence all year round. A large number of soldiers are constantly being rotated at high altitude. Therefore, there is constant movement of troops going up to their places of duty at high altitude as well as those coming down from their posts. The soldiers, like all mountaineers, are subjected to altitude-related illnesses. They affect soldiers' ability to perform at high altitude[13].

Goma Hospital caters for the medical needs of the soldiers coming from low land areas. These soldiers then ascend to military camps and posts at higher altitude. The inclusion criteria was that only those patients be recruited in the trial who were being exposed to high altitude for the first time and were not suffering from any chronic illness, especially that involving respiratory and cardiovascular systems. It was asked if anyone had been pre-medicating for prevention of high altitude illness or taking any medicines beforehand. None was found to be doing so. Those patients who were residents of areas above 2000 meters, those who were sick or taking any sort of medicines were excluded.

The permission to carry out the study was sought from the hospital's ethical committee. Written informed consent was taken from the subjects. All the soldiers were examined and complete medical history was taken. AMS was defined as per the Lake Louise Consensus on the Definition of Altitude Illness[14] as "development of headache plus at least one of: gastrointestinal symptoms (nausea, vomiting or anorexia), insomnia, dizziness and fatigue/ weakness, in the setting of recent climb". Soldiers who fulfilled this criterion and scored 4 or more on the Lake Louise Questionnaire (LLQ) work sheet were declared as cases of AMS[15]. The LLQ worksheet used is shown in fig-1.

The scoring system of LLQ has been studied and validated against the U.S. Army Environmental Symptoms Questionnaire and has demonstrated similar sensitivity and specificity[15].

The patients were randomly assigned through lottery method to two equal groups: 1 and 2. Group 1 was treated with oral acetazolamide as 250 mg tablets administered eight hourly and intravenous injection

dexamethasone eight hourly. Group-2 was treated with only oral acetazolamide 250 mg eight hourly. Their progress was noted on LLQ worksheet after every 12 hours till the clinical features subsided.

The mean LLQ score at the start of treatment for the two groups was calculated and compared. The twelve hourly progresses were also compared. Descriptive statistics were used to analyze the results. Independent samples't-test/Mann-Whitney U test was applied (where appropriate) to compare quantitative variables between the groups. A *p*-value less than 0.05 was considered significant. SPSS version 17.0 was the software used for statistical analysis.

RESULTS

Seventy six soldiers participated in the study. All of them were male. The participants were randomly divided into two equal groups of 38. The age range for group 1 was 21 years to 34 years with mean being 28 years (SD= 3.25) whereas the age range for group 2 was 22 years to 34 years with mean being 27 years (SD= 3). In group 1, the height varied from 1.62 m to 1.9 m, mean being 1.7 m (SD=0.07) and the weight varied from 51 kg to 84 kg, mean being 68 kg (SD= 8.25). The body mass index (BMI) varied from 22 to 26, mean being 23.4 (SD=0.91). In group 2, the minimum height was 1.64 m and maximum was 1.89 m, mean being 1.68m and (SD=0.06 m) while the weight varied from 54 to 82 kg, mean being 66 kg (SD=7 kg). The BMI ranged from 21 to 26, mean being 23 (SD=1.28). T-tests were conducted and no statistically significant difference was found between the two groups with respect to age (*p*-value=0.365), height (*p*-value=0.164), weight (*p*-value=0.114) and BMI (*p*-value=0.084).

The comparison between LLQ score of group 1 and group 2 was not statistically significant at any level: baseline, 12 hrs, 24 hrs, 36 hrs, and 48 hrs, as evident in table 1.

Table-1: Comparison of mean LLQ scores of groups at baseline, 12 hours, 24 hours, 36 hours and 48 hours.

	Group 1 (n=38)		Group 2 (n=38)		*p*-value
	Mean LLQ Score	SD	Mean LLQ Score	SD	
Baseline	5.95	1.541	5.82	1.843	0.431
12 hrs	5.08	1.699	4.61	1.897	0.132
24 hrs	2.95	2.066	2.21	1.711	0.119
36 hrs	1.50	1.538	0.84	1.151	0.054
48 hrs	0.16	0.37	0.05	0.226	0.137

DISCUSSION

The study compares the effect of one drug (acetazolamide) with a combination of drugs (acetazolamide and dexamethasone). Thus, two groups were formed for the comparison. A placebo group was deliberately not formed because of the nature of the disease, its potential complications and the remote area where the trial was being performed. Not getting treatment might have put the patients at risk. The safety of the patients comes first, always. Secondly, the purpose of the study was not to establish the efficacy of a drug, which would entail comparing it with a placebo. Acetazolamide is used for the prevention of AMS[16] as well as its treatment. Acetazolamide resolves the symptoms of AMS and accelerates acclimatization to high altitude[17]. Dexamethasone, on the other hand, has a more established role in the alleviation of symptoms but less so in acclimatization.

Grissom, et al conducted a randomized double blind trial on 12 subjects with AMS[18]. They administered acetazolamide to one group and placebo to the other and then observed the

effect on symptoms and gas exchange measurements. The result was that acetazolamide administration improved symptoms as well as gas exchange and arterial oxygenation.

Acetazolamide has been hypothesized to act by inhibiting carbonic anhydrase, causing metabolic acidosis and thus prompting the individual to hyperventilate as a compensatory response. The acidosis should take days to develop. However, the patients started recovering within hours of administrating the drug. This rapid effect of acetazolamide has been studied in quite a few studies. It has been seen that inhibition of red blood cells and vascular endothelial cell carbonic anhydrase causes carbon dioxide retention almost immediately[19]. Swenson and Hughes studied the effects of acetazolamide one hour after intravenous administration when the time period was insufficient to cause bicarbonate loss through the kidneys. They found significantly raised normoxic ventilation at rest[20]. Montgomery, et al studied the effect of administration of dexamethasone on mountaineers with AMS in a double blind randomized research study in the Rocky Mountains. Administration of dexamethasone resulted in improvement of symptoms of AMS at 2700 meters.

The role of dexamethasone in the treatment of acute mountain sickness was also studied by Levine, et al at a simulated altitude of 3700 m. They put six subjects in a hypobaric chamber and exposed them to the hypobaric hypoxic conditions for 48 hours. AMS was diagnosed with the help of a questionnaire. One group was administered dexamethasone and the other placebo in a randomized, double-blind fashion. The group receiving dexamethasone had 63% improvement of symptoms whereas the placebo group improved only 23%. Dexamethasone did not improve objective physiologic abnormalities like oxygenation, hematologic profile and serum electrolyte levels that occur at high altitude[21]. Thus the role of dexamethasone was established in symptom relief in cases of AMS but not in acclimatization.

We studied the combined effect of acetazolamide and dexamethasone in AMS. This combination has scarcely been studied before for treating AMS. It can help our doctors to administer acetazolamide alone in the patients of AMS.

Some additional data was also gathered in the study. The frequency of clinical features was noted. Amongst them, headache was the most common. Essentially all the cases of AMS complained of it. Headache has been described as the most common clinical feature of AMS in other research studies as well. Millions of visitors to high altitude suffer from headache each year[22]. Fiore et al conducted a study at high altitude and stated that headache was the most common presentation of acute mountain sickness and occurred 6-12 hours after the climb. Headache has been defined as an essential component of AMS due to its prevalence at high altitude[23].

Headache at high altitude is frequently associated with other clinical features including insomnia and gastrointestinal symptoms of nausea and vomiting[24]. The most common symptoms of AMS in a study on Jade Mountain in Taiwan were headache, followed by insomnia, fatigue or weakness, gastrointestinal symptoms, and dizziness[25]. We also had more or less the same clinical features in our patients. Difficulty in sleeping was the most common symptom after headache, followed by gastrointestinal symptoms including nausea and vomiting.

Neurological features like impairment of judgment and ataxia may occur due to hypoxia[26]. We also noted a couple of subjects with ataxia. We did not see peripheral edema in any patient although Maggiorini et al described peripheral edema as a common sign of AMS[16].

CONCLUSION

The combined administration of acetazolamide and dexamethasone in patients of acute mountain sickness does not improve the rate of recovery when compared to the effect of administration of acetazolamide alone at 3300 meters.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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SPECTRUM OF PATIENTS ENROLLED IN A SPECIALIZED PAIN CLINIC AT A TERTIARY CARE REHABILITATION HOSPITAL

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ABSTRACT

Objective: To describe the pattern of diseases among patients attending the specialized pain clinic in our hospital, identify the commonest gender, age group, pain diagnosis, performed procedure, age group, gender, and evaluate the association of gender with the disease causing pain.

Study Design: A cross-sectional descriptive study.

Place and Duration of study: Armed Forces Institute of Rehabilitation Medicine (AFIRM), Rawalpindi from June 2011 to August 2013.

Material and Methods: Through non-probability consecutive, sampling patients of both genders presenting with pain in the specialized pain clinic of AFIRM were included. Those with poor cognition, inability to communicate and concurrent brain injury were excluded. The age, gender, primary diagnosis of the pain complaint and duration of symptomswere recorded.

Results: Out of 2736 patients (mean age 54 ± 12.34 years), 1711 (62.5%) were male and 1025 (37.5%) were female.Most of the patients were within the age range of 41- 60 years (55.3%) and presented with the diagnosis of osteoarthritis knee (32.7%). Majority (54.1%) had pain complaint on right side of the body.Intra-articular injections were the commonest 57.2 %(n=1566) procedures performed. Association between the disease causing pain and the gender was insignificant.

Conclusion: Patients presenting in the specialized pain clinic at our rehabilitation hospital were predominately male presenting in the age group of 41 – 60 years. Osteoarthritis knee was the commonest pain diagnosis and intra-articular injections were the commonest procedure performed. The different diagnoses of pain were not associated with the gender of the patient.

Keywords: Pain clinic, Pain diagnosis, Pain procedures.

INTRODUCTION

Pain is described as an unpleasant sensory and emotional experience associated with actual or potential tissue damage[1]. It is among the leading reasons to visit a doctor. Pain and especially chronic pain is common in the general population and has overwhelming financial impact on the individual and on the health care services[2]. Estimates of pain prevalence vary by the survey methods and the painful conditions examined. Annual prevalence of chronic pain ranges from 2% to 40% in developed countries[3]. A large-scale epidemiological study covering western, northern and central Europe and Israel found that 19% of respondents reported moderate or severe pain of at least 6 months' duration[4].

Several studies are available on the prevalence, pattern and impact of pain on patients, but a few can be foundfrom our part of the region. There are limited specialized pain clinics in our country and this trend is yet to flourish. The objectives of this study were to evaluate the nature of painful conditionsamong patients attending the specialized pain clinic in our hospital, identify the most prevalent age group and gender and evaluate the relationship of gender with the presentation of a specific painful condition. This information is deemed vital for establishing specialized pain clinics and healthcare management strategies at the national level.

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MATERIAL AND METHODS

This cross-sectional descriptive study was conducted at the specialized pain clinic of Armed Forces Institute ofRehabilitation Medicine (AFIRM) Rawalpindi from June 2011 to August 2013. AFIRM is the country's first tertiary care rehabilitation facility looking after the diversity of patients with pain, disability and impairments. Patientsof both genders presenting with any pain symptomwho had accepted to participate in the studywere included in the study. Those with poor cognition, inability to communicate and concurrent brain injury were excluded. The patients were interviewed for the clinical history of pain and the information was recorded on specialized forms. The data collected included: age, gender, primary diagnosis of the pain complaint, side of the body involved and the pain management procedure performed. The patients were later examined by the same examiner to ascertain the primary diagnosis and the primary management given based on the complaint. Patients' confidentiality and anonymity were kept preserved.

Data had been analyzedwith SPSS for Windows, version 20.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to describe the results i.e. mean and standard deviation (SD) for quantitative variables while frequencies and percentages were used for qualitative variables. Chi-square test was applied to assess the association between the pathology causing pain and gender. A *p*-value <0.05 was considered as significant.

Table-1: Showing distribution of the different diagnoses of presentation and their relation with gender.

Diagnosis	Gender		Total	*p*-value (1-tailed)
	Male	Female		
	n (% within gender)	n (% within gender)		
Osteoarthritis knee	532 (31.1%)	363 (35.4%)	895 (32.7%)	0.259
Adhesive capsulitis	429 (25.1%)	238 (23.2%)	667 (24.4%)	0.377
Rotator cuff syndrome	348 (20.3%)	231 (22.5%)	579 (21.2%)	0.352
Mechanical backache	79 (4.6%)	29 (2.8%)	108 (3.9%)	0.250
Lumbosacral adiculopathy	69 (4.0%)	27 (2.6%)	96 (3.5%)	0.230
Carpal tunnel syndrome	15 (0.9%)	18 (1.8%)	33 (1.2%)	0.290
Lateral epicondylitis	33 (1.9%)	31 (3.0%)	64 (2.3%)	0.307
Plantar fasciitis	60 (3.5%)	41 (4.0%)	101 (3.7%)	0.426
Spastic disorder	71 (4.1%)	23 (2.2%)	94 (3.4%)	0.221
Dequervain's tenosynovitis	9 (0.5%)	7 (0.7%)	16 (0.6%)	0.427
Amputation	15 (0.9%)	0 (0.0%)	15 (0.5%)	0.171
Coccygodynia	4 (0.2%)	4 (0.4%)	8 (0.3%)	0.398
Myofascial pain syndrome	8 (0.5%)	4 (0.4%)	12 (0.4%)	0.458
Osteoarthritis hand joints	8 (0.5%)	5 (0.5%)	13 (0.5%)	0.5
Sacroilitis	9 (0.5%)	1 (0.1%)	10 (0.4%)	0.302
Achilles tendinitis	3 (0.2%)	0 (0.0%)	3 (0.1%)	0.327
Sub trochanteric bursitis	0 (0.0%)	3 (0.3%)	3 (0.1%)	0.292
Meralgiaparesthetica	6 (0.4%)	0 (0.0%)	6 (0.2%)	0.263
Osteoarthritis hip	11 (0.6%)	0 (0.0%)	11 (0.4%)	0.219
Trigger finger	2 (0.1%)	0 (0.0%)	2 (0.1%)	0.376

RESULTS

A total of 2,736 patients with a mean age (54 ± 12.34) years (range: 6 – 90 years) were studied; out of whom1711 (62.5%) were male

and 1025 (37.5%) were female. Most patients were within the age range of 41- 60 years (55.3%), followed by patients within the age group of 61 - 80 years (27.4%) (fig-1).

Concerningthe diagnosis of the painful condition, osteoarthritis knee was the most common diagnosis with 895 (32.7%) cases, followed by adhesive capsulitis with 668 (24.4%) and rotator cuff syndrome with 578 (21.1%) cases. (table-1). About the side of the body with pain complaint, 1481 (54.1%) cases reported pain on the right side, 878 (32.1%) reported pain on the left side. In the remaining 377 (13.8%) cases,pain was affecting both sides of the body. Considering the type of procedures performed, intra-articular injectionswere the commonest 57.2% (n=1566) followed by subacromial injections 20.9% (n=572) and intralesional injections8% (n=219).

rotator cuff syndrome, subtrochantetric bursitis, carpal tunnel syndrome, de Quervains tenosynovitis, lateral epicondylitis, plantar fasciitis and coccygodynia were more prevalent among the females. On the other hand, osteoarthritis hip, osteoarthritis hand joints, adhesive capsulitis,lumbosacral radiculopthy, sacroilitis, mechanical backache, achillestendinits and myofascial pain syndrome were more frequent among the males. Nevertheless, association between the pathologic entity causing the pain and the genderwas insignificant.

DISCUSSION

Pain, over the time, has progressively been recognized, handled and cared for as a disease process[5]. Ideal outcomes in the management of pain are not achievable by simply attempting to remove the source of the pain but rather through addressing both consequences of and contributors to the source of pain. Pain affects

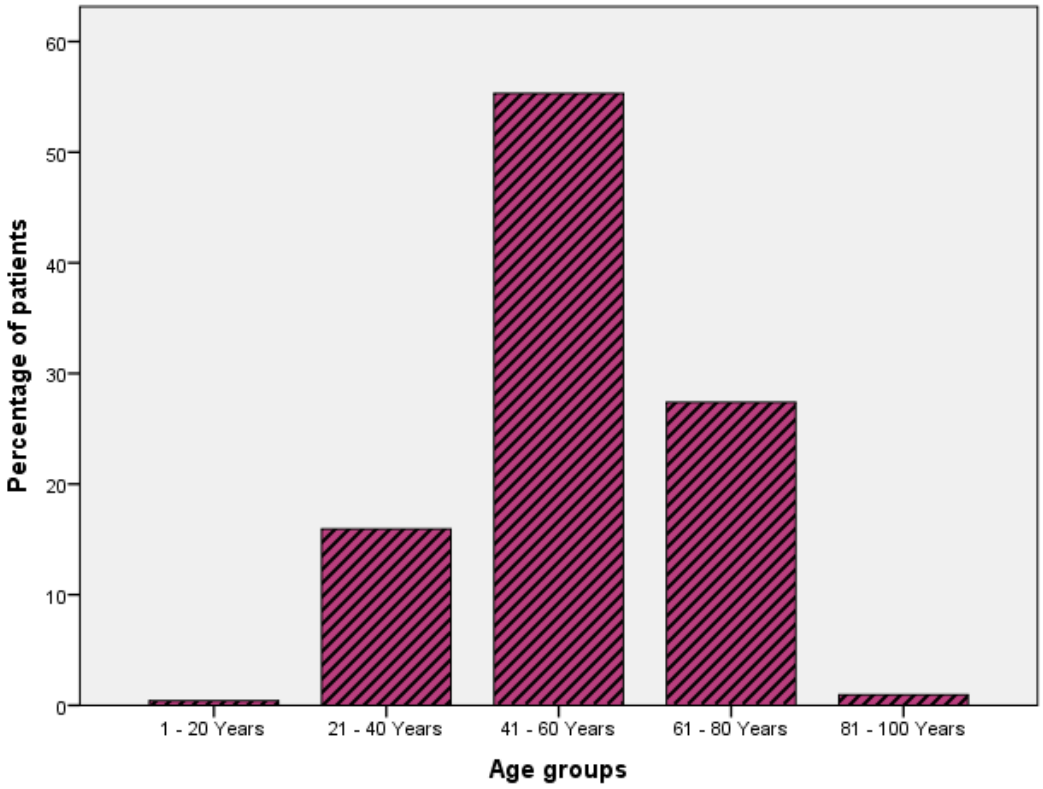

Figure-1: Showing distribution of the sampled patients based on age groups.

Cross-tabulation of gender with the sources of pain showed that osteoarthritis knee,

people's well-being, their ability to maintain an independent lifestyle, productivity and social relationships[6,7]. It may result in development of immobility, fatigue, sleep disturbance, poor appetite, medication dependence, frustration,poor work performance, depression and in rare cases suicide[8]. Therefore, pain and chiefly chronic painenforces a profound burden on patients, their families, employers and the health care system[9].

The incidence and prevalence of pain seems to vary in different age groups. In our study, most of the patients seeking evaluation and treatment for pain problems belonged to the age group of 41 – 60 years. These results are supported by a report of United States National Center for Health Statistics[10]. The report documented the prevalence of pain in adults of age ≥20 years. Individuals, 45 to 64 years of age werethe most predominant group to report pain lasting > 24 hours and >3 months. Adjacent age groups i.e. 20 to 44 years and ≥ 65 years reported a pain problem less frequently at the corresponding time intervals. These results were alsosupported in areview of literature by Verhaak et al, who reviewed the availablestudies of chronic non-cancer pain and concluded that chronic pain generally increased with age, with some studies reported a peak prevalence between the ages of 45 and 65 years[11]. It is interesting to note that the reporting of pain decreases after 60 – 65 years of age despite higher levels of medical painful conditions in older age. It is suggestedby several studies that increased pain thresholds and other physiological changes associated with older age may dull pain and delay the need for consulting a pain clinic[12,13].

Major part of the epidemiological pain research suggest that women are more likely than men to report a variety of temporary and persistent pains[14] in addition to moderate or severe pains from menstruation, pregnancy and childbirth[15,26]. Women report more severe pain, more frequent pain and pain of longer duration than men [16-19]. Even under extreme circumstances when similar prevalence is anticipated, women continue to report more headaches, musculoskeletal pain and abdominal pain thanmen[20]. Our study,on the contrary showed different findings, as majority of our patients was male. A possible explanation to this could be that most patients reporting to the pain clinic were from the Pakistan armed forces whichis a male dominated organization.

We observed that the most common diagnosis with which the patients presented to the pain clinic was osteoarthritis knee (32.7%) followed by adhesive capsulitis (24.4%) and rotator cuff syndrome (21.1%). Internationally reported, musculoskeletal diseases are one of the major causes of disease burden around the world[21,22]. The World Health Organisation (WHO) has reported the figures for burden due to musculoskeletal disease and shown that osteoarthritis particularly of the knee joint is the most significant cause of not only pain but of absolute disability adjusted life years[22].

Cross-tabulation of gender with the sources of pain showed that osteoarthritis knee, rotator cuff syndrome, subtrochantetric bursitis, carpal tunnel syndrome, de Quervains tenosynovitis, lateral epicondylitis, plantar fasciitis and coccygodynia were more predominant among the females. On the other hand, osteoarthritis hip, osteoarthritis hand joints, adhesive capsulitis, lumbosacral radiculopathy, sacroiliitis, mechanical backache, achillestendonitis and myofascial pain syndrome were more predominant among the males. However, chi-square test did not reveal any significant association between the pathologic entity causing the pain and the gender

Painful condition is usually not expected to be associated with a particular side of the body. Here,regarding the side of the body involved, majority of the cases (54.1%) reported with pain on the right side than on the left side (32.1%) or bilaterally (13.8%).

Considering the type of procedures performed, intra-articular injections were the commonest 57.2 % (n=1566) followed by subacromial injections 20.9% (n=572) and intralesional injections 8% (n=219).

There were few limitations of this study. Firstly, it was a single center based study where majority of the patients belonged to musculoskeletal disorders. Secondly, it was a military care setup for a particular population. We recommendmulticenter surveys from diverse groups of population on a larger scale for further studies to identify other explanations and justification for these results.

CONCLUSION

Patients presenting in the specialized pain clinic at our rehabilitation hospital were predominately male presenting in the age group of 41 – 60 years. Osteoarthritis knee was the commonest pain diagnosis and intra-articular injections were the commonest procedures performed. The different diagnoses of pain were not associated with the gender of the patient.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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MATERNAL PERCEPTION OF THEIR CHILD'S HEALTH STATUS

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ABSTRACT

Objective: To determine the association between the child's actual weight status and maternal perception of her child's health.

Study Design: A cross sectional study.

Place and Duration of Study: Military Hospital (MH), Rawalpindifrom 1stDecember 2011 to 31st May 2012.

Material and Method: Six hundred of either gender aged 9 months to 12 years presenting at paediatric OPD MH, Rawalpindi, were evaluated. The mothers were given the questionnaires regarding perception of the child's health and then weight of these children was plotted against the standard growth centile charts.The correlation between the weights of children with other parameters was done using the Pearson Chi-Square method and Fisher's Exact test.

Results: Out of 600 mothers, 206 (34.3%) mothers were under matrics, 66 (11 %) were undergraduates, 190 (31.7%) were graduates and 138 (23%) were postgraduates. Out of 600 children, mothers of 394 (65.7 %) thought that their children don't eat enough. Amongst these, the weight of 286/394 (72.6%) was normal. Three hundred and seventy (61.7%) mothers thought their child looked weak; however 280/370 (75.7%) of these children fell into normal weight category. Three hundred and twenty four (54%) mothers thought that appetite stimulants or multivitamins would make their children stronger and look healthier. In this group, 252/324 (77.8%) children fell into normal weight category. Three thirty eight (56.3%) mothers often force fed their children, however, 254/338 (75.1%) of these children had weight within normal limits.

Conclusion: Mothers from all educational and social backgrounds believe that their children are underweight for age and use force-feeding and appetite stimulants to improve their feeding.

Keywords: Anthropometry, Child's weight, Misclassification.

INTRODUCTION

A child not eating enough is a source of anxiety and concern for mothers worldwide. Every year, millions of consultations are made merely just because the mothers are concerned that their children are not eating enough and look weak as compared to their peers. Most of these children have normal dietary behavior when recalled from history and fall within the normal or higher percentiles after anthropometry[1].However, the parents want the doctors to prescribe appetite stimulants for their children. They want the doctors to provide them with proof that their alarm about their child's "poor appetite" is valid[2]. This maternal concern results in unnecessary prescription of medications to the children with potentially deleterious effects on their health. Moreover, millions of rupees are spent unnecessarily on tonics and appetite stimulants every year just for the false alarm of the mothers that their child is not eating enough[3].There is also some evidence that suggests that parents tend to under report the weight of their children, though their child is normal or even greater than the normal weight for age[4].Also many studies show that in clinical settings, less than 20% of health professionals use percentile charts to evaluate the weight status of children[5].

The present study was planned at paediatric department Military Hospital Rawalpindi with an aim to determine the

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association between the maternal perception of a child not eating enough and the child's weight as it may help curb unnecessary consultations, investigations and medications. This study will also highlight the importance of anthropometry in assessment of the nutritional status of a child, which is often ignored during the clinical practice. No local data is available on the subject and the international data on this subject is mostly related to over-weight children being misclassified, which is not a major issue yet in Pakistan.

MATERIAL AND METHODS

This descriptive study was carried out at Paediatric Department of Military Hospital (MH), Rawalpindi from 1st December 2011 to 31st May 2012. Paediatric department is a 300-bed capacity tertiary care unit. The study population consisted of children of both military and non-military personnel reporting to paediatric department. All children of either gender between the age of one and 12 years who were brought with the complaints of not feeding enough were included in the study. Their mothers were handed over questionnaires in which questions were asked about the diet and health of their children (Annex A). The educational status of the mother was categorized broadly as Undermatric, Undergraduates, Graduate or Postgraduate. The mothers were asked whether they force fed their children, whether their children looked weak as compared to their peers, whether he ate enough or did they think that the use of multivitamins and appetite stimulants may improve the health of their child.

We excluded records in which the interview respondent was not the mother of the participating child. Patients with concurrent diseases (pneumonia, viral infection, asthma, and diarrhea) and those with chronic illnesses or any other organic disorder were excluded from the study.

All the children meeting the inclusion criteria under went weight measurement using a standard weight machine. The weight of these children was plotted on the growth charts based on World Health Organization (WHO) Child Growth Standards (2006) and their centiles were calculated. The weight of the child was categorized as Underweight (less than 3rd centile), Normal (between 3rd and 90th centile) or Overweight (more than 90th centile).

Information on feeding practices, maternal perceptions of their child's health, maternal education and the weight of the child was collected by the researcher and was recorded on a data form.

The Research and Ethics Committee of the hospital approved the study. Written informed consent was obtained from the parents of all the participants.

Sample size was calculated using World Health Organization (WHO) calculators. All data was analyzed using Statistical Package for Social Sciences (SPSS) version 18.0. Frequencies and percentages were taken out from the qualitative data; mean and standard deviation were taken out for the numerical variable. Associations between the qualitative variables were taken out using Pearson Chi-Square

Table-1: Mothers' perception of children health and feeding according to education status.

Mother's Perception	Educational status of the mothers								Total (n=600)
	Under Matric (n=206)		Under Graduate (n=66)		Graduate (n=190)		Postgraduate (n=138)		
	n	%	n	%	n	%	n	%	
Child does not eat enough	140	68	44	66.7	118	62.1	92	66.7	394
Child looks weak	160	77.7	46	69.7	94	49.5	70	51	370
Use of appetite stimulants	134	65.0	40	60.6	78	41.0	72	52.2	324
Force feeding	118	57.3	36	54.5	102	53.7	82	59.4	338

correlation and Fisher's Exact Test. At 95% confidence level, *p*-value less than 0.05 was taken as significant.

RESULTS

Six hundred children fulfilling the inclusion criteria were weighed on a standard weighing scale and their parents were given questionnaires in which different questions about the maternal perceptions and concerns on child's health and nutrition were asked (Annex A). The mean age of the study population was 3.5 years (SD ± 2.51). Out of 600 children, 364 (60.7%) were males and 236 (39.3%) were females with a male to female ratio of 1.5:1.

Two hundred and six (34.3%) mothers were under matrics, 66(11 %) were undergraduates, 190(31.7%) were graduates and 138(23%) were postgraduates (table-1).Out of 600 mothers, 394(65.7%) mothers thought that their child did not eat enough; however 286/394 (72.6%) of these children fell within the normal weight category, 45/394 (11.4%) were underweight and 40/394 (10.2%) were overweight. Three hundred and seventy (61.7%) mothers thought their child looked weak; however 280/370 (75.7%) of these children fell into normal weight category, 76/370 (20.5%) were underweight and 14/370 (3.8%) were overweight.

Three hundred and twenty four (54%) mothers thought that appetite stimulants or multivitamins would make their children stronger and look healthier. Out of these 252/324 (77.8%) had normal weight, 46/324 (14.2%) were underweight and 26/324 (8%) were overweight.

Three thirty eight (56.3%) mothers admitted that they often had to force feed their child; however 254 (75.1%) of the children had weight within normal limits, 54 (16%) were underweight and 30 (8.9%) were overweight (table-2).

Table-2. Maternal perception of child health and actual body weight of children.

Children not eating enough		
Category	Number	Percentage
Normal weight	286	72.6
Underweight	45	11.4
Overweight	40	10.2
Children looking weak		
Category	Number	Percentage
Normal weight	280	75.7
Underweight	76	20.5
Overweight	14	3.8
Appetite stimulants or multivitamins will make children strong		
Category	Number	Percentage
Normal weight	252	77.8
Underweight	46	14.2
Overweight	26	8.0
Force Feeding		
Category	Number	Percentage
Normal weight	254	75.1
Underweight	54	16.0
Overweight	30	8.9

DISCUSSION

The weight of the children and their physical appearance has always been a source of concern and anxiety for the mothers. Despite the fact, that most of the children are of normal weight or over weight, majority of mothers underestimate the weight of their children and misclassify them as underweight[5-6]. Mathieu ME et al reported that 20% of the children with normal weight are perceived to be slimmer and

leaner than they are[7]. Similarly, Genovesi S et al showed that 28% of the mothers underestimated their child's weight[8]. A Parry LL et al reviewed that in nearly all of the studies, less than 50% of parents were able to correctly classify their child's weight[9]. However, the present study documented that out of those children who were perceived to be thinner, only 20.5% were underweight, 75.7% fell within the normal weight category and 3.8% were overweight. This shows that the tendency to underestimate weight of children is also quite prevalent in our setup.

It's a fact that the concept of "fat babies are healthier babies" in mothers is culturally imbedded, reinforced by friends, grandparents, and history. So it's difficult for the doctors to convince a mother that her child does not need more food[2]. FernándezNúñez JM et al reported that 1 out of every 12 consultations was because a child had lost his/her appetite and the actual cause turned out to be either worrisome parents or lack of information about the feeding techniques of the children[1].The present study reveals that out of all those children whose mother thought that he/she does not eat enough, only 11.4% were actually underweight.

Effect of caregiver feeding behaviors on child's weight status has been studied in detail by many researchers. It has been observed that force-feeding by the mother leads to refusal of food by the child whereas positive mother behavior is associated with higher acceptance of food by the child[10]. Webber L et al reported that use of pressure to eat or force-feeding was increased as the mother perceived her children to be thinner but the perceived weight did not mediate the association between child's weight status and maternal pressure to eat[11].The present study also showed 56.3% admitted that they often force fed their children.But out of those children who were force fed by their mothers, only 16% were underweight.

A survey conducted by researchers in Karachi, Pakistan in 1990 showed that roughly 55% of all drugs prescribed to the children by the physicians fell into the drug categories of anti diarrhoeals, appetite stimulants, multivitamins and brain tonics[3].Nwolisa CE et al reported that multivitamin preparations were amongst the commonest inappropriately prescribed drug in Nigeria[12]. Lee Y et al documented that mothers pressurized their children to use multivitamin supplements rather than using healthier patterns of food intake[13]. Briefel R et al showed that there was no difference between supplement users and nonusers in mean daily intake and weight gain[14]. The present study also showed that 54% of the mothers thought that their children would look stronger and healthier if they give them multivitamins or appetite stimulants. Amongst the children of these mothers, 77.8% fell within normal weight category.

Mothers with a lower educational background are more likely to misclassify overweight silhouettes and underestimate overweight-associated health problems as pointed out by Waschburger P. et al[15]. Socio-economic factors have been identified as a strong factor in the under estimation of children's weight by Henninger W.R. et al[16]. The present study on the contrary showed mixed results. There was a greater tendency in the undergraduate and graduate mothers to misinterpret the weight of their normal-weighted child followed by postgraduate mothers and then by under matric mothers.

CONCLUSION

Maternal misperception of their children's weight, specially perceiving them as underweight children and then taking measures like force feeding and giving unnecessary over the counter drugs to them is a common problem in Pakistan. Also, avoidance by the physicians to use growth charts for assessment of these children due to overload of such patients in the OPDs and unnecessary prescriptions of multi vitamins and appetite stimulants has become a common practice. These things, if curbed, by proper education of the mothers and seminars at appropriate levels may help avoiding unnecessary consultations and spending of millions on unnecessary drugs.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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GERIATRIC HEALTH CARE: A CRUCIAL NEED OF TIME

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ABSTRACT

Objective: The objective of this study was to assess the need of establishing a geriatric department in tertiary care military hospitals.

Study Design: Cross sectional descriptive study.

Place and duration of study: Class "A" military hospitals i.e. CMH and MH Rawalpindi from 1st January 2013 to 30th June 2013.

Material and Methods: Data of geriatric workload of last 3 years collected from Hospital Statistical offices and medical directorate. Senior hospital staff was asked to fill a questionnaire to record their views on geriatric health problems and their management in military hospitals.

Results: Forty six (93.8%) of medical administrators and 75 (100%) of consultants held the view that the workload of elderly patients is increasing day by day. Keeping in view the increase health problems of elderly people 63 (84%) of clinicians were in strong favor of the idea that geriatric medicine should be treated as a separate specialty in the Army and physicians should be trained specifically.

C***onclusion:*** Yearly increasing population of ex-servicemen and entitlement of parents of soldiers has led to increase in number of elderly patients in military hospitals. A need to establish geriatric department in tertiary care military hospitals is crucial.

Keywords: Elderly patients, Geriatrics, Geriatric medicine.

INTRODUCTION

Aging, a natural process, is regarded as a normal, inevitable biological phenomenon. The process of aging is complex one that can be described chronologically, physiologically, and functionally. World Health Organization classifies it chronologically, all individuals aged 60 years or above as old. However, most of the developed countries classify all individuals aged 65 years or more as old. The care of the elderly with physical and psychological changes, which are incident to old age is called geriatrics.

Geriatric population is a rapidly growing age bracket globally. The majority of this elderly population (60% of the 580 million elderly people globally) is living in the developing countries. By 2020, this value will increase to 70% of the total elderly population[1].

This older population is vulnerable to various disabilities as a consequence of stroke, dementia, heart diseases and trauma[2-3]. Elderly people usually encounter dietary, medical, physical and social problems. They also encounter unique nutritional challenges as a consequence of chronic medical conditions, such as osteoporosis, arthritis, depression and diabetes mellitus[4]. This demonstrates the ever increasing need for specialized care in community to look after geriatric population.

Pakistan is the sixth most populous country in the world with an estimated population of 191 millions, incorporating 7.64 millions of elderly population[5]. However, this segment of the society is not receiving its due share of health care services, despite facing a

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myriad of medical problems[6,7] and issues such as paucity of appropriate retirement benefits and pensions[8]. The evanescence of the traditional joint family system in Pakistan is also important concern for the health care of geriatric population[9].

Pakistan Army comprises of relatively younger people, because most of them bid farewell to their glorious past in middle age. Previously caring for elderly persons in the services hospitals was fairly easier as the old people in service or retired, formed a negligible percentage of patients attending these hospitals but after the entitlement of parents there is tremendous increase in number of elderly patients dependent upon service hospitals. They are being looked after in the existing setup, which was designed for serving persons and their families. No concrete and organized facilities exist in military hospitals caring towards medical, psychological and occupational rehabilitation for this class of patients.

Over the period total number of elderly patients and the percentage of elderly patient admissions has increased (table-1). This shows that the rate of increase in elderly patients has outpaced the general rate of patient increase. If the current trend continues, the need for establishing a geriatric department in tertiary care military hospitals will become even more severe.

Our literature search revealed that previous research has focused on healthcare professionals other than physicians such as nurses[10]. It also revealed a dearth of information with regard to the general expectations of geriatric patients from physicians generally and especially in Pakistan despite a sizeable population being 65 years and above. Therefore, both medical and mental health of geriatric patients runs the risk of under-treatment and under recognition[11]. It becomes increasingly necessary to take firm steps in the direction of specialized geriatric care. As a first step, this study was designed to pursue the feasibility of establishing a geriatric department in tertiary care military hospitals.

MATERIAL AND METHODS

This cross-sectional descriptive study was conducted in tertiary care military hospitals of Rawalpindi i.e. CMH and MH Rawalpindi from 1st January 2013 to 30th June 2013.

Table-1: Workload of CMH Rawalpindi.

Description	2010	2011	2012
Total admissions (CMH)	15534	15277	15768
Total elderly admissions	6971	7705	8406
Percentage of elderly patients admissions	44.87%	50.43%	53.31%
Total outdoor visits	611817	625889	640909
Elderly patients outdoor	160490	166535	171940
Percentage of outdoor	26.23%	26.60%	26.82%

During the study period, an opinion survey through a questionnaire / personal visit was conducted to obtain the views of senior administrators and specialists on geriatric health problems and their management facilities in various military hospitals. Seventy administrators were approached out of which forty nine (70%) responded to questionnaire. Seventy five of 100 consultants working in various specialties took part in the study. All the participants were included through non-probability purposive sampling. Data of existing workload for elderly patients in military hospitals of last 3 years was collected from hospital statistic offices and the medical directorate. Since the data organized was not

personal in nature therefore no absolute confidentiality was observed. However, names of administrators / specialist and patients interviewed were not documented.

Data had been analyzed using Statistical Package for the Social Sciences (SPSS-16). Descriptive statistics were used to describe the results.

RESULTS

Forty six (93.8%) of medical administrator and 75 (100%) of consultants held the view that the workload of elderly patients is increasing day by day. Keeping in view the increasing frequency of geriatric health problems of elderly people, majority of administrators, consultants and patients were in favor of establishment of separate entry and waiting area in OPDs for elderly patients.

Thirty nine (80%) of medical administrators and 52 (69%) of clinicians, as shown in fig-1, have termed the geriatric patients facilitate, unsuitable as in existing facilities no consideration was given to geriatric population which require special care. This response clearly indicates that there is enough room for improvement in existing facilities for geriatric patients.

63 (84%) of Clinicians were in strong favor of the idea that geriatric medicine should be treated as a separate specialty in the Army and physicians must be trained inland as well as from abroad. Fig-1. Because of increasing number of elderly population, poorly trained paramedical staff, ill suited health care facilities for geriatric patients and lack of specialized geriatric health care, it is strongly recommended by 60 (86%) of administrators, 62 (82%) of consultants and 100 (100%) of patients, that a separate geriatric department should be established at every military hospital.

DISCUSSION

The age at which individuals considered "elderly" or "geriatric" varies from study to study. However, by convention, age 65 usually taken as the minimum age, which we also followed[12]. There is a significant rise in elderly patients visiting hospitals worldwide. According to National Center for Health Statistics (NCHS) data brief; 511 per 1000 patients of 65 years and more age are visiting emergency department in USA and 36.5% of emergency department visits result in hospital admission[13].

There is no exclusive setup present in Pakistan until now, but there is upcoming

Figure-1: Opinion about the need for geriatric medicine specialty.

awareness in this regard. A study conducted by Qidwai and his colleagues concludes that there is need to carry out training program and courses for healthcare providers to deal proficiently with common health problems of geriatric population[14].

In our study, most of the participants were below the age of 70 owing to a relatively lower life expectancy in our region. We can explain this on basis of the limited access of the elderly population to the specialized geriatric healthcare services and probably poor risk factor control of chronic diseases[3].

A previous study from Pakistan has found a statistically significant association between depression in the elderly and satisfaction with health care services[15]. With advancing age, incidence of chronic diseases and psychological ailments increases and age specific healthcare becomes essential[16]. There is a need to address these special psychological problems of elderly and to make the overall experience better at the hospitals. There is also need to raise the satisfaction level and pre-empt the evil of depression. The study conducted at Aga Khan University Hospital Karachi concludes that there is a need to establish a system that recognizes the value, and understands the unique nature of problems of geriatric patients[3]. Geriatric specialists understand the process through which elderly individuals perceive, evaluate the symptoms and are able to respond more appropriately to the needs of older patients.

In past number of senior citizens reporting at the services hospitals were negligible. These were the old soldiers, who retired after spending prime of their life in army. The administrator and health professional also did not face many problems to entertain a few elderly, in 1983 government entitled the parents of serving soldiers to free treatment in service hospitals without enhancing the required facilities. The hospitals were not staffed and equipped to care for geriatric population.

Increasing number of pensioners, entitlement of parents and multiple chronic ailments of elderly has put extra load on already over stretched resources of the hospitals. Nursing and paramedical staff is not adequately trained to look after the specific requirements of geriatric patients. Elderly patients are treated in the same way regardless of the fact that they require tender care. More medical supplies are needed and local purchase funds are diverted to purchase costly medicines required by elderly patients. More problems regarding the treatment of elderly patients in the form of longer stay in the hospital, lack of facilities in wards and OPD's long waiting lines, lack of funds and lack of personal attention to patients came to light from the survey conducted in the study. The geriatric medicine is recognized as a separate specialty in the world but in Army Medical Corps no doctor is specifically trained in the field of geriatric medicine. Nursing staff in Pakistan is not well versed with the techniques, skill, expertise required to nurse the elderly sick.

Globally many centers of health for elderly are established. Four such state of the art geriatric care centers are established at Toronto, Canada; with 805 long term beds and serving fifteen thousand individuals on daily basis[17].

The patients and consultants both agreed that geriatric departments are the need of the hour. This bilateral agreement between the physicians and the patients has been termed "concordance"[18-19].

Keeping in view all the available information and data regarding the workload of elderly patients and problems faced by the patients as well as the health care providers, some practical steps have to be taken to overcome the shortcoming and to affect visible improvement. It is strongly felt that a separate and parallel health care system for the geriatric patients is the need of hour.

CONCLUSION

Because of the yearly increasing population of ex-servicemen and entitlement of parents of soldiers, there has been a continuously rise in number of elderly population dependent on military hospitals. In this process medical care of serving people suffered to some extent because of extra workload on hospitals. Lack of geriatric field specialty, ill suited health care facilities for elderly people and with subsequent rise in number of these people, it is strongly indicated that steps should be taken in regard to this issue. The patients, physicians and health administrators agreed that there is crucial need to have a separate geriatric department at every hospital for elderly to provide them better healthcare. It will provide better medical care to the geriatric patients and at the same time health care of serving personnel will improve.

CONFLICT OF INTEREST

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

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FREQUENCY OF FALCIPARUM AND VIVAX MALARIA IN ACUTE FEBRILE ILLNESS AND COMPARISON OF HAEMOTOLOGICAL PARAMETERS BETWEEN FALCIPARUM AND VIVAX MALARIA

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ABSTRACT

Objective: To determine the frequency of *vivax* and *falciparum* malaria in acute febrile illness and to compare the frequency of hematological parameters between falciparum and vivax malaria as a single centre study.

Study Design: Descriptive case series.

Place and Duration of Study: The study was carried out at a tertiary care hospital (combined Military Hospital Multan) from Oct 2012 to Jun 2013.

Material and Methods: Six hundred indoor patients of acute febrile illness who were fulfilling the inclusion criteria as fever of >100 F for less than two weeks duration but without any localizing signs and symptoms were enrolled in the study. Malaria was diagnosed by thick and thin films stained with leishman,s stain and also confirmed by ICT malaria kit methods. Anemia was defined as Hb <12 g/dl in males and less than 11 g/dl in females, lymphopenia was defined as absolute lymphocyte count < $1.5x10^9$ /L and thrombocytopenia was defined as platelet count < $150x10^9$/L. All the data was collected and entered in SPSS version 16 and results obtained.

Results: Male patients were 74.7% and 23.3% patients were female. The mean age (±SD) of patients was 31.34 (±11.11) years, and range was 12 to 70 years. In this study 41 % patients were diagnosed as *Vivax* Malaria, and 15.5 % as *Falciparum* Malaria. Anemia was found in 34.3% patients of *Vivax* malaria as compared to 53.8% of *Falciparum* malaria, 36.7% patients of *vivax* malaria were having lymphopenia as compared to 53.8% patients of *Falciparum* malaria and thrombocytopenia was seen in 70.6% patients of *Vivax* malaria and 89.2% patients of *Falciparum* malaria. Mean Hb (±SD) in Vivax malaria was 11.89 g/dl (±1.19), while in *Falciparum* malaria mean Hb (±SD) was 11.02 g/dl (± 1.47). Mean lymphocyte count (± SD) in *vivax* malaria was 1.608 (±0.479), while in *falciparum* malaria mean lymphocyte count (± SD) was 1.2 x 10^9/L (± 0.595). Mean platelet count (± SD) in *Vivax* malaria was 114.79 (±53.35), while in *falciparum* malaria mean platelet count (± SD) was 74.9 (± 41.74). *p*-value as calculated by Chi square test was less than 0.005 in all parameters.

Conclusion: Hematological alterations including thrombocytopenia, and anemia which use to be common in *falciparum* malaria are now almost equally common in *vivax* malaria thus *Vivax* malaria once considered benign malaria, is not benign.

Keywords: Acute febrile illness, Anemia, Falciparum malaria, Hematological parameters, Lymphopenia, Thrombocytopenia,*Vivax* malaria.

INTRODUCTION

Malaria is a major health problem. Each year, there are more than 225 million cases of malaria, killing around 781,000 people each year according to the World Health Organization's (WHO) 2010 World Malaria Report.

Local prevalence of individual diseases influences the differential diagnoses of a clinical syndrome of acute febrile illness (AFI). Malaria

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is the main differential diagnosis of AFI in the tropics mainly in malaria season, in various studies, 12 to 17% cases were reported to be due to malaria[1,2], out of which *Plasmodium falciparum* was the first cause of malaria (47.3%) followed by *Plasmodium vivax* nomenclature (23%).

Alteration of hematological parameters like thrombocytopenia, anaemia, and lymphopenia have been observed in patients with malaria[1,3-4]. Thrombocytopenia is early sign of infection which is variable in different studies and was 70 % in vivax malaria in a study conducted at Gadab, Pakistan[3], and was 49% in *falciparum* malaria in another study conducted in Western Kenya[4]. Anemia was observed in 54% cases of *Falciparum* malaria and in 29.5% cases of *Vivax* malaria, lymphopenia was present in 36%, and 15% in *Vivax* and *Falciparum* malaria respectively[5].

A prompt diagnosis of malaria is the key for successful treatment. Clinical presentation is diverse thus clinical diagnosis[6] is unreliable. It is difficult to distinguish it from dengue fever, enteric fever or even leptospirosis[7] especially in tropics. The clinical picture is wide spectrum ranging from simple malaise to life threatening disseminated intra vascular clotting or cerebral malaria[8].

Microscopic diagnosis, the established gold standard method for laboratory confirmation of malaria requires technical expertise is and repeated smear examinations[9]. It is a valuable technique when performed correctly but unreliable when poorly executed or if expertise not available for smear examination. ICT malaria is reliable, have excellent negative predictive value[10] but expensive as compared to microscopy and usually not available in the field.

Falciparum and *Vivax* malaria are major health problems in Pakistan. *Vivax* malaria once considered to be benign is now emerging as severe malaria causing many complications like cerebral malaria, acute respiratory distress syndrome and many others[11].

To explore how much is the burden of *Falciparum* and *Vivax* malaria in AFI and to compare hematological alterations in *Vivax* and Falciparum malaria is the purpose of this study, so that this information could be utilized in field areas where expertise are usually not available for microscopic diagnosis and the treatment may be given on the basis of clinical findings with supportive hematological alterations.

MATERIAL AND METHODS

The descriptive case series was carried out at Combined Military Hospital Multan from Oct 2012 to Jun 2013. The study was conducted in non-malarial season to detect the presence of malaria cases in AFI all over the year instead of malaria season only. Total of 600 patients were included in the study using WHO formula of sample size calculation with confidance level 95% and power of test 90, P1=70 3, and P2=49 4. Consecutive sampling technique was used for selection of patients. Patients were enrolled after obtaining Permission from concerned authorities and Hospital Ethical Committee. AFI was defined as Patients having fever of > 100 F with less than two weeks duration but without any localizing sign/symptoms like productive cough, dysuria, neck stiffness, pain abdomen, splenomegaly, hepatomegaly, or any other finding pertinent to any system. All admitted patients of both gender above the age of 12 years (adults) with AFI were recruited in the study after necessary history, examination and consent from the patient. Patients who have taken anti malarial in last 14 days or having mix malaria or any localizing sign were excluded from the study. Haemotological parameters in the the study were defined as Anemia; defined as Hb less than 12 g/dl in males and less than 11 g/dl in females, Lymphopenia was defined as absolute lymphocyte count less than 1.5 x 10 9 /L and Thrombocytopenia was defined as platelet count less than 150 x 10 9 /L.

Blood complete picture by SYSMEX KX-21 Haematological analyzer, Liver function tests, Urea, Creatinine, and electrolytes , Blood Culture and sensitivity, Typhidot IgM, Urine for routine Examination, Urine for culture and sensitivity and Chest X-ray were done on admission, Malarial Parasite slides were examined on admission and carried out 8 hourly for 3 days if it was negative initially, simultaneously ICT malaria was also done to negate or confirm the diagnosis of malaria. Dengue virus serology was done on day 5 of fever. The patient were given Tab. Paracetamol 500 mg along with supportive treatment until investigations completed. The follow up of the patients carried out until diagnosis. Diagnosis of malaria was made by thick and thin films prepared by Leishman,s stain and species were identified as *plasmodium vivax* or *falciparum*. The diagnosis was also confirmed by Immune chromatographic test for malaria. Patients were given appropriate anti-malarial treatment and monitored as required including MT index in falciparum malaria. Then data was collected including hematological parameters at the time of diagnosis and entered in the Performa.

Data Analysis

The data was coded and entered using software SPSS v-16. Descriptive statistics were calculated for both quantitative and qualitative variables. For quantitative variables like age, and hematological parameters Mean ± SD was calculated. For qualitative variables like gender and *Vivax* and *Falciparum* malaria, anemia, lymphopenia, and thrombocytopenia frequency and percentages were calculated. Chi square test was used to compare hematological parameters between *Vivax* and *Falciparum* malaria. *p*-value less than 0.05 was considered significant.

Table-1: Hematological parameters in *vivax* and *falciparum* malaria.

Malaria		Hb g/dl	Lymphocyte count X 10 9 /L	Platelet count X 10 9 /L
Vivax	Mean	11.889	1.608	114.79
	Std. Deviation	1.1933	0.479	53.352
	Range	7.8-14.3	0.5-2.3	39-290
Falciparum	Mean	11.021	1.204	74.29
	Std. Deviation	1.466	0.595	41.740
	Range	7.9-13.2	0.3-2.1	25-176

Table -2: Comparison of haemotological parameters between *vivax* and *falciparum* malaria.

Haematological parameter		Malaria		Total	*p*-value
		Vivax	*falciparum*		
Anaemia	Yes	85	50	135	0.001
	No	163	43	206	
	Total	248	93	341	
Thrombocytopenia	Yes	175	83	258	< 0.001
	No	73	10	83	
	Total	248	93	341	
Lymphopenia	Yes	91	50	141	0.004
	No	157	43	200	
	Total	248	93	341	

RESULTS

The range of age was from 12 to 70 years and Mean age of study population was 31.34 with standard deviation of 11.11, maximum number of patients were in 21-30 year age

group. Out of 600 patients 448 (74.67%) were male and 152 (25.33%) were female.

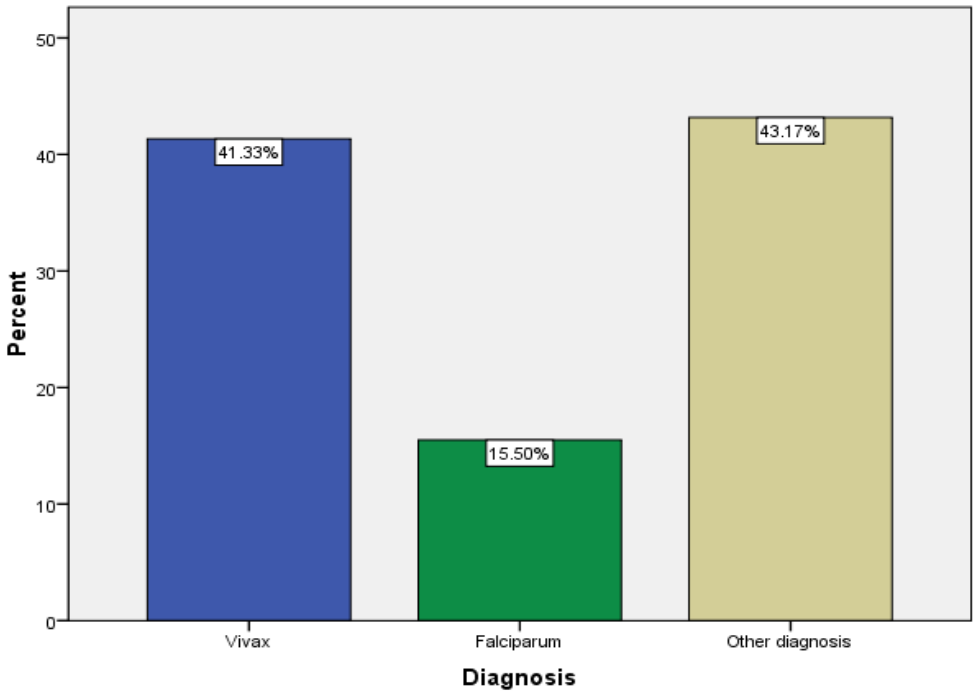
In the study 248 (41.3%) patients were diagnosed as *Vivax* and 93 (15.5%) patients as *Falciparum* Malaria, the cumulative percentage remained 56.8 % as shown in graph-1.

The hematological parameters including Hb, lymphocyte count and Platelet count were entered in the data sheet and mean, standard deviation calculated for both *Vivax* and *Falciparum* Malaria. This is shown in table-1. Anemia was found in 34% patients of *Vivax* Malaria while it was 53.8 % in patients of

DISCUSSION

Local prevalence of individual diseases influences the differential diagnoses of a clinical syndrome of AFI. AFI is a challenge in patients without localizing signs, the differential diagnosis includes Malaria, Dengue fever, Enteric Fever, Leptospirosis[8], and many cases remains undiagnosed.

There are certain hematological changes in malaria which have been observed in different studies like thrombocytopenia[12] anemia[13], and lymphopenia[14].



Graph- 1: Frequency of *vivax* and *falciparum* malaria.

Falciparum malaria. Lymphopenia was found in 36.7% patients of *Vivax* Malaria while it was 53.8 % in patients of *Falciparum* malaria. Thrombocytopenia was found in 70.6% patients of *Vivax* Malaria, and in 89.2% patients of *Falciparum* Malaria. Anemia, thrombocytopenia, Lymphopenia were compared between *Vivax* and *Falciparum* malaria by applying Chi-Square Test, *p*-value was less than 0.005 in all the haematological parameters, as shown in table-2.

Vivax malaria in this study population remained 41.3%, and *Falciparum* malaria was diagnosed in 15.5% patients, the combined percentage of malaria patients was 56.8%. This is in contradiction to study conducted by "Chrispal A et al" in India, where frequency of malaria in AFI was 17.1%[1], while it is almost similar to study conducted by Animut A et al. in North-west Ethiopia where 62% patients were diagnosed as malaria. But in contradiction

to my study *Plasmodium Falciparum* was the first cause of malaria (47.3%) followed by P. *vivax* (23%) in Ethiopia[2].

In the study most of the patients were male (74.67%) because most of the female patients were already treated as outdoor cases with anti-malarial (thus excluded from study) and also there are less number of females reporting to military hospital because more than 50% of troops are living alone in military units and families live at there home stations.

Thrombocytopenia was the main hematological alteration found in the study population, in *Vivax* Malaria, 70.6% patients were having thrombocytopenia while in *Falciparum* Malaria it was found in 89.2% patients. *p*-value was <.001, thus it was confirmed that Vivax malaria is also causing thrombocytopenia similar to *Falciparum* malaria. Thrombocytopenia is the most common laboratory finding in many studies conducted at various places[12] The results of the study are comparative to the study conducted by "Abro et al" at Rashid Hospital Dubai UAE[13] where thrombocytopenia was found in 91% patients of P. *falciparum* and 84.62 % patients of *p. Vivax*.

Anaemia was found in 34% patients of *Vivax* Malaria in comparison to 53.8% patients of *falciparum* malaria. These findings are comparative to the study conducted by Ranjini CY et al at Bangalore in which 34% patients of Vivax Malaria were having anemia in comparison to 50% patients of *Falciparum* malaria[15].

In the study lymphopenia was observed in 36.7% patients of *p.* vivax while 53.8% patients of *p. falciparum* were having Lymphopenia, these results are in contradiction to the study conducted by "Abro et al" where lymphopenia was observed in 36% in P. *vivax* as compared to 15% in P. *falciparum* cases[5]. Lymphopenia was the consistent finding in many cases of *Falciparum* malaria as depicted by the results, there are very few studies to correlate this finding, further studies are required to support it.

CONCLUSION

Malaria should be the main differential diagnosis in patients presenting with acute febrile illness without localizing signs and symptoms even in non-malaria season. Hematological alterations including thrombocytopenia, and anemia which use to be common in *falciparum* malaria are now almost equally common in *vivax* malaria thus *Vivax* malaria once considered benign malaria, is not benign now. Hematological alterations if present in the patient of Acute Febrile Illness then they will support the presumptive diagnosis of malaria and warrants intense search for not only *plasmodium falciparum* but also *plasmodium vivax* and to consider empirical treatment for malaria in Malaria Endemic areas especially in the field where expertise for diagnosis of malaria by slide method is not available.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

AUTHORS CONTRIBUTION

Muhammad Tanveer, Umair Ahmed Siddiqui and Ejaz Ahmed, data collection, analysis and data interpretation.

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CHANGING TRENDS IN SUSCEPTIBILITY PATTERN OF METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS TO ROUTINELY USED ANTIBIOTICS: A POSSIBLE THREAT

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ABSTRACT

Objective: To assess the in vitro antimicrobial susceptibility pattern of the Methicillin resistant Staphylococcus aureus (MRSA) isolated from routine clinical specimens.

Study Design: Cross-sectional study.

Place and Duration of Study: The study was conducted over a period of 2 years (June 2011 – June 2013) in the Department of Microbiology, Army Medical College, National University of Science and Technology, Islamabad, Pakistan.

Material and Methods: A total of 149 MRSA isolates were obtained using standard microbiological techniques from various clinical specimens. In vitro susceptibility testing against routinely used antimicrobials was performed by Modified Kirby-Baeur disc diffusion technique as per Clinical and Laboratory Standards Institute (CLSI) guidelines 2013. The isolates were tested for methicillin resistance by using oxacillin disc by disc diffusion method and confirmed by agar screen test (oxacillin 6 µgm/ml).

Results: We obtained 114, 25 and 10 isolates from pus, blood and tips respectively. MRSA was found to be highly susceptible to vancomycin 149 (100%), linezolid 144 (96.7%), minocycline 143 (96.3%) and showed moderate susceptibility to rifampicin 111 (74.7%), fusidic acid 99 (66.7%) and chloramphenicol 93 (62.6%). Low in vitro susceptibility was associated with clindamycin 82 (54.7%), tetracycline 79 (53.0%), ciprofloxacin 44 (29.4%), cotrimoxazole 33 (23.6%), gentamicin 34 (22.5%) and erythromycin 26 (17.6%). The susceptibility rates of linezolid and chloramphenicol for MRSA were found to be declining over a period of 2-3 years when compared with previous available data. The data was analyzed using Statistical Package for Social Sciences (SPSS) 19. Frequency of susceptibility for each antimicrobial agent was determined by calculating the percentages.

Conclusion: MRSA is rapidly developing resistance against routinely used antimicrobials especially linezolid and chloramphenicol. Special surveillance to avoid injudicious used of these antimicrobials is the need of hour.

Keywords: Antimicrobial susceptibility, Methicillin, Staphylococcus aureus.

INTRODUCTION

Staphylococcus aureus (S. aureus) are Gram positive cocci. Clinical findings in patients infected with S.aureus range from common skin infections (furunculosis, impetigo, carbuncle) to infections of prosthetic implants and surgical wounds and necrotizing pneumonia. Furthermore, it is one of the leading cause of blood stream infections. Initially, S. aureus was being treated with the 'wonder drug' Penicillin. However, it quickly became resistant due to the production of a plasmid encoded enzyme, pencillinase[1].

Shortly after the introduction of methicillin in the clinical practice[2], the bacterium evolved

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and became resistant to this new drug as well. This earned it the name of methicillin-resistant Staphylococcus aureus (MRSA). The first injudicious case of MRSA was reported in 1961 in United Kingdom[3]. Methicillin targeted penicillin binding protein (PBP) of S. aureus which was responsible for the construction and maintenance of the bacterial cell wall. However, the breakthrough this discovery had brought was short-lived as the bacteria evolved yet again, forming a new protein PBP2a, encoded by the mecA gene which replaced PBP[1]. Thus, methicillin could no longer bind to its active site making it ineffective against S.aureus and also to all other beta lactam antimicrobials[4]. Moreover the mecA gene complex also contains insertion sites for non-β-lactam drugs like ciprofloxacin, cotrimoxazole, erythromycin, clindamycin and gentamicin. As a result MRSA has developed resistance against them as well[5-7].

Over the years, community acquired strains of MRSA have flourished. A study in Chicago showed a 25% increase in colonization of MRSA among children[6]. The emergence of MRSA from patients having current or recent hospitalization, receiving dialysis, or residing in long term care facility is called Hospital associated methicillin resistant Staphylococcus aureus (HA-MRSA). Outbreaks of HA-MRSA were observed around the world including Austria, Argentina, South Africa, Italy[8].

The threat posed by MRSA to the community is apparent. There is not a lot of data available to show the prevalence of MRSA in Pakistan even though local research papers claim a figure of 35%[9,10]. Keeping clinicians and microbiologists aspired of any change in the susceptibility pattern of this lethal pathogen is the need of hour. Therefore, we conducted a study to compare the susceptibility pattern of MRSA isolated from our clinical setting to the routinely used antimicrobial agents.

MATERIAL AND METHODS

This cross sectional study was carried out in the Department of Microbiology, Army Medical College Rawalpindi, National University of Science and Technology Islamabad, Pakistan. The department is associated with Military Hospital Rawalpindi, a 1300 bedded tertiary care facility. MRSA isolated over a period of 2 years (June 2011 – June 2013) from the samples of pus, blood, urine and tips (central venous line tips, endotracheal tube tips and urine catheter tips) were included in this study. Although urine samples were also included but we could not recover any isolates from them over the time course of our study. We obtained a total of 149 MRSA isolates from all the samples. The data was collected using purposive sampling technique.

Samples were cultured on blood and MacConkey agar and incubated at 35±2°C for up to 48 hours. Grey white (mostly hemolytic) colonies on blood agar, showing Gram positive cocci in clusters on Gram staining and giving a positive catalase test were identified as Staphylococci. A positive tube coagulase test confirmed the isolates as S. aureus. In accordance with Clinical and Laboratory Standards Institute (CLSI) guidelines (2013), methicillin resistance was determined using a 30µg cefoxitin disc on Mueller Hinton Agar plate by Modified Kirby-Bauer Disc diffusion technique[4]. The isolates showing zone of inhibition of ≤ 22mm around the disc margins after overnight incubation at 35±2°C were taken as resistant to cefoxitin and therefore, marked as MRSA.

In accordance with CLSI 2013 guidelines, MIC was done using E strips to determine vancomycin susceptibility. Susceptibility to routinely used antimicrobial agents like linezolid (30µg), minocycline (30µg), rifampicin (5µg), fusidic acid (10µg), chloramphenicol (30µg), clindamycin (2µg), tetracycline (30µg), ciprofloxacin (5µg), cotrimoxazole (25µg), gentamicin (10µg) and erythromycin (15µg) (Oxoid) was checked for all the isolated MRSA

strains using modified Kirby-Bauer disc diffusion technique as per CLSI 2013 guidelines.

The data was analyzed using Statistical Package for Social Sciences (SPSS) 19. Frequency and percentage susceptibility for each antimicrobial agent was determined.

RESULTS

A total of 149 MRSA were isolated during the study period which included 114 (76.5%) isolates from pus, 25 (16.8%) from blood and 10 (6.71%) from tips. The susceptibility pattern of MRSA checked against 14 routinely used antimicrobials showed high susceptibility rates to vancomycin 149 (100%), linezolid 144 (96.7%), minocycline 143 (96.3%) and moderate susceptibility to rifampicin 111 (74.7%), fusidic acid 99 (66.7%) and chloramphenicol 93 (62.6%), Low in vitro susceptibility was seen with clindamycin 82 (54.7%), tetracycline 79 (53.0%), ciprofloxacin 44 (29.4%), cotrimoxazole 35 (23.6%), gentamicin 34 (22.5%) and erythromycin 26 (17.6%). (Fig-1).

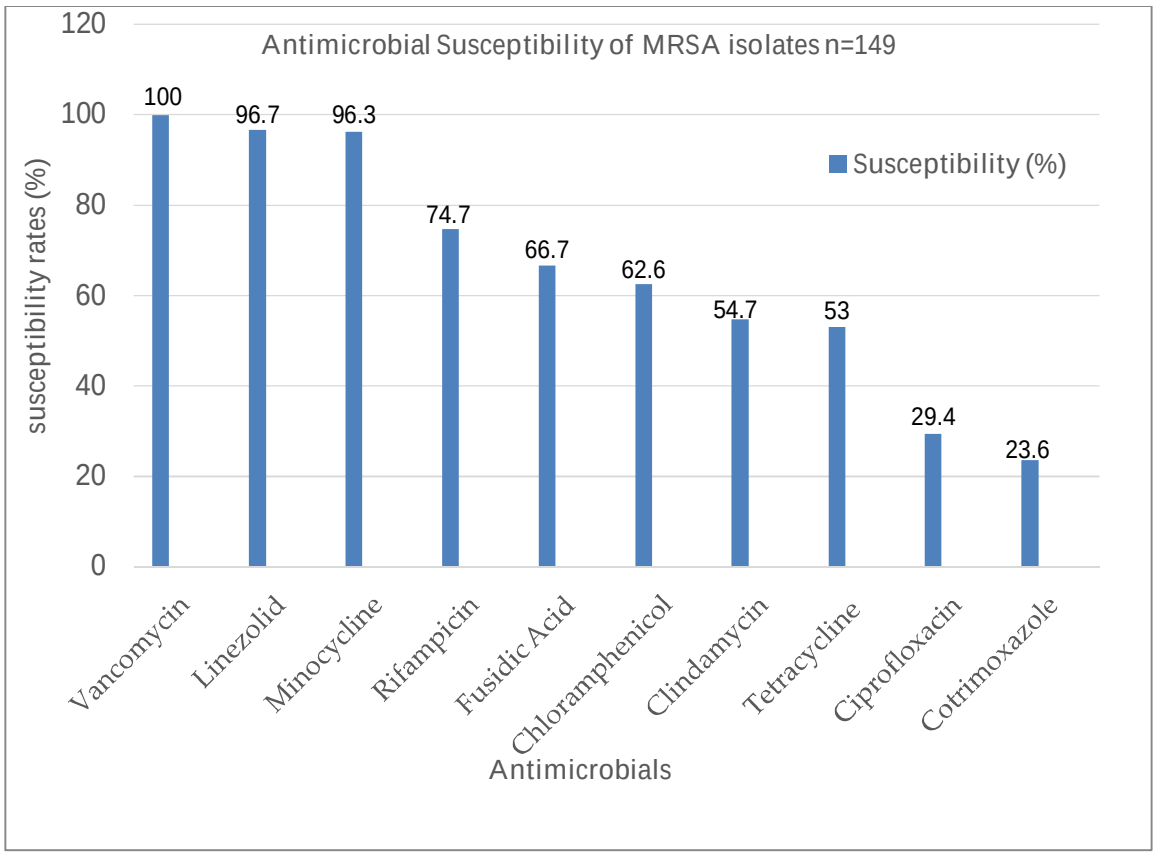

Figure-1: Susceptibility of MRSA to routinely used antimicrobials.

DISCUSSION

Growing antimicrobial resistance of bacteria is of paramount significance in the 21st century. This emerging problem has taken the world by storm since resistant strains imply increased morbidity, mortality, healthcare costs and hospital stays. MRSA is one such pathogen[11]. Various studies over the past 18 years show trends in the antimicrobial profile of MRSA with resistance developing to most drugs[9,12].

None of our isolates showed any resistance against vancomycin which is consistent with similar studies carried out in other parts of the country such as five government hospitals of Rawalpindi[13], making it the drug of choice in our set up. Similarly, MRSA strains susceptible

to vancomycin were obtained in Nigeria[14]. However, the pathogen is evolving resistance against vancomycin and other new antimicrobials in some parts of the world like Tehran[3] and Ethiopia[15]. However, resistance is still low and it continues to be used as a potent antibicrobial agent in the USA[16] and Europe[17].

In our study, 96.7% of the bacteria were found to be sensitive to linezolid, a much cheaper drug available as oral and intravenous preparations. A similar study carried out in the same department between January to December 2009 reported 100% sensitivity to linezolid[18]. This is a matter of immediate concern since resistance to the antimicrobial has developed in our very own setup over a span of about 2-3 years. This confers with a similar study in Karachi where 19 out of 20 MRSA strains were found to be resistant to linezolid with 15 of them possibly carrying the cfr gene. This gene mediates resistance to not only linezolid but also to phenicols, lincosamides, pleuromutilins, and streptogramin A and macrolides[3]. Although PCR was not carried out in our study, none of the MRSA strains showed resistance to linezolid, chloramphenicol, clindamycin and erythromycin together, suggesting that the gene might not be present in our clinical set up yet.

Minocycline is a broad spectrum tetracycline. Its IV formulation was removed from the US market in 2005 but reintroduced in 2009[19]. This is probably attributed to the high sensitivity of this drug to MRSA, with 99.5% sensitivity reported in USA[19,20]. Local susceptibility patterns show somewhat similar results[13]. However our susceptibility rate of 96.2% is a slightly higher than that determined by Kaleem et al (94%) from the same department[18].

Our MRSA strains showed 74.7% susceptibility to rifampicin as compared to only 50% in a study carried out in Aga Khan University, Karachi[21], making this drug a potential therapeutic option in Northern Pakistan. This claim is further supported by Parveen et al who reported 89.87% susceptibility to the drug in the major government hospitals of Rawalpindi[13]. It should not be forgotten that rifampicin is also used in the treatment of tuberculosis, a disease which is highly prevalent in Pakistan. Therefore, routine treatment with rifampicin should be kept at a minimum.

Fusidic acid has been used for both topical and systemic treatment of staphylococcal disease since the 1960s. However, MRSA strains harboring fusA, fusB and fusC genes have been reported that confer resistance to fusidic acid[22]. Susceptibility rates of 66.7% to this drug in our study and somewhat similar rates shown by Kaleem et al still make it a good option for topical usage in our set up[18].

Around 62.6% of our MRSA isolates are susceptible to chloramphenicol. A similar susceptibility profile was reported by Hussain et al in the Kohat District[8]. A much higher susceptibility rate of 93% was reported by Kaleem et al in 2010 from the same department, which shows that the susceptibility rate has decreased[18]. A study in South India reported a sensitivity rates of 85.5%[23].

We observed high resistance rates to gentamicin, erythromycin, cotrimoxazole, tetracycline and ciprofloxacin, making them unsuitable as therapeutic options in our setup today. Keeping in mind that not too long ago these antimicrobials were in the limelight for the treatment of MRSA, we have to use the currently available options as judiciously as possible.

CONCLUSION

MRSA is rapidly developing resistance against routinely used antimicrobials including linezolid and chloramphenicol. Special surveillance to avoid injudicious use of these antimicrobials is the need of hour.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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THE FREQUENCY OF HEPATITIS C IN THE PATIENTS OF TYPE II DIABETES MELLITUS WITH GOOD GLYCEMIC CONTROL VERSUS POOR GLYCEMIC CONTROL

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ABSTRACT

Objective: To determine the frequency of hepatitis C in the patients of type II diabetes mellitus with Good glycemic control versus Poor glycemic control.

Study Design: A cross sectional observational study.

Place and Duration of Study: Departfment of Medicine, Military Hospital, Rawalpindi, from 20-02-2012 to 19-08-2012.

Material and Methods: A total of 175 cases of Type II diabetes were included in thestudy, They were advised anti HCV antibodies(anti hepatitis C antibodies) by 3rd generation ELISA and Glycosylated-hemoglobin (HBA1C).On basis of HBA1C they were divided in two groups, Poorly control diabetes HBA1C >7% and good control diabetes HBA1C<7%.Data was analyzed using SPSS Version 13.0.Mean and standard deviation was calculated for quantitative variables like age .Frequency and percentages were calculated for qualitative variables like gender and HCV status. Chi-square test was applied to determine the differences in proportion of anti-HCV antibodies in two groups. *p*-value <0.05 was considered as significant.

Results: Hepatitis C infection was found in 26 cases (14.9%) of type II diabetic patients. Regarding glycemic control, 37 patients (21.1%) were having good glycemic control while remaining 138 patients (78.9%) belonged to poor glycemic control. HCV infection was observed in 5 (13.5%) patients of good glycemic control group and in 21 (15.5%) patients of poor glycemic control group .The analysis by chi-square test shows that there was no significant(p-value >0.7958) association between glycemic control and HCV infection.

Conclusion: The frequency of HCV infection in type II diabetic patients is 14.9% so that risk of getting HCV infection is increased in diabetics but it is not associated with glycemic control.

Keywords: Glycemic control, Hepatitis C, HbA1C, Type II diabetes.

INTRODUCTION

Type II diabetes mellitus (Type II DM) and Hepatitis C (HCV) infection are among the most common diseases involving around 170 and 130 million people worldwide respectively [1]. Pakistan has intermediate hepatitis C prevalence, 10 million people in Pakistan are suffering from HCV infection and prevalence rate of HCV is 6% in Pakistan[2]. Approximately 70% cases of chronic liver disease and 50% cases of Hepatocellular carcinoma in the countryare due to chronic HCV infection[2]. HCV infection has hepatic and systemic manifestations such as insulin resistance, essential mixed cryoglobulinemia, glomerulonephritis, porphyria cutanea- tarda and benign monoclonalgammopathy[2,3].

Diabetes is a considerable public health issue in the country. Pakistan has 7.1 million patients of diabetes which will be rise to 13.8 million in next decade[4]. The hypothesis that HCV may associated with type II diabetes mellitus was first presented by Allison in 1999[4,5] since then studies assessing the connection between HCV and type II DM have been performed, but these studies have provided unclear data, with some studies supporting that type II DM is increased the risk of HCV infection compared to non-

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diabetic controls[5,6], and some studies showed no association between HCV infection and type II DM[7,8]. Moreover, the association of HCV infection with diabetes-related complications has not yet been clarified[5].

This study was design to determine the risk of diabetic patients to acquired HCV infection and question the answer wither well controlled DM HbA1C (Glycosylated-hemoglobin) less than 7 or poorly controlled DM, HBA1C more than 7 have effects on infectivity of HCV.

MATERIAL AND METHODS

This cross sectional study was performed in Department of General Medicine, Military Hospital, Rawalpindi from 20-02-2012 to 19-08-2012.Approval from hospital ethical committee was obtained. Written consent was taken from patients. In the study we included diagnosed/treated cases of type II diabetes for less than 15 years , from either sex and there were between 20 to 60 years of age. Intravenous drug abuser, patient with past history of blood transfusion , hemodialysis or organ transplant , body tattooing, health care worker, past history of surgery, patient of type II DM on insulin therapy, and patent with already diagnosed hepatitis C were excluded from study. Sample size was 175 (Level of significance (α) = 5%, Anti Power of test (1-β) = 80%, Anticipated Population Proportion (P1) = 96%9, Anticipated Population Proportion (P2) = 73%9). Sampling technique was non probability consecutive sampling. Type II Diabetic patients fulfilling the inclusion and exclusion criteria went for detailed history and examination and advised Anti HCV antibodies by 3rd generation ELISA, blood sugar and HBA1C. The samples were sent to AFIP. The results were verified by a pathologist. Diagnosed patients of type II diabetes divided in to two groups poorly controlled Type II DM: HbA1C>7.0%, Good controlled Type II DM: HbA1C<7.0%.Hepatitis C was define by detection of anti-HCV antibodies by 3rd generation ELISA. The results were verified by a pathologist. All data was analyzed using SPSS Version 13.0.Mean and standard deviation (mean ± SD) was calculated for quantitative variables like age. Frequency and percentages were calculated for qualitative variables like gender and HCV status.Chi-square test was applied to determine the differences in proportion of anti-HCV antibodies in two groups. A *p*-value <0.05 was considered as significant.

RESULTS

In this study 175 patients of type II diabetes mellitus were included, which were further divided into two groups patients with well glycemic control and poor glycemic control on the basis of HbA1C.

As regards to age distribution, majority of the patients were middle age (41 to 60 years of age). Mean age of the patients was 54.5 ± 7.9 years.

In our study sample of 175 patients, 83 patients (47.4%) were male while 92 patients (52.6%) were female.

Hepatitis C infection was found in 26 cases (14.9%) of type II diabetic patients. Out of these 26 HCV infected cases, 16(61.5%) were male and 10 (38.5) were female.

Regarding glycemic control, 37 patients (21.1%) were having good glycemic control while remaining 138 patients (78.9%) belonged to poor glycemic control group. HCV infection was observed in 5 (13.5%) patients of good glycemic control group and in 21 (15.5%) patients of poor glycemic control group (table-1). The analysis by chi-square test shows that there was no significant (*p*-value 0.7958)

Table-1 Comparison of hepatitis C in good and poor glycemic control.

Hepatitis C virus	Good glycemic control		Poor glycemic control		*p*-value
	No	%	No.	%	
Present	05	13.5	21	15.2	0.7958
Absent	32	86.5	117	84.8	
Total	37	100.0	138	100.0	

association between glycemic control and HCV infection.

DISCUSSION

Hepatitis C is a growing public health issue, it infects 3% population world wide. HCV infection become chronic in 80% cases [10]. The intensity and rate of progression to chronic disease depends on host related and disease related factors[11].

The association between the hepatitis C and Type II DM was discovered by Allison et al in 1994 and then explored by Simo et al in 1996[12,5].

The concept that patients with type II DM have excessive parenteral exposures due to regular blood sugar monitoring increased the of risk HCV infection was rejected by Rudoni S, et al[13]. Our study indicates that patients with type II DM has increased prevalence of HCV infection 14.9% , whereas prevalence of HCV is 6 % in general papulation[2] . Our study established the presence of type II DM has a risk factor for HCV infection. In a study conducted by Momen et al prevalence rate of HCV in diabetics was 31.5% which is higher than our study[14]. Our results are in contrast to a study from Karachi Pakistan in which Qureshi et al[15] reported the frequency of HCV is 1.8% in type II DM. Another local study by Khakar et al[16] showed that prevalence of HCV infection in diabetics to be 17.27%. The reason for this difference may be increasing prevalence of HCV infection in our community or studies were performed in different district of Pakistan.

In the present study mean age was 54.5 ± 7.9, it was noted “that with increasing age chance of infected with HCV was increased” which is in consistent with past studies[17].

Our study showed hepatitis C infection rate higher in males (61.5%) than female (38.5%). This agrees with the work of Caronia et al which showed that male patients of type II DM are more likely to contact hepatitis C infections as compared to females[18].

In spite of the growing number of reports showing a link between hepatitis C infection and type II DM, the association of HCV infection with diabetes related complications has not yet been clarified. In our study HCV infection was observed in 5 (13.5%) patients of good glycemic control group and in 21 (15.5%) patients of poor glycemic control group .This showed that there was no significant association between glycemic control and HCV infection in contrast with study conducted by Chehadeh W et al[9].

The small sample size was one of the limitation of the study, therefore a study on a larger scale is required to authenticate the prevalence of HCV infection in patients of type II DM.

CONCLUSION

The frequency of HCV infection in type II diabetic patients is 14.9% so that risk of getting HCV infection is increased in diabetics but it is not associated with glycemic control.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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MAJOR LIMB AMPUTATIONS AMONG CIVILIAN POPULATION AT A CENTRAL MILITARY AMPUTEE REHABILITATION CENTER

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ABSTRACT

Objective: To determine the causes and patterns of traumatic and non-traumatic major limb amputations among civilian population attending a military amputee rehabilitation center.

Study design: Cross-sectional descriptive study.

Place and Duration of Study: The study was conducted at the amputee rehabilitation department, Armed Forces Institute of Rehabilitation Medicine (AFIRM) Rawalpindi, Pakistan from July 2007 to December 2013.

Material and Methods: Civilian patients of all age groups and gender with one or more major limb amputations due to any cause, who reported for the first time for provision of pros thesis were registered for the study after informed consent. Basic demographics including age, gender and ethnicity based on provinces and clinical data, taking account of level, side and cause of amputation were recorded. The sample was divided into two groups i.e. group-1 (age ≤ 40 years) and group-2 (age >40 years).

Results: A total of 146 patients were enrolled in the study. The age ranged between 1-80 years (mean 37±19). Majority were male (70.5%), from Punjab province (60.3%) and had a lower limb (LL) amputation (78.8%). Trauma (primarily road traffic accidents (RTA) was the most common reason for amputation (62.3%) followed by diabetes mellitus. Amputees in age group ≤ 40 years were more likely to have a traumatic amputation and an upper limb (UL) amputation while amputees in the age group > 40 years were more likely to have a non-traumatic amputation and a LL amputation. Transtibial amputation was the most common level in LL amputation while transradial amputation was most frequent level in UL amputations.

Conclusion: Trauma primarily due to RTA is the foremost cause of amputation in civilian population seeking rehabilitation services at our setup. Majority were male from Punjab province, have a LL amputations and belong to a younger age group. Transtibial amputation is the commonest level in LL amputations while transradial amputation is the commonest level in UL amputations. Amputees in younger age group are more likely to have a traumatic amputation and an UL amputation while amputees in the older age group are more likely to have a non-traumatic amputation and a LL amputation.

Keywords: Amputation level, Epidemiology, Etiology, Rehabilitation.

INTRODUCTION

Amputation surgery is one of the most ancient surgical procedures dating back to the time of Hippocrates[1]. It is the option when limb salvage is not possible or when limb is dead, non-functional or endangers patient's life. Losing a limb is a major public health concern that imparts in significant social, psychological and economic burden not only to the patient and family but to the society as well[2]. Limb amputation is practiced for punitive and therapeutic reasons including trauma, tumor, infection, peripheral vascular disease (PVD) and congenital anomalies[3]. The magnitude of these issues increases manifold when it comes to the developing countries like Pakistan where health care is the last concern in everyday life and prosthetic services are very poorly

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developed. Furthermore, the available services are either not approachable or not affordable by the masses. Disability due to amputation, in Pakistan, is a stigma and is viewed as a curse by general population. Persons with disability (PWD), especially amputation are being viewed as incomplete individuals[4].

Many pathologies that lead to limb amputation have been reported in the literature. In developed countries, PVD ranks the first; whereas trauma, infection, diabetes mellitus (DM) and malignancies are the leading causes in developing countries[5]. Most of the amputees in developed countries are older than 60 years but younger age group is reported to have amputations in developing regions[6].

This study was conducted to find outthe etiologies, patterns and presentations of major limb amputations among civilian population presenting at a military amputee rehabilitation center in Pakistan.

MATERIAL AND METHODS

It was a cross-sectional study carried out in the outdoor amputee clinic of Armed Forces Institute of Rehabilitation Medicine (AFIRM) from July 2007 to December 2013. All civilian patients of all ages and gender with one or more major limb amputations due to any cause, who reported for the provision of prostheses, were included in the study. The major limb amputation was defined as any amputation at or proximal to wrist or ankle. All patients verbally agreed to participate. The data was collected on a structured proforma. Basic demographic statistics including age, gender andethnicity based on provinces and clinical data comprising of level, side and cause of amputation were recorded. Age was divided into two groups i.e. group-1 (age ≤ 40 years) and group-2 (age >40 years) respectively. The data analysis was done using SPSS version 20. Desriptive statistics were used to describe the results. Pearson's Chi-square test was applied to study association of amputation with the age group. A *p*-value < 0.05 was considered significant.

RESULTS

A total of 146 patients were included with mean age of 37 ± 19 years (range: 1- 80 years). There were 103 (70.6%) males (mean age: 36 ± 19 years, range: 1 – 76 years) and 43 (29.4%) females (mean age: 39 ± 20 years, range: 2 – 80 years). There were 88 (60.3%) patients from Punjab, 25 (17.1%) from Khyber Pakhtunkhawa (KPK), 19 (13%) from Islamabad, 7 (4.8%) from Sindh, 3 (2%) from Balochistan, 2 (1.4%) from Gilgit and Baltistan, and one (0.7%) each from Kashmir and Afghanistan. Majority (78.8%) had a lower limb (LL) amputation.

The trauma was the leading cause of amputations (62.3%).Comparing age groups, the traumatic amputations were significantly more frequent in group-1 while non-traumatic amputations were significantlymore common in group-2 (p<0.001) table-1. Similarly, upper limb (UL)amputations were significantly more frequent in group-1 whereas LL amputations were significantly more common in group-2 (p=0.001).

Further exploring etiology, majority of the traumatic amputations (30.1%) were caused by road traffic accidents (RTA) and non-traumatic amputations by DM (24%) table-2. Regarding level of amputations;most patients (52.7%) had a transtibial amputation, followed bytransfemoral amputation (18.5%), transradial amputation (8.9%) and transhumeral amputation (3.4%) (table-3).Bulk (58.2%) of the patients had amputations on the right side.

DISCUSSION

The present study was conducted with an aim to know the demographic, etiological and geographic spectrum of civilian patients with amputation in Pakistan that consulted prosthetic services of military amputee rehabilitation setup. So far, there is no statistical data about amputations available at the governmental level. Few independent studies

have been conducted but focused only on one aspect of the disease. Razzaq et al described only military population[7] Soomro et al described only LL amputations[8] and Khan et al discussed only the hind foot amputations due to mine blast injuries[9]. We focused on the civilian population that presented with amputation of any etiology or amputation level or belonged to any region of the country.

Table-1: Showing the comparison of major age groups with primary level and etiology of amputation.

Variables	Sub variables	Age group		*p*-value
		≤ 40 Years n (%)	> 40 Years n (%)	
Primary etiology	Traumatic etiology	63 (69.2)	28 (30.8)	< 0.001
	Non-traumatic etiology	16 (29.1)	39 (70.9)	
Primary level of amputation	Upperlimb amputation	22 (71.1)	5 (28.9)	0.001
	Lower limb Amputation	54(47)	61 (53)	
Variables	Sub variables	Age group		*p*-value
		≤ 40 Years n (%)	> 40 Years n (%)	
Primary etiology	Traumatic etiology	63 (69.2)	28 (30.8)	< 0.001
	Non-traumatic etiology	16 (29.1)	39 (70.9)	
Primary level of amputation	Upperlimb amputation	22 (71.1)	5 (28.9)	0.001
	Lower limb Amputation	54(47)	61 (53)	

Table-2: Showing the etiology of amputation with which the civilian amputees of different major age groups presented to the military amputee rehabilitation setup [*IED: improvised explosive device).

Primary etiology	Secondary etiology	Frequency	Percentage
Traumatic etiology (n=91)	Road Traffic Accident	94	48.4
	Crush injury	13	14.
	Bomb blast injury	4	4.4
	Mine blast Injury	3	3.3
	Gun Shot Injury	3	3.3
	Electric shock injury	2	2.2
	IED* blast injury	1	1.1
	Other causes of trauma	21	23.1
Non-traumatic etiology (n=55)	Diabetes mellitus	35	63.3
	Congenital	8	14.5
	Gangrene	7	12.7
	Sarcoma	3	5.4
	Osteomyelitis	2	3.6

The studied population was young with a mean age of 37 ± 19 years (36 ± 19 years in males and 39 ± 20 among females). Other local studies have supported similar findings and reported a mean age of 30 ±9 years and 37 ± 16 years in the military and civilian populations respectively[7,8]. A regional study from neighboring country India, focusing on civilian amputees presenting to the central military amputee care center and enrolling 14,400 subjects found that majority were in the age bracket of 20–40 years[10]. Contrary to these reports, from the developed countries,Ebskovet al reported a mean age of 49.4 years in Danish amputees (44.8 years in males and 58.8 among females) and Rotter at al reported a mean age of 67 years in American amputees[11,12]. This difference appears to be due to strict observation of road safety measures and infrequent terrorist activities in the developed countries, due to which the younger population infrequently gets an amputation. Moreover, the average life expectancy in developed countries

is quite high as compared to the developing countries which leads to recruitment of older subjects in the selected sample.

Table-3: Showing the type of amputation with which the civilian amputees presented to the military amputee rehabilitation setup.

Primary amputation	Level of amputation	Frequency	Percentage
Lower limb amputation	Transtibial amputation	77	52.7
	Transfemoral amputation	27	18.5
	Partial foot amputation	4	2.7
	Syme's amputation	2	1.4
	Knee disarticulation	3	2
	Hip disarticulation	1	0.7
Upper limb amputation	Transradial amputation	13	8.9
	Transhumeral amputation	5	3.4
	Partial hand amputation	4	2.7
	Wrist disarticulation	1	0.7
	Shoulder disarticulation	3	21
Others	Dysmyelia	4	2.7
	Multiple amputations	2	1.4

In the present study, male accounted for more than 70% of the whole sample. The similar distributionwas reported in other local[7] and regional studies[10]. The possible explanation given by the authors were: (1) The males predominantly work in the outdoor while females primarily confine to the houses in our society and are thus less exposed to trauma (2) The bread winners in the family are mostly males, therefore,disabled males get preference for treatment over disabled females in the family.

Majority of our patients with amputation were from the Punjab province 60.2% followed by KPK 17.1%. This can be explained by two possibilities. Firstly, the Punjab is the largest populated province of the country (over 60%), secondly AFIRM is easily approachable being located in the same province. Similar trend was reported by Soomro and colleagues in their study conducted in Sindh province with over 60% sample from Karachi[8].

The reporting patients lost their limbs due to a variety of reasons. Majority had a traumatic event that eventuated in amputation. Comparing age groups, traumatic amputations were more frequent in Group-1 (age 1–40 years) while non-traumatic amputations were more common in Group-2 (age > 40 years). RTA was the leading cause in traumatic amputations (62.8%)and DM was more frequent in non-traumatic amputations (63.6%) World wide, amputation secondary to trauma makes a smaller percentage of population while non-traumatic causes such as DM and obstructive arterial disease are in the leading roles[12].The possible justification for increased number of traumatic amputees in this study is the same proposed for the younger age being more common in the study.

Regarding the levels of amputation, LL amputations were more common (78%) than UL amputations.Furthermore, older age group (Group-2) was more likely to have a LL amputation while younger age group was more likely to have an UL amputation. The most common amputation level was transtibial amputation (67% of LL amputations) followed by transfemoral a mputations (23.6%). A similar high proportionof transtibialamputation was reported by Soomro et al (72.1%) and Razzaq et al(53.8%) from Pakistan[7,8]. Narang et al also reported a higher proportion of (below-knee)

transtibial amputations (46.3%) among civilian Indian amputees with LL amputations[10]. Considering the UL amputations, transradial amputation was the most frequent level followed by transhumeral amputation. The above mentioned Indian study had found similar results. Below-elbow (transradial) amputation was the most frequent level (37.4%) followed by above-elbow (transhumeral) amputation (34.1%)[10]. Rotter et al reported a greater prevalence for transtibial (47%) and transfemoral (40%) amputations in a study from Chile[12]. Other studies carried out in Cambodia and Srilanka showed a prevalence of 63% to 73% for transtibial amputation in mine blast wounded amputees[13].

Amputation indications and patterns vary from hospital to hospital in a country and between countries to countries. This study described our experience in a military care setup but on a different set of population. Trauma and especially the RTA was the leading cause of amputation affecting a relative younger age group in this study. The government and concerned authorizes should take the meaningful preventive measures in order to prevent the avoidablecauses of causes of disabilities.The government must also set up necessary prosthetic services in the country.

There are some limitations of the current study. It was carried out in a single military rehabilitation center in upper Punjab where most civilian amputees could not be benefitted due to financial problems. A multicenter study, from different regions of the country is needed to identify the magnitude of the problem, ascertain the most frequent types, recognize causes and take preventive measures accordingly. Furthermore, the quality of life issues and the functional outcome measures need to be researched in our own environments.

CONCLUSION

Trauma primarily due to RTA is the cause of amputation in civilian population seeking rehabilitation services at AFIRM. Majority were male from Punjab province, have a LL amputation and belonged to a younger age group.Transtibial amputation was the commonest level in LL amputations while transradial amputation is the commonest level in UL amputation.Amputees in younger age group were more likely to have a traumatic amputation and an UL amputation while amputees in the older age group were more likely to have a non-traumatic amputation and a LL amputation.

CONFLICT OF INTEREST

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

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AWARENESS REGARDING DECEASED ORGAN DONATION AMONGST UNDERGRADUATE MEDICAL STUDENTS

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ABSTRACT

Objective: To analyze the awareness regarding deceased organ donation amongst under graduate medical students of Army Medical College.

Study Design: Cross sectional

Place and Duration of Study: The study was conducted at Army Medical College, Rawalpindi from Jan 2014 to May 2014.

Material and Methods: Primary data containing sample size of 100 was collected i.e.1/10th of MBBS population comprising 50 males and 50 females students. A close ended questionnaire was distributed. SPSS version 15 was used for data analyses.

Results: More than half of students had little or no knowledge about the progress made in deceased organ donation in Pakistan as well as in developed countries. Major source of information was found to be electronic media. Majority of the population was unaware regarding religious concept as well as the Pakistan's law of deceased organ donation and most of them also did not know any donor in Pakistan. More than half of the population was willing for deceased organ donation. Ethical issues were found to be of prime importance in considering the use of any organ transplant technology. Fortunately, almost 90% males and 75% females agreed that organ donation should be promoted.

Conclusion: Although most of them did not search about deceased organ donation, but, after filling our questionnaire they were interested to know more about it. Hence further studies are needed based on awareness programmes.

Keywords: Awareness, Organ donation, Under graduate Medical School.

INTRODUCTION

Deceased organ donation is the donation of organs by a person after his death to those who suffer from organ failure, transplantation of the vital organs is carried out from donor to recipient to save his life[1]. National transplantation of tissue organs and tissue act 2010 has proclaimed that any person of more than eighteen years of age can will to donate any of his organ or tissue for transplantation and for this purpose authorization of medical institution or recognition by monitoring authorities is mandatory. For this purpose this Act has defined 'Brain death' to be the permanent loss of brain and brain stem functions at a same time. It also states that on the death of a donor, any of close relative of the deceased shall take steps for the removal of human organs or tissues after informing the Evaluation Committee according to authorization[2]. Introduction of such acts to the public and especially to the young under graduate students is a foremost step to fill the gap between long transplantation waiting lists and a very few donating population.

Each year in Pakistan 50,000 people lose their lives due to irreversible organ failure and the number is increasing at the annual rate of five per cent .In the year 2010, 100,000 organ transplants were carried around the globe out

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of which 75,000 pertained to kidney, 25 per cent of which was based on deceased organ donation[3].

In past, Pakistan used to send 250-300 people to India for liver transplants every year, at a cost of Rs4-5 million per head as the incidence of liver cirrhosis was rapidly increasing in Pakistan. There was a need to establish several institutions to conduct liver transplants in order to meet the demand[4]. On an average about 106 people are added to an organ waiting list every day and 18 people die each day for an organ[5]. According to Sindh Institute of Urology and Transplantation (SIUT), a well-known kidney transplant centre of Pakistan, approximately 15,000 patients in Pakistan suffer from kidney failure every year. The only treatment options available for these patients are either dialysis or kidney transplantation[6]. In addition to kidney transplantation, first liver transplantation was carried out at Shifa International hospital, Islamabad on 3rd March 2012[7] and now it is also chalking out to be in Shaikh Zayed Hospital, Lahore[4]. In addition, Armed Forces Institute of Cardiology/ National Institute of Heart Diseases, AFIC/NIHD has introduced Heart Transplant department first time in Pakistan in January, 2013[8].

In this scenario, there is a strong a need to evaluate the awareness level of our population. Physicians support is required to serve as a prediction of the attitude of other professionals towards deceased organ donation. Neurosurgeons and intensive care unit nurses who believe organ procurement is a professional responsibility have the fewest reservations about facilitating organ donation[9]. Hence our study was conducted to evaluate the prevailing unawareness specifically among undergraduate medical students. Objective of our study was to analyze the awareness regarding deceased organ donation amongst under graduate medical students of Army Medical College.

MATERIAL AND METHODS

It was a cross-sectional study conducted at Army Medical College, Rawalpindi from Jan 2014 to May 2014. Primary data containing sample size of 100 was collected which is 1/10th of MBBS students comprising 50 males and 50 females students. A carefully designed close ended questionnaire, comprising of 15 questions with 4 stems, was distributed among the study population. All the participants completed the questionnaire. The data had been analyzed using the SPSS version 15 for windows. Descriptive statistics were used to describe the data.

RESULTS

Out of 100 students, there were 50 males and 50 female cadets of age ranging from 18 to 21. 76% male students and 82% female students had little or no knowledge about the progress made in deceased organ donation in Pakistan as well as in developed countries. Electronic media was found to be the major source of information among them. 46%male students and 54%female students and 24% male students and 42%female students were unaware regarding religious concept as well as the Pakistan's law regarding deceased organ donation respectively. 58% male students and 76% female students did not know any donor in Pakistan.

34% male students and 28 % female students were willing for deceased organ donation and they also showed a positive response from their parent's side. Most of them recognized the fact that supply for organs will be less than the demand even if all potential donors were properly identified and consent for donation obtained. Ethical issues were found to be of prime importance in considering the decision of organ transplantation. Almost 90% males and 75% females agreed that organ donation should be promoted. Although only 8% male students and 4% female students did search about deceased organ donation, but,

after filling our questionnaire 64% male students and 50 % female students were interested to know more about it. (Table-1 & 2).

Table-1: Responses of undergraduate students regarding decreased organ donation.

Questions		Boys	Girls
Progress made in deceased organ donation in Pakistan	up-to-date	8	4
	most of the knowledge but not up-to-date	16	14
	little knowledge	40	56
	no knowledge	36	26
Progress made in deceased organ donation in developed countries	up-to-date	12.0	18
	most of the knowledge but not up-to-date	16.0	24
	little knowledge	44.0	44
	no knowledge	44.0	24
Source of information about deceased organ donation	Electronic media	66.0	64
	Family/Friends	10.0	20
	Teachers	10.0	8
	Others (please specify)	14.0	8
Concept of Islam regarding deceased organ donation	allowed in Islam in all conditions	12.0	10
	Allowed only in life-saving situations	38.0	32
	Prohibited in all conditions	4.0	4
	Don't know	46.0	54
Deceased organ donation allowed in Pakistan's law	Yes	42.0	34
	No	4.0	2
	May be	30.0	22
	Don't know	24.0	42
Any known donor in Pakistan	Family	24.0	14
	Celebrity	10.0	4
	Politician	8.0	6
	Don't know	58.0	76
Willingness for deceased organ donation	Yes	34.0	28
	No	24.0	24
	May be	36.0	34
	Don't know	6.0	14
Response of your parents/guardians towards deceased organ donation decision	They will definitely allow	20.0	8.0
	May allow	44.0	46.0
	Will not allow	30.0	44.0
	Not concerned	6.0	2.0

DISCUSSION

Our results proposed that most of the undergraduate medical students were unaware regarding deceased organ donation, which are similar to the results of another study which indicated the prevalent awareness of health sciences students about organ donation[10]. It is in contrast to a study conducted in Mangalore which states that most of their participants had heard about organ donations which could be due to the high literacy and education rate[11]. Another similar study was done in which people who are even in favor of organ donation had apprehensions due to lack of awareness

about the process of organ donation. Hence continuous information should be provided to them after they agree to become donors[12].

In our study electronic media is found to be the major source of information to the young medical students for organ donations which shows similarity to the results of a study which states that media and television is an important source of creating awareness among general population and about 97% became aware of organ donation through media[13]. Our present study results match with the data of the previous study in Pakistan, where again the major source of information came to be television and print media[7]. Quiet similar were the results of a study conducted in Faisalabad, which states that the major source of information came out to be television (46.5%). This finding is important because electronic media can be used for further awareness of people. The second major source of information was peers (19.70%)[14].

Regarding willingness for organ donation, our results were positive for more than half

Table-2: Responses of undergraduate students regarding decreased organ donation.

The supply for organs match the demand if all potential donors were properly identified and consent for donation obtained	Supply would exceed demand	22.0	10.
	Supply would be roughly the same as demand	20.0	24.0
	Supply would be less than demand	34.0	38.0
	Not sure	24.0	28.0
Ranking the importance of ethical issues in considering the use of any organ transplant technology	Very important	55.1	60.0
	Important to some degree	32.7	22.0
	Not important	12.2	10.0
	No idea		8.0
Who would you like to donate your organs to?	Family	30.0	38.0
	Friend	4.0	
	Can be anyone	62.0	56.0
	No one	4.0	6.0
Who should make decisions about organ donation in case of unclaimed dead bodies?	Charitable organization	6.0	12.0
	Hospital administration/doctors	66.0	42.0
	Elective representative	10.0	18.0
	A judge	18.0	28.0
Should organ donation be promoted?	Yes	82.0	68.0
	No	4.0	4.0
	May be	8.0	10.0
	Don't know	6.0	10.0
Searched about deceased organ donation	Yes	8.0	4.0
	No	60.0	52.0
	Not very much	30.0	36.0
	Not interested	2.0	8.0
After filling this form, are you interested in learning more about deceased organ donation?	Yes, a lot	64.0	50.0
	No	10.0	8.0
	May be	10.0	16.0
	A little bit	16.0	26.0

(70% males and 62% females) of the respondents which are comparable to the results of a study conducted in India which states that majority of participant showed positive attitude and they were willing to donate organs[13]. Similarly in another study most of the participants said that their family would support their willingness as 69% were willing to donate the organs of their family members in previous research carried at Saudi Arabia[13].

Regarding reservations to become a donor some people cited religious reason for their non willingness which in accordance to a previous study[6]. In another study most of the families refuse to donate organs of their family members after death mainly because they don't want the body to be torn. Religious views and fear of the medical faculty are some other reasons[15].

Only 27% of respondents actually knew that there was law in Pakistan which regulates the practice related to organ transplantation and 24% replied that there was no law while 49% said that they did not know about that law which may be attributed to lower literacy rate in the country. These finding points towards the need to give adequate knowledge regarding law in Pakistan[14]. The UK Muslim Law Council ruled in 1996 that organ transplantation is entirely compatible with Islamic beliefs. Yet, in Singapore, which has a presumed consent system, Muslims are automatically exempt from it, and Islamic countries generally have a low rate of carriage of organ donor cards[16].

In the Middle East countries that include insufficient preventive medicine, jagged health infrastructure, meager awareness is seen in the medical community and public regarding the importance of the organ donation and transplantation. In addition, there is lack of team spirit among transplant physicians, lack of planning for organ procurement and transplant centers and lack of effective health insurance[17]. This fact should also be considered while planning for awareness regarding deceased organ donation.

CONCLUSION

In the light of the results of our study, we positively conclude that although majority of undergraduate medical students are unaware regarding deceased organ donation, but they are interested to know the facts regarding it. True religious concept as well as proper knowledge of Pakistan's law regarding it can increase the willingness for donation. Hence further researches as well as awareness programs are needed to increase the awareness regarding deceased organ donation. This can help us to decrease the size of those long lists of patients waiting for organ transplantation.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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ELECTRO-DIAGNOSTIC IMPRESSION IN CHILDREN PRESENTED AS FLOPPY BABY

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ABSTRACT

Objective: The objective of the study was to analyze the pattern of various neuromuscular diseases among floppy babies referred to electro-diagnostic department of AFIRM.

Study Design: A cross-sectional study

Place and Duration of Study: Electro-diagnostic department of Armed Forces Institute of Rehabilitation Medicine (AFIRM), Rawalpindi from July 2011 to July 2013

Material and Methods: Through non-probability convenience sampling patients of both genders referred to electro diagnostic department of Armed Forces Institute of Rehabilitation medicine for the electro diagnostic evaluation of hypotonic children were included. Patients medical history was entered on designed performa.

Results: Out of 64 patient 37 (57.8%) were male and 27 (42.2%) were female. The electro-diagnosis studies diagnosed Spinal Muscular Atrophy (SMA) in 31 cases (48.4%), followed by Normal Studies in 21 cases (32.8%), Myopathy in 7 cases (10.9%), and Hereditary Sensory Motor Polyneuropathy (HSMN) in 5 cases (7.8%).

Conclusion: Among the floppy babies that were referred to the electro-diagnostic department at AFIRM for electro-diagnostic evaluation, spinal muscular atrophy (SMA) was the commonest electro-diagnostic impression.

Keywords: Generalized hypotonicity, Hereditary sensory motor polyneuropathy, Myopathy, Muscular dystrophy, Spinal muscular atrophy,.

INTRODUCTION

Children with generalized hypotonia or “Floppy Baby” is a constellation of conditions associated with impaired development of motor skills and signs of generalized hypotonia, intense weakness, and rag-doll features[1-3]. Hypotonia is the inability to maintain control over movements and posture against gravity.

A multitude of causes including abnormalities of the central and peripheral nervous system can give rise to the syndrome. Studies have shown that central causes account for 60% to 80% of cases and that peripheral causes occur in 15% to 30%[2,3]. Central conditions include hypoxic-ischemic encephalopathy, other encephalopathies, brain insult, intracranial hemorrhage, chromosomal disorders, various congenital syndromes, inborn errors of metabolism, and various neuro-metabolic diseases. Of these the most common central cause is cerebral palsy or hypoxic encephalopathy in the young children. Peripheral disorders include abnormalities in the motor unit, especially in the anterior horn cells (e.g. spinal muscular atrophy), peripheral nerves, neuromuscular junctions (e.g. botulism), and muscles (e.g. myopathy). Of these the most common neuromuscular causes are congenital myopathies, congenital myotonic dystrophy, and spinal muscular atrophy [4,5].

The overall point prevalence of congenital myopathies in the United States is 1: 26,000[6]. Myotonic dystrophy type 1 is the most common form of myotonic muscular dystrophy diagnosed in children, with a prevalence ranging from 1 per 100,000 in Japan to 3-15 per 100,000 in Europe[7]. The incidence of spinal

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muscular atrophy in USA is about 1 case in 15,000-20,000 (5-7 per 100,000) live births[8].

Generalized hypotonia is a frequent source of diagnostic dilemma for the pediatrician and neonatologist. After taking a detailed history and performing relevant physical examination if the treating physician is convinced that the cause is one of the disorders of the peripheral nervous system and/or muscles, then NCS/EMG emerge as one the important diagnostic tools and its early use is supported by studies when a peripheral cause is likely[9,10]. Causes of generalized hypotonia if ascertained early during the course of disease have not just positive psychological, social and financial implication on parents but also lead to early and targeted management of the child itself[5].

Several studies have been done on usefulness of NCS/EMG in diagnostic evaluation of children with generalized hypotonia. To our knowledge and literature search, in Pakistan studies pertaining to the generalized hypotonia is lacking. The objective of this study was to analyze the pattern of various neuromuscular diseases among children referred to electro-diagnostic department in our hospital. Our study results will help the health professional to formulate their differential diagnosis our population, and will also lead to early rehabilitation interventions.

MATERIAL AND METHODS

This cross-sectional study was conducted at Armed Forces Institute of Rehabilitation Medicine (AFIRM) Rawalpindi from July 2011 to July 2013. AFIRM is the country's only tertiary care physical rehabilitation facility for the patients with disabilities and functional impairments. It has a well equipped state of the art electro-diagnostic department. After obtaining permission from the institutional ethical committee, children (age 2 months to 2 years) of both genders referred to electro-diagnostic department of AFIRM during the study period were included in the study who's parents had willingly accepted to participate in the study. Excluded from the study were children who were on medication that could have resulted in decreased muscle tone. Sixty four patients were included through non-probability purposive sampling. The parents were interviewed for the clinical history and after performing the relevant physical examination the data was recorded. Later the same examiner performed the NCS/EMG studies on the patients. Electro-diagnostic impression was then entered in the same Performa.Patient's confidentiality and anonymity were kept preserved.

Data had been analyzed using SPSS version 20.0 (IBM Corp., Armonk, NY, USA). Mean and standard deviation were calculated for quantitative variables while frequency and percentage were calculated for qualitative variables.

RESULTS

A total of 64 patients were included out of which 37 (57.8%) were male and 27 (42.2%) were female.Average age of patients was 6.78 ± 3.7 months varying from 2 – 24 months.

With respect to the electro-diagnostic impression of the floppy babies, Spinal Muscular Atrophy (SMA) was the most common diagnosis found in 31 (48.4%) children. Pediatricians were the ones with maximum referrals 44 (68.7%) as shown in Table-1. Mean age of patients diagnosed with SMA, Hereditary sensory motor neuropathy (HSMN) and Myopathy was 6.06± 2.4 months, 7.20 ± 1.5 months and 10.71 ± 7.4 months respectively.

DISCUSSION

A well organized systematic approach is required while evaluating a child with generalized hypotonia, paying attention to the history and clinical examination, as it is essential in localizing the problem to a specific region of the nervous system [4, 11].

If the cause of floppy baby syndrome is suspected to be a disorder of peripheral neuromuscular origin, the NCS/EMG studies become very important diagnostic tool[9,10]. In experienced hands these tests are very useful in making a prompt electro-physiological diagnosis by localizing the site of lesion in the lower motor unit, especially when a genetic analysis has failed to reach a specific diagnosis.

Thus NCS/EMG are of particular value in diagnosing conditions like spinal muscular atrophy (SMA), various myopathies, hereditary sensory motor neuropathies (HSMN), and neuromuscular junction (NMJ) disorders[12].

Studies have shown that generalized hypotonia (floppy baby) is usually a presentation that is recognized at birth or at the most early in infancy[2]. This was in accordance to our study results where the mean age of presentation of children for electro-diagnostic testing was (6.78 ± 3.7) months.

In our study majority of the patients (37) were males, while remaining (27) were females. This is probably because in our part of the world male children are usually given more importance with respect to necessities like food and medical treatment.

Spinal Muscular Atrophy (SMA) is a degenerative disease of the anterior horn cells that presents with progressive generalized weakness, absent reflexes, feeding problems along with hypotonia. In our study spinal muscular atrophy (SMA) was the most common electro-diagnostic impression (85.7%)among our study participants. Onthe contrary SMA was found to be the diagnosis in 2% in a three hypotonic series[4,13]. This was because their study participants included all patients of hypotonia irrespective of suspected central or peripheral pathology, while our study participants were all referred patients with suspected peripheral neuromuscular causes of hypotonia.

In our study NCS/EMG studies of 32.8% were normal studies depicting that in these patients the cause of hypotonia was not located within the peripheral neuromuscular system. In contrast 13% of the floppy children in a three hypotonic series were found to be of unknown etiology[4]. This obvious discrepancy one again is due to the fact that the scope was only to rule out lesions of peripheral neuromuscular system as causes of hypotonia while these international studies employed all available diagnostic tests and they also diagnosed patients with disorders of central nervous system, and various genetic and musculoskeletal disorders.

Congenital myopathies are heterogeneous disorders of genetic origin that are characterized by congenital weakness of skeletal muscle alongside hypotonia[16]. In a three hypotonic series myopathies (including muscular dystrophies) accounted for 7% of patients with hypotonia[4,14]. In our study myopathies were found to be the cause of hypotonia in 10.9% of patients. This is very much in accordance with the international studies implying the fact that myopathies are an important cause in floppy babies.

HMSN are a group of slowly progressive genetic disorders affecting motor and sensory peripheral nerves with many sub-types having

Table-1: Baseline characteristics and electro-diagnostic impression among children evaluated for floppy baby syndrome.

Age (years)	**6.78 ± 3.7**	
Gender	**Frequency**	**Percentage**
Male	37	57.8
Female	27	42.2
Electro-diagnostic Impression	**Frequency**	**Percentage**
Normal Study	21	32.8
Spinal Muscular Atrophy	31	48.4
HSMN	5	7.8
Myopathy	7	10.9
Referring Physician	**Frequency**	**Percentage**
Pediatrician	44	68.7
Neurologist	09	14.0
Physiatrist	08	12.5
General practitioner	03	4.6

different clinical features[17]. In our study HMSN was the diagnosis in 7.8% while in a three hypotonic series neuropathy was the diagnosis in 1.4% of hypotonic babies[4,15]. This was because in our study all patients were referred by the pediatrician/neonatologist with suspected peripheral neuromuscular causes of hypotonia while participants in most of the international studies included all patients of hypotonia irrespective of pathology.

CONCLUSION

Patients presenting at the electro-diagnostic department at AFIRM for electro-diagnostic evaluation of floppy baby syndrome were predominantly male and spinal muscular atrophy (SMA) was the commonest electro-diagnostic impression. Further studies are recommended at larger scale to explore causes of floppy babies in our population.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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EFFICACY OF INTRAVENOUS ONDANSETRON FOR PREVENTION OF SHIVERING IN SPINAL ANAESTHESIA ADMINISTERED IN ELDERLY PATIENTS

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ABSTRACT

Objective: To determine the efficacy of intravenous Ondansetron for prevention of shivering in elderly patients undergoing spinal anesthesia.

Study Design: Double blinded randomized controlled trial.

Place and Duration of Study: It was conducted in Anesthesiology department, CMH Rawalpindi; 1st July, 2014 to 31st December, 2014.

Material and Methods: Eighty Patients were selected for this study, and randomly divided in two groups consisting of 40 patients each. Patients were preloaded with pre-warmed Ringer's lactate at dose of 10 ml/kg. Group A was given IV ondansetron 08 mg five min prior to administration of spinal anesthesia, whereas Group B was given Normal Saline. Core and axillary temperatures were monitored preoperatively, at 30, 60 and 90 min for both groups. Both groups were observed for shivering.

Results: There was no statistically significant difference between average age, weight, height, BMI, core and axillary temperatures preoperatively, at 30 min, 60 min and 90 min. Shivering was observed in 07 patients in Group A, and 16 patients in Group B. Difference between groups was statistically significant. ($p = 0.026$)

Conclusion: Intravenous administration of 08 mg of Intravenous Ondansetron prior to subarachnoid block, is effective in decreasing frequency of shivering.

Keywords: Intravenous Ondansetron, Shivering, Spinal Anesthesia.

INTRODUCTION

Shivering is the one of the most commonly observed complications in anesthesia practice. It has a very high incidence (60 %) in general anaesthesia[1], whereas the incidence in regional anaesthesia ranges between 40-60 %[2]. It can have different adverse effects associated with it, like it can increase metabolic rate, which increases oxygen consumption, leading to hypoxia, increasing the risk of myocardial insult[3]. This risk is more in elderly patients. In addition, shivering can also result in increased incidence of bleeding, floating clots, infection, increased carbondioxide production and even lactic acidosis. Also, it can interfere with monitoring of the patient (ECG, Pulse oximetry), and is unpleasant for the patient[4].

Prevention has always been considered better than cure, and hence different intravenous drugs have been tested to find out a better prophylaxis against Shivering. Researchers have tested drugs like Meperidine, Dexmedetomidine, Tramadol, clonidine, Ketamine etc. However, they have different problems associated with them. For example, Meperidine is associated with nausea, vomiting, sedation, respiratory depression, bradycardia and hemodynamic changes etc[5]. Sedative effect of low dose ketamine[2] can prove detrimental in elderly population. Tramadol is associated with Nausea and vomiting[6].

Ondansetron, a 5-HT3 antagonist, is commonly used for prevention and treatment of intraoperative and Postoperative Nausea and vomiting[7]. It has also been demonstrated to reduce the incidence of Post Dural puncture

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Headache in patients undergoing LSCS in spinal anaesthesia[8].

Incidence of Hypertension, Ischemic Heart disease and other comorbidities is higher in elderly patients. And shivering can expose them to further risk. Rationale of Our study is to find out the efficacy of ondansetron for reduction of shivering in elderly population.

MATERIAL AND METHODS

This study was carried out in Main operation Theatre, CMH Rawalpindi from 1st July, 2014 to 31st December, 2014 after taking approval from Hospital Ethical Review Committee. Those patients were included in the study who were considered otherwise fit for spinal anaesthesia, male, age over 50 years, BMI between 20-30. Exclusion criteria included patients with any complains or history of running fever, Raynaud's syndrome, Thyroid disease, dysautonomia, Parkinson's disease or requirement of blood transfusion and surgery more than 90 minutes.

Patients were selected using convenience sampling. After taking consent from the patients, they were divided into Two Groups (A and B) of 40 each using computer generated table of Random numbers. Operation Theatre temperature was kept at 21-22 °C, and When patients arrived at operation theatre, they were cannulated with 18 G cannula, and were infused with pre-warmed (37°C) Ringer's lactated at dose of 10 ml/kg over 15 minutes. Group A was given 08 mg IV ondansetron 05 minutes prior to administration of spinal anesthesia. Patients of Group B were given normal saline for sake of blinding. Vital signs were recorded. Axillary temperature and core temperature were monitored 03 min prior to spinal anaesthesia. 02 ml of 0.75% Bupivacaine was administered via 25 G spinal needle at L3-4 level for spinal anaesthesia. Pin prick and inability to lift leg, were used to ensure sensory

Table-1: Comparison of age, height, weight and BMI between two Groups.

	Group A (Ondansetron)	Group B (Normal Saline)	*p*- value
Age (years)	63.78 ± 8.45	62.83 ± 8.95	0.627
Height (cm)	167.95 ± 4.48	168.82 ± 5.001	0.412
Weight (kg)	72.85 ± 5.74	74.18 ± 6.90	0.353
BMI	25.20 ± 1.81	25.45 ± 1.88	0.547

Table-2: Comparison of core and axillary temperatures between two groups

		Group A	Group B	*p*- value
Core temperature	Preoperative	36.81 ± 0.18	36.85 ± 0.15	0.285
	30 min	36.52 ± 0.13	36.47 ± 0.13	0.107
	60 min	36.16 ± 0.14	36.11 ± 0.15	0.162
	90 min	36.11 ± 0.14	36.09 ± 0.13	0.800
Axillary temperature	Preoperative	36.20 ± 0.23	36.24 ± 0.21	0.426
	30 min	36.04 ± 0.20	36.07 ± 0.18	0.554
	60 min	35.98 ± 0.17	35.99 ± 0.14	0.717
	90 min	35.96 ± 0.17	35.91 ± 0.17	0.363

Table-3: Comparison of frequency of shivering between two groups.

Shivering	Group-A		Group-B	
	No	%	No	%
Present	7	17.5	16	40.0
Absent	33	82.5	24	60.0
p -value	0.026			

and motor blockage. Heart rate, ECG and SpO2 were continuously monitored, whereas blood pressure was monitored every 03 minutes for first 15 min, followed by every 05 min for rest of procedure. Hypotension was treated by ringer's lactate infusion, and IV injection Phenylephrine. Axillary and core temperatures were monitored at 30 min, 60 min and 90 minutes. Shivering was observed in this period of time, and was defined as fasciculation in pectoralis major for more than 10 seconds. These patients were labeled as "Shivering Present". IV Pethidine at dose of 0.3 mg/kg was used for treatment of shivering.

SPSS version 20 was used for analysis of data. Age, weight, height, BMI and core and axillary temperatures were compared using independent samples T-test. Frequency of shivering was compared using chi square test. P value < 0.05 was taken as significant.

RESULTS

A total of 80 patients were selected, divided in two groups of 40 each. There was no statistically significant difference between average age, weight, height and BMI between the two groups (table-1). Similarly, there was no statistically significant difference between Core and axillary temperatures between the two groups, preoperatively, at 30 min, 60 min and 90 min (table-2). Shivering was present in 07 patients (17.5%) in Group A, and in 16 patients (40%) in Group B. This difference between the two groups is statistically significant ($p = 0.026$) (table-3).

DISCUSSION

Shivering is a very common finding in patients undergoing Spinal Anaesthesia [2]. It has different effects on body, especially putting stress on the myocardium[3] by increasing oxygen demand, and thus leading to hypoxia. The exact mechanism is not fully known in spinal anaesthesia, however, it is suggested that vasodilation in legs leads to more heat loss, and so core temperature is distributed to legs. Shivering and vasoconstriction cannot take place below the level of blockade, and is restricted to upper body parts[9].

Different drugs have been tested for use as prophylactic measure. Pethidine has been tested for its efficacy in prevention of shivering[4], however, its side effects like sedation, respiratory depression, bradycardia and hemodynamic changes[5] can prove troublesome in elderly patients. Dexmedetomidine has been tested by some researchers[9,10], and was found effective. However, it is not commonly available in our market. Tramadol[6] and ketamine have been used too, and ketamine was found more effective in prevention of shivering[11]. However, Sedative effects of ketamine[2] can prove troublesome in elderly population.

Ondansetron is a 5-HT3 Antagonist, and is primarily used for Prevention and treatment of Nausea and vomiting[7]. It also decreases the incidence of Post dural puncture headache[8]. It has also been demonstrated that it decreases the incidence of hypotension in spinal anesthesia[12]. These effects make it a very useful adjunct in patients undergoing spinal anesthesia.

We decided to look into efficacy of ondansetron for prevention of shivering in elderly patients. Its mechanism is not fully clear, however, it is suggested that serotonergic pathways play some part in regulation of shivering[13].

There are other studies on this subject too, however, these mainly differ in fact that they were not performed in elderly population. This is one of the basic differences since we thought that shivering predisposes elderly patients to stress on myocardium.

Kelsaka et al[14] took 75 patients, and distributed them in three groups of 25 patients each. He compared ondansetron, meperidine and placebo. They found that Meperidine and ondansetron had similar efficacy in prevention.

Safavi et al[5] also compared intrathecal Meperidine with intravenous ondansetron for prophylaxis against shivering in orthopedic cases. They also concluded that both were comparable in reducing frequency of shivering. However, they differ from our study in that; the average age of their patients was less than 40.

Marashi et al[15] compared two different doses (06 mg and 12 mg) of Ondansetron for the sake of prevention. And they concluded that there was no difference between efficacies of two doses. This is one of the differences from our study as we had used 08 mg for the sake of prophylaxis. Also, they did not exclude younger patients.

Apart from spinal anesthesia, ondansetron also reduced frequency of shivering in general anesthesia. Powel and Buggy[13] demonstrated this in their study, in which they gave 08 mg of ondansetron just before induction of anesthesia, and it decreased frequency of shivering. Also, Ali Reza Mahoori et al[16] demonstrated that 08 mg of intravenous ondansetron can effectively treat shivering associated with general anesthesia. They had compared it with 0.4 mg/kg of meperidine and 04 mg ondansetron. They concluded that 08 mg ondansetron and 0.4mg/kg of meperidine had same effect.

In our study, we decided to include patients above 50 years of age, and use ondansetron at dose of 08 mg. It was concluded that it decreased the frequency of shivering significantly. However, we did not compare ondansetron with other drugs which are used for prophylaxis against shivering like low dose ketamine, meperidine, tramadol.

We suggest that more attention should be paid to research in elderly population. And comparison should be made between these drugs.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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PATTERN OF NEONATAL ADMISSIONS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Objective: The primary objective of this study was to determine the frequency of neonatal admissions to the neonatal intensive care unit (NICU) at the Military Hospital (MH), Rawalpindi. The secondary objective was to assess the pattern of admissions and outcomes.

Study Design: Descriptive study.

Place and Duration of Study: The study was conducted in the NICU at MH, Rawalpindi, Pakistan. Data was collected from January 2011 to May 2013.

Material and Methods: All the neonates admitted to NICU were included in the study. Neonates were grouped as per their diseases diagnosed by examination and laboratory investigations.

Results: Total number of patients admitted to the NICU was 4201. 2163 (51.49%) were female, 2029 (48.30%) male, and 9 (0.21%) had ambiguous genitalia. Mode of delivery was lower segment caesarean section (LSCS) in 2514 (59.84%) and spontaneous vaginal delivery (SVD) in 1687 (41.16%). Reasons for admission were preterm/low birth weight in 981 (23.35%) patients, neonatal sepsis in 713 (16.97%), respiratory distress syndrome in 601 (14.31%), neonatal jaundice in 457 (10.88%), birth asphyxia in 401 (9.54%), meconium aspiration syndrome in 344 (8.19%), intra uterine growth retardation (IUGR) in 121 (2.88%), babies with hepatitis-B positive mother in 108 (2.57%), vomiting in 91 (2.17%), neonatal seizures in 9 (0.21%) and haemorrhage disease of newborn in 4 (0.10%). The remaining 371 (8.83%) causes were grouped as "others". This included neonates with genetic syndromes, congenital anomalies and surgical conditions, who did not have a definitive diagnosis at the time of admission. 3253 (77.43 %) neonates were discharged from the NICU with satisfactory medical condition; the remaining 948 (22.57%) died during their stay in the hospital.

Conclusion: Prematurity, low birth weight, neonatal sepsis and respiratory distress syndrome were the most common reasons for admission in the NICU.

Keywords: Preterm, Low birth weight, Neonatal jaundice, Neonatal sepsis, Respiratory distress syndrome.

INTRODUCTION

The neonatal period, which extends from birth to 28 days of life is the most vulnerable period with half of the infant deaths in our country occurring during this period[1]. Prematurity, infections and birth asphyxia are amongst the most common causes of neonatal death[2]. The pattern of neonatal disease changes from time to time and between different places[3]. Despite the decrease in neonatal deaths by 17% over the last decade, 3.1 million newborns died in 2010 most of them belonging to developing countries[4]. Prior to 2000, neonatal deaths were rarely mentioned in global policy and programs. More recently, local government and global organizations have increased attention towards neonatal survival[5,6]. For reduction of stillbirths, neonatal deaths and maternal deaths, strengthening of human resource capacity is required. Effective care at delivery can be improved even in a set up with low rate of skilled personnel at birth[7].

Most of the causes of neonatal morbidity in our country are preventable[8]. Neonatal mortality depends on care in the Neonatal Intensive Care Unit (NICU)[9]. Neonatal morbidity and mortality is still very high in developing countries[10]. To reduce newborn mortality, highly cost-effective interventions exist[11]. However, there is no single intervention

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which fits all programmatic approaches for reduction of neonatal mortalities[12].

MATERIAL AND METHODS

This cross sectional descriptive study was conducted in the NICU of the military hospital (MH) Rawalpindi, from January 2011 to May 2013. The study was approved by the hospital ethics committee. This is a retrospective cross-sectional study. The admission register was used to collect data. The admission register in the NICU documents admissions with basic data (demographic data, date of admission and discharge, mode of delivery, admission diagnosis, whether the baby died or was discharged in a satisfactory clinical state). Inclusion criteria included all neonates admitted to the NICU from January 2011 until May 2013. By policy, the NICU at MH, Rawalpindi accepts neonatal admissions from both in hospital and out hospital sources. There were no exclusion criteria; all neonates admitted in the specified time were included in the study.

A questionnaire was created to collect pertinent data. It was based on the information available in the admissions register. This included basic demographic data, age, gender, weight, gestational age, mode of delivery, cause of admission and outcome .Based on the information in the register, the outcome is classified as death or discharge from the NICU.

Detailed history, physical examination and relevant diagnostic modalities were used for diagnoses. The neonates were followed until discharge from the NICU. During the admissions period, departmental protocols were strictly observed for the management of the neonates. The Silverman scoring system was used to assess gestational age. Data had been analyzed using SPSS version 15. Descriptive statisticitics were used to describe the results.

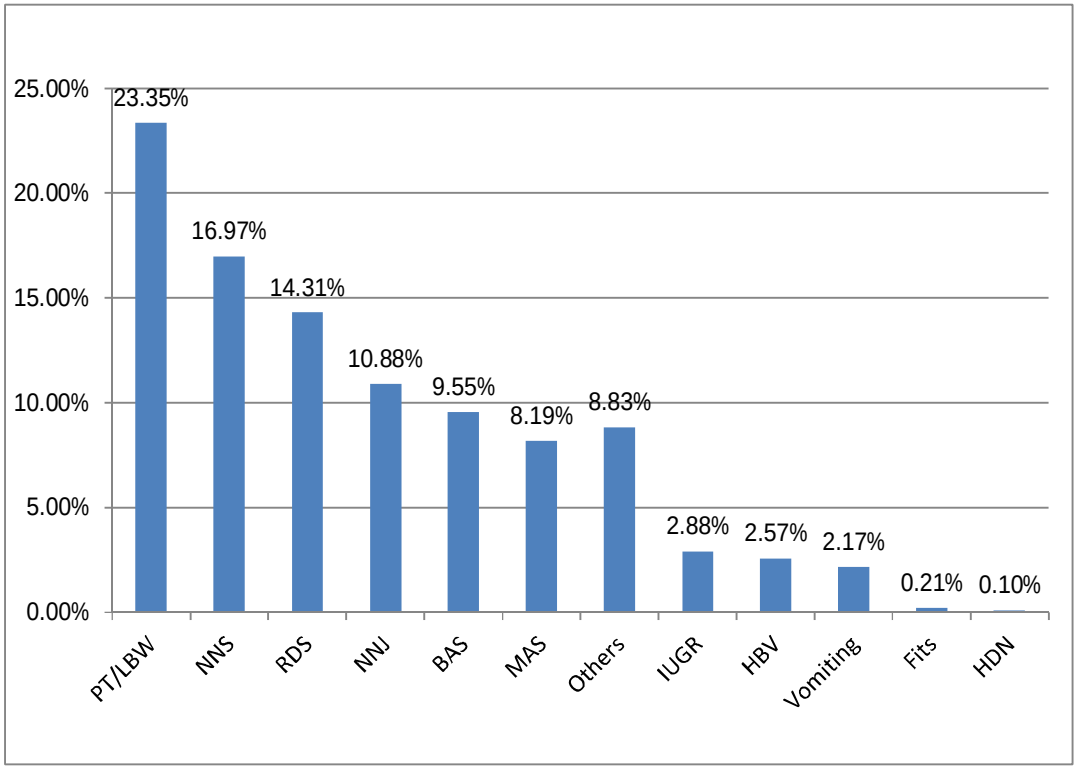

Figure: Percentage of different diseases in NICU patients in MH Rawalpindi (n=4201).

Note: PT/LBW: Preterm/Low Birth Weight; NNS: Neonatal Sepsis; RDS: Respiratory Distress Syndrome; NNJ: Neonatal Jaundice; BAS: Birth Asphyxia; MAS: Meconium Aspiration Syndrome, IUGR: Intra Uterine Growth Restriction; (Babies of) Hepatits-B Virus positive mother; HDL: Hemorrhagic Disease of Newborn.

RESULTS

The total number of neonates admitted to the NICU was 4201. Of these, 2163 (51.49%) were female, 2029 (48.30%) were male, and 9 (0.21%) had ambiguous genitalia. Mode of delivery was lower segment caesarean section (LSCS) in 2514 (59.84%) and spontaneous vaginal delivery (SVD) in 1687 (41.15%). Babies who were treated successfully and discharged when stable were 3253 (77.43%); the remaining 948 (22.56%) died during their stay in the hospital. Preterm and low birth weight babies accounted for 981 (23.35%) of the cases being the leading cause of NICU admissions followed by neonatal sepsis, at 713 (16.97%), Figure.

Other common diagnoses, in descending order of frequency, were: respiratory distress syndrome 601(14.31%), neonatal jaundice 457(10.88%), birth asphyxia 401(9.54%), meconium aspiration syndrome 344 (8.19%) and Intra Uterine Growth Retardation (IUGR) 121(2.88%). Babies born to hepatitis B positive mothers who were admitted for hepatitis B vaccination and immunoglobulin accounted for 108 (2.57%). Babies admitted with the complaint of vomiting were 91(2.17%), with history of fits were 9 (0.21%) and with haemorrhagic disease of newborn were 4(0.10%). The remaining 371 (8.83%) were grouped as “others” and included babies with surgical conditions, and those with congenital anomalies, which were not conclusively diagnosed at the time of admission.

DISCUSSION

The study was conducted at the NICU of MH, Rawalpindi, Pakistan. This NICU is amongst the best centres in the country and the biggest neonatal unit in the extensive medical network of the Pakistan Army. It is well equipped with state of the art equipment and ventilators, and is the main referral hospital of the Pakistan Army. Most of the referrals to this unit present with complications that either need specific investigations for diagnosis like blood culture and sensitivity, CT scan or MRI, or require specific therapies like incubator care for premature babies, phototherapy and exchange transfusion, continuous positive air way pressure or mechanical ventilation.

In most developing countries, low birth weight continues to be a major public health problem[13-16]. In the present study, 23.35% admissions were due to pre term and low birth weight. Similar studies carried out in other neonatal units in Pakistan, in Larkhana[13] Lahore[16] showed low birth weight to be responsible for 36% and 39% of admissions respectively. Prematurity and infection were the main reason (27.9%) for admission to the neonatal intensive care unit in a large study from Karachi[17]. Studies from Bangladesh[18], India[19] and Ethiopia[20], demonstrated that low birth weight and prematurity contributed 13.25%, 20% and 11.02% towards neonatal admissions.

Neonatal sepsis still remains the major cause of morbidity and mortality in many developing countries[1]. In the present study neonatal sepsis was diagnosed in 16.97% of neonates. This figure is quite low compared with other studies conducted in Pakistan like 26.03% in Peshawar[20] and 45.21% in Karachi[18]. Respiratory distress syndrome and neonatal jaundice were the next leading causes of admissions, which were diagnosed in 14.31% and 10.88% babies. The increased percentage of respiratory distress syndrome in the present study may be due to increased number of referrals of these babies to this unit, because of the facilities of continuous positive airway pressure and mechanical ventilations. The incidence of RDS in admitted babies in Peshawar[21] and Multan[22] was reported to be 0.59% and 1.2% respectively. Neonatal jaundice as cause of admission was 6.6% in Multan[22] and 19% in Peshawar[21]. In Bangladesh neonatal jaundice was reported to be responsible for 9.4% of admissions. Birth asphyxia was diagnosed in 9.55% of admitted neonates. Other studies reported a high incidence of birth asphyxia; 18.85% in Karachi[19], 31% in Rawalpindi[23] and 40.66% in Lahore[24]. Meconium aspiration syndrome was diagnosed in 8.19% while some studies showed its incidence to be 1.18%[21] and 2.07%[22]. Neonatal mortality in our study was 22.56% as compared to 34% in Karachi[19], 38 % in Larkhana[13] and 38% in Lahore[25].

The distinctive features of this study included a female predominance 51.70% in admitted newborns, no patient left against medical advice, and the high incidence of LSCS. No patients leaving against medical advice in our NICU may be due to regular counselling sessions held with the parents of the neonates on a daily basis. The high incidence of LSCS in this set up may due to the referral of high-risk pregnancies to this centre or it may be due to a general increase in the trend of performing LSCS in this part of the world, as reported by a WHO global survey in Asia[26]. Caesarean section is associated with higher rates of admissions to the NICU[27]. To reduce the number of admissions to NICU safe reduction in caesarean section is priority and several authors have suggested strategies to achieve this[28,29].

There are some limitations to this study. Given that the study design relied on information in the admissions journal present in the NICU, details regarding each admission are lacking. For example, mode of delivery is defined as either SVD or LSCS; there are no details on forceps or vaccum deliveries. Also, the authors are cognizant that neonates in the NICU have multiple medical issues, especially low birth weight and premature infants. As the objective of the study was to examine admission patterns, only the main diagnosis has been looked at. Given the constraints of space in a register, some admissions get labelled as "other". These include neonates with genetic syndromes, congenital anomalies and surgical conditions, which did not have a definitive diagnosis at the time of admission.

CONCLUSION

Prematurity, low birth weight, neonatal sepsis and respiratory distress syndrome are the most common causes of admission to the neonatal intensive care unit.

Most of the conditions responsible for admissions to the NICU can be prevented. To reduce the number NICU admissions, a safe reduction in Caesarean deliveries is mandatory. Mothers should be educated about care during pregnancy, importance of appropriate antenatal care, clean and safe delivery and care of newborn babies. Timely referral of high risk pregnancies and newborn babies requiring specific therapies to a tertiary care centre can play a role in reducing neonatal morbidity and mortality.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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ROLE OF SUBGALEAL VACUUM DRAINGAGE IN CHRONIC SUBDURAL HEMATOMA

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ABSTRACT

Objective: The aim of this study is to evaluate the level of safety and effectiveness of a subgaleal vacuum drain in chronic subdural haematoma.

Place and Duration of Study: In the department of Neurosurgery at CMH Rawalpindi from April 2012 to April 2014,

Study Design: Descriptive prospective study.

Material and Methods: The sampling technique was non-probability consecutive sampling. A calculated sample size was 110, by taking consecutive patients with chronic subdural haematoma (CSDH), who were treated with closed drainage system. Out of 110 patients, 10 patients were excluded on the basis of exclusion criteria. 100 patients below 85 years without gender discrimination were included in the study. Among the 10 excluded patients; 5 were critically ill and were above 85 years, 1 patient was below 5 years and 4 patients had craniotomy. Two burr holes were made on the maximum width of hematoma and subgaleal and subdural drains were placed. CT Scan was done on 5th post-surgical day for radiological evaluation.

Results: There were a total of 100 patients included in the study, 90 men and 10 women, ranging in age from 19 to 85 years (mean age, 63 ±15 years). The mean GCS at admission was 14 (+ 1). Out of total 100 patients, 88 (88%) patients had unilateral CSDH and 12(12%) had bilateral CSDH. In out of 88 patients with unilateral CSDH 44 (50%) and out of 12 with bilateral CSDH 6 (50%) subgaleal vacuum drain was placed. In 44 (50%) patients out of 88 with unilateral and 6 (50%) out of 12 bilateral CSDH, subdural simple drain was placed. The recurrence in either group was noted respectively. Among 50 patients with subgaleal drain only, 1(2.2%) patient out of 44 with unilateral CSDH and 1 (16.6%) patient out of 6 with bilateral CSDH had recurrence. Among 50 patients with simple subdural drain, 2 (4.5%) out of 44 patients with unilateral and 2(33%) out of 6 patients with bilateral CSDH had recurrence. The overall postoperative recurrence was in 6(6%) out of 100 patients. The recurrence with subgaleal drain was in 2 patients (4%) out of 50 patients and with subdural drains 4 (8%) out of 50 patients respectively. Also, the recurrence rate was high in bilateral CSDH as compared to the unilateral hematoma. Out of 88, 2(2.2%) patients with unilateral and 4 (33%) out of 12 patients with bilateral CSDH had recurrence. A serious complication during this study was that 2 (4%) out of 50 patients with subdural drains had drain related cerebral cortical laceration and intra parenchymal bleed , one in male and one in female. Those patients were treated conservatively, whereas, no such complication was noted with subgaleal vacuum drain.

Conclusion: A sub galeal vacuum drain with two burr holes is sufficient to evacuate CSDH with lower recurrence rate.

Keywords: Burr-hole, Subdural hematoma, Subgaleal drain.

INTRODUCTION

CSDH is the presence of liquefied blood within the subdural space lined by a pseudo membrane, after 3 weeks[1]. It mostly happens in the elderly population[1]. Treatment of choice is surgery[2]. Surgical techniques used are burr holes[3]. Burr hole is simple with low surgical risk and fairly effective. The reported recurrence rate ranges from 9.2 to 26.5% after surgical evacuation[4]. Different factors are

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associated with recurrence[5]. CSDH are evacuated and flushed via a single or two burr holes and frequently followed by closed-system drainage. Location of drains depends on neurosurgeon's choice. There are studies regarding efficacy and safety as regards to location of drains and use or no use of drains also[6]. Drains have the potential complications which make there use debatable. The aim of this study to assess the safety and postoperative recurrence between subgaleal vacuum drains and simple drains in CSDH.

MATERIAL AND METHODS

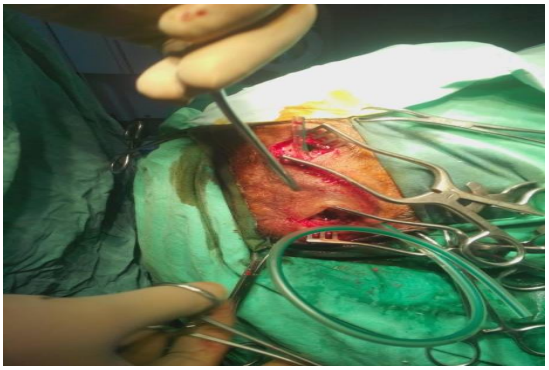
This descriptive prospective study was carried out prospectively at CMH Rawalpindi from April 2012 to April 2014. The sampling technique was non-probability consecutive sampling. A calculated sample size was 110 by taking consecutive patients with CSDH, who were treated with closed drainage system. Out of 110 patients, 10 patients were excluded on the basis of exclusion criteria. 100 patients below 85 years without gender discrimination were included. Among the 10 excluded patients; 5 were critically ill and were above 85 years, 1 patient was below 5 years and 4 patients had craniotomy

Patients were usually elderly with usual symptoms of headache, low conscious level and neurological deficit. History of trauma and use of anticoagulants was present in some cases. Diagnosis was confirmed with CT Scan. Some patients had MRI in hand which was already done by the doctors. Burr hole surgery was performed under general or local anesthesia depending on anesthetist evaluation. Subdural hematoma was evacuated by durotomy. Warm saline irrigation through a catheter or a syringe was done in each case until the irrigation return became clear. A catheter having numerous holes was placed extending from frontal to parietal burr hole through subgaleal space and out through a separate stab skin incision and secured. A vaccum suction bottle was attached to subgaleal drain in fifty patients. In another fifty patients soft nasogastric tubes were placed subdurally through frontal and parietal burr holes and connected to drainage bags without any suction. Post operatively patients were placed preferably in flat position for at least 24 hours. Drains were mostly removed within 3- 5 days . Brain CT scans were performed post-operatively on fifth day and at final follow-up after one month in all cases. The clinical criteria for recurrence included a change in mental status, deterioration or no improvement of the preexisting neurological deficit and new onset or aggravation of headache and a CT scans during the follow-up period revealing an increased subdural collection.

The results were calculated by statistical software SPSS version 21. Mean and SD were calculated for quantitative variables like age and GCS and categorical variables were presented by percentage and frequency.

RESULTS

There were a total of 100 patients included in the study, 90 men and 10 women in the study, ranging in age from 19 to 85 years (mean age, 63 ±15 years). The mean GCS at admission was 14 (+/- 1). Out of total 100 patients, 88 (88%) patients had unilateral CSDH and 12(12%) had bilateral CSDH. Among 88 patients with unilateral CSDH 44 (50%) and out of 12



Figure–1: Sub-galeal drain.

with bilateral CSDH 6 (50%), subgaleal vacuum drain was placed. In rest of 44 (50%) patients with unilateral and 6 (50%) bilateral CSDH, subdural simple drain was placed. The recurrence in either group was noted respectively. Among 50 patients with subgaleal drain only, 1(2.2%) patient out of 44 with unilateral CSDH and 1 (16.6%) patient out of 6

with bilateral CSDH had recurrence. Among 50 patients with simple subdural drain, 2 (4.5%) out of 44 patients with unilateral and 2(33%) out of 6 patients with bilateral CSDH had recurrence. The overall postoperative recurrence was in 6 (6%) out of 100 patients. The recurrence with subgaleal drain was in 2 patients (4%) out of 50 patients and with subdural drains 4 (8%) out of 50 patients respectively. Also, the recurrence rate was high in bilateral CSDH as compared to the unilateral hematoma. Out of 88, 2(2.2%) patients with unilateral and 4 (33%) out of 12 patients with bilateral CSDH had recurrence. A serious complication during this study was that 2 (4%) out of 50 patients with subdural drains had drain related cerebral cortical laceration and intra parenchymal bleed , one in male and one in female. Those patients were treated conservatively, whereas, no such complication was noted with subgaleal vacuum drain.

DISCUSSION

CSDH generally occurs in elderly patients by a relatively trivial unnoticed trauma or spontaneously. The incidence of CSDH has been steadily increasing. This can be explained by the fact as the fraction of older population has increased[7]. The main aetiological factors are trauma, old age, brain atrophy, coagulopathy, fits and bilateral CSDH, higher hematoma density, postoperative air accumulation in sub dural space if simple drains are used[8].

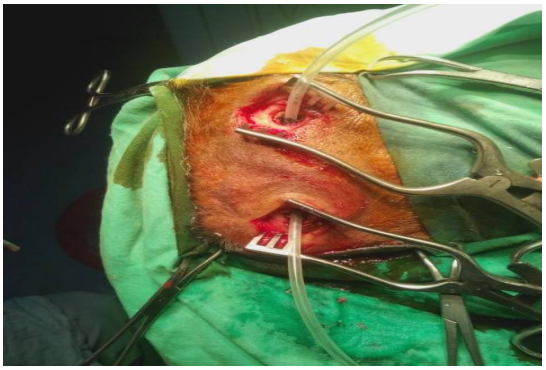
Haematoma begins by tearing of subdural bridging vessels and cortical surface lacerations causing accumulation of blood in subdural space. Clinical features may be headache, vomiting, low conscious level, fits and hemiparesis. Radiologically it is crescent shaped hypodensity area over cortical surface on CT scan[9].

Surgery is the treatment of choice in most cases especially if symptomatic[10]. Burr holes are simple, quick and widely used technique with overall morbidity of 0 to 9%[11,12]. Craniotomy has greater morbidity but is still performed for a solid hematoma and multiple recurrences to remove blood and neo membrane[13].

The main reasons for reoperation were residual thick hematoma membranes causing reaccumulation of subdural fluid due to residual hematoma or to re-bleeding[14,15].

Burr-holes with closed-system drainage are used for treatment of CSDH[16]. Burr holes with subgaleal suction drain takes shorter operation time (fig-1) than subdural drains (fig-2). It has been reported previously that the irrigation through one burr hole is usually sufficient to wash out the hematoma in multiple cavities even if they are septated[17]. They concluded that in most cases of CSDH, multiplicity did not mean multiple closed cavities and that all hematoma cavities were in fact continuous with each other. In the previous study it was demonstrated that the catheter tip located in the frontal showed better surgical outcome in one burr craniostomy with closed-system drainage and irrigation[18]. According to another report which has compared closed-system drainage with irrigation with strict closed-system drainage in CSDH managements, and found five recurrences in the former and one in the latter group[19]. Their result suggested that post-operative residual intra capsular air may be a factor of recurrence.

In our study, patients operated on with burr holes and subgaleal vaccum suction drain had lower postoperative recurrence rate than those of two burr holes and subdural drains. The higher postoperative recurrence rate with subdural drains in a study was due to residual fluid and air. Another study reported that the



Figure–2: Sub-dural drains.

persistence of the post-operative subdural cavity is a risk factor for reaccumulation of the hematoma and the presence of postoperative residual air prevents reduction of the cavity[20]. The explanation for higher recurrence rate is that the residual hematoma fluid due to non dependent craniostomy, contains large concentrations of vasoactive cytokines, inflammatory mediator and fibrinolytic factors. The complete evacuation of hematoma seems to be directly linked to the success of surgical procedure. This is why in our study a subgaleal vaccum suction with two burr holes is more efficient to suck out subdural fluid collection with minimal recurrence[21,22].

One serious complication during this study was that two patients with subdural drains had drain related cerebral cortical laceration and intra parenchymal bleed each one in male and one in female. These patients were treated conservatively.

CONCLUSION

We conclude that CSDH can be efficiently and safely evacuated by a subgaleal suction drains which is less invasive procedure, with lower recurrence rate and less drain related complications.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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CORRELATION OF SONOGRAPHIC PLACENTAL THICKNESS WITH GESTATIONAL AGE IN NORMAL SINGLETON PREGNANCIES

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ABSTRACT

Objective: The main objective of the study is to determine the correlation of sonographic mean placental thickness in mm with the composite mean 2nd and 3rd trimester gestational age in weeks estimated by ultrasound.

Study Design: Cross sectional.

Place and Duration of Study: Radiology department, Military hospital, AFIRI Rawalpindi for the period of six months from 10/10/13 to 10/5/14.

Material and Methods: The instrument used in this study was Aloka SSI 5500 ultrasound equipment with 3.5MHz curvilinear transducer. A total of 200 women were included through radiology outdoor with singleton pregnancy in 2nd and 3rd trimester. The fetuses were observed for gestational age estimation using bi-parietal diameter (BPD) and femur length (FL) in the second trimester and BPD, FL and abdominal circumference (AC) in the third trimester. The composite average of the gestational age estimated by the various growth parameters were taken for each fetus and was calculated automatically by the ultrasound software. The placenta was localized in longitudinal section and its antero-posterior thickness measured at the level of insertion of the umbilical cord

Results: A total of 200 women with singleton pregnancy in 2nd and 3rd trimester were included in this study. The mean age of the women was 25.43±2.63 years, average gestational age and placental thickness was 26.18±7.91 weeks and 29.10±7.027 mm. Total of 104(52%) patients were in2nd trimester and 96(48%) were in 3rd trimester. A linear relationship was observed between gestational age and placental thickness. There were 104 women with 2nd trimester, correlation between placental thickness and gestational age was positive and significant (r=0.959 and p=0.0005) , similarly 96 women with 3rd trimester, correlation between placental thickness and gestational age was positive and significant (r=0.858 and p=0.0005). Strong positive correlation between placental thickness and gestational age was observed (r= 0.985 and *p*= 0.0005).

Conclusion: Positive correlation suggested that as placental thickness increases, the fetal weight also increases so that the placental growth directly influences the fetal weight.

Keywords: Gestational age, Placenta, Second trimester, Ultrasonography

INTRODUCTION

Placenta is the vital support organ for the developing fetus which provides the physiological link between a pregnant woman and the fetus[1]. The placenta is a highly vascularized organ and its main functions are supplying of nutrient, oxygen, and hormones to the fetus[2]. The placenta is formed by the interaction of decidua basalis of the endometrium and chorionic villi of the fetus atimplanation site at about 8-10 weeks. True definition of placenta is possible at about 10-11weeks after conception[3].

The placental thickness can be a useful sonographic parameter. It tends to gradually increase with gestational age in a linear fashion (~ 1 mm per week) and therefore the thickness in mm can approximate the gestational age (in weeks). The normal placental AP measurement of the anterior placenta in second trimester greater than 33mm and posterior placenta

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greater than 40mm should be considered thick[4] and associated with a poor outcome in term of perinatal mortality and growth restriction[5].

Placental thickness appears to be a promising parameter for estimation of gestational age of the fetus as was also shown in animal studies[6]. There was a strong positive correlation between placental thickness and gestational age[7] (Pearson correlation coefficient r = 0.609, 0.812 and 0.814 in first, second and third trimesters respectively; *p*= 0.01). He also concluded that subnormal placental thickness for a particular gestational age may be the earliest sign of intrauterine growth. No local data on the subject was available in the last five years.

The measurement of the placental thickness is an important parameter for estimation of fetal age along with other parameters especially in the late mid trimester and early third trimester, where the exact duration of pregnancy is not known and other sonographic parameters also become less reliable . But it is not routinely done locally and if correlation is established then it could be recommended in local practice.

Rationale of the study is to determine the correlation of sonographic mean placental thickness in mm with the composite mean 2nd and 3rd trimester gestational age in weeks estimated by ultrasound.

MATERIAL AND METHODS

This Cross sectional descriptive study was carried out at Armed Forces Institute Of Radiology and Imaging (AFIRI), Military Hospital, Rawalpindi. The study was carried out over a six month duration starting from the 10/10/13 to 10/5/14. Patients with known LMP(last mestrual period), viable singleton pregnancy and in second and third trimester of gestation were included in the study whereas patients havingtwin pregnancy,history of previous IUGR or adverse fetal outcome, coexistent palcental pathology, uterine or adnexal mass, PIH, polyhydramnios or oligo hydramnios, history of immune or non immune hydrops and gestational age of > 40 weeks were excluded from the study.

The sample size was calculated using the software StatsDirect (Menu location: Analysis_Sample Size_Correlation.). Karthikeyan T in 20127demonstrated that there was a linear correlation of placental thickness with gestational age. (Pearson correlation coefficient = 0.812 in second trimesters). Sample size was 200 patients and sampling technique was non probability purposive sampling

Approval of the study was taken from the hospital ethical review committee. Informed consent was taken from the patients before recruitment into the study. The patients were recruited through the radiology outdoor from the patients who are being referred for routine ante natal ultrasound. Patients with their blood pressure and plasma random glucose checked and a history of hypertension, diabetes, previous adverse fetal outcome, intrauterine growth retardation and fetal hydrops were sought. On history the LMP (last menstrual period) date was ascertained and gestational age was calculated by LMP using the Naegle's rule.

Sonography was carried out on each subject included in the study using Aloka SSI 5500 ultrasound equipment with 3.5MHz curvilinear transducer. The fetuses were observed for gestational age estimation using bi-parietal diameter (BPD) and femur length (FL) in the second trimester and BPD, FL and abdominal circumference (AC) in the third trimester. The composite average of the gestational age estimated by the various growth parameters were taken for each fetus and was calculated automatically by the ultrasound software. The placenta was localized in longitudinal section and its anteroposterior thickness measured at the level of insertion of the umbilical cord. All the information was recorded in the proforma attached as Annex I.

Data analysis procedure

Data was analyzed on computer using SPSS 16 (Statistical software package for social sciences). Quantitative data included was placental thickness and gestational age. Values were expressed as mean +standard deviation. Pearson's correlation coefficient (*r*) of +1-1 was used to measure the correlation of mean

gestational age in 2nd and 3rd and mean placental thickness. *p*< 0.05 was indicated as statistically significant.

RESULTS

A total of 200 women with singleton pregnancy in 2nd and 3rd trimester were included in this study. Histogram of age distribution of the patients is presented in fig-1.

Table-1: Descriptive statistics of the study variables

Statistics		Variables		
		Age (Years)	Gestational Age (Weeks)	Placental Thickness (mm)
Mean		25.43	26.18	29.10
95% Confidence Interval for Mean	Lower Bound	25.06	25.07	28.12
	Upper Bound	25.79	27.28	30.08
Median		25	25	27.7
Std Deviation		2.63	7.91	7.027
Inter quartile Range		3	12	11.9

Table-2: Correlation of sonographic mean placental thickness and gestational age estimated by ultrasound.

	n	Pearson's Correlation between placental thickness and gestational age	*p*-value
Overall	200	0.985	0.0005
2nd Trimester	104	0.959	0.0005
3rd Trimester	96	0.858	0.0005

The mean age of the women was 25.43±2.63 years. Similarly average gestational age and placental thickness was 26.18±7.91 weeks and 29.10±7.027 mm as presented. Regarding trimester of the women, 104(52%) were with 2nd trimester and 96(48%) were in 3rd trimester.

A linear relationship was observed between gestational age and placental thickness. Similarly according to 2nd and 3rd trimester linear relationship was also observed.

In table-2, Strong positive correlation between placental thickness and gestational age for the whole sample was observed (r= 0.985 and *p*=0.0005). There were 104 women with 2nd trimester, correlation between placental thickness and gestational age was positive and significant (r=0.959 and *p*=0.0005) ,similarly 96 women with 3rdtrimester, correlation between placental thickness and gestational age was positive and significant (r=0.858 and *p*=0.0005) as shown in table-2.

DISCUSSION

The best possible antepartum care and the successful deliveries of babies always revolve around the accurate knowledge of the Gestational Age (GA). The gestational age is of utmost importance in the interpretation of biochemical tests such as the screening for the expanded maternal serum biomarkers (Human Chorionic Gonadrotrophin, Alfa Feto protein and the oestrogen and progestrone levels) for the risk assessment of various fetal anomalies, in evaluating the fetal growth by distinguishing the normal from the pathological fetal development.

The placenta is a fetal organ with important metabolic, endocrine and immunological functions besides being responsible for nutrition, respiration and excretion for the fetus. Lastly acting as a barrier, it has a role in protecting the fetus from noxious agents[8]. Placental formation begins in the later half of the 2ndmonth of the pregnancy and is usually completed by the 4thmonth. It reaches

its maximum growth at term[9]. Placental thickness is not diagnostic of any particular condition but can contribute to the management of high risk pregnancies[10]. Placental thickness of less than 2.5 cm is associated with intrauterine growth retardation while thick placenta are associated with maternal diabetes mellitus, foetalhydrops and intra uterine foetal infection. The usefulness of this relationship between placental thickness for a gestational age may be the earlist indication of foetal growth retardation[11].

In our study the fetus was observed for gestational age estimation using biparietal diameter (BPD) and femur length (FL) in the second trimester and BPD, FL and abdominal circumference (AC) in the third trimester.

In our study strong positive correlation between placental thickness for a gestational age for the whole sample was observed (r= 0.985 and *p*= 0.0005). Tongsong T; Boonyanurak P et al[2] did a regression analysis which yielded the following linear equation of the relationship: placental thickness (in mm) = gestational age (in weeks) × 1.4-5.6 (r=0.82).Christopher ChukwuemekaOhagwu et al[13] demonstrated in Nigerian women that there is significant and strong positive correlation between placental thickness and gestational age. They also concluded that placental thickness appears promising as an accurate indicator of gestational age in singleton pregnancies. In a study by Elchalal, Ezra et al in 2000, Placental thickness was determined by routine sonographic examination throughout the pregnancy in 561 normal singleton pregnancy. A linear increase of placental thickness was found to correlate with gestational age throughout the pregnancy[14].

Mital P, Hooja N, Mehndiratta K.et al[15]concluded, that the measurement of placental thickness is an important parameter for estimation of fetal age. It is helpful in cases where the exact duration of pregnancy is not known (especially between the 22[nd]week and 35th week) where the placental thickness almost matches with the gestational age. Anupama Jain, Ganesh Kumar, U Agarwal, S Kharakwal et al[16] reported that the value of mean placental thickness increases with advancing gestational age and almost matched the gestational age from 27 to 33 weeks. Tanawattancharoen et al[17] reported less variation in placental thickness at gestational age between 18 and 41 weeks. Jauniax et al[18]

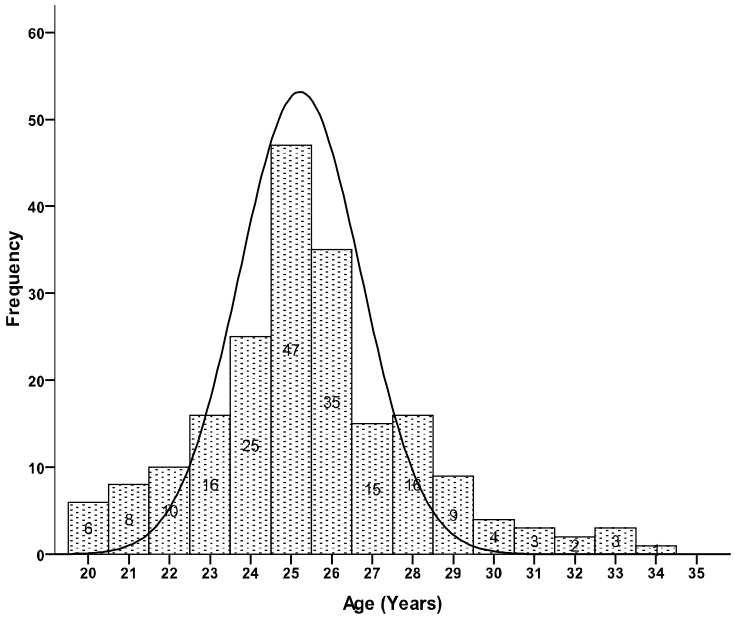

Figure-1: Histogram of age distribution of the women n=200.

have established correlation between placental size and gestational age.

CONCLUSION

To conclude, we can say that the measurement of the placental thickness is an important parameter for estimation of fetal age along with other parameters especially in the late mid trimester and early third trimester where the exact duration of pregnancy is not known and other sonographic parameters also become less reliable in this part of gestation. This positive correlation suggested that as placental thickness increases, the fetal weight also increases so that the placental growth directly influences the fetal weight.

CONFLICT OF INTEREST

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

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CASE SERIES

AIRWAY MANAGEMENT IN LARGE ANAPLASTIC THYROID CARCINOMA

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ABSTRACT

Objective: To demonstrate use of nasotracheal intubation in airway management of large anaplastic thyroid carcinoma.

Study Design: Descriptive case series.

Place and Duration of Study: Combined Military Hospital Lahore, from January 2014 to May 2015

Material and Methods: Respiratory compromise in five cases of an a plastic thyroid carcinoma were managed by nasotracheal intubation. Following intubation a planned tracheostomy was carried out. Airway was secured using a modified tracheostomy tube.

Result: Of the five cases in this descriptive case series, 2 (40%) were females and 3(60%) were males. Airway in all patients were managed with nasotracheal intubation and modified tracheostomy tube.

Conclusion: Management of large anaplastic carcinoma requires some modifications in terms of intubation and tracheostomy.

Keywords: Anaplastic Thyroid Carcinoma, Nasotracheal, Tracheostomy.

INTRODUCTION

Malignant thyroid masses account for 5% of all thyroid masses. With a variety of histological patterns, airway involvement occurs in nearly all the types in latter stages[1]. Extra thyroidal extension is not commonly seen and represent about 6 - 13% of cases of thyroid malignancies. Extrathyroidal invasions most commonly affect strap muscles, recurrent laryngeal nerves, trachea, esophagus and neck vessels[2].

Undifferentiated malignant thyroid carcinomas are prone to invade the trachea and surrounding structures early. Among them, anaplastic carcinoma is the rarest and spreads rapidly. Incidence of anaplastic thyroid carcinoma reported in western literature is 0.21 per 100,000 (pacini)[3]. Aggressive nature of this carcinoma is well documented and mean survival time in literature is quoted to be 6 months. The main cause of death is involvement of surronding structures resulting in life threatening complications. It is relatively uncommon to see large thyroid masses with respiratory distress. Malignant thyroid masses with size larger than 10 centimeters tend to cause airway obstruction by mechanical compression of trachea and also by tracheal invasion. Respiratory distress in such cases is often fatal and gives limited time to establish an airway[4].

Management of such cases becomes a challenge due to various reasons: 1. Inability to intubate the patient due to distortion of laryngeal inlet by mass effect, 2. Awake tracheostomy results in desaturation and respiratory distress[5], 3. Increased vascularity of thyroid can cause potentially life threatening bleeding, 4. Conventional tracheostomy tubes cannot be used as there length is not sufficient to deal with massively enlarged thyroid masses. Therefore an improvised tracheostomy tube was used to achieve adequate length to canulate the trachea[6].

MATERIAL AND METHODS

This is a case series review of five patients of large anaplastic thyroid carcinoma managed

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by ENT department CMH Lahore from October 2013 to September 2015. Sampling technique was "Purposive sampling". All five patients were brought in stridor and were subsequently managed in main operation theater. Help of preoperative computerized tomography of neck was taken to generate a road map of the deviated trachea. Awake fiber optic nasoendoscopy was done in a sitting position as the patients were unable to lie down. Upon visualization of vocal cords patients were intubated via nasal route using an endotracheal tube number 5.5. Using the CT scan, trachea was traced and an opening in the trachea made. An improvised tracheostomy tube was placed in each case. Improvised tracheostomy tube was created by dividing a No.7.5 endotracheal tube above the exit of cuff channel. A No. 5 tracheostomy tube was divided with a 1.5 cm stump. The tracheostomy tube stump was fixed in the endotracheal tube and the junction secured with silk suture as shown in figure 1. Improvised tracheostomy tube was fixed to neck with silk sutures (size Number 1).

All data was analyzed using SPSS (version 13.0). Frequency and percentage was calculated for gender. Mean ± SD was calculated for quantitative variables like age.

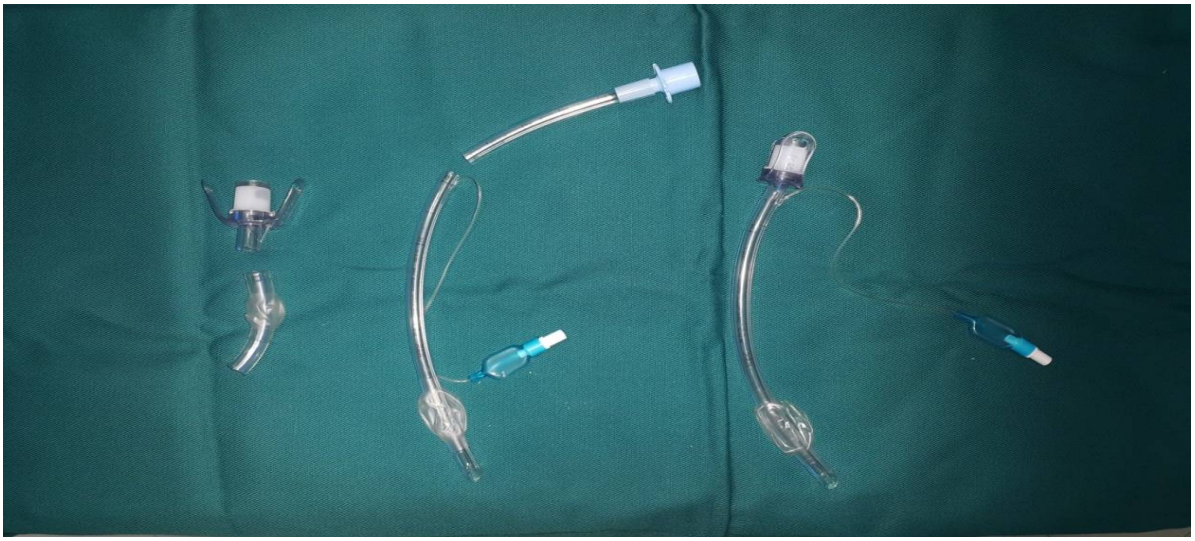

Figure-1. Improvised long tracheostomy tube created by dividing a no.7.5 endotracheal tube above the exit of cuff channel and attaching flange of a no. 6 tracheostomy tube to it.

Case-1

Patient was a 65 year old male diagnosed as a case of Anaplastic carcinoma thyroid three weeks prior to tracheostomy. The thyroid mass measured 15 / 9 cm in the largest dimension which had pushed the trachea to left. Patient had presented in emergency with increasing stridor. (fig-2).

Case-2

Patient was a 57 year old male diagnosed as Anaplastic carcinoma thyroid. The thyroid mass was measured 16.8 / 10.3 cm in the largest dimension and had pushed the trachea to right. Patient was counseled previously for tracheostomy but had refused. He subsequently presented in a cyanosed state with severe stridor.

Case-3

Patient was 22 year old female diagnosed as a case of Anaplastic cell carcinoma thyroid. The thyroid mass was 18 / 12 cm in largest dimension and trachea was compressed and being deviated to right.

Case-4

Patient was 47 year old male diagnosed as a case of Anaplastic cell carcinoma thyroid. The thyroid mass was 11.2 / 9.4 cm in largest dimension and trachea was compressed and

was in midline. The presenting complaints were severe respiratory distress.

Case-5

Patient was 61 year old female diagnosed as a case of anaplastic cell carcinoma thyroid. The thyroid mass was 13.4 / 11 cm in largest dimension and trachea was compressed and being deviated to right. She presentation with respiratory distress.

RESULTS

The study group comprised of 5 patients, 2 (40%) females and 3 (60%) males. Mean age was 47.7 years SD 18.6. Mean time from diagnosis to respiratory distress was 22 days. Post operatively patients were managed by ventilatory support for at least 24 hours. All the patients were subsequently able to maintain 100% oxygen saturation without oxygen support. Regular tracheostomy care was ensured.

DISCUSSION

Anaplastic thyroid carcinoma is documented as one of the most rapid growing malignant tumors with a median overall survival of 6 months or less[7]. This tumour accounts for fewer than 5% of all thyroid malignancies but it is responsible for up to 90% of thyroid cancer deaths[8]. Typical presentation is of a rapidly enlarging aggressive mass complicated by symptoms like stridor, dysphagia, vocal cord paralysis, neck pain and dyspnea due to rapid extra thyroidal spread[9]. In up to half of the cases of anaplastic thyroid carcinoma there is evidence of distant metastatic disease at time of initial diagnosis[10], and the most common sites being spine, lungs, and brain. Regardless of treatment ensued nearly all literature available on anaplastic thyroid carcinoma shows that majority of the cases develop distant metastases during treatment[11].

Regarding surgical treatment anaplastic thyroid carcinoma, surgical clearance is usually not possible due to its invasive nature. Surgical treatment is usually aimed at relief of airway obstruction secondary to mass effect of enlarged thyroid. Radical surgical treatment like total thyroidectomy and radical neck dissection gives no added advantage over less radical surgical treatment or non surgical treatment[12] . This is due to the fact that extra thyroidal spread cannot be controlled and incision site infection is very common. Total thyroidectomy can be carried out if cervical and mediastinal disease can be surgically removed. In most of the cases, debulking of the tumor is considered to be an adequate treatment option. Literature research shows that complete thyroid resection is mostly associated with longer survival than debulking alone. Local regional control of disease is an important consideration in management of anaplastic thyroid carcinoma[13].

Management of respiratory distress is by tracheostomy alone. Emergency awake tracheostomy can be used to secure an airway in patients with life threatening airway obstruction. But emergency awake tracheostomy is riddled with complications, of which the most dreaded are uncontrolled haemorrhage, airway compromise, pneumothorax and nerve damage. Fiberoptic naso tracheal intubation secures the airway and helps in creation of tracheostomy stoma. By passing endotracheal tube, respiratory distress is controlled and tracheostomy becomes a controlled elective procedure[14]. Furthermore, we have incorporated a technique of improvised tracheostomy tube which gives extra length so as to accomodate for bulk of the tumour in neck.

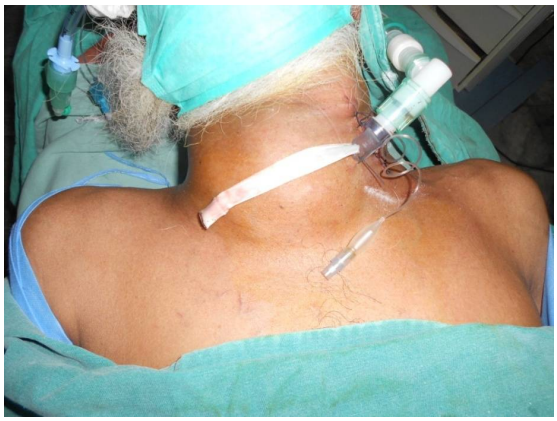

Figure-2: Deviation of trachea to right.

Management of respiratory distress in malignant thyroid carcinoma is greatly helped by radiological studies. Patients with large tumors or signs or symptoms suggestive of invasive disease warrant further radiographic evaluation[15]. The most helpful radiological investigation is computerized tomogram with contrast. Position of trachea can be adequately ascertained and incision can be planned accordingly. Three dimensional reconstruction on computerized tomography can give a realistic road map with exact tract of trachea, and information about tissue covering trachea and tracheal invasion[16].

Conclusion

Airway control in large thyroid masses is best achieved by endoscopic guided nasotracheal intubation, followed by planned tracheostomy using an improvised tracheostomy tube.

CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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