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Editorial

Health Indictors of Pakistan – A Serious Concern

Mohsin Masud Jan

Editor

Health indicators is of great importance for health policy makers. Some important health indicators like crude death rate (CDR), crude birth rate (CBR), and infant mortality rate (IMR) and total fertility rate (TFR) of Pakistan.

Covid-19 pandemic had tested the country's health infrastructure and identified needs for ore investment in the sector, especially to improve diagnostic facilities, disease surveillance, prevention and spread, training of health personnel and their protection from pandemic, vaccine development, upgrading healthcare infrastructure, emergency rooms, intensive care units, isolation wards and public awareness.

Life expectancy increased from 66.9 years in 2017 to 67.3 years in 2019 but is still behind other countries. The infant mortality rate, maternal mortality and population growth rate have decreased in the last three years.

A comparative position of the regional countries in health indicators development shows abysmal picture as infant mortality rate (IMR), per 1,000 live births, in Pakistan is 55.7, in Afghanistan 46, in India 28, Bangladesh 25, China seven and in Sri Lanka six.

The under-five mortality rate shows that in Pakistan 69 deaths are reported in 1,000 children against 60 in Afghanistan, 34 in India, 30 in Bangladesh, 28 in Bhutan and seven each in China and Sri Lanka.

However, in terms of population growth, Pakistan is a bit better compared to Afghanistan. Pakistan has recorded 1.9% growth rate compared to2.3% in Afghanistan, 1% each India and Bangladesh, 0.6% in Sri Lanka and 0.4% in China.

The national health infrastructure comprises 1,282 hospitals, 5,472 Basic Health Units, 670 Rural Health Centres, 5,743 dispensaries, 752 maternity and child health centres and 412 TB centres while the total availability of beds in these health facilities are estimated at 133,707. There are 245,987 registered doctors, 27,360 registered dentists and 116,659 registered nurses in these facilities together.

Health expenditures have increased gradually since 2011-12 - by 14.3% - from Rs. 421.8 billion in 2018-19 to Rs.482.3 billion in 2019-20. Public sector expenditure on health was estimated at 1.2% of the GDP in 2019-20 compared to 1.1% in 2018-19.

In almost every country, healthcare delivery has been disrupted by the mistaken initial assumption that health systems would quickly win the fight against Covid-19.

"Now, it is clear that the pandemic will persist much longer than anticipated. It was estimated that at least half of the world's 7.8 billion people lacked access to essential health services. But now Covid-19 has increased these numbers and eroded access to health-care. The infected cases are rapidly rising in India compared to other countries like Pakistan, Bangladesh, Sri Lanka, which have seen a less devastating impact from the virus.

Pakistan and Sri Lanka have so far coped reasonably well with the pandemic compared to other regional countries. Iran is the worst in the region as having the second highest fatality rate of 2.7% after Afghanistan and 96 deaths per 100,000 of population," it stated.

It added that in Pakistan 3% people have been vaccinated compared to 15% in India, 9% in Sri Lanka and 6% in Bangladesh.

The survey claimed that according to the estimates of National Institute of Population Studies (NIPS), the population of Pakistan is 215.25 million with a growth rate of 1.9% in 2020 and population density of 270 per square km.

Population falling in the age group of 15-59 years is 59% whereas 27% are between 15 and 29 years. This youth bulge can translate into economic gains only if the youth have skills consistent with the requirements of a modern economy.

Pakistan has improved health indicators over the last three years, as exhibited in the regional comparison of health indicators shown in the Table below:

Country	Life expectancy at birth, total (years)			Infant Mortality Rate (per 1,000 live births)			Maternal Mortality Rate (Per 100,000)			Under 5 Mortality Rate (Per 1,000)			Population growth (annual %)		
Country Name	2016	2017	2018	2016	2017	2018	2015	2016	2017	2016	2017	2018	2016	2017	2018
Pakistan	66.8	66.9	67.1	60.5	58.8	57.2	154.0	143.0	140.0	73.8	71.5	69.3	2.1	2.1	2.1
India	68.9	69.2	69.4	33.2	31.5	29.9	158.0	150.0	145.0	41.1	38.7	36.6	1.1	1.1	1.0
Bangladesh	71.8	72.1	72.3	28.0	26.5	25.1	200.0	186.0	173.0	33.9	31.9	30.2	1.1	1.1	1.1
Sri Lanka	76.5	76.6	76.8	7.0	6.7	6.4	36.0	36.0	36.0	8.2	7.8	7.4	1.1	1.1	1.0
Nepal	69.8	70.2	70.5	28.7	27.6	26.7	236.0	200.0	186.0	34.8	33.4	32.2	0.9	1.3	1.7
Bhutan	70.8	71.1	71.5	26.5	25.6	24.8	203.0	193.0	183.0	32.0	30.8	29.7	1.2	1.2	1.2
China	76.2	76.5	76.7	8.5	7.9	7.4	30.0	29.0	29.0	9.9	9.2	8.6	0.5	0.6	0.5
Indonesia	71.0	71.3	71.5	22.6	21.9	21.1	192.0	184.0	177.0	26.9	25.9	25.0	1.2	1.2	1.1
Malaysia	75.6	75.8	76.0	6.8	6.7	6.7	30.0	29.0	29.0	8.0	7.9	7.8	1.4	1.4	1.4
Philippines	70.8	71.0	71.1	23.4	22.9	22.5	127.0	124.0	121.0	29.7	29.1	28.4	1.5	1.4	1.4
Thailand	76.4	76.7	76.9	8.6	8.2	7.8	38.0	37.0	37.0	10.0	9.5	9.1	0.4	0.3	0.3

Note: Health-related data is given in a calendar year

Source: World Bank Development Indicators (Year 2020)

Original Article

Spectrum of Surgically Treated Congenital Heart Diseases: Single Center Experience

Surgically Treated Congenital Heart Diseases

Faiz Rasool, Imran Hashim[2], Jamal Butt[2] and Armaghan Ahmad[2]

ABSTRACT

Objective: Congenital heart disease is the most common birth defect. Congenital heart disease was the underlying cause of an estimated 261 247 deaths globally in 2017. Childrens hospital Lahore is one of the top three high volume center in Pakistan, where more than 1000 cases of congenital heart disease are surgically treated. In this article author has discussed spectrum of diseases which are being treated surgically at Children's Hospital Lahore.

Study Design: A Retrospective Study

Place and Duration of Study: This study was conducted at the Children's Hospital/Institute of Child Health Lahore from January, 2019 to December, 2019.

Materials and Methods: Depending on diagnosis of condition and co morbid status a combined decision between pediatric cardiologists and surgeons was made regarding choice of intervention in the cath conference after reviewing the echocardiogram, angiogram, CT, pulse oxymetry etc.

Results: 1177 patients underwent cardiac surgeries. 402 (34%) underwent closed heart surgeries. 61% were male. Age group 1 month to 12 months was the most common age group that made 34% of all cases., TOF, VSD and PDA made the bulk of cases.

Conclusion: Most of the congenital heart diseases can be managed surgically at our institute. With the rising incidence of CHD in Asian countries such as Pakistan, establishment of pediatric cardiac surgery units have allowed for the provision of quality care. VSD closure, TOF repair and PDA ligation were the most commonly performed surgical procedures.

Key Words: congenital heart diseases, ventricular septal defect, tetralogy of fallots

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INTRODUCTION

Congenital heart disease is the most common birth defect. [1] Congenital heart disease was the underlying cause of an estimated 261 247 deaths globally in 2017, [2] In a meta-analysis of 260 studies, the mean prevalence of CHD was 9.4 per 1,000 live births [3] with the highest prevalence in Asia. Although one study[4] reveled the prevalence of CHD of 4/1000 live births in Pakistan, another study [5] showed the prevalence of 15/1000 live births but the true prevalence is unknown because of births at rural areas and at homes which are not documented and are not evaluated by health care professionals. It is estimated that every year 42000 babies are born with CHD in Pakistan [6]

According to cardiothoracic surgeon registry there are 0.52 (0-25.97) pediatric cardiac surgeons per million populations globally. Large disparities exist between regions, ranging from 0.08 pediatric cardiac surgeons per million populations (sub-Saharan Africa) to 2.08 pediatric cardiac surgeons (North America),[7]. With population of 200 million and only 17 pediatric cardiac surgeons in Pakistan, the figure is 0.08 / million in Pakistan.

Children's hospital Lahore Is one of the top three high volume center in Pakistan, where more than 1000 cases of congenital heart disease are surgically treated. In this article author has discussed the spectrum of diseases which are being treated surgically at Children's hospital Lahore.

MATERIALS AND METHODS

From 1st January 2019 to 31st December 2019, all the patients who underwent surgery at children's hospital/institute of child health Lahore were retrospectively reviewed. Depending on diagnosis of condition and co morbid status a combined decision between pediatric cardiologists and surgeons was made regarding choice of intervention in the cath conference

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after reviewing the echocardiogram, angiogram, CT, pulse oxymetry etc.

RESULTS

in year 2019, total of 1177 patients underwent cardiac surgeries. (fig 1 table 1) 402 (34%) underwent closed heart surgeries. 61% were male. Age group 1 month to 12 months was the most common age group that made 34% of all cases. (table 2 figure 2) PDA ligation was the most common closed heart operation. Other included pulmonary artery banding, modified BT shunt, coarctation of aorta repair, permanent pace maker implantation, aortico pulmonary window ligation and drainage of pericardial effusion. 775 (66%) patients underwent open heart surgeries. VSD was the most common diagnosis (27%).

Table No.1: Spectrum of surgically managed congenital heart diseases

diagnosis	Number of cases	Palliative procedure	Corrective procedure
VSD	317 (27%)	44	273
TOF	291 (25%)	81	211
PDA	144 (12%)		144
TAPVC	75 (6%)		75
TGA	72 (6%)	12	60
COA	64 (5%)		64
Univentricular heart	53 (4.5%)	53	0
AV canal defects	46 (4%)	7	39
ASD	46 (4%)		46
Pericardial effusion	26 (2%)		26
ccTGA	6 (0.5%)	6	0
CHB	21 (1.7%)		21
Ascending aortic aneurysm	4 (0.3%)		4
ALCAPA	5 (0.4%)		5
AP window	9 (0.7%)		9

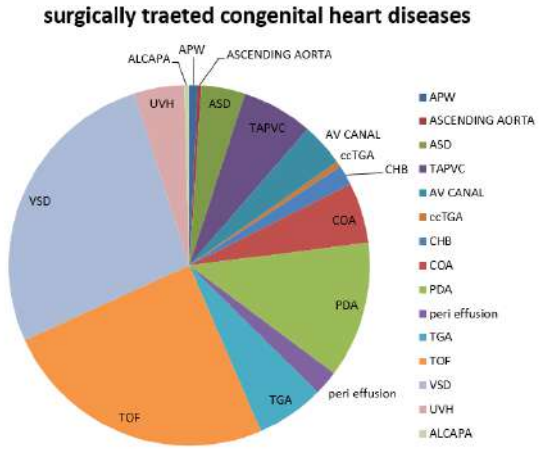

Figure No.1: TOF, VSD and PDA made the bulk of cases

VSD closure was the most common operation. Pulmonary hypertension was the most common indication for the VSD closure. (table 3) Tetrology of fallot (TOF) was second most common diagnosis that accounted for 24% of all cases. As shown in the table, most of the patients underwent total correction. Those patients who were having intractable hypercyanotic spells were treated with modified BT shunt.

As shown in the figure 1, TOF, VSD and PDA made the bulk of cases.

Table No.2: Age Group

Male	719 (61%)
Female	458 (39%)
Neonates	44 (3.7%)
1-6 months	224 (19%)
7-12 months	179 (15%)
1-2 years	136 (11.5%)
2-5 years	229 (19.5%)
5-10 years	230(19.5%)
>10 years	135 (11.5%)

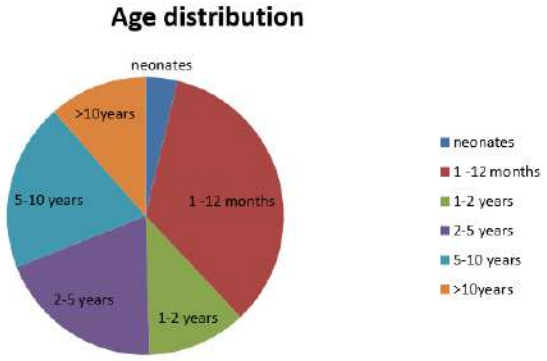

Figure No.2: Age Distribution

Table No.3: VSD break up

Diagnosis	Number of cases	procedure
VSD with pulmonary hypertension	233	VSD closure
VSD with aortic valve prolapsed	21	VSD closure ± AV repair
VSD with RVOTO	19	VSD closure + RVOT resection
Multiple VSDs	32	PAB
VSD, FTT	12	PAB

Comparison with other studies in Pakistan: As shown in table 4, most common surgically corrected disease in Pthan's study 8 was TOF which is different from our study. Most common operation in other studies 9-11 was VSD closure which is in coherence with our study. Interestingly, ASD closure was only 4% in our study. This is because most of the ASDs are being closed by interventional cardiologists.

Table No.4: Comparison with other studies in Pakistan

Diagnosis	Current study	Pathan et al 8	Mehmood 9	Rizvi 10	Sadiq 11
VSD	27%	21%	30%	40%	32%
TOF	25%	42%	11%		16%
PDA	12%	6%	6%		18%
TAPVC	6%				
COA	5%				
TGA	6%	7.6%	5%		
UVH	4.5%	3.7%			
CAVSD	4%	3.2%	3%	10%	
ASD	4%	5.6%	25%	30%	13%

Comparison with international studies: As shown in table 5 our study is in coherence with studies 12-14 with VSD closure being the most common operation.

Table No.5: Comparison with other international studies

Diagnosis	Current study	Prince hashem hospital 12	FUad Abbag 13	Marry MK shann 14
VSD	27%	43%	32%	39%
ASD	4%	13%	10%	5%
PDA	12%	8%	15%	10%
PS		6%	10%	2.5%
AS		4%	3%	
COA	5%	3%	3%	1%
TOF	25%	9%	4%	12%
COMPLEX CHD	4.5%	2%	3%	5%
TGA	6%	5.5%	2.5%	3%
AVSD	4%	3.6%		

DISCUSSION

CHD is the most common congenital birth defect with higher mortality rate. Most recent statistics have recorded an increasing trend in CHD occurrence. Its prevalence has escalated from 4.5 per 1,000 live births in 1970-74 to 9.4 per 1,000 live births in 2010-17 (P <0.001 This meta-analysis also reported the highest average prevalence of mild CHD lesions from Asia compared to other parts of the world (9.3 per 1,000 live births.[3] At Children's Hospital Lahore, we have increased the number of surgeries from 530 in 2016 to 1177 in 2019, that is remarkable 2.2 times increase.

CONCLUSION

Most of the congenital heart diseases can be managed surgically at our institute. With the rising incidence of CHD in Asian countries such as Pakistan, establishment of pediatric cardiac surgery units have allowed for the provision of quality care. VSD closure, TOF repair and PDA ligation were the most commonly performed surgical procedures.

Author's Contribution:

Concept & Design of Study:	Faiz Rasool
Drafting:	Imran Hashim, Jamal Butt
Data Analysis:	Armaghan Ahmad
Revisiting Critically:	Faiz Rasool, Imran Hashim
Final Approval of version:	Faiz Rasool

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

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Original Article

Frequency and Types of Seizures among Patients Presenting with Stroke

Muhammad Abas Khan[1] and Murad Ali[2]

ABSTRACT

Objective: To study the frequency and types of seizures among patients presenting with stroke.
Study Design: Descriptive Cross-sectional study.
Place and Duration of Study: This study was conducted at the Department of Medicine lady Reading Hospital Peshawar from January, 2020 to July, 2020 for a period of six months after approval of synopsis.
Materials and Methods: Data was collected by non-probability consecutive sampling technique. A total of 177 patients were included in the study. Patients with acute ischemic stroke and haemorrhagic stroke both genders and 20 years and above age were included in the study. The major resultant outcome measures were the occurrence of single or recurrent seizures and the occurrence of both early (within 2 weeks) and late (after 2 weeks) seizures were noted. Those patients who already were having history of seizures, those with sub-arachnoid hemorrhage and also those with intra-cerebral bleed were excluded from the study. Data were analysed using SPSS version 23.
Results: Among 177 patients, males were 96 (54.6%) and females were 81 (45.4%). The mean age was 63.47 ±11.62 years. Post stroke seizures were found in 33 (20.2%) patients with acute stroke. Among these, 16 (48.48%) were males and 17 (51.51%) were females, p value 0.276. Out of 177 patients 17(9.6%) had early seizures and 22 patients (12.4%) had late seizures.
Conclusion: post stroke seizures were found with increased frequency in patients with acute stroke

Key Words: Ischemic Stroke, haemorhagic stroke, Seizures, early seizures, late seizures

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INTRODUCTION

Stroke is the major cause of serious disability in adults and the third most common cause of death[1].The stroke burden is highest globally in developing world where urgent cost effective treatments are required[2]. While large population based studies on the incidence of stroke in Pakistan are lacking, it is estimated that each year 350,000 new strokes occur in the country[3]. Worldwide, ischemic stroke is found in 73% to 83% of cases while hemorrhagic stroke accounts for 8% to 18% patients[4]. Stroke is still a major cause of disability in young as well as old patients in Asia, and its mortality rates are rising[5].

Annually it is estimated that about 16 million first-ever strokes are occurring in the world, leading to a total death of 5.7 millions[6].

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The age-adjusted annual death rate from stroke in the USA is 116 per 100,000 populations and in the UK it is about 200 per 100000[7]. In the elderly population of the European countries, it was estimated as 2.700,000 prevalent cases and 536,000 incident cases every year[8]. Stroke is a global epidemic, and it is not a problem limited to high-income or western countries. Of all stroke deaths about 85% are registered in low- and middle-income countries, which is accounting for 87% of total losses due to stroke in terms of disability-adjusted life years (DALYS), calculated worldwide in 72 million per year[9-13].

According to the largest trial conducted rrecently, in Pakistan the prevalence of stroke is 6.4%[14]. Hypertension is the important and most common risk factor for all types of strokes. Research indicates that across WHO regions about 62% of strokes and 49 per cent of heart attacks are caused by high blood pressure[15]. Recent epidemiological studies from Oxford reveal that the stroke incidence is very similar to ischemic heart disease (IHD), and that contrary to common belief, stroke manifests at an age similar to that of IHD[16].

In addition, brain imaging studies revealed that "silent stroke" is 4-6 times more common as compared to overt stroke in older segments of the population[5]. These lesions are not just an epiphenomenon[6]. They have revealed an increase the risk of subsequent symptomatic stroke[5], and hence lead to cognitive decline[7] and dementia[17,18].

stroke can cause many complications. These complications include chest infection, aspiration pneumonia, dehydration, constipations, urinary ract infection, pulmonary embolism and deep vein thrombosis [19]. One of the many consequences of stroke is the development of post stroke seizures' seizures after stroke can be early or delayed. Early onset seizure is thought to occur due to cellular biochemical dysfunction, which leads to electrically excitable tissue. Late onset seizures are thought to be caused by gliosis. When a region of the brain tissue dies during a stroke, it degenerates into scar tissue which than acts as provocative irritant to the normal neurons leading to precipitation of a seizure[20].

Stroke is noted as the most common cause of seizures in the elderly population[13]. The Oxtordshire community stroke project (OCSP), which has examined the immediate and long term risk of seizures after first ever stroke with a minimal follow-up duration of two years in survivors of stroke, established that 11.5% of patients stroke were at risk of developing post stroke (that is, delayed) seizures by five years[14,] .

It was observed in one of the study that Stroke patients are having an overall 14% risk of seizures out of which 8% are developed within 14 days of stroke and 92% developed seizures after 14 days of Stroke[19]. Electroencephalography (EEG) which is not used in the routine workup of acute stroke, hence now a day latest neurodiagnostic technique for detecting epileptic activity, especially in the patients non-convulsive post-stroke epileptic activity are used [20].

Rationale: The current study has been designed to determine the frequency and types of seizures in our local population presenting with both ischemic and haemmorhegic stroke in contrast to previous study done only in patients presenting with ischemic stroke in lady Reading Hospital Peshawar by Adnan et al. Seizures are most serious complication of stroke and if attention is not paid can carry high morbidity and mortality among stroke patients. This study will definitely highlight the frequency of seizures among stroke population and also of its types whether early or late. we will compare The results of this study with local and internationally available data on seizures following stroke and if found to be significantly high than already available data than this study will provide a valuable reference for general physicians and neurologists to carry out further research on such problem in our local population.

MATERIALS AND METHODS

This descriptive study was being carried out from 5th January 2020 to 5th July 2020 at the Department of Medicine, Lady Reading Hospital (LRH), Peshawar. Non-probability consecutive sampling technique was used for the collection of data. Patients with acute stroke including both haemorrhagic and ischemic stroke of both genders of 20 years and above 20 years of age were included in the study. On the other hand, patients who had been previously diagnosed with epilepsy and those with hyponatremia, hypoglycemia, and hypocalcaemia were excluded. Sample size was 177 patients with acute stroke. It was calculated based on the 13% prevalence of seizures in stroke with 95% confidence level and 5% absolute precision. The study was carried out after approval from hospitals ethical and research committee. All patients who presented with stroke that is focal or global neurological deficit that lasted more than 24 hours and an area of hypo dense lesion (ischemic stroke) or hyper dense lesion (hemorrhagic stroke) revealed on CT brain were enrolled in the study through OPD and ER department and were than admitted for further evaluation in the medical A ward lady Reading Hospital Peshawar. CT scan of brain was done in Lady Reading Hospital Peshawar.All other relevant investigations (blood sugar level, lipid profile, serum creatinine, complete blood count, erythrocyte sedimentation rate and serum electrolytes) were carried out in hospital laboratory of LRH, Peshawar. Seizures was defined as an abnormal electrical discharge in the brain which manifested as episodic impairment in brain activity which can be diagnosed by patients complaining any one of the following. loss of consciousness as diagnosed by history. Abnormal motor phenomena which are noticed in the patient as jerky movements called fits. Sensory disruption of autonomic nervous system which are noted in the patient as paresthesias and flashing of lights in vision, disturbance of atonomic nervous system or hallucinations as noticed by history and clinical examination. Early post stroke seizure was defined as seizures that occurred within 2 weeks of stroke and late post stroke seizure were defined as seizures that occurred after 2 weeks to 3 months duration following stroke for assessing of conscious level Glasgow coma scale was calculated. Examination of motor and sensory systems and cranial nerves were carried out in detail. All the patients were explained the purpose and benefits of the study and a written informed consent was than obtained. Confounders were than excluded to eliminate bias in the study results. All patients were told to immediately report to the OPD When any seizure activity has occurred and also all patients were followed on weekly basis in the OPD to detect seizures. Once detected the type of seizure was also be established as per early or late. All the follow up assessments were done under supervision of consultant physician. All information including name, gender, age and address were noted in a pre-designed proforma. Frequency of seizures were than calculated in enrolled patients. In patients having seizures, along with detailed history, EEGs (when available) and their previous medical records were checked, in order to know whether their seizures were previously diagnosed or not

that is to know whether previously epileptic or not. The time duration of seizures following stroke was determined in those with seizures. It was further grouped as early and late post stroke seizures. Collection of data was done through objective-oriented proforma. Analysis of data was one by using SPSS version 23. To analyse the data descriptive statistics were used. Percentages and frequencies were used for qualitative or categorical variables like frequency of seizures, gender, stroke presentation (first episode or recurrence) and seizures status (known or unknown). Mean and SD were calculated for numerical or quantitative variables like age and seizures duration. Chi square test was than applied for compare the frequency of seizures in both genders and between first episode and recurrent stroke. P value <0.05 was considered significant.

RESULTS

Among 177 patients presenting with acute stroke, there were 96 (54.6%) males and 81 (45.4%) females. Overall, age of the patients was ranging from 23 to 90 years (mean 63.47 ±11.62 years). However, age of the patients who had seizures ranged from 40 to 90 years (mean 66.18 ±11.91 years). Most of patients presenting with seizures were in the age group of 70-79 years followed by 60-69 years and 50-59 years respectively (details in Table 1). Patients presented from various districts of Khyber Pakhtunkhwa including Federally Administered Tribal Areas (FATA). Most of the patients belonged to District Peshawar 50 (28.25%) followed by FATA 40 (22.6%)than by Charsadda 35(19.77%), Nowshera 25(14.12%), Swabi 15(8.48%) and others 22(6.78%).

Table No.1: Types of Seizures

	Partial seizures	generalized tonic clinic seizures	Total
Early seizures <2 weeks	9(52.94%)	8(47.06%)	17(100%)
Late siezures > 2 weeks	15(68.18%)	7(31.8%)	22(100%)

Table No.2: Age wise distribution of patients with seizures in stroke

Age groups (years)	Seizures after stroke		Total
	Yes	No	
<50	3(8.33%)	11 (7.8%)	14 (7.91)
50-59	6 (16.67%)	33 (23.40%)	39 (22%)
60-69	9 (25%)	39 (26.66%)	48 (27.12%)
70-79	13 (36.11)	38 (26.95%)	51(28.81%)
80-89	2 (5.56%)	17(12.06%)	19 (10.73%)
90-99	3 (8.33%)	3 (2.13%)	6 (33.9%)
Total	36(20.3%)	141(79.66%)	177 (100%)

Table No.3: Gender wise distribution of seizures

Gender	Seizures in stroke		Total	P value
	Yes	No		
Male	18(47.22%)	77(55.8%)	95 (53.672%)	
Female	21(52.78%)	61(44.2%)	82 (46.33%)	
Total	39(22%)	138 (78%)	177 (100%)	

In these stroke patients, 28 (22.4%) presented with first episode while 11 (21.15%) patients were having recurrent stroke.

Out of 177 patients with ischemic stroke, seizures were found in 39(22%) cases. Among these, 18(47.22%) were males and 21 (52.78%) were females, with p value 0.276 (Table 2). Frequency of seizures in new onset stroke was 28/39 (71.8%) while in the recurrent stroke it was 11/39 (28.21%), with p value 0.402 (Table 3)

Early Onset Seizures: Out of 200 patients 17(9.6%) patients had early seizures that is seizures were developed in these patients within 2 weeks with no previous history of seizures. 9(52.94%) patients developed partial seizures and 88(47.06%) patients developed generalized tonic clonic seizures.

When followed up in opd 3 of the patients having generalized tonic clonic seizures went to have one or more post stroke seizures.

All the 3 patients were in range of age 30-70 years. They had also some additional risk factors and underlying diseases hyperlipidemia, hypertension, Diabetes mellites. 2 patients with partial seizures were having hyperlipidemia and hypertension while one patient with partial seizures was having mitral stenosis leading to clot in atrium as cause of stroke.

Out of 17 patients with early seizures 6 had posterior circulation infarct. while 2 patients were having lacunar infarcts

Late Onset Seizures: Out of 22(12.4%) patients having late onset seizures. 20 patients had a single fit during their six month follow up while 2 patients had recurrent seizures).

3 patients with early onset seizures also then progressed to have late onset seizures.one patient had 2 late onsets seizures.so overall 4 patients had late onset seizures.

All patients with late onset seizures had infarcts in middle cerebral artery perfusion area none of these patients presented with epileptic seizures. posterior circulation infarct was the risk factor considered for higher frequency of seizures after stroke.

DISCUSSION

Our study was conducted to determine incidence and risk factors for seizures after stroke. overall seizures occurred in 22 percent of patients. The major risk factors identified in our study were middle cerebral artery infarcts and old age and stroke involving large cortical areas.

Our study showed that out of total of 39 patients having seizures. 17 patients had early seizures that is 9.6%.

Adnan et al conducted a trial on 200 patients who suffered from ischemic stroke and found out that 8% of patients had seizures after stroke which is comparatively lower than our study[12]. The possible explanation is that they had included only ischemic stroke patients while our study included both haemorrhagic and ischemic stroke patients.

In a population based study in Rochester 4.8% patients were found to have early onset seizure within 24 hours of cerebral ischemic stroke. The Rochester series had included hemorrhagic stroke patients as well as subjects[21].

Treatment options included carbamazepine, phenytoin, valproic acid and the new antiepileptics. New anti-epileptics can be used to lower the likelihood of drug interactions and adverse effects of anti-epileptic drugs and in treatment failures with the classic anti-epileptic drugs[22].

In our study late onset seizures within 6 months after stroke. patients with large cortical infarcts, middle circulation infarcts and early post stroke seizures were noted to be mainly at risk.

The increased incidence after the middle artery territory infarct may show extensive damage frequently sustained to temporal gyrus [23]

There is increased morbidity associated with early post stroke seizures [24].

CONCLUSION

Seizures were found in 22% of acute ischemic stroke patients. It was more common in older patients. Majority had seizures in the past.

Recommendations: Patients with acute stroke need to be assessed for the presence of seizures. As seizure is the most disabling consequence of stroke, appropriate preventive and therapeutic measures need to be taken against seizures in patients with stroke to reduce associated morbidity and mortality.

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Original Article

Efficacy of Posterior Pericardiotomy to Prevent Postoperative Pericardial Effusion after Valvular Heart Surgery

Muhammad Sher-i-Murtaza, Muhammad Hamid Chaudhary, Iftikhar Paras and Ahmad Abdul Manan

ABSTRACT

Objective: To determine the effect of posterior pericardiotomy to prevent postoperative pericardial effusion.
Study Design: prospective observational study
Place and Duration of Study: This study was conducted at the Chaudhary Pervaiz Elahi (CPE) Institute of Cardiology, Multan, Pakistan, from January 2019 to August 2020.
Materials and Methods: Patients who underwent mechanical valve replacement surgery and posterior pericardiotomy at time of surgery were included in the study group (Group 1) and patient in whom posterior pericardiotomy was not done during valve replacement surgery were taken as a control group (Group 2). Perioperative characteristics of all patients were recorded. Primary end-point of the study was postoperative large pericardial effusion which needs surgical drainage.
Results: 2,399 patients were operated for cardiac diseases, out of which 520 (21.6%) patients underwent valve replacement surgery. Posterior pericardiotomy was done at time of surgery in 70 patients. There was no difference between the two treatment groups with regard to age, sex, LV ejection fraction, preoperative pulmonary pressure, operation type, cross clamp time and CPB time. 21 patients (4.67%) developed postoperative large pericardial effusion in control group. However, it was not statistically significant (p >0.065). Operative mortality of pericardial effusion drainage was 19%.
Conclusion: We concluded that Posterior Pericardiotomy at time of valve replacement surgery is a safe and effective technique to prevent postoperative Pericardial Effusion.
Key Words: Posterior pericardiotomy, Postoperative pericardial effusion

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INTRODUCTION

Rheumatic heart disease is still common in developing countries like Pakistan. Patients with severe valve disease undergo valve replacement surgery.[1] Patients having mechanical prosthetic valve need lifelong anticoagulation therapy after surgery to avoid valve thrombosis. These patients are prone to develop postoperative pericardial effusion (POPE).[2,3] Literature review revealed that 4.5-6% patients develop clinically significant Pericardial effusion after valve surgery.[4,5]

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Despite improvements in perioperative care, pericardial effusion is an important cause of morbidity and mortality after surgery. Up to 19% mortality is reported among patients who needs pericardial effusion drainage.[2,6] Postoperative PE may present with nonspecific clinical symptoms which may be easily missed in early postoperative follow up period resulting in delayed diagnosis and treatment.[2,7,8]

Posterior pericardiotomy is a technique whereby a window is created between pericardium and left pleural cavity to prevent any fluid accumulation in pericardial cavity, this simple technique may help to reduce the incidence of lethal cardiac tamponade after valvular heart surgery.[9]

Although the effect of posterior pericardiotomy (PP) in reducing the incidence of late pericardial effusion after valve replacement surgery is reported by Erdil et al.[10] but so far, scarcely any center is performing this procedure in valve patients routinely, suggesting that there is not yet sufficient awareness in this regard.

Therefore, we aimed to evaluate the role of Posterior Pericardiotomy to prevent postoperative pericardial effusion and its complications in patients having valve replacement surgery.

MATERIALS AND METHODS

From January 2019 to August 2020, patients undergoing isolated or concomitant mechanical valve replacement surgery at Department of Cardiac surgery, Chaudhary Pervaiz Elahi Institute of cardiology Multan were included in the study.

Patients were divided into two groups; in Group 1 posterior pericardiotomy was done during surgery and in Group 2 no posterior pericardiotomy was done.

Following patients undergoing valve replacement surgery were excluded from study group:

Exclusion criteria:

- Patients having left pleural adhesions
- Inability to do posterior pericardiotomy because of thick calcified adhesions of heart to posterior pericardium
- cardiac tamponade within 48 hours of cardiac surgery due to excessive surgical bleed in the presence of mediastinal drains.

The study was conducted after approval from the ethical committee of the institution and according to the rules established by the revised Helsinki convention.

In Group 1, Posterior pericardiotomy was done during surgery by our own method. After cardioplegic arrest of heart before replacing the valve, heart was lifted and retracted by surgeon to expose posterior pericardium. Then Posterior Pericardium was grasped with Ellis's forceps at its most dependent part in supine position medial to the phrenic nerve and lateral to descending aorta, 3-4 cm longitudinal incision was made with electrocautery to create a window between pericardium and left pleural space. Care was taken to position incision on posterior pericardium proximal to LV apex to avoid any speculated risk of cardiac herniation through this incision into left pleural cavity. (Fig I).

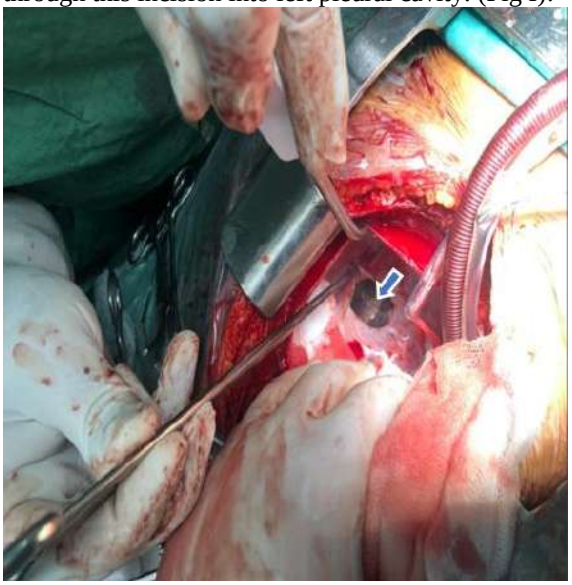

Figure No.1: Arrow points the pericardio-pleural window after posterior pericardiotomy

Two chest tubes, one in the left pleural cavity and the other in anterior mediastinum, were placed in Group 1. In Group 2, chest drain was placed in anterior mediastinum and in pleural cavity only when it was entered. No posterior mediastinal drain was used in either group.

Chest tubes were removed on the following day when the drainage was nil for two hours or less than 10 mL/h for consecutive 4 hours, no air leak and no mediastinal or pleural collection confirmed by x-ray chest and echocardiography. Rest of surgical technique used in both groups was same. Conventional median sternotomy was performed in all patients. Sodium warfarin was used for anticoagulation which was started on the first postoperative day. Sodium warfarin dose was adjusted daily to achieve therapeutic INR in range of 2.5-3.5. Anti-platelet medication was routinely added in all patients. We did not use heparin as a bridge therapy during achievement of therapeutic INR. Echocardiographic evaluation for presence of pericardial effusion was made by a cardiologist of senior registrar rank at time of discharge. Patients were followed for 6 weeks for pericardial effusion. Echocardiography was done when there was any clinical suspicion of pericardial effusion during follow up period. Pericardial effusion was graded using the criteria described by Bakhshandeh et al.

Grade	Description
Small	<10 mm echo-free space in diastole
Medium	10 mm echo-free space in diastole
Large	20 mm echo-free space in diastole
Very Large	20 mm echo-free space in diastole with compression of the heart

Pericardial effusion of 2cm or above was considered as clinically significant and needed drainage.

Primary outcome was cardiac tamponade or large pericardial effusion within 6 weeks after surgery. Secondary outcome was presence of left sided pleural effusions in patients and mortality associated with pericardial effusion drainage.

The data was entered and analyzed using SPSS (statistical package for social Sciences) version 25.0. Quantitative variables were expressed as mean ± standard deviation and the qualitative variables were expressed as frequency and percentage. Difference between groups was assessed by independent student t test or chi square contingency analysis. P values < 0.05 was considered statistically significant.

RESULTS

From January 2019 to August 2020, *2399* patients were operated for cardiac diseases at cardiac surgery department CPEIC, Multan, out of which 520 (21.6%)

patients underwent valve replacement surgery. Depending upon surgeon discretion and preference, in 70 patients posterior pericardiotomy was done at time of valve surgery and no posterior pericardiotomy in 450 patients undergoing valve replacement surgery. There was no difference between the two treatment groups with regard to age, sex, LV ejection fraction, Left ventricle end-diastolic dimension, preoperative pulmonary pressure, functional class, cross clamp time, CPB time, ventilation time and hospital stay as shown in table I and table 2. 21 patients (4.67%) out of 450 patients in group 2 (control group) developed postoperative large pericardial effusion which needed drainage after primary surgery on follow up and none of the patients who had posterior pericardiotomy during valve replacement surgery developed postoperative large pericardial effusion.

Table No.1: Quantitative Variables

Variables	Group	Mean	Std.Deviation	P value
Age	1	30.4714	11.55042	0.530
	2	29.0622	12.59850	
Pulmonary hypertension	1	59.843	21.3288	0.734
	2	60.673	22.1636	
EF	1	55.7143	6.32946	0.712
	2	56.3556	5.81319	
Creatinin	1	.9129	.25647	0.489
	2	.9398	.23886	
LVIDD	1	60.2286	11.00879	0.937
	2	60.5511	10.97307	
CPB time	1	100.1714	29.61344	0.927
	2	99.4178	29.46061	
Clamp time	1	77.8000	25.88021	0.976
	2	77.5933	25.68910	
VT	1	7.0000	3.61158	0.932
	2	6.9978	3.56455	
Hospital stays	1	5.1714	.97760	0.771
	2	5.1844	.97598	

EF=Ejection Fraction, LVIDD=Left ventricle internal diastolic dimension, CPB=cardiopulmonary bypass VT=ventilation time

Table No.2: Qualitative Variables

Variable	Group 1	Group 2	Pvalue
Gender			
Male	40	250	0.804
Female	30	200	
NYHA Class			
II	9	81	0.565
III	53	318	
IV	8	51	
Pericardial Effusion			
Yes	0	21	0.065
No	70	429	
Pleural Effusion			
Yes	1	5	0.817
no	69	445	

Symptomatic large pericardial effusion was drained by surgical exploration under anaesthesia by subxiphoid approach. The postoperative large pericardial effusion was more in control group. However, this difference was not statistically significant (p >0.065). There was no significant difference regarding the postoperative left pleural effusion.

Out of 21 patients how developed postoperative large pericardial effusion 4 patients expired. (mortality among pericardial effusion=19%). This raises the operative mortality 0.9% in group 2.

DISCUSSION

Postoperative Pericardial effusion is a well-known complication after open heart surgery[4]. Different operative strategies and drugs are used to prevent early postoperative pericardial collection and cardiac tamponade like opening of left pleura, placing posterior mediastinal drain and use of anti-inflammatory drug like colchicine[11,12,13]. Literature review revealed no clear benefits of these strategies to prevent cardiac tamponade. Erdil's group suggested that posterior cardiotomy during valve replacement operation might reduce the risk of cardiac tamponade and postoperative pericardial effusion, but they failed to show statistically significant difference. Postoperative pericardial effusion has been associated with anticoagulant use and post pericardiotomy syndrome.[14,15] Large effusion may surround the heart, but the most frequently it is localized posterior to the heart.[15] Posterior Pericardiotomy is considered an important operative strategy that can remarkably diminish the incidence of postoperative pericardial effusion and tamponade.[16] Results of our study are similar to a study done by Nevzat Erdil et al which showed that incidence of postoperative pericardial effusion is less after posterior pericardiotomy but the difference was not statistically significant. There is conflicting data about safety of this strategy some study highlighted that pulmonary complications and left pleural effusion is more in posterior pericardiotomy group and other study showed no difference[9,10]. In our study there is no difference in occurrence of left pleural effusion in both groups. In all patients with PP, a chest tube was placed in left pleural cavity, there was no untoward effect like herniation of heart was noted in our study. Some surgeons may use sharp incision on posterior pericardium. We preferred low-powered electrocautery incision between left phrenic nerve and descending aorta. Our study showed that the incidence of clinically significant postoperative large pericardial effusion in patients without posterior pericardiotomy was 4.67 % which was similar to study done by Pepi M et al and a study done by sang chang chu and colleagues.[4,17]

Although many studies[18,19,20] have showed that posterior pericardiotomy is safe and effective treatment in preventing postop pericardial effusion but none of the study have highlighted the survival advantage of posterior pericardiotomy. In our study we have noted that although the difference of large POPE is not

significant among groups, but even after successful primary surgery this lethal complication increases the operative mortality nearly 1% in control group. And mortality among patients who need pericardial effusion is remarkably high up to 19%. This high mortality in patients who need POPE drainage is reported in literature.[2,6]

The limitation of study is that a smaller number of patients are in study group as compared to control group. To strengthen the conclusion a randomized trial is needed. Only those patients who underwent surgical drainage are seen for large postoperative PE complication, those patients how expired at their homes or cannot reached at tertiary care centers have been missed.

In summary Posterior pericardiotomy is useful in sub-continent countries where surgery for rheumatic heart disease is still a big health burden. In these developing countries with limited health resources and infrastructure, patients have to visit for follow up in tertiary care centers from remote areas with no health facilities. So, efforts should be made to avoid this early lethal complication.

CONCLUSION

We concluded that posterior pericardiotomy during valve replacement surgery is a safe and effective technique to prevent postoperative pericardial effusion and mortality associated with it.

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Original Article

Tooth Wear Among Diabetics

Prevalence of Tooth Wear among Adult Population Suffering from Diabetes Mellitus-Presenting in A Tertiary Care Hospital of Taxila Cantt; A Descriptive Study

Syeda Sameen Zehra Rizvi[1], Maimoona Siddiq[2], Aamir Rafique[1], Muhammad Uzair[1], Naila Zakria[1] and Syed Zuhair Mehdi[2]

ABSTRACT

Objective: To determine the prevalence of tooth wear in permanent dentition of adults suffering from diabetes mellitus.

Study Design: Descriptive / Cross Section Study

Place and Duration of Study: This study was conducted at the Dental College, HITEC-IMS, Taxila Cantt for a duration of 3 months, from October 2020 to December 2020.

Materials and Methods: A total of 200 patients who gave positive history of diabetes mellitus were randomly selected, informed consent was acquired from all subjects. Patients were clinically examined for tooth wear: attrition, erosion, abrasion and abfraction. Data was analyzed on SPSS version 27. Chi square test was applied for statistical significance.

Results: Out of 200 subjects, 58% were males and 42% were females, 124 individuals had presence of tooth wear and 76 subjects had no tooth wear, 33 patients were found to have good glycemic control while 86 and 81 number of individuals had moderate and poor glycemic control respectively.

Conclusion: Diabetes Mellitus is common disease in adult population and it severely effects the oral health of an individual. Tooth wear is common finding in diabetic patients due to xerostomia**.** When patient is diagnosed as diabetic, the dentist should educate the patient about the significance of hygiene maintenance and possibility of tooth wear and should carry out screening for tooth surface loss as a part of their routine clinical exam in diabetic patients.

Key Words: Tooth wear, Permanent Dentition, Diabetes Mellitus, Attrition, Abrasion, Abfraction, Erosion

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INTRODUCTION

Non-Carious Tooth Surface Loss (NCTSL) also designated as Tooth Wear (TW) is a matter of concern to all dental expert these days [1]. Tooth wear is a general term that describes the loss of hard tissues from the surface of teeth caused by factors other than dental caries, trauma or developmental disorders. (Amelogenesis Imperfecta, Dentinogenesis Imperfecta, Dentine Dysplasia)[2] It is a physiological process that occurs as the aging process continues[3,4] causing an enamel loss of between 28-30 µm per annum as proved by Van't Spijker et al. in 2009[5] but if the rate of this loss is accelerated it jeopardizes the survival of teeth and is considered as pathologic[6,7].

There are multiple factors that contributes to the etiology of tooth wear. The terms Attrition, Abrasion, Erosion and Abfraction were used by Grippo in 1991 to classify the tooth wear [8]. Attrition is the loss of tooth surface caused by tooth surface contact during occlusion or mastication. It presents in the form of wear facets on occlusal or incisal surfaces of teeth[9], parafunctional habits like bruxism, and clenching is also a well-known etiology of Attrision. Abrasion is caused by factors like tooth-brush trauma during vigorous brushing. Lesions are usually located at cervical areas of teeth[9,10] Abfraction also occurs at the cervical areas of the teeth but the possible cause of abfraction is premature occlusal contacts and lesions are narrow V-shaped notches [11]. Erosion is caused by chemical degradation of tooth surface commonly caused by ingestion of acidic foods & drinks or Gastroesophageal Reflux Disease (GERD). The most commonly affected locations are palatal aspects of

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maxillary anterior teeth and cupping lesions on occlusal surfaces of posterior teeth[11]

Among various etiologies, caffeine addiction, gastroesophageal reflux, asthma, diabetes mellitus, hypertension, or other systemic diseases or syndromes that predispose to xerostomia are the most common. Increase incidence of tooth wear in the diabetic patients is due to increased intake of acid inducing foodstuff, poor lifestyle, immune-compromised state as well as due to xerostomia[12]. Excessive tooth wear leads to hypersensitivity, pulpitis and pulp necrosis and can cause serious damage to the oral health of an individual. Many times the degree of tooth wear is so severe that it causes recurrent symptoms or presents a considerable restorative challenge, then it is deemed 'pathological' tooth surface loss[13], which is a leading cause of early tooth loss among diabetic patients.

The main objective of the study is to assess the relationship between the blood sugar levels and tooth wear in diabetic patients, thereby taking precautionary measures and prevent the complications of tooth sensitivity and infection.

MATERIALS AND METHODS

This study was conducted at OPD of Dental College (HITEC-IMS) Taxilla-Cantt, for a duration of three months, from 1st October 2020 to 31st-December-2020, after approval from ethical review board with letter number: Dental/HITEC/IRC/2/4. Total number of 200 patients were randomly selected from OPD who gave positive history of Diabetes Mellitus. Informed consent was taken from all subjects, fasting blood sugar (FBS) was acquired from all patients from laboratory of same hospital, and patients were called next morning for complete dental examination and assessment with laboratory report of FBS. Subjects included in the study were males and females, between age range of 35 -75 years with at least 6 functional occlusal units present in the oral cavity, patients having multiple types of tooth wear are also included. The Exclusion Criteria encompassed as, Patients affected by any developmental dental anomaly like Amelogenesis Imperfecta, Dentinogenesis Imperfecta, Hypodontia, Microdontia. Those who suffered from Dental Fluorosis, having multiple grossly carious teeth, patients with chronic systemic illness other than diabetes like renal failure, tumor patients, and irradiated patients were also not included in this study.

Patient's bio data, medical history of systemic illnesses, history of diabetes along with disease duration, history of parafunctional habits of bruxism /night grinding, aggressive brushing, habit of carbonated drinks and acidic food intake was acquired. Clinical examination was performed for any signs of Non-Carious Tooth surface loss (tooth wear). Diagnosis of types of tooth wear was made by careful clinical examination. Tooth wear types were documented as Attrition, Erosion, Abrasion and Abfraction All patients were examined by single examiner to overcome any bias for ambiguity in diagnosis of type of tooth wear present. All tooth surfaces buccal, labial, lingual, palatal and cervical margins were carefully examined bilaterally. History and examination findings were documented for each patient in dedicated pro-forma specially designed for this study. Fasting blood sugar for every subject was acquired and values in mg/dl were documented.

Diagnostic criteria for attrition was presence of matching wear facets on occlusal and incisal surfaces, shiny facets on amalgam restorations or fracture of cusps or restorations. Erosion was diagnosed as bilateral concave defects with a smooth and glazed surface that are free from any plaque deposits. Abrasion was diagnosed as cervical lesions that are more wide than deep and frequently effects the canine and premolar, with a strong history of vigorous tooth brushing. Abfraction was diagnosed as deep V shaped notches on cervical aspect of teeth and in association with premature occlusal contacts. All forms of tooth surface loss were noted in pre designed proforma.

Fasting Blood Sugar (FBS) levels upto 130 mg/dl were termed as "good glycemic control", 131 to 200mg/dl as "moderate glycemic control", above 200 mg/dl is mentioned as "poor glycemic control". Tooth wear present/not present was noted, type of tooth wear as attrition, abrasion, erosion and abfraction was documented, and data collected was analyzed using SPSS version 27. Gender distribution, mean age range and prevalence of tooth wear was calculated. Association of tooth wear with degree of diabetic control was analyzed using chi square test. Relation of glycemic control with isolated type of tooth wear and multiple types of tooth wear present in single individual is also analyzed using chi-square test.

RESULTS

A total number of 200 known diabetic patients, 116 males and 84 female patients i.e. 58 % and 42% respectively were studied. Table 2 mentions the mean age is 54.6 years, which reveals the fact that diabetes is a middle age disease among Pakistani population, minimum age was 35 year and maximum age was 74 years.

Table No.1: Gender Distribution

	Frequency	Percent
Males	116	58.0
Females	84	42.0
Total	200	100.0

Table No.2: Age of Patient

	N	Minimum	Maximum	Mean	Std. Deviation
Age of patient	200	35.00	74.00	54.6750	8.44012

Table 3: Mentions the prevalence of tooth wear among diabetic individuals as high as 62%. Out of all 200 subjects 124 had clinically diagnosed Tooth Wear, and 76 subjects had no tooth wear.
60 patients had single type of tooth wear present while 64 individuals had multiple types of tooth wear.

Table No.3: Prevalence of Tooth Wear in Diabetic Patients

Diabetic patients	Tooth Wear	
N=200	Present	Not present
	124 (62%)	76 (38%)

Table 4: mentions frequency of Tooth Wear. Attrition is most prevalent type of tooth wear, present in 86 subjects, followed by Erosion, Abrasion and Abfraction present in 59, 30 and 14 subjects respectively.

Table No.4: Frequency of Tooth Wear

Number of patient with tooth wear=124	Type of tooth wear			
	Attrition	Erosion	Abrasion	Abfrac-tion
	86	59	30	14
	69.3%	47.5%	24.1%	11.2%

Table 5: mentions that 33 patients had good glycemic control mean FBS up to 130 mg/dl, 86 had moderate glycemic control with FBS from range of 131 mg/dl to 200 mg/dl, and 81 patients had FBS more than 200 mg/dl i.e. poor glycemic control.

Table No.5: Glycemic Control and Presence of Tooth Wear

Glycemic Control	Tooth Wear		
	present	not present	
Good=33	7	26	P= 0.001
Moderate=86	52	34	
Poor=81	65	16	
Total=200	124	76	

Table No.6: Frequency of Isolated Type of Tooth Wear & Multiple Types of Tooth Wear Present in Single Subject

Glycemic control	Tooth Wear		
	Patients having isolated type of tooth wear present	Patients having multiple type of tooth wear present	P= .927
Good	3	4	
Moderate	26	26	
Severe	31	34	
Total= 124	Total= 60	Total= 64	

DISCUSSION

Out of 81 individuals with poor glycemic control 65 subjects had clinically diagnosed Tooth Wear, while moderate glycemic control group had 52 out of 86 having tooth wear, good glycemic control group had only 7 subjects with Tooth Wear out of 33 individuals. P value of 0.001 is statistically significant for the relation glycemic control and presence of tooth wear. Thus patients having poor glycemic control has prevalence of tooth wear.
Table 6: mentions the frequency of individuals having single type of Tooth Wear and those having multiple (two or more) types, p value of .927 is not statistically significant, thus no relation of glycemic control with single or multiple type of tooth wear is evident from this study.
Nowadays, the connection between oral and systemic diseases has become an important topic for research. So far there is no published data which discusses the incidence or prevalence of Tooth Wear in the diabetic population of Pakistan. Diabetes is one of the most common non-communicable disease found in adults [14] with the prevalence of type 2 diabetes mellitus in Pakistan was 13.50% in 1999, 7.18% in 2002; 9.52% in 2004; 8.74% in 2007, 19.21% in 2009, 10.85% in 2010; 10.95% in 2011[15]. Dental practitioners should be aware of the prevalence and severity of tooth wear in diabetic population to prevent the potential complications. It is therefore worthwhile to investigate the prevalence and severity of tooth wear among diabetic patients in Pakistan.[14]
In a study done in Thailand that included 179 patients with the age ranging from 35–74 years, the most prevalent type of tooth wear in the subjects was attrition (99.4%). The prevalence of erosion, abrasion, and abfraction were 64.8%, 31.3%, and 7.3%, respectively [13.] In the current study, the prevalence of attrition was 69.3%%, erosion was 47.5%, abrasion was 24.1%, and abfraction was 11.2%
In another study conducted in Chennai, India on diabetic patients in 2017, tooth wear was more prevalent in patients with poorly controlled diabetes [13]. The result was similar to our investigation but the previous study makes use of Random Blood Sugar Levels(RBS) as compared to FBS in current study.
The data, both from our study as well as from the previous studies, shows that tooth wear is an important dental public health problem in diabetic patients. The reason could be due to the xerostomia, change in dietary patterns, increased quantity of citrus foods consumption, improper brushing techniques, and parafunctional habits [16,17] but the exact cause of the increased intensity of tooth wear in the diabetic patients is still unknown.

Emphasis is being laid on improving oral hygiene and routine clinical examination of diabetic patients not only to prevent the possible complications such as pulpal pain, sensitivity, loss of occlusal vertical dimension and temporomandibular joint disorders[18,19] but also time consuming and complex rehabilitation procedures can be avoided [20].

CONCLUSION

There is a high prevalence of tooth wear among diabetic patients especially with poor control. Need of the hour is to create awareness regarding this growing problem and its preventive and management strategies in diabetic patients so a healthy dentition can be preserved throughout the lifespan of the population. The role of prevention is vital in maintaining the integrity of the teeth and to avoid treating those worn teeth in diabetic patients.

Author's Contribution:

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

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Original Article

To Find Out the Association of Vitamin D Levels on Blood Pressure

Syed Shahmeer Raza[1], Sara Sajjad[2], Hunya Amin[1], Tooba Khan[1], Dur E Shehwar Ali[2] and Syed Salman Shah[1]

ABSTRACT

Objective: To explore the association of vitamin D levels on the Blood Pressure.
Study Design: Observational / cross sectional study
Place and Duration of Study: This study was conducted at the Department of Physiology at Khyber Medical College/Teaching Hospital in Peshawar from January, 2020 to December, 2020.
Materials and Methods: Subjects were recruited according to the inclusion criteria. Patients were divided into three cohorts; Stage I hypertension (Group I), Stage II (Group II) hypertension and a third group (Control group). Blood for Vitamin D Levels was taken and analysed at the Hospital Lab. Blood Pressure readings in mm Hg via Yamasu mercury sphygmomanometer. All information was recorded using proforma and analysed on IBM SPSS for MacBook, Version 26.0.
Results: Mean and Standard Deviations (SD) for the levels of vitamin D (ng/mL) recorded as 34.77 ± 7.18 for control group, 26.91 ± 9.75 for Group I and 26.21 ± 9.14 for Group II. For the Control Group, Mean and SD for systolic blood pressure (SBP) and diastolic blood pressure (DBP) were recorded as 111.52 ± 4.69 mm Hg and 74.36 and ± 3.41mm Hg respectively. Group I, Mean and SD for SBP and DBP were recorded as 130.17 ± 7.93 mm Hg and 92.09 ± 5.46 mm Hg respectively. Group II, Mean and SD for SBP and DBP were recorded as 145.08 ± 18.98 mm Hg and 102.98 ± 11.95 mm Hg respectively.
Conclusion: Our study finds out a positive association of lower vitamin D levels with raised Blood Pressure.
Key Words: Blood Pressure; Vitamin D; Vitamin D Deficiency; Fat Soluble Steroid

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INTRODUCTION

The effects of Vitamin D on the various organ systems of the body may be categorized as Pleotropic in nature. Many of the time the deficiency of Vitamin D has been associated and liked to raised or higher blood pressure levels. There have been many interventional studies that recorded and examined the effect of vitamin D levels to the levels of blood pressure.

High Blood Pressure or Hypertension is a very common chronic illness prevalent in the current era. Hypertension is considered as a silent killer because of the symptomatology[1,2]. Over the one decade the patients having hypertension have risen by almost 2% (from 23.8% to 25.4%)[3,4].

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There have been many interventional studies that recorded and examined the effect of vitamin D levels to the levels of blood pressure. Still, many systemic reviews, meta-analysis and level I evidence studies are going on to understand the medical condition. It is therefore adamant to explore and find out the association and correlation of vitamin D levels on the Blood Pressure.

In our study we have included new-onset or newly diagnosed hypertensive patients. These patients were divided into two cohorts; Stage I hypertension, Stage II hypertension and a third group that included healthy individuals as the control group.

MATERIALS AND METHODS

A study was performed in the Department of Medicine at Khyber Teaching Hospital in Peshawar from January 2020 to December 2020. Inclusion criteria included patients older than age 20, of female sex, with new-onset or newly diagnosed hypertensive patients. Exclusion criteria included patients with low vitamin D levels, Kidney disease, secondary hypertension, thyroid, liver or parathyroid related medical conditions. These were excluded. Sixty (60) patients were divided into three cohorts; Stage I hypertension, Stage II hypertension and a third group that included healthy individuals as the control group. Blood for Vitamin D Levels was taken and analysed at the Hospital

Laboratory via Cobas 6000 E 501 analyzer. Blood Pressure readings in mm Hg via Yamasu mercury sphygmomanometer. Written informed, voluntary consent was obtained. The Institutional Review and Ethics Board approved the study. All Confounding variables will be controlled by exclusion criteria. Bias will be controlled by following strict inclusion criteria for patient selection, diagnosis of new hypertensive patients with measurable operational definitions and using same methods and parameters for blood pressure and vitamin D levels. All the data will be collected on a research proforma for this study's protocol. All information was recorded using proforma and analysed on IBM SPSS Statistics for Windows, Version 26.0. (Armonk, NY: IBM Corp.).

RESULTS

Sixty (60) patients divided into three cohorts; Stage I hypertension, Stage II hypertension and a third group that included healthy individuals as the control group. Mean and standard deviations for age were recorded as 34.5 ± 10.1. Whereas the Mean and standard deviations for the levels of vitamin D (taken in ng/mL) were recorded as 34.77 ± 7.18 for the control group, 26.91 ± 9.75 for patients in group I and 26.21 ± 9.14 for the patients in group II.

For the Control Group, Mean and standard deviations for systolic blood pressure (SBP) were recorded as 111.52 ± 4.69 mm Hg. While Mean and standard deviations for diastolic blood pressure (DBP) were recorded as 74.36 ± 3.41mm Hg. Stage I Hypertension Group, Mean and standard deviations for systolic blood pressure (SBP) were recorded as 130.17 ± 7.93 mm Hg. While Mean and standard deviations for diastolic blood pressure (DBP) were recorded as 92.09 ± 5.46 mm Hg. For Stage II Hypertension Group, Mean and standard deviations for systolic blood pressure (SBP) were recorded as 145.08 ± 18.98 mm Hg. While Mean and standard deviations for diastolic blood pressure (DBP) were recorded as 102.98 ± 11.95 mm Hg.

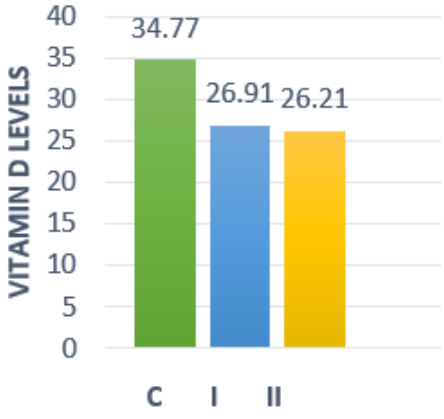

Figure No.1: Mean Vitamin D Levels (ng/mL) for the three groups.

Figure 1 shows the levels the vitamin D for all the three groups; Stage I hypertension (I), Stage II hypertension (II) and a third group that included healthy individuals as the control group (C)

I= Stage I hypertension, II=Stage II hypertension, C= Control Group (Healthy females)

Table No.1: Shows vitamin D levels have an inverse relation with the blood pressure readings as it changed from normotensive (control group) to stage I and stage II hypertensive patients

	Control (n=25)	**Stage I Hypertension (n=25)**	**Mean difference**	**p-value**
Vitamin D (ng/mL)	34.77 ± 7.18	26.91 ± 9.75	7.86	0.015
Systolic BP (mmHg)	111.52 ± 4.69	130.17 ± 7.93	(-)18.65	0.000
Diastolic BP (mmHg)	74.36 ± 3.41	92.09 ± 5.46	(-)17.73	0.000
	Control (n=25)	**Stage II Hypertension (n=25)**	**Mean difference**	**p-value**
Vitamin D (ng/mL)	34.77 ± 7.18	26.21 ± 9.14	8.56	0.015
Systolic BP (mmHg)	111.52 ± 4.69	145.08 ± 18.98	(-)33.56	0.000
Diastolic BP (mmHg)	74.36 ± 3.41	102.98 ± 11.95	(-)28.62	0.000

DISCUSSION

We found out in our study that lower levels of vitamin D were associated with high blood pressure. The Hypertensive Group I and Group II showed lower than normal levels of vitamin D (Mean) on average. The mean difference to the Control group was 7.86 ng/mL for the Hypertensive Group I and 8.56 ng/mL for the Hypertensive Group II (Fig. 1 and Table. 1)

Some studies have found out that hypertension has an association with the months that have relatively lower temperatures. Also, in parts of the world or regions that are far from the equator where the radiation of sun is low. The study found out that as we go 10 degrees away from the equator, this will lead to a rise in the blood pressure by 2.5 mm Hg and hypertension by 2.5% [5,6,7].

Here is an interesting fact about the Vitamin D levels and the African American population. African Americans' population shows a 15% difference for Hypertensive prevalence (40%), in comparison to white Americans' 25% prevalence of hypertension. The African-Americans population is at a higher risk for

developing hypertension. This leads to further target organ damage and subsequently, causes to morbidity and mortality [8,9,10]. Hence, we postulate and deduce the inference that the UV rays and skin's ability to convert vitamin D to its active form, has a connection to hypertension.

In an experimental study, Krause, et al. exposed the ultraviolet light (type B) to subjects that had both; Vitamin D deficiency and mild essential hypertension (EH). It was concluded that the type B UV Radiation not only caused an increase in the active vitamin D levels but also brought down the blood pressure levels in patients that showed Vitamin D deficiency and had EH. These results were instrumental and has since 1998, lead to extensive research on the subject[11].

CONCLUSION

Our study found out that relation exists between lower vitamin D levels and raised Blood Pressure. There have been many interventional studies that recorded and examined the effect of vitamin D levels to the levels of blood pressure. Still, many systemic reviews, meta-analysis and level I evidence studies are required for not only to understand the medical condition but also establish a possible link and to further help us understand the pathophysiology governing this change of blood pressure with the variation in the vitamin D levels.

Author's Contribution:

Concept & Design of Study:	Syed Shahmeer Raza
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

To Investigate Premenopausal and Postmenopausal Women for Evaluation of their Serum Calcium, Calcitonin and Parathormone Levels

Pre and Postmenopausal Women with Serum Calcium, Calcitonin and Parathormone

Sara Sajjad, Syed Salman Shah, Tooba Khan, Hunya Amin, Dur E Shehwar Ali and Syed Shahmeer Raza

ABSTRACT

Objective: To investigate premenopausal and postmenopausal groups of women and evaluate their serum levels of Calcium, Calcitonin and Parathormone.

Study Design: Cross-sectional/ Observational Study

Place and Duration of Study: This study was conducted at the Department of Physiology at Khyber Medical College/Teaching Hospital in Peshawar from April, 2020 to October, 2020.

Materials and Methods: 100 Subjects were included according to the Inclusion criteria. The subjects were divided into two groups: Group I (Premenopausal Women) and Group II (Postmenopausal Women). Blood for Calcium, Calcitonin and Parathormone Levels was taken and analysed at the Hospital Lab. All information was recorded using proforma and analysed on SPSS for MacBook, Version 26.0.

Results: Mean and standard deviations for age were recorded as 34.5 ± 10.1. The Mean and standard deviations for the levels of Serum Calcium (taken in mg/dl) were recorded as 9.74 ± 0.56 for Group I (Premenopausal Women) and 7.92 ± 0.72 for Group II (Postmenopausal Women), Serum Parathormone (taken in pg/ml) were recorded as 31.29 ± 18.56 for Group I (Premenopausal Women) and 60.16 ± 42.63for Group II (Postmenopausal Women) and Serum Calcitonin (taken in pg/ml) were recorded as 5.8 ± 3.02 for Group I (Premenopausal Women) and 5.1 ± 1.98 for Group II (Postmenopausal Women).

Conclusion: Our study finds out that Calcium levels were lower in the Postmenopausal women (Group I) with significantly higher parathormone levels. This has a strong correlation and suggests an increased bone turnover.

Key Words: Calcium; Calcitonin; Parathormone; Obesity; Menopause

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INTRODUCTION

Age related decrease in the calcium absorption has been reported for well over five decades now.[1, 2] Calcium ion has been reported as an essential anatomic constituent of the body's framework. Nutrition is important to keep healthy joints and bones. One of the major causes of osteoporosis is an imbalance nutrition alongside endocrine related illnesses.[3]

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Parathormone is the hormone secreted by the Parathyroid Glands. This hormone along with Vitamin D and Calcitonin controls the levels of calcium in the extracellular fluid. It does so by keeping a balance in the calcium renal excretion, calcium absorbed from the gut, calcium release from the bone and its uptake at the level of bone.[4, 5]

There are a number of hormones which control the bone mineralization and turnover.[6] Parathyroid hormone (Parathormone-PTH) releases calcium from the bones and maintains the level of calcium in the blood.[7] Estrogen plays an important role in the reduction of calcium released from the bone. Estrogen inhibits interleukin-6 production.[8] This leads to an overall reduction in the calcium released from the bone. It is evident from the above mentioned facts that the deficiency of Estrogen results in a greater and longer osteoclast cell activity.[9] So there is an increased level of osteoporosis which is known as postmenopausal osteoporosis.[10, 11]

Females around the age of 45-50 years, first experience an irregularity and later the complete cessation of the monthly menstrual cycle. This is called menopause.

The female sex hormones reach very low levels.[12] Hence, the loss of hormones (especially estrogen) after menopause and ageing, lead to lower levels of calcium.[1] Calcitonin works in a manner opposite to that of parathormone. Calcitonin plays an important role in the reduction of calcium released from the bone. In our study we investigate premenopausal and post-menopausal groups of women and evaluate their serum levels of Calcium, Calcitonin and Parathormone. 100 subjects were divided into two groups: Group I (Premenopausal Women) and Group II (Postmenopausal Women). Their Body Mass Index (BMI), Serum Calcium, Calcitonin and Parathormone levels were checked and recorded.

MATERIALS AND METHODS

A study was performed in the Department of Physiology at Khyber Medical College/Teaching Hospital in Peshawar from April 2020 to October 2020. Subjects were included according to the Inclusion criteria. Exclusion criteria included patients with Hx of Hormone Replacement Therapy (HRT), Hysterectomy, Diabetes Mellitus, secondary hypertension, thyroid, liver or parathyroid related medical conditions. These were excluded. 100 subjects were divided into two groups: Group I (Premenopausal Women) and Group II (Postmenopausal Women). Blood for Calcium, Calcitonin and Parathormone Levels was taken and analysed at the Hospital Lab. Written informed, voluntary consent was obtained. The Institutional Review and Ethics Board approved the study. All information was recorded using proforma and analysed on IBM SPSS Statistics for Windows, Version 26.0. (Armonk, NY: IBM Corp.).

RESULTS

Mean and standard deviations for age were recorded as 34.5 ± 10.1. The Mean and standard deviations for the levels of Serum Calcium (taken in mg/dl) were recorded as 9.74 ± 0.56 for Group I (Premenopausal Women) and 7.92 ± 0.72 for Group II (Postmenopausal Women).

The Mean and standard deviations for the levels of Serum Parathormone (taken in pg/ml) were recorded as 31.29 ± 18.56 for Group I (Premenopausal Women) and 60.16 ± 42.63for Group II (Postmenopausal Women).

The Mean and standard deviations for the levels of Serum Calcitonin (taken in pg/ml) were recorded as 5.8 ± 3.02 for Group I (Premenopausal Women) and 5.1 ± 1.98 for Group II (Postmenopausal Women).

This study finds out that Calcium levels were lower in the Postmenopausal women (Group I) with significantly higher parathormone levels. This has a strong correlation and is suggestive of an increased bone turnover.

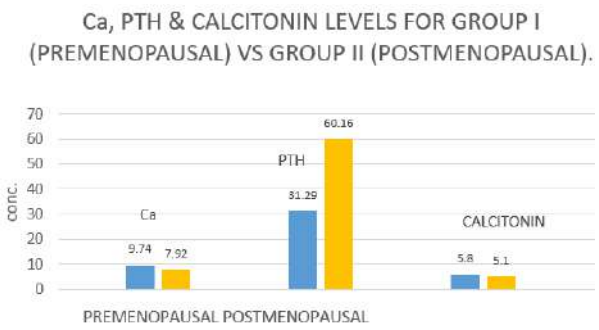

Figure No.1 shows Calcium, PTH and Calcitonin levels in Group I (Premenopausal Women) and Group II (Postmenopausal Women)

Serum Calcium (mg/dl) Serum PTH (pg/ml)
Serum Calcitonin (pg/ml)

Table No.1: Shows Calcium, PTH and Calcitonin levels in Group I (Premenopausal Women) and Group II (Postmenopausal Women)

	Group I (n=50)	Group II (n=50)	Mean difference	p-value
Serum Calcium (mg/dl)	9.74±0.56	7.92±0.72	1.82	0.039
Serum PTH (pg/ml)	31.29±18.56	60.16±42.63	(-)28.87	0.014
Serum Calcitonin (pg/ml)	5.8±3.02	5.1±1.98	0.7	0.216

Table No.2: Shows Mean Calcium levels on the basis of age group

Age Group (Years)	Patient Number	Mean Ca Level (mg/dl)
20-30	23	10.3
31-40	22	9.18
41-50	25	8.64
51-60	18	8.47
61-70	13	7.20

DISCUSSION

Our study checked calcium levels in premenopausal and postmenopausal women. It was noted that Group II (Postmenopausal Women) showed lower levels of serum calcium in comparison to Group I (Premenopausal Women). Deficiency of Estrogen results in a greater and longer osteoclast cell activity.[9, 13] At menopause the female sex hormones reach very low levels. Hence, the loss of hormones (especially estrogen) after menopause and ageing, lead to lower levels of calcium.[1, 13] Which is evident from the results of our study in the Group II (Postmenopausal Women).

Our study also finds out that not only the Calcium levels were lower in the Postmenopausal women (Group 2) but subjects had significantly higher parathormone levels (Fig. 1 and Table. 1). When the

Calcium levels are low in the body, Parathyroid hormone (Parathormone-PTH) releases calcium from the bones and maintains the level of calcium in the blood. Hence, Low Calcium Group II (Postmenopausal Women) is consistent with high PTH Levels.[4]

Table. 2 shows mean calcium levels on the basis of age group. The subjects were divided into 5 groups with an age range of 10 years. The mean calcium levels showed a decremental decrease in the higher age group ranges. Calcium supplementation has proved to be promising in elderly postmenopausal population and has shown benefits in yielding a better bone density. Some studies have found out that a deficiency of calcium in the diet had association with high blood pressure. This can simply be corrected by supplementation.[14, 15]

Given the circumstances and the high risk of osteoporosis, hypertension and other associated risks & complications, it is recommended that a national calcium supplementation plan be initiated by the government of Pakistan. As this is the need of the hour and high time to take a decision on the issue.

CONCLUSION

Our study finds out that Calcium levels were lower in the Postmenopausal women (Group I) with significantly higher parathormone levels. This has a strong correlation and is suggestive of an increased bone turnover. Still, many systemic reviews, meta-analysis and level I evidence studies are required not only to understand the medical condition but also establish a possible link and to further help us understand the pathophysiology governing this change.

Author's Contribution:

Concept & Design of Study:	Sara Sajjad
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Data Analysis:	Hunya Amin, Dur E Shehwar Ali, Syed Shahmeer Raza
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Final Approval of version:	Sara Sajjad

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

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Original Article

Influence of an Orthoptic Exercises on Near Point of Convergence

Israr Ahmed Bhutto[1], Ashique Hussain Gadehi[2], Imran Ali Pirzado[3], Mazhar Ali[4], Asim Ateeq[1] and Uroosa Memon[1]

ABSTRACT

Objective: To evaluate the influence of Orthoptic exercise on near point of converge in patients with Convergence insufficiency (CI).

Study Design: Interventional longitudinal study

Place and Duration of Study: This study was conducted at the Eye Clinic of Al-Ibrahim Eye hospital Karachi for a period of 8 months October 2020 to April 2021.

Materials and Methods: 60 patients with confirmed diagnoses of CI were chosen for the study. All of the patients were prescribed pencil push-up tests as a form of Orthoptic Exercise to reduce CI. The pre and post Near Point of Convergence was determined and compared using the chi-square test with P-value ≤0.05 considered being statistically significant.

Results: Significant difference (P-value ≤0.001) was seen in Pre and Post Near Point of Convergence in the group without glasses and the group with glasses.

Conclusion: Orthoptic Exercises proved to be influential in improving the Near point of Convergence

Key Words: Orthoptic Exercises, Convergence Insufficiency, Near Point of Convergence

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INTRODUCTION

Convergence insufficiency (CI) is an eye related pathology in which the binocular vision is dysfunctional. It is characterized by the fact that both eyes are unable to work together while focusing on a near object thus unable to accurately converge or keep persistent convergence while focusing on a nearby object. This prevents patients from seeing a single clear image leading to many difficulties such as reading issues and sleepiness[1-2]. The condition can also be mistaken by some parents and teachers in children as a rather learning disability, instead of an actual eye disorder. CI if not accounted for affects life in a negative manner, as the health and the quality of life of individual negates substantially[3].

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The cause for CI is mostly related to the intraocular muscles of the eye that are the cause due to misalignment[4]. CI is said to present in age group of less than nine years and is said to have a prevalence of about 4%[5-6]. However, if there is increase stress on the eye with an increase in burden of near vision work and prolonged working hours, it can appear much earlier ahead of time[7]. Doctors can clinically diagnose CI by assessing a redundant near point of convergence (NPC)[8]. Albeit CI is a very disturbing disorder and has a definitive impact on the quality of life and the overall health of an individual, it can still be treated. The treatment of choice for most patients that is recommended by ophthalmologist is an intensive course of Orthoptic exercise therapy[9]. Orthoptic exercises are done to enhance the ocular muscles strength. Orthoptic exercises such as pencil push-ups and use of targets for accommodation have a strong role in battling CI. Orthoptic exercises reduce the symptoms related to CI and decompensate exophoria, thereby being a very effective treatment modality[10]. 87% of Ophthalmologists and Optometrists prescribed Orthoptic Exercises such as Pencil push-ups and base-in prism reading glasses as these two treatments have shown to be effective and have a better compliance with the patient [11]. Pakistan lacks data concerning CI and how it improves with Orthoptic exercises. In light of this lack of data, a cross-sectional study was conducted at Al-Ibrahim Eye Hospital to assess the influence of Orthoptic exercises on the near point of convergence in patients with CI.

MATERIALS AND METHODS

Once IRB approval was attained, an interventional longitudinal study was carried out at the eye clinic of Al-Ibrahim Eye hospital Karachi. The study spanned for a period of 8 months during which 60 patients were selected on the basis of non-probability convenience sampling technique. All the patients were diagnosed with Convergence Insufficiency by the same Ophthalmologist of which was selected to diagnose CI. All the patients were aged between 15-30 years and were thoroughly taken into confidence about their involvement in the study and that their personal data will not be revealed or publicized. Before prescribing Orthoptic Exercises, we measured the near point of convergence (NPC) using the Royal Air Force Rule (RAF). Once NPC was measured all of the participants were prescribed pencil push-up tests as a form of orthoptic exercise for one month. They were all shown how to perform it and also were asked to demonstrate it in front of them so that they may not practice it improperly at home. On one month follow up the NPC was once again checked. The NPC data was separated for individuals with glasses and those without glasses. Data was analyzed using SPSS Version 21.0. To assess the compare, the difference of NPC after orthoptic exercise, the chi-square test was applied with P-value set at ≤0.05.

RESULTS

Figure 1: Shows the Percentage of Pre and Post Near Point of Convergence of Patients without Glasses
Figure 2: Shows the Percentage of Pre and Post Near Point of Convergence of Patients with Glasses

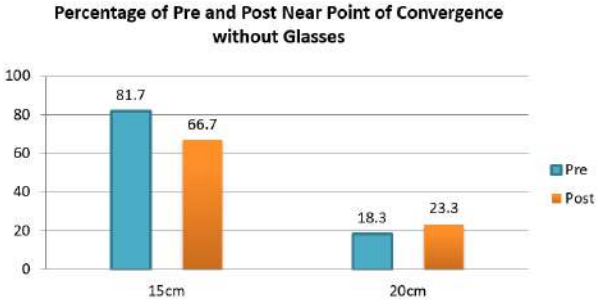

Figure No.1: Percentage of Pre and Post Near Point of Convergence without Glasses

Table No.1: Compare the Pre and Post analysis with and without glasses

With Glasses		Without Glasses	
Pre. Near Point of Convergence	Post. Near Point of Convergence	Pre. Near Point of Convergence	Post. Near Point of Convergence
≤0.001		≤0.001	

Chi-Square test applied P=<0.05

Table 1: Shows the analysis of Pre and Post Near Point of Convergence with and without glasses after Orthoptic Exercise. Results showed that the Pre and Post comparison of NPC in the with glasses group and the without glasses group was statistically significant P-value ≤0.001.

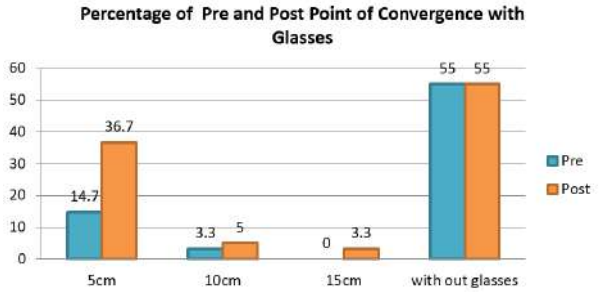

Figure No.2: Percentage of Pre and Post Near Point of Convergence with Glasses

DISCUSSION

The use of computers, smartphones, and handheld tablets have all become the norm in the day and age that we live in. All of the devices can have adverse consequences on our near vision and eventually quality of life. No age group is spared from these near vision defects and one of the more common conditions that affect our near vision is CI [12]. Current literature has recognized orthoptic exercise as a scientifically proven method for treating CI with strong researches coming out of countries such as Egypt, India, Iran, and South Korea[13-16]. Pencil Push-ups is an easy, cost saving, and self-taught home based therapy for treating symptomatic CI[17]. In Our study, we used pencil push-up test as a form of orthoptic exercise to see that it can improve NPC in CI patients. There was a significant difference in the NPC pre and post treatment in both the groups (with and without glasses). Similarly, another study also showed that pencil push-ups tests are beneficial for patients with CI, as there was improvement in NPC and prime fusion vergence (PFV)[18]. Our study was only restrained to using one form of Orthoptic Exercise. In the future we may use other forms of Orthoptic exercise and even compare them to one another as to which one is more influential in improving symptoms and NPC. Other treatment modalities such as home-based computer Orthoptic exercise program can also improve CI symptoms and NPC, meaning that other treatment modalities exist[19]. A study was also conducted to see if Pencil Push-up test was more effective than office-based therapy in patients with CI, the results showed that NPC was not statistically significant meaning that there are many options available for practitioners' to use as a form of Orthoptic exercise[13]. We can conclude that our study showed positive results and that Orthoptic exercises are influential in improving NPC.

CONCLUSION

Our study showed that indeed Orthoptic Exercise improved Near Point of Convergence in patients with Convergence insufficiency.

Author's Contribution:

Concept & Design of Study:	Israr Ahmed Bhutto
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Data Analysis:	Ashique Hussain Gadehi, Imran Ali Pirzado, Mazhar Ali, Uroosa Memon
Revisiting Critically:	Asim Ateeq
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

Effect of External Cephalic Version in Reducing the Incidence of Cesarean Section for Breech Presentation at Term

Kausar Parveen[1], Rukhsana Kasi[1], Nagina Panezai[1], Saliha Kakar[2], Khushhal Khan[2] and Muhammad Samsoor Zarak[2]

ABSTRACT

Objective: To see the effect of external cephalic version in reducing the incidence of cesarean section for breech presentation at term.

Study Design: Descriptive case series study

Place and Duration of Study: This study was conducted at the Obstetrics and Gynecology Department of Bolan Medical Complex Hospital Quetta from April, 2014 to October, 2014.

Materials and Methods: A total of 100 cases fulfilling the inclusion/exclusion criteria were enrolled. After the confirmation of diagnosis of breach presentation by ultrasound, external cephalic version was carried out in labour room with external fetal monitor. In case of success woman were allowed to go into spontaneous labour to see the success of the procedure (spontaneous vaginal delivery).

Results: A total of 100 patients were included in the study. The mean age of patients was 27.60 years with standard deviation of 6.552 years. Out of 100 patients, 66 (66%) patients had efficacy (spontaneous vaginal delivery) after successful external cephalic version while 34 (34%) patients had no efficacy (spontaneous vaginal delivery) after successful external cephalic version.

Conclusion: External cephalic version is a safe procedure with a high success rate. This will provide an alternate management option by reducing caesarean sections for breech presentation without causing any harm to mothers and their fetuses.

Key Words: External cephalic version, breech presentation, caesarean sections

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INTRODUCTION

Breech presentation is among the most common occurring abnormal presentation with a ratio of about 3-4% out of all deliveries. Previously, till the 15th century, the breech presenting babies were always delivered vaginally. There were several maneuvers to assist the breech delivery, especially delivery of the extended arms and/or the after coming head are widely practiced. Some obstetricians applied forceps to the coming head. External Cephalic Version (ECV) was introduced in the mid-16th century and popularized to avoid breech delivery.

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Breech vaginal birth is not a standard of care and a big proportion of singleton breech presentations lead to a cesarean delivery.[1]

Meanwhile, the cesarean delivery rate in the United States has reached an all-time high of 31.1% and continues to increase annually. The primary cesarean delivery rate is similarly at an all-time high despite recommendations from health workers 2010 for a primary cesarean rate of 15%. Of these, an increasing number of primary cesarean deliveries are performed for breech presentation. The reasons are less clear even though fewer women opt for attempted external cephalic version (ECV). External cephalic version (ECV) is the manipulation of the fetus through maternal abdomen to cephalic presentation.[2]

Management of fetus with breech presentation has been area of great controversy and changing practice. Until 1960s, the breech fetuses were delivered vaginally, however, by 1970s studies suggested that vaginal breech delivery were more hazardous for the baby in terms of morbidity and also mortality. ECV is a skill as well as an art that could be easily acquired, and has been practiced since the time of Aristotle (384-322 BC). External cephalic version also decreases neonatal morbidity and mortality by decreasing the incidence of cord prolapse and unattended precipitated breech

delivery. Nevertheless, the Royal College of Obstetricians and Gynecologists (RCOG) and American College of Obstetricians and Gynecologists (ACOG) currently recommend that every pregnant women with an uncomplicated singleton breech presentation at term needs to be offered external cephalic version.[3,4]

The Complications of ECV reported at term includes fracture of the baby's femur, sinusoidal baby's heart rate pattern, prolonged tachycardia baby, and fetal-maternal hemorrhage. The rate of caesarean section (C-Section) during labor was reported to be greater following successful ECV than in spontaneous cephalic presentation. Elective caesarean section was found to be safer for the fetus as well as for the mother when compared with intention to deliver vaginally. But as cesarean is a major surgical process and no doubt associated with several maternal and fetal complications of its own.[5,6]

This means that measures to reduce the incidence of breech presentation have become more important and the effect of any such measure on the incidence of cesarean section will be more marked. For this reason, ECV has become a valuable option in the management of breech fetus at term with a success rate of about 60 to 70 percent. Many adjuvant methods such as tocolysis, epidural and fetal acoustic stimulation have been shown to improve the success of external cephalic version. Beta mimetic agents, as tocolytic, increased the success rate of external cephalic version.[7,8]

Careful evaluation of the factors that influence success make this simple procedure safer and routine use of ECV in selected cases can reduce the rate of cesarean about two third and long-term studies has proved the safety of ECV for the fetus as well as for the mother.[9,10]

MATERIALS AND METHODS

The study design is Descriptive case series and was conducted at obstetrics and gynecology department of Bolan Medical Complex Hospital Quetta. Sample sizing was done by taking the percentage of successful ECV in women with breech presentation at term that is 70%, margin of error 9% and confidence level 95% then at least a sample of **100** women was required. Sampling technique used is Non probability consecutive.

The study was conducted from April 30, 2014 to October 29, 2014 at obstetrics and gynecology department of Bolan Medical Complex Hospital Quetta. The study sample included all the antenatal multigravida patients with breech presentation, confirmed by ultrasonography, gestational ages were between 37 to 41 weeks determined by last menstrual period with Intact membranes on clinical examination and adequate liquor (amniotic fluid index >8cm) by ultrasonography examination.

The study sample excluded patients with gestational age below 37 weeks, patients having multiple gestations, low-lying placenta confirmed by ultrasonography, having per vaginal bleeding anytime during current pregnancy, having any type of fetal anomaly and having any indication for cesarean section on the history and examination.

Data collection procedure: All the patients who fulfilled the inclusion criteria coming to gynae OPD at Bolan Medical complex Hospital Quetta were enrolled in the study. The informed consent was obtained after explaining each patient about the aim, method, benefits and potential hazards of the procedure like rupture of membranes, preterm labour, fetal bradycardia and fetal distress, and alternative options, like emergency cesarean section or breech vaginal delivery if procedure fails, was discussed. Subjects were informed that participation is voluntary and they may withdraw any time during the procedure. After that detailed history was taken, clinical examination was done which includes, General physical examination, per-abdominal examination, per-vaginal examination and detailed obstetrical ultrasonograpy report was requested to confirm the diagnosis of breech presentation, the type of breech, localization of placenta, viability of the fetus, amount of liquor and estimated fetal weight. Cardiotocography was performed to confirm a normal reactive heart rate pattern. After the confirmation of diagnosis by ultrasound the procedure was performed. The ECV was carried out in labour room with external fetal monitor and ultrasound machine adjacent to bed and with full preparation for cesarean section, Anesthetist and pediatrician were informed, procedure was carried out by a senior obstetrician with sufficient expertise in performing ECV, No premedication was used except for anxiolytics that was given to the morning of ECV to anxious women only. Maternal cooperation and relaxation was obtained by proper explanation of the procedure, after that woman was positioned supine with a slight lateral tilt, first the buttocks of the fetus was displaced upward and laterally away from the pelvis to iliac fossa and then fetus was turn in direction of forward role gently by applying pressure to the buttocks using right hand as well as to the head using left hand. Sustained pressure for 5 minutes was enough as intermittent pressure my cause discomfort to mother, the success rate was improved by coinciding the application with fetal movements ,as the active baby turned itself quickly, after successful version the attitude of the fetus was maintained manually for few minutes. In case of success woman were allowed to go into spontaneous labour and called for follow-up after one week or if she gone in to the labour, but irrespective of outcome a cardiotocography repeat ultrasound and complete examination of the patient were done to assess the fetomaternal condition

and success of the procedure (spontaneous vaginal delivery).

Data Analysis: Data was analyzed by using statistical package for social science (SPSS) version 17.0. Mean and standard deviation was calculated for age and birth weight and parity. Frequency and percentage were calculated for success (spontaneous vaginal delivery) and parity. Stratification with respect to age and parity was done. Post stratification chi-squire test was applied. P value ≤ 0.05 was taken as significant.

RESULTS

A total of 100 patients were included in the study. The mean age of patients was 27.60 years with standard deviation of 6.552 years. The minimum age of patients was 16 years, maximum age of patients was 40 years, range age of patients was 24 years, median age of patients was 28 years and mode age of patients was 23 years as shown in table 1.

Out of 100 patients, 40 patients were 16-24 years of age group, 33 patients were in 25-32 years of age group and 27 patients were in 33-40 years of age group.

Out of 100 patients, 22 patients were in 37 weeks of gestation, 28 patients were in 38 weeks of gestation, 31 patients were in 39 weeks of gestation and 19 patients were in 40 weeks of gestation.

24 patients were para-II, 28 patients were para-III, 32 patients were para-IV and 16 patients were para-V.

Out of 100 patients, 66 (66%) patients had efficacy (spontaneous vaginal delivery) after successful external cephalic version while 34 (34%) patients had no efficacy (spontaneous vaginal delivery) after successful external cephalic version.

Table No.1: Age statistics of patients in years

Total no of patients (n)	Valid	**100**
	Missing	**0**
Mean age of patients in years		**27.60**
Median age of patients in years		**28**
Mode age of patients in years		**23**
Std. Deviation		**6.552**
Range age of patients in years		**24**
Minimum age of patients in years		**16**
Maximum age of patients in years		**40**

26 patients in 16-24 years of age group had efficacy (spontaneous vaginal delivery) while 14 patients had no efficacy (spontaneous vaginal delivery), 22 patients in 25-32 years of age group had efficacy (spontaneous vaginal delivery) while 11 patients had no efficacy (spontaneous vaginal delivery) and 18 patients in 33-40 years of age had efficacy (spontaneous vaginal delivery) while 9 patients had no efficacy after successful external cephalic version with insignificant p value of 0.985 as shown in table no: 2

11 patients of 37 weeks of gestation had efficacy (spontaneous vaginal delivery) while 11 patients had no efficacy, 17 patients of 38 weeks of gestation had efficacy (spontaneous vaginal delivery) while 11 patients had no efficacy, 23 patients of 39 weeks of gestation had efficacy (spontaneous vaginal delivery) while 8 patients had no efficacy and 15 patients of 40 weeks gestation had efficacy (spontaneous vaginal delivery) while 4 patients had no efficacy after successful external cephalic version with insignificant p value of 0.157 as shown in table no: 3.

Table No.2: Comparison of efficacy (spontaneous vaginal delivery) after successful external cephalic version in different age group of patients

Age group of patients	Efficacy of external cephalic version (spontaneous vaginal delivery)		Total	p-value
	Yes	No		
16-24 years of age group	26 65.0%	14 35.0%	40 100.0%	0.985
25-32 years of age group	22 66.7%	11 33.3%	33 100.0%	
33-40 years of age group	18 66.7%	9 33.3%	27 100.0%	
Total	66 66.0%	34 34.0%	100 100.0%	

Table No.3: Comparison of efficacy (spontaneous vaginal delivery) after successful external cephalic version in different gestational age of patients

Gestational age of patients	Efficacy of external cephalic version (spontaneous vaginal delivery)		Total	p-value
	Yes	No		
37 weeks of gestation	11 50.0%	11 50.0%	22 100.0%	0.157
38 weeks of gestation	17 60.7%	11 39.3%	28 100.0%	
39 weeks of gestation	23 74.2%	8 25.8%	31 100.0%	
40 weeks of gestation	15 78.9%	4 21.1%	19 100.0%	
Total	66 66.0%	34 34.0%	100 100.0%	

15 patients of para-II had efficacy (spontaneous vaginal delivery) while 9 patients had no efficacy, 19 patients of para-III had efficacy (spontaneous vaginal delivery) while 9 patients had no efficacy, 21 patients of para-IV had efficacy (spontaneous vaginal delivery) while 11 patients had no efficacy and 11 patients of para-V had efficacy (spontaneous vaginal delivery) while 5 patients had no efficacy with insignificant p value of 0.973.

DISCUSSION

Breech presentation is a relatively less occurring condition (3-5% of all births), it is an important indication for caesarean section. External cephalic version is a procedure that externally rotates the fetus from a breech presentation to a vertex presentation. External version has made resurgence in the past 15 years because of a strong safety record and a success rate of about 65 percent. It increases risks and complications both for mother and fetus. Planned caesarean section is supported than planned vaginal birth for the fetus in breech presentation at term. ECV is one of the most effective procedures in modern obstetrics. It involves the manipulation of fetus externally to change the presentation of fetus from the breech into the cephalic presentation. A successful maneuver may will be cost imperative by avoiding operative deliveries and decreasing maternal morbidity.[11,12]

In our study, out of 100 patients, 66 (66%) patients had efficacy (spontaneous vaginal delivery) after successful external cephalic version while 34 (34%) patients had no efficacy (spontaneous vaginal delivery) after successful external cephalic version. These results are comparable to the results of other study done locally and internationally.

A study conducted by Rauf B et al[13] reported the findings of 40 patients were offered ECV. All singleton breech presentations with an otherwise normal antenatal course between 36-41 weeks of gestation were included in the study. Overall success rate was 67.5% with only 30% being primi-gravida ($p<0.05$). Multi-gravida showed higher success rate of 80%. Following successful ECV, spontaneous vaginal delivery was attained in 77.7% (n=21), while caesarean section was performed due to various indications in about 6 cases ($p<0.05$). Following failed version, 61.5% (n=8) had elective C/S and only 5 delivered vaginally. Route of delivery did not affect the perinatal outcome except for congenital abnormalities. Following successful ECV, there was only one stillbirth. Overall live births associated with successful version was 96.2% ($p<0.05$), while in failed version, there were no fetal deaths.

In another study conducted by Arif W et al[8] showed that forty women were included in the study. External cephalic version was successful in 60% patients. The majority (70.83%) of this group achieved the vaginal delivery. The rate of caesarean section was 29.16%. The most common indication for caesarean section was fetal distress and failure to progress. There was no fetal or maternal adverse outcome except one in which membranes ruptured during the procedure. The majority of women were satisfied with external cephalic version.

In another study conducted by Rueangchainikhom W et al[14] showed that all parturients who had completed 36 or more gestational weeks with singleton non-vertex fetus were included in the study. The participated 140 participants were singleton, pregnant women with non-vertex presentation. The success rate was 71.43% for ECV. Birth weight had a significant impact on the success rate of ECV. However, parity, maternal weight, gestational age, and placental site had no significant impact on ECV success rate. All fetuses in the present study were subsequently delivered without significant morbidity and no cases of perinatal mortality were recorded.

A study conducted by Ben-Arie A et al[15] showed that two hundred and forty-nine parturients identified as having a breech presenting fetus after the 36th gestational week over a 3-year period, after excluding contraindicated cases, were offered a trial of ECV. ECV was done by one operator, using the minimally effective force necessary. Successful ECV was achieved in 196 attempts (78.7%). No side effects were reported in neither fetus nor mother. 78% eventually had a vaginal vertex delivery from the successfully turned fetuses. Introduction of the ECV protocol effected a significant decrease in breech presentation at term, from 3.9 to 2.4% ($P < 0.01$), which can be translated into a decrease of 5.5% in the overall cesarean section rate.

In another study conducted by Lojacono A et al[16] showed that 89 women with fetal breech presentation underwent external cephalic version. The gestational age was 36.8+/-0.8 weeks. The following variables have been taken into consideration: breech variety, placental location, fetal back position, parity, amount of amniotic fluid and gestational age. The success rate of the procedure was 42.7% (n=38). No maternal or fetal complication or side effects occurred, both during and after the manoeuvre, except a transient fetal bradycardia that resolved spontaneously. Only one spontaneous reversion of the fetus occurred before delivery. Of all the women that underwent a successful version, 84.2% (n=32) had a non-complicated vaginal delivery. Five women (15.8%) had a caesarean section. There was no significant interaction between the variables assessed.

Giusti M, et al[17] conducted study on 67 patients (age 29.5 +/- 3.8) with fetal breech presentation at gestational age 35.8 +/- 1.9 weeks. Every patient underwent ECV. The same physician had performed every ECV attempt using the forward roll technique. ECV succeeded in 77.6% (n = 52) and failed in 22.4% (n = 15) of cases. No maternal or fetal complications,

side effects and spontaneous breech version occurred and in 74.6% of cases (n = 50) a vaginal delivery was performed. In 25.4% of cases (n = 17) a caesarean section was performed (15 breech presentation, 1 fetal distress in labour and 1 cervical dystocia). Among variables examined related to successful ECV, it has been observed that the amount of amniotic fluid (chi 2 = 15.33; p < 0.0000), the kind of tocolysis (chi 2 = 10.04; p < 0.007) and the umbilical cord rounds (chi 2 = 3.98; p < 0.045) were distributed in a significantly different way, whereas gestational age (p < 0.045) was significantly higher in unsuccessful ECV.

A study conducted by Policiano C et al[18] showed that attempts of ECV were successful in 62 (46%) of 134 women, and 44 women whose fetuses remained in a cephalic presentation until delivery. The rates of intrapartum cesarean delivery and operative vaginal delivery did not differ significantly between cases and controls (intrapartum cesarean delivery, 9 [20%] vs 16 [18%], P=0.75; operative vaginal delivery, 14 [32%] vs 19 [22%], P=0.20). The indications for cesarean delivery after successful ECV did not differ; in both groups, cesarean delivery was mainly performed for labor arrest disorders (cases, 6 [67%] vs controls, 13 [81%]; P=0.63).

In another study conducted by Jabeen S, et al[19] showed that most of the patients in this study were multiparous. Success rate of ECV in this study was 50%. Out of this successful group 88% persisted as cephalic and 12% experienced reversion of their fetuses to breech. Normal vaginal delivery rate was 80% in the successful ECV group. Remaining cases underwent emergency caesarean section either due to spontaneous reversion to breech or fetal distress of cephalic fetuses in labour. Unsuccessful ECV group constitute 50% of cases. Elective caesarean delivery rate was high i.e. 96% in this group. Only one had vaginal breech delivery. The remaining underwent emergency caesarean section for various indications including footling breech, delayed progress in first stage of labour or at patient's request. Multiparity was the factor associated with greater success. No relationship could be found of the birth weight of fetus with the success of procedure in this study. No complication was observed during and after ECV.

CONCLUSION

External cephalic version is a safe procedure with a high success rate. The major benefits of external cephalic version are reduced maternal morbidity and mortality from surgery. All the pregnant women with uncomplicated breech presentation should be offered external cephalic version when they are approaching term. This will provide an alternate management option without causing any harm to them and their fetuses. This will also help in reducing the number of caesarean sections for breech presentation.

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Original Article

Frequency Distribution of Causes and Severity of Thrombocytopenia in Patients of All Age Groups

Causes and Severity of Thrombocytopenia

Muhammad Idris[1], Jamila Farid[1], Mumtaz Ahmad Khan[2], Nasreen Gul[1] and Shazia Moeen[1]

ABSTRACT

Objective: The present study was planned to see the frequency distribution of causes and severity of thrombocytopenia in thrombocytopenic patients of all the age groups.

Study Design: Descriptive cross sectional study

Place and Duration of Study: This study was conducted at the Department of Pathology, Ayub Medical College Abbottabad from July 2018 to April 2021.

Materials and Methods: As much as 120 patients with blood reports showing thrombocytopenia were studied. Their blood counts were repeated with sodium citrate based anticoagulant followed by peripheral blood film examination for platelet clumps aggregates.

Results: A total of 120 patients had thrombocytopenia on initial testing. Screening by sodium citrate and blood film method revealed nine patients with pseudo thrombocytopenia. They were excluded from the study. The remaining 111 patients had true thrombocytopenia with 45% male & 55 % female, male to female ratio being 0.82:1. 20 patients aged < 25 years, 70 were 25 - 50 years & 30 were > 50 years old, with mean age 42±12 years.

Conclusion: Primary ITP & acute infection was the most frequent cause of thrombocytopenia (2/3rd), followed by acute leukemia and secondary ITP (1/3rd). Mild thrombocytopenia was the most frequent finding (2/3rd), followed by moderate & severe thrombocytopenia (1/3rd each).

Key Words: Thrombocytopenia, Immune thrombocytopenia, Pseudo thrombocytopenia

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INTRODUCTION

Thrombocytopenia is defined as platelets count <150×10^3/µl in peripheral blood. It may be caused by decreased platelet production, increased platelet destruction, abnormal platelet distribution or platelet sequestration[1].Thrombocytopenia in adults is mostly due to immune mediated destruction of platelets (Idiopathic or immune thrombocytopenia abbreviated as ITP). ITP is defined as platelets <100×10^3/µl with other causes of thrombocytopenia excluded. Pseudo-thrombocytopenia is a term used for a spuriously low platelet count when complete blood count is performed on an automated haematology analyzer, while in fact the platelet count is within the normal range[2].

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It has no actual clinical significance but the uncertainty created by the abnormal report may lead to unnecessary investigations, wastage of time and financial resource.

Thrombocytopenia has been studied extensively from different angles by researchers the world over. Immune thrombocytopenia, previously called idiopathic thrombocytopenic purpura (ITP) is the commonest type of thrombocytopenia in all the age groups involving immune mediated peripheral destruction of platelets. A change in the descriptive terminology for ITP has been suggested by an international working group[3]. It may be primary or secondary. In primary ITP the immune attack is mainly directed against the platelets while in the secondary ITP there is some immune mediated disease mainly against other cells or systems of the body, thrombocytopenia being part of it[4]. Other causes of thrombocytopenia include acute and chronic infections, chronic liver disease, disseminated intravascular coagulation, gestational thrombocytopenia, haematologic disorders, heparin therapy, drugs, complications of pregnancy, internal malignancies, disorders of bone marrow and parasitic infections, chemotherapy or radiotherapy. The diagnostic workup includes history, examination and appropriate investigations for the exact cause of thrombocytopenia[1].

The present study aimed at determining the frequency of causes and severity of thrombocytopenia in

symptomatic and asymptomatic outdoor patients at a tertiary health care facility.

MATERIALS AND METHODS

It was a descriptive cross sectional study conducted at a tertiary care hospital on 120 consecutive outdoor patients presenting with low isolated thrombocytopenia on machine generated complete blood count report. As much as 35 patients were symptomatic too, 23 with severe and 12 with moderate thrombocytopenia. The commonest symptoms were red colour spots on limbs & trunk, nose and gum bleeds. The patients were enrolled in the study by purposive sampling. The test was performed on a six part automated haematology analyzer (Mindray). Moreover, asymptomatic patients whose complete blood count were done on their request, and were found with low platelet count, also participated in the study. An informed written consent was obtained from every patient at the time of enrolment in the study and approval of institutional ethical review committee was also obtained. The patients with reports showing isolated thrombocytopenia on EDTA blood sample were screened initially by examining giemsa stained blood films. Detailed history was taken from every participant followed by a thorough clinical examination for the common manifestations of conditions presenting with thrombocytopenia. Present or past history of any bleeding episodes, or using any medicines affecting platelets in the past two months, was also recorded from each patient. Those with platelets clumps on blood film examination were labeled as pseudo thrombocytopenia and were evaluated further on the same day by (a). Repeat blood count on citrated blood sample (b). Manual platelet counts by ammonium oxalate method for confirmation. Manual platelet counting, repeat blood counting by citrate method and blood film examination was done by an experienced pathologist. Blood samples were kept at $37C^{o}$ while performing platelet count by different methods. The patients with true thrombocytopenia were investigated further for the cause of thrombocytopenia, including septic screen, viral studies, coexisting autoimmune diseases, thick and thin blood film for malarial parasite and bone marrow examination. Those with spuriously low platelet count were excluded from the study. The results were recorded on a Performa designed for this purpose. Thrombocytopenia was classified as mild moderate or severe on the basis of platelet count 100-149×10^3/µl, 50-99×10^3/µl and <50×10^3/µl respectively[1,5].

RESULTS

A total of 120 patients had thrombocytopenia by using EDTA based complete blood count. After initial screening by sodium citrate and blood film method, nine had pseudo thrombocytopenia and all of them were asymptomatic. They were excluded from the study. The remaining 111 patients had true thrombocytopenia. Gender wise, 50/111 (45%) patients were male and 61/111 (55 %) female, male to female ratio being 0.82:1 (table 1). Age wise, 20 patients were less than twenty-five years old, 70 were 25 to 50 years and 30 patients aged more than 50 years. Mean age of the patients was 42±12 years (Table.2). As much as 22 /111 (19.8%) had mild, 66/111 (59.5%) moderate and the remaining 23/111 (20.7%) had severe thrombocytopenia (table 3). Primary ITP & acute infection was the commonest cause of thrombocytopenia, followed by acute leukemia and secondary ITP.

Table No.1: Gender of patients (n=111)

No	%	Male : Female
Male	50 45	0.82:1
Female	61 55	

Table No.2: Age of patients (n=111)

Age		Mean age (years)
years	No %	
<25	20 18	42±12
25-50	66 59.5	
>50	25 22.5	

Table No.3: Causes and severity of thrombocytopenia (n=111)

Cause	Mild No %	Moderate No %	Severe No %	Total
Primary ITP	06 16.2	28 75.7	03 08.1	37 33.3
Acute infection	05 22.7	13 59.0	04 18.0	22 19.7
Acute leukemia	02 18.0	01 09.0	08 73.0	11 11.0
Secondary ITP	02 18.2	07 63.6	02 18.2	11 11.0
Pregnancy	01 12.5	05 62.5	02 25.0	08 07.2
Drugs	02 28.6	04 57.1	01 14,3	07 06.3
COVID- 19	01 20.0	03 60.0	01 40.0	05 04.5
Malaria	02 50.0	01 25.0	01 25.0	04 03.5
Heparin	01 25.0	02 50.0	01 25.0	04 03.5
Alcohol	00 00.0	02 100	00 00.0	02 100
Total	22	66	23	111

DISCUSSION

Platelet count, like other blood cells may not remain constant and keep on varying within normal limits in different physiological conditions [6-9]. In pathological conditions platelets may fall below the reference range. If platelets fall below 50×10^3/µl, the chances of spontaneous bleeding increase. At times the actual platelet count is within the normal limits but the report of blood complete picture by hematology analyzer shows low platelet count. This condition (also called pseudo thrombocytopenia), may cause anxiety and lead

to unnecessary investigations or therapeutic interventions [10].

Different aspects of thrombocytopenia have been studied by the researchers in the past few years. These include thrombocytopenia in patients with chronic active hepatitis [11], drug induced thrombocytopenia due to linazolid[12], frequency of ITP in isolated thrombocytopenia[13], thrombocytopenia in patients with malaria[14, 15], thrombocytopenia in neonatal sepsis [16] and thrombocytopenia in hospitalized medical patients [17]. These studies have provided useful information for the better diagnosis and management of thrombocytopenia due to different factors. Covid-19 is the latest addition in this list. Thrombocytopenia was seen in 33.33% critical and 12.85 % noncritical patients with this condition[18, 19].

In the present study, thrombocytopenia was seen in five patients with Covid -19, one was symptomatic and four asymptomatic. Primary ITP was the commonest cause of thrombocytopenia, affecting as much as 1/3rd of the patients. Out of them 92 % patients had mild or moderate thrombocytopenia while 8 % patients were diagnosed with severe thrombocytopenia. This is contrary to the findings of an earlier study in which acute leukemia was the commonest cause of thrombocytopenia and ITP was seen in 10 percent patients only[20]. The study focused on hematological causes of thrombocytopenia, while in the present study the main focus was frequency of thrombocytopenia due to all causes. Acute infection was the second common cause of thrombocytopenia in our study, followed by acute leukemia and secondary ITP, each contributing equally.

Regarding the frequency of severity of thrombocytopenia, as much as 22 /111 (19.8%) had mild, 66/111 (59.5%) moderate and the remaining 23/111 (20.2%) had severe thrombocytopenia (table 3). A recent study focused on interpretation of laboratory and clinical findings in thrombocytopenic patients caused by different factors concluded that thrombocytopenia in patients with aplastic anaemia had higher bleeding score compared to those with ITP and TTP[21]. High incidence of thrombocytopenia was seen in a study conducted on cardiac patients[22]. In our study no patient with cardiac surgery participated. In a study conducted on children, 59.9 and 51.3 % children with malaria had thrombocytopenia[23]. Another recent research revealed that thrombocytopenia was the commonest haematological finding in malarial patients[24]. In the present study, malaria was seen in four patients out of whom 2 had mild, one had moderate while one patient had severe thrombocytopenia. Significant correlation of pre-eclampsia was noted with thrombocytopenia in pregnant females in a study conducted on pregnant females [25]. Eight pregnant females participated in the present study. Five of them had moderate thrombocytopenia and mild or severe thrombocytopenia was noted one in each. Another study on paediatric newly diagnosed ITP in a tertiary care hospital concluded that majority of the patients had severe disease[26]. This is not in accordance with the findings of present study. A study on thrombocytopenia in cirrhotic patients revealed that thrombocytopenia can be a predictor of esophageal varices in cirrhotic patients[27]. No patient with chronic liver disease participated in the present study.

CONCLUSION

Primary ITP & acute infection were the most frequent cause of thrombocytopenia (2/3rd), followed by acute leukemia and secondary ITP (1/3rd). Mild thrombocytopenia was the most frequent finding (2/3rd), followed by moderate & severe thrombocytopenia (1/3rd each).

Recommendations: Further studies on thrombocytopenia are recommended on large sample size. Pseudo thrombocytopenia should always be excluded in asymptomatic thrombocytopenic patients.

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Original Article

Comparison of Recovery Time in Breast Feed and Formula Feed Neonates with Neonatal Sepsis

Ayaz Ali, Shakeel Ahmad and Mukhtar Ahmad

ABSTRACT

Objective: To compare recovery time between breast feeding and formula feeding in neonatal sepsis.
Study Design: Randomized control trial
Place and Duration of Study: This study was conducted at the DHQ Teaching Hospital, DG Khan from February 2020 to January 2021 for a period of one year.
Materials and Methods: A total of 30 patients was presented with neonatal sepsis were included in study. Patients were divided into two groups (A and B) by lottery method. Group A was fed with breast feeding during treatment and group B was fed with formula feeding. Mother education and recovery time were main variables of study. SPSS version 23 was used for data analysis. Test of significant were applied and p value ≥0.05 was taken as significant.
Results: Thirty neonates were included in this study, both genders. The mean age, weight and height of breast feed neonates was 11.53±5.04 days, 432.41±26.37 gram and 0.85±0.56 cm, respectively. The mean recovery time of formula feed neonates was greater than the mean recovery time of breast feed, 12.19±3.95 days and 7.87±1.88 days, respectively. The difference was statistically significant, (p=0.001).
Conclusion: Exclusive breast feeding is associated with shorter duration of hospital stay/ recovery time as compare to formula feeding when given with recommended treatment protocol for neonatal sepsis.

Key Words: Recovery time, Breast feeding, Formula feeding, Neonatal sepsis

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INTRODUCTION

Breast feeding and colostrums are two initial sources of infant feeding; both these sources have all nutrients, immunity developing components and growth factors[1]. All these ingredients are essential for newborn's health and fitness. Time duration of breast feeding and start of solid food are two key factors that may influence development of allergy. Child's health and survival are strongly associated with breast feeding which ensure about healthy life of child[2].

Over one million child deaths occur every year due to failure to breast feed during initial first six months of life, this rate of death is preventable[3]. Child's mental growth and development of immune system are well established advantages of mother feed, not only for child but it is also beneficial for mother.

World Health organization recommends that newborn should be breast fed exclusively for 6 months and after that for two years along with solid diet (supplemental food[4].

Worldwide below 40% of newborns exclusively breast fed for 6 months. Increase in rate of breast feeding can be achieved by giving awareness about benefits of breast feeding and supporting mothers and families financially and morally[5]. In Pakistan rate of early initiation of breastfeeding is 18% and rate for exclusive breast feeding for 6 months is only 37.7% that shows 44% of Pakistani children are poorly cognitive and low heighted[6].

In United Kingdome incidence of breast feeding was observed 81% in recent years, this ratio increased from 76% in year 2005. In 1990 this rate was 62% only. The term breastfeeding is also known as feeding of young mothers, nursing or milk from female breast to the young children[7].

Breastfeeding should be started after one hour of birth or as baby wishes to feed and after that within few days babies may feed 8-12 times a day[8]. Duration of feeding should be 10-15 minutes from each side. This duration and frequency of feeding decreases as child becomes older[9]. In some cases, mothers pump milk to feed child by other care takers. On the other hand, formula feed not have sufficient benefits when compared with breast feed. A study was conducted in 2017 and reported mean increase in breast feed group as 0.86 ± 64.46 and in formula feed 0.88 ± 64.59[10].

Since the day of management of neonatal sepsis was introduced no study was conducted on comparison of

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breast feed and formula feed in reduction of recovery time in neonatal sepsis in South Punjab region, so this study will be planned to fulfill the local reference gap and to choose the better feeding method during sepsis treatment.

MATERIALS AND METHODS

This study was conducted at DHQ Teaching Hospital, DG Khan from February 2020 to January 2021 in one-year duration. Study was started after obtaining ethical approval from hospital ethical board. Informed written consents was taken from the parents, (father/mother, which one available) of those babies fulfilling the inclusion criterion. Demographic variables (name, age, gestational age at birth, contact number) will also obtained. General physical examination will be done on all patients. Routine investigations Total leukocyte count, DLC, Hb, and if needed complete blood count, urine complete examination and chest X-ray were also done. Non probability consecutive sampling technique was used. Patients were divided into two groups (group A and group B) by lottery method. Patients in group A were given breast feed along with treatment of sepsis according to ward protocol. Group B were given formula feed along with sepsis treatment protocol of ward. Weight of neonate was measured by digital weighing scale. Neonate's length was measured (cms) using an infant meter. All the data was entered on the Performa for each patient.

Data was analyzed by using SPSS version 23. Mean and SD was calculated for age, weight, height and recovery time. Frequency and percentages were calculated for qualitative variables e,g; gender and groups (A, B). Effect modifiers like age, weight, height and gender was assessed. Post stratification independent t test was applied. P value ≤0.05 was taken as significant.

RESULTS

Thirty neonates were included in this study, both genders. The study neonates were equally divided into two group i.e. breast feed n=15 (50.0%) and n=15 (50.0%) formula feed. The mean age, weight and height of breast feed neonates was 11.53±5.04 days, 432.41±26.37 gram and 0.85±0.56 cm, respectively. There was n=8 (53.3%) males neonates and n=7 (46.7%) females neonates. Socio-economic status observed as class I n=8 (53.3%), n=4 (26.7%) class II and n=3 (20.0%) class III. n=7 (46.7%) mothers were uneducated, n=2 (13.3%) were matriculation, n=3 (20.0%) mothers were graduate and n=3 (20.0%) mothers were master's degree. While, the mean age, weight and height of formula feed neonates was 13.06±4.72 days, 433.25±24.54 gram and 0.86±0.32 cm, respectively. There was n=6 (40.0%) males neonates and n=9 (60.0%) females neonates. Socio-economic status observed as class I n=6 (40.0%), n=3 (20.0%) class II and n=6 (40.0%) class III.n=8 (53.3%) mothers were illiterate, n=2 (13.3%) were matriculation, n=3 (20.0%) mothers were graduate and n=2 (13.3%) mothers were master's degree. The differences were statistically insignificant, (p>0.05). (Table 1).

The mean recovery time of formula feed neonates was greater than the mean recovery time of breast feed, 12.19±3.95 days and 7.87±1.88 days, respectively. The difference was statistically significant, (p=0.001). (Table 2).

Table No.1: Demographic variables of the study groups

Variable	Breast feed n=15 (50.0%)	Formula feed n=15 (50.0%)	P-value
Age (days)	11.53±5.04	13.06±4.72	0.485
Weight(gram)	432.41±26.37	433.25±24.54	0.994
Height (cm)	0.85±0.56	0.86±0.32	0.880
Gender			
Male	n=8 (53.3%)	n=6 (40.0%)	0.464
Female	n=7 (46.7%)	n=9 (60.0%)	
Socio-economic status			
Class-I	n=8 (53.3%)	n=6 (40.0%)	0.490
Class-II	n=4 (26.7%)	n=3 (20.0%)	
Class-III	n=3 (20.0%)	n=6 (40.0%)	
Mother Education			
Illiterate	n=7 (46.7%)	n=8 (53.3%)	0.966
Matriculation	n=2 (13.3%)	n=2 (13.3%)	
Graduate	n=3 (20.0%)	n=3 (20.0%)	
Masters	n=3 (20.0%)	n=2 (13.3%)	

Table No.2: Mean recovery time of the study groups

Recovery time	Breast feed n=15 (50.0%)	Formula feed n=15 (50.0%)	P-value
Recovery time (days)	7.87±1.88	12.19±3.95	0.001

DISCUSSION

Breast milk plays a best preventive and protective role for babies. In 1991 WHO designed global data bank on human breast feeding which was renamed as "global data bank on infant and young child feeding" after multiple revisions[11]. According to data bank only 38% of infants were exclusively breast fed till 6 months and 27.6% fed till 4-5 months of age. Long term efforts and community awareness programs were launched by WHO to achieve 50% breastfeeding goals till 2025[12]

In a study by Tiewsoh et al[13] reported in his study that lack of breast feeding or breast feeding below 6 months associated with prolonged hospital stay in neonates admitted for treatment of severe pneumonia. About 86% neonates remain admit for more than 5 days in lack of breast fed group and in exclusively breast fed group only 14% remain admitted for more than 5 days.

In another study by Cushing et al[14] hospital admission of infants was observed in US population who were followed up for 6 months. This study was conducted on 1202 healthy infants and observed that incidence of respiratory infection like wheezing, cough or both is much higher in poorly breast fed infants they have mean hospital stay of 6 days as compare to 5 days in exclusively breast fed infants. Results of this study were statistically significant with 95% confidence interval.

Li YW et al[15] conducted a study on comparison of formula feed and breast feed on preterm infants who were admitted in neonatal intensive care with gestational age 28=33 weeks. This study concluded that infants with breast feeding have shorter length of hospital stay, incidence of feeding intolerance is also less and body growth is much higher as compare those infants who were formula fed and having gestational age of 28-33 weeks.

Ajetunmobi al[16] completed a study on Scotland population and compared formula feeding and breast feeding in terms of hospital stay. Mean hospital stay in formula feeding was 3.25 days and in breast feeding group it was 2.81 days. Length of hospital stay was not observed in individual diseases but it was hypothesized that in all infectious diseases recovery time is directly associated with exclusive breast feeding.

Bachrach et al[17] conducted a meta-analysis on protective effect of breast feeding and concluded that hospitalization due to respiratory diseases can be prevented by exclusive breast feeding. Seven studies from different regions were included in this meta-analysis and concluded that formula feeding is 3.6 folds more risky for infants to be admitted in hospital because of respiratory diseases as compare to 4 months of breast feeding.

Similarly, Duijts al[18] conducted a study on comparison of formula feed and mixed formula and breast feed. He concluded that mixed feeding infants were younger and remains admitted for long time when hospitalized for some infection. Breast feed promotes the health and development of neonates which provides a healthy start to the child for a healthy life. As increased cases of childhood hospitalization were reported in United Kingdome because of formula feeding[19].

Oddy al[20] conducted a study on benefits of breast feeding and reported that there was a greater risk of hospitalization due to formula fed and prolonged hospital stay in cases of upper and lower respiratory tract infections. In contrast breast feeding associated with lower hospitalization. In another study Eidelman et al[21] reported similar findings in cases of gastroenteritis and otitis media.

CONCLUSION

Exclusive breast feeding is associated with shorter duration of hospital stay/ recovery time as compare to formula feeding when given with recommended treatment protocol for neonatal sepsis.

Limitations: Our study had limitation of being conducted at single center of South Punjab on 30 neonates but results were statistically and clinically relevant. Other environmental and treatment factors which can influence hospital stay were not included.

Recommendations: Further studies on larger sample size and multi center analysis recommended to analyze role of breast more precisely**.**

Author's Contribution:

Concept & Design of Study:	Ayaz Ali
Drafting:	Shakeel Ahmad
Data Analysis:	Mukhtar Ahmad
Revisiting Critically:	Ayaz Ali, Shakeel Ahmad
Final Approval of version:	Ayaz Ali

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

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Original Article

Predictors of Left Atrial Thrombus in Patients with Severe Mitral Stenosis

Imran Javaid[1], Muhammad Zafar Iqbal[2], Abrar Ahmad[3] and Faizan Mustafa[1]

ABSTRACT

Objective: To evaluate the trans esophageal echocardiography (TEE) findings in patients of mitral stenosis and to determine the risk factors associated with Left atrial (LA) thrombus in this disease.

Study Design: Prospective study

Place and Duration of Study: This study was conducted at the Medicine & Cardiology/CCU DG Khan Medical College & Teaching Hospital, DG Khan from May 2019 to April 2020 in one year duration.

Materials and Methods: A total of hundred patients selected in this study. Patients aged 15 or above with any gender having severe mitral stenosis eligible for percutaneous trans venous mitral commissurotomy (PTMC) on the basis of trans esophageal echocardiography (TEE) were selected for this study. SPSS version 23 was used for data analysis. Test of significant were applied and p value ≥0.05 was taken as significant.

Results: Considering demographics, the mean age of the patients was 33.4±16.56 years and majority of females 89% in our study. LA thrombus formation was cross tabulated against 7 clinical and echocardiographic parameters and their association with LA clot formation was evaluated with Pearson chi square test. These variables were Age, Atrial fibrillation, mitral valve area, mitral regurgitation, Wilkins score, pulmonary hypertension and LA size. Out of these parameters; atrial fibrillation, Wilkin's score, LA size and pulmonary hypertension were significantly associated with LA clot formation with asymptotic significance of 0.000, 0.000, 0.007 and 0.034 respectively.

Conclusion: Rheumatic Mitral stenosis is a major public health concern in our country. Management of these patients is complicated by LA thrombus and systemic embolism. This study showed presence of AF, enlarged LA, severe pulmonary hypertension and high Wilkin's score to be the predictor of LA thrombus.

Key Words: Rheumatic heart disease (RHD), Left atrial thrombus, Mitral stenosis, Transesophageal echocardiography

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INTRODUCTION

Rheumatic fever licks at the joints, but bites at the heart, this is an old saying by Laseque in 1884. Rheumatic heart disease (RHD) is caused by Group a Streptococci that initially causes innocuous looking sore throat which leads to Rheumatic fever that in some patients ends up crippling the heart. In the USA in the 1920s, Rheumatic fever was the leading cause of death in individuals between 5 and 20 years of age[1]. The discovery of Penicillin in 1928 by Alexander Fleming exponentially reduced mortality and morbidity associated with Rheumatic Fever.

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However, it still remains a public health problem in developing countries especially in sub Oceania, Saharan Africa and South Asia.

In 2015, a total of 33.41 Million cases of rheumatic heart disease occurred in the world with estimated age-standardized prevalence of 444 cases per 100,000 populations for countries with an endemic pattern[2]. In Pakistan in 2015, there were 2.25 Million cases of RHD with 18900 deaths[2].

Mitral valve is most commonly involved in RHD either in isolation or in combination and the most common lesion is mitral stenosis. Mitral stenosis is often complicated by enlargement of Left Atrium (LA) and presence of Atrial Fibrillation (AF) which not only worsen heart failure but also is a major cause of thromboembolism in Rheumatic Mitral Stenosis. Clinical deterioration occurs because of the loss of atrial contraction and increase in heart rate, resulting in reduced cardiac output and functional capacity[3].

TEE is mandatory before PTMC not to rule out LA clot but also to reassess mitral valve anatomy and to exclude MR. The standard of care in severe mitral stenosis is percutaneous trans septal mitral commissurotomy. In this procedure, a balloon is placed across Mitral Valve through Atrial septal puncture and expanded at high pressure which results in splitting of commissures and

fracture of calcium. This increases the Mitral valve area and results in relief of symptoms. However, success and freedom from complications in this procedure depends upon proper selection of Patients. LA thrombus, more than mild Mitral regurgitation and poor valve anatomy with heavy calcification and high Wilkins score constitute contraindication to this procedure[4]. Wilkins Scoring system is being used for assessment of pliability of Mitral valve for PTMC. This scoring system includes four grades that is mobility, thickening, calcification and sub-valvar disease. Total score is 16. Score ≤8 is pliable for PTMC[5-6].

MATERIALS AND METHODS

This prospective study was conducted at Medicine & Cardiology/CCU DG Khan Medical College & Teaching Hospital, DG Khan from 1ST May 2019 to 30th April 2020 in one-year duration. A total of hundred patients having age ≥15 years with both gender having severe mitral stenosis eligible for PTMC on the basis of TEE were included. The patients having severe mitral regurgitation, contraindications to PTMC/TEE, multivalvular involvement and concomitant coronary artery disease were excluded. All Patients eligible for PTMC were involved in this study after informed consent. ECG was evaluated for presence of AF which is defined as irregularly irregular rhythm on ECG with absent P waves and fibrillatory f waves. Severe Mitral stenosis is defined as mitral valve area less than or equal to 1.5 cm^2 as measured by planimetry or pressure half time more than or equal to 150 milli seconds and less than or equal to 1.0 cm^2 as measured by planimetry or pressure half time more than or equal to 220 milli seconds defined as very severe mitral stenosis.

Transthoracic echocardiogram (TTE) was performed for measurement of Wilkin's score, LA size, pulmonary hypertension and Mitral regurgitation. Left Atrial size is measured in TTE in PLAX view at end systole either in M mode or 2D echo with normal size 40mm or less, mild enlargement defined as 41-45 mm, moderate enlargement described as 46-50mm and severe enlargement described as >50mm. Mitral Regurgitation (MR) is seen on TTE in PLAX and A4C views. Mild MR described as regurgitation fraction filling < 20% of LA on color Doppler and vena contract of <3mm. Moderate MR is described as regurgitation fraction filling 20-40% of LA on color Doppler with VC of 3-6mm. Pulmonary Hypertension is based on measurement of estimated Pulmonary artery systolic pressures which is measured by Tricuspid calve pressure gradient and estimated Right atrial pressure on the basis of IVC size and respiratory variations. Mild, moderate and severe pulmonary hypertension (PH) are categorized as 40-50 mmHg, 51-60 mmHg and >60 mmHg respectively. TEE was carried out to evaluate LA and LAA for Thrombus. Findings along with demographical data was noted on given Performa. All the data was analyzed by using computer software SPSS version-23. Mean and standard deviation were calculated for quantitative variables like age. Frequency and percentage calculated for all qualitative variables i.e. LA clot, AF etc. Pearson chi square test was used for association of different parameters with LA thrombus formation.

RESULTS

Hundred patients participated in this study. Considering demographics, the mean age of the patients was 33.4±16.56 years. A total of 49 patients were 30 years or younger, 35 patients were aged 31 to 45 years and only 16 patients were older than 45 years. Women formed the bulk of our patient cohort with 89% being female and only 11% male. Sixty-eight patients were married and 32 patients were unmarried.

Regarding clinical characteristics, 26 people had clot in left atrium or Left atrial appendage, while rest of the 74 patients had no LA or LAA thrombus. Atrial Fibrillation was present in only 11 patients. Only seven patients had normal sized LA i.e. less than 40mm, while rest of 93 patients had varying degrees of LA enlargement. Thirty-three patients had mild LA enlargement i.e.41-45mm, 34 patients had moderate LA enlargement i.e., 46-50mm while 26 patients had severe LA enlargement i.e. more than 50mm. Regarding Mitral Valve area, 81 patients had very severe MS i.e. MVA less than 1 cm^2 and 19 patients had severe MS i.e. MVA 1-1.5cm^2. Surprisingly only 11 patients had atrial fibrillation while 89 patients had normal sinus rhythm. Mitral regurgitation was absent in 77 patients while Mild MR was present in 17 patients and 6 patients had moderate MR. There were no patients with severe MR as they were excluded from study design. Wilkins score was calculated in each patient on TTE. The mean Wilkin's score was 7.10±1.90 with median score of 7. The patients clustered around score of 6 (27%) and 7 (35%). Seventy-nine patients had Wilkins score of 8 or below while rest of 21 patients had high Wilkin's score. Mean LA size in our study was 47±50 mm while mean Mitral valve area was 0.86±.22 cm^2 Regarding pulmonary hypertension (PH), Mild PH was present in 32 patients, Moderate PH in 24 patients and Severe PH in 44 patients.

LA thrombus formation was cross tabulated against 7 clinical and echocardiographic parameters and their association with LA clot formation was evaluated with Pearson chi square test. These variables were Age, Atrial fibrillation, Mitral Valve area, Mitral regurgitation, Wilkins score, pulmonary hypertension and LA size. Out of these parameters; atrial fibrillation, Wilkin's score, LA size and pulmonary hypertension were significantly associated with LA clot formation with asymptotic significance of 0.000, 0.000, 0.007 and

0.034 respectively. On the other hand, age, mitral valve area and mild to moderate mitral regurgitation were not significantly associated with LA thrombus (Table-1).

Table No.1: Predictors of LA thrombus

Parameter		Absent	Present	Significance (Pearson Chi square test)
Atrial Fibrillation	Absent	73	16	0.001
	Present	1	10	
Age	Less than 30 years	35	14	0.837
	31-45 years	27	8	
	More than 46 years	12	4	
Wilkins Score	4-8	68	11	0.000
	9 or above	6	15	
Mitral Valve Area	Less than 1cm^2	58	23	0.260
	1-1.5cm^2	16	3	
Left Atrial size	Below 40mm	7	0	0.007
	40-45mm	30	3	
	46-50mm	21	13	
	Above 50mm	16	10	
Mitral Regurgitation	Absent	57	20	0.895
	Mild	13	4	
	Moderate	4	2	
Pulmonary Hypertension	Mild	29	3	0.034
	Moderate	16	8	
	Severe	29	15	

DISCUSSION

Both male and female patients were selected in this study however 89% of patients with Mitral stenosis were females. This female preponderance regarding acute rheumatic fever and rheumatic heart disease has been documented in literature from all over the world. A study evaluating incidence and progression of RHD in Australia showed 65% of patients suffering from RHD were females[8]. The reason for this female dominance is not completely understood but may relate to reduced access to health care facility to females in developing and underdeveloped countries and increased likelihood of disease becoming symptomatic during pregnancy especially mitral stenosis. As ARF is a disease of children and teenagers and because Pakistan is an endemic area for RHD[2], most of our disease burden of Rheumatic MS is shared by relatively younger individuals as evidenced in this study by 49% of patients below 30 years of age and while 84% of patients below 45 years.

Left Atrial thrombus was found in 26% of patients or roughly one in four patients with severe Mitral stenosis. An Indian study showed the presence of LA clot in 33% of patients which is marginally higher than our study[9]. A recent study (2020) in Karachi showed the prevalence of LA clot to be 25 % that is similar to our study[10]. Another study from Quetta in 2018 showed the prevalence of LA clot to be 27% but in this study all the patient had AF in addition to Mitral stenosis[11]. Atrial fibrillation was present in 11% of patients. The world prevalence of AF in general population is 0.4-0.5%[12]. This prevalence is much lower in general population as Mitral valve obstruction exposes LA to high pressure which causes wear and tear in LA eventually culminating into AF. A study from Lahore showed the frequency of AF in mitral stenosis at 25%[13]. This number is roughly double the frequency seen in our study likely due to selection bias as patients with moderate MS, severe MR and those patients who were advised surgical procedure were excluded from our study.

As already discussed a total of 7 variables (2 clinical i.e. age, atrial fibrillation and 5 TTE i.e. LA size, MVA, mild to moderate MR, Wilkins score and pulmonary hypertension) were assessed for association with LA clot formation. Four of these variables i.e. LA size, AF, Wilkins score and pulmonary hypertension were significantly associated with LA clot with p value <0.05. On the other hand, Age, mild to moderate MR and Mitral valve area were not significantly associated with LA thrombus. A study conducted in 2011 in India found 3 variables associated with LA thrombus formation i.e. Age >44 years, LA infer superior dimension >6.9 cm and mean mitral gradient >18 mmHg[14]. An older study of LA thrombus risk factors in

mitral valve disease found female gender, prior history of embolism, prior anticoagulant therapy, mitral stenosis and atrial fibrillation to be significantly associated with LA thrombosis on univariate analysis. However, on logistic regression analysis only MS and AF were significantly associated with LA thrombosis[15]. A study from Thailand found atrial fibrillation, male sex, left atrial enlargement by electrocardiogram, left atrial diameter, left atrial volume, Ejection fraction by Teicholz method, EF by Biplane method, tricuspid regurgitation, mitral regurgitation and Right ventricular systolic pressure as significant predictors of LA throbus[16]. A study from Lahore found frequency of left atrial thrombus formation is increased in patients of rheumatic mitral stenosis with low left atrial appendage flow velocities, atrial fibrillation and smaller mitral valve area[17].

Another study from Lahore showed atrial fibrillation, large left atrial size and old age to be significantly associated with LA thrombus[18].

Logistic regression analysis showed maximum strength of association for Wilkins score and atrial fibrillation followed by LA size and pulmonary hypertension. On the basis of univariate analysis, a risk score is proposed in Table 4. Cut off value of 6 is selected with patient having a score of 6 or more deemed to be at high risk for clot formation. This cutoff value of 6 gives a Specificity of 87.84% and sensitivity of 61.54%, positive predictive value of 64% and negative predictive value of 86.67 % and accuracy of 81%. This simple score can be calculated easily with TTE and can help in predicting the presence of thrombosis in patients with Severe MS.

CONCLUSION

Rheumatic Mitral stenosis is a major public health concern in our country. Management of these patients is complicated by LA thrombus and systemic embolism. This study showed presence of AF, enlarged LA, severe pulmonary hypertension and high Wilkin's score to be the predictor of LA thrombus. On the basis of these parameters, a simple scoring system is proposed for risk stratification of such patients.

Author's Contribution:

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Data Analysis:	Abrar Ahmad, Faizan Mustafa
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Final Approval of version:	Imran Javaid

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

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Original Article

Impact of Vitamin D Levels on HbA1C in Diabetic Obese Patients Hyderabad Sindh Based Study

Fatima Sohail, Imran Ali Shaikh, Naila Masood, Fouzia A Sheikh, Kamran Ali Qureshi and Tariq Shaikh

ABSTRACT

Objective: To assess the impact of Vitamin D deficiency in patients having raised hemoglobin A1C (HbA1c) with obesity.

Study Design: Descriptive / Cross sectional study

Place and Duration of Study: This study was conducted at the Department of Medicine, Liquate University Hospital, Hyderabad for six months from July 2016 to Jan 2017.

Materials and Methods: This study included 143 patients. All the patients who fulfilled the inclusion criteria were evaluated for the deficiency of vitamin D level by taking 2cc venous blood sample in a disposable syringe and send to laboratory for analysis. A written proforma was filled by all the patients for participation in the study. The deficiency of vitamin D was labeled when <20ng//ml.

Results: In our study, out of 143 cases with raised HbA1c and obesity 13.29 %(n=19) were between 30-45 years of age, while 86.71%(n=124) were between 46-60 years of age ± 53.58±5.37 years, Males were 46.85 %(n=67) and 53.15%(n=76) were females, mean Vitamin D level was 29.30±7.33. Frequency of vitamin D deficiency in diabetic patients having raised hemoglobin A1C(HbA1C) with obesity shown 21.68%(n=31) and p value was insignificant p>0.68.

Conclusion: It has concluded that the impact of Vitamin D deficiency in patients having raised hemoglobin A1c (HbA1c) with obesity is higher and needs attention to address this issue in our population.

Key Words: Diabetes mellitus, raised hemoglobin A1C, Obesity, vitamin D deficiency

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INTRODUCTION

Vitamin D has crucial role in calcium/phosphorus homeostasis and bone physiology, several indications suggest that vitamin D status may also have a momentous role in glucose homeostasis and on preventing progression of metabolic syndrome and Type 2 diabetes.[1] Low level of vitamin D adversely effects on HbA1C.[1] Vitamin D has an amendable role in managing type 2 diabetes which has global prevalence of around 285 million currently and 438 million by the year 2030.[2]

Diabetes is a group of metabolic disorder in which chronic hyperglycemia occur which is associated with several complications affecting kidneys, eyes, nerves, heart and blood vessels, this occur due to the defect in insulin secretion and insulin action.[3] Vitamin D deficiency has been identified in patients with type 2 diabetes and is essential for glucose homeostasis because it releases normal insulin.[4] There is inverse relation between serum level of Vitamin D and serum glucose levels but have a favorable relation with insulin levels and sensitivity.[5] Besides glucose homeostasis it has important role in calcium and phosphorus maintenance and bone mineralization, it also have favorable impact on non-skeletal outcomes which includes neuro muscular function.[6] Vitamin D impact on diabetes is measured through HbA1c, is the hemoglobin component that comprises glycohemo-globin formed by the non-enzymatic glycation of the N-terminal valine on the beta chain of Hb.[7] The relationship between HbA1C and Plasma glucose; which is directly related to diabetes is complex. HbA1C is a standard measurable tool of plasma glucose over the preceding weeks to months and can increase or decrease relatively quickly with large changes in plasma glucose.[8] The correlation analysis showed a relatively weak but significant association between HbA1C and vitamin D impact and the National Health and Nutrition Examination Survey (NHANES) III study demonstrated the relation between low levels of 25(OH)D and diabetes prevalence.[8-9] The vitamin D

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level is inversely proportional to raised HbA1C (uncontrolled diabetes), while the reported prevalence for vitamin D deficiency in patients having raised HbA1c (uncontrolled diabetes) with obesity is 16%.[10]
There were few studies on vitamin D deficiency in type 2 diabetes mellitus without any link to glycemic status but there was no any study conducted on Vitamin D deficiency in relation to raised HbA1c(controlled diabetes) with obesity. Therefore, the literature regarding the vitamin D deficiency having raised HbA1c in our population still has been scarce and needs to be studies because there are variations in race and dietary habits, low socioeconomic status and deficiency of awareness in our population as compared to western world. The results may share to various health care providers and community health oriented programs and it may also supportive for physicians should consider vitamin D level in subjects having raised HbA1c with obesity as early screening can evaluate the deficiency so that proper effective measures can be planned on priority basis.

MATERIALS AND METHODS

This Cross sectional descriptive study was carried out for six months from 31st July to 31st Jan 2017 at Department of Medicine, Liaquat University Hospital, Hyderabad Sind. The sample size was 143 patients having raised hemoglobin with obesity was taken, the prevalence of vitamin D deficiency with raised HbA1c and obesity was 16%, [10] and the sample technique was Non-probability consecutive.
These patients were excluded from multiple disorders by clinical history, previous hospitalization and inquiring the existence of previous record and diagnoses. Postmenopausal women and the patients already on vitamin D supplements and phenytoin therapy also confirmed and excluded.

Inclusion criteria:

- Patients with raised HbA1c and obesity for more than 03 months duration, age 30-60 year and either gender

Exclusion criteria:

- Hypo/hyper parathyroidism, osteoporosis
- Chronic liver, kidney and lung disease
- Malignancy

These patients were recruited from medicine department of Liaquat University Hospital Hyderabad. All the patients who fulfilled the inclusion criteria were evaluated for the deficiency of vitamin D level by taking 2 cc venous blood sample in a disposable syringe and send to diagnostic & Research laboratory LUMHS for analysis. The deficiency of vitamin D was considered less than 20ng/ml[11]
The data was collected on pre-designed proforma. The entire expenses of tests were bear by authors.
The data of all patients was analyzed in SPSS version 16.00. The frequency and percentage (%) was calculated for deficiency of vitamin D in patients having raised HbA1c with obesity, gender distribution, residence (urban/rural), dyslipidemia, and hypertension. The mean and standard deviation (SD) was calculated for age, duration of diabetes, BMI, HbA1c and vitamin D level. The stratification was done for age, gender, duration of raised HbA1c and obesity, dyslipidemia, hypertension, rural and urban to see the effect on outcome and to control the effect modifiers. The post-stratification chi-square test was applied to see the effect of these outcomes at 95% confidence interval and the p-value ≤ 0.05 was considered as statistically significant.

RESULTS

A total of 143 cases fulfilling the inclusion/exclusion criteria were enrolled to determine the frequency of Vitamin D deficiency in patients having raised hemoglobin A1c (HbA1c) with obesity.

Table No.1: General characteristics 143 patients

Charact-eristics		Number	%tage	Mean	SD
Age (in years)	30-45	19	13.29	53.58	±5.37
	46-60	124	86.71		
Gender	Male	67	46.85		
	Female	76	53.15		
Residential status	Urban	73	51.05		
	Rural	70	48.95		
Dyslipidemia		99	69.23		
Hypertension		86	60.14		
Body mass index				8.32	0.59
Duration of diabetes				4.57	1.71

Table No.2: Vitamin D Parameters in 143 Patients

Vitamin D characteristics	No. of patients	Mean	SD	%tage
Vitamin d level	143	29.30	7.33	
vitamin D deficiency	31	15	4.3	21.68
Normal vitamin D levels	112	23.3	4.1	78.32
Duration of diabetes with vitamin d status				
< 5 years	111			
Deficiency	26			
normal	85			
> 5 years	32			
Deficiency	5			
normal	27			0.34 (p value)

Age distribution of the patients was done, it shows that 13.29 %(n=19) were between 30-45 years of age, while 86.71 %(n=124) were between 46-60 years of age, mean±sd was calculated as 53.58±5.37 years.

Table No. 3: Deficiency with regards to HbA1C in 143 patients

Hba1c	Vitamin D deficiency		P value
	Yes	No	
6.6-8	8	34	0.62
> 8	23	78	

Gender distribution shows that 46.85 %(n=67) were male and 53.15%(n=76) were females. Residential status of the patients was recorded which shows that 51.05% (73) were urban and 48.95%(n=70) belongs to rural area. Frequency of Co-morbidities shows that 69.23 % (n=99) had dyslipidemia, while 60.14%(n=86) had hypertension. Mean duration of diabetes mellitus was 4.57±1.71 years. Body mass index of the patients was recorded as 8.32±0.59.(Table 1)

Vitamin D level of the patients was recorded as 29.30±7.33.

Frequency of vitamin D deficiency in patients having raised hemoglobin A1C (HBA1C) without obesity shows that 21.68 %(n=31) had vitamin D deficiency while 78.32%(n=112) had no vitamin D deficiency. (Table 2)

The stratification was done for age, gender, duration of raised HbA1c and obesity, dyslipidemia, hypertension, rural and urban to see the effect on outcome and to control the effect modifiers. The post-stratification chi-square test was applied to see the effect of these outcomes at 95% confidence interval and the p-value ≤0.05 was considered as statistically significant. (Table 3).

DISCUSSION

A growing literature suggests that vitamin D homeostasis may play a role in the etiology of type 2 diabetes. Vitamin D also affects insulin resistance by stimulating the expression of insulin receptors, or indirectly by regulating calcium homeostasis. Despite proposed biological mechanisms, observational studies and clinical trials in humans did not provide consistent evidence regarding the association between vitamin D status and diabetes. There are few studies on vitamin D deficiency in type 2 diabetes mellitus without any link to glycemic status but there was no any study conducted on Vitamin D deficiency in relation to raised HbA1c(controlled diabetes) without obesity. There, the literature regarding the vitamin D deficiency having raised HbA1c in our population still has been scarce and needs to be studies because there are variations in race and dietary habits, low socioeconomic status and deficiency of awareness in our population as compared to western world.

In our study, out of 143 cases with raised HbA1c with obesity 13.29%(n=19) were between 30-45 years of age, while 86.71%(n=124) were between 46-60 years of age, mean and standard deviation was calculated as 53.58±5.37 years, 46.85%(n=67) were male and 53.15%(n=76) were females, mean Vitamin D level of the patients was recorded as 29.30±7.33. Frequency of vitamin D deficiency in patients having raised hemoglobin A1C without obesity shows that 21.68%(n=31) had vitamin D deficiency.

The findings of our study are in agreement with a study showing that the vitamin D level is inversely proportional to raised HbA1 while the reported prevalence for vitamin D deficiency in patients having raised HbA1C with obesity was 16%.[11,12]

A robust study showed young female high BMI[14] that vitamin D less than 15 ng/mL represented negative effect on insulin resistance. While NHANES III declared low levels of vitamin D levels were more likely to have elevated blood glucose levels.

A study[13] of more than five hundreds individuals, non diabetic from both sex in between 40-69 year measured for serum vitamin D, IGF-1,oral glucose tolerance , lipids, insulin, anthropometry, blood pressure of followed up for a decade. It has been resulted negative correlation between vitamin D, dysglycemia and insulin resistance.

These findings also supported by another cohort showed significant inverse association between serum vitamin D and risk hyperglycemia[14].

Nwosuet al[15] showed inverse relationship in between HbA1c and vitamin D supplements, concluded that there was a clinically significant decrease in HbA1c 1 to 1.5% after correction of vitamin d deficiency.

Prakashet al.[16] resulted same that correction of vitamin d kept Hba1C under normal levels. This actually supported that vitamin d is associated with HbA1c directly.

In our study obese diabetics had vitamin d deficiency in about 22% while Iqbal et al.[17]found vitamin D deficiency in 30.6% patients of diabetes with good control and in 58.7% patients with poor control.

It has been shown in another study there was significant reduction in HbA1c levels after replacement of vitamin D in diabetic patients.[18]

CONCLUSION

We concluded that the frequency of Vitamin D deficiency in patients having raised hemoglobin A1c (HbA1c) with obesity is higher and needs attention to address this issue in our population.

Author's Contribution:

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

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Original Article

Comparison of Effectiveness of Oral Fluconazole and Intralesional Glucantime in the Treatment of Cutaneous Leishmaniasis

Samina Sheraz[1] and Kashif Kamal[2]

ABSTRACT

Objective: To Assess the Effectiveness of Oral Fluconazole and Intralesional Glucantime in the treatment of Cutaneous Leishmaniasis.

Study Design: Randomized Control Trial study

Place and Duration of Study: This study was conducted at the Dermatology Department, PIMS Islamabad from April 2014 till November 2014.

Materials and Methods: The study was composed of 240 patients and they were equally divided into two groups by lottery method. In Group A, 120 patients were given oral Fluconazole daily for 6 weeks while in Group B, 120 patients were given intralesional Glucantime for 21 to 28 days. All the data was recorded on a structured proforma. Chi square test was used to compare efficacy between the two groups.

Results: In Group A, 99 patients showed complete resolution of the lesions while 21 showed no resolution after treatment with oral Fluconazole for 6 weeks. In Group B, 109 patients showed complete resolution while 11 showed no resolution with intralesional Glucantime. The difference between the groups was significant with p value of less than 0.05.

Conclusion: Intralesional Glucantime is significantly more effective than oral Fluconazole in the treatment of Cutaneous Leishmaniasis.

Key Words: Oral Fluconazole, Intralesional Glucantime, Cutaneous Leishmaniasis

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INTRODUCTION

Cutaneous Leishmaniasis (CL) is a zoonotic disease, caused by a protozoan parasite of the genus Leishmania and spread by the bite of an infected female sand fly[1]. About 1.5 million new cases of CL are emerging annually and about 350 million people remain at risk[2]. In Khyber Pukhtunkhwa, approximately 67,500 people are infected with Cutaneous Leishmaniasis[3]. Male to female ratio is 2:1 because of increased exposure of the male to the habitat of the sand fly through occupation and working in agricultural envoirnment[4]. This RCT was conducted in Dermatology Department of PIMS Islamabad from 4th April 2014 till 3rd November 2014.

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MATERIALS AND METHODS

A total of 240 patients were included in the study between the ages of 20-70 years. Patients excluded from the study were those with Visceral Leishmaniasis, already on medications for Cutaneous Leishmaniasis, pregnant and lactating women and those with chronic disease e.g. cirrhosis and chronic renal failure. Sample size was calculated through WHO software. Approval was taken from ethical committee of the institution. Patients were enrolled by non-probability consecutive sampling. Written informed consent was taken from the patients.

Randomization was done through lottery method and the patients were divided into two groups. Group A patients were give oral Fluconazole 200 mg daily for 6 weeks while Group B patients were given intralesional Glucantime daily for 3 to 4 weeks. All the patients were then regularly followed up on weekly basis till complete resolution of the lesion. All the data was recorded on a structured proforma. For follow up contact numbers of patients were recorded.

Data was analyzed on SPSS version 17. Comparison of efficacy between the two groups was done by chi square test. The P value ≤ 0.05 was considered significant with 95% Confidence Interval. Stratification

of effect modifiers like age, gender, site of lesion and duration was done and post stratification chi square test was used for significance.

RESULTS

In our study out of 240 patients 180 were male and 60 were female. Group A had a mean age of 35.14 years while Group B had 35.28 years.

Table No.1: Descriptive statistics of Age n=240

Total number of Patients	**240**
Mean	**35.21**
Std Deviation	**12.564**
Minimum	**14**
Maximum	**70**

Table No.2: Table with cross tabulation of Groups with age showing Mean age in both groups

Age			
Groups	**Mean**	**N**	**Std. Deviation**
Fluconazole	**35.14**	**120**	**11.794**
Intralesional Glucantime	**35.28**	**120**	**13.339**
Total	**35.21**	**240**	**12.564**

p=0.937

The cross tabulation of both groups with Gender distribution is shown in table 3.

Table No.3: Gender Groups Cross tabulation

Count				
		Groups		Total
		Flucona-zole	Intralesional Glucantime	
Gender	Male	95	85	180
	Female	25	35	60
TOTAL		120	120	240

P= 0.137

Stratification of Age & Successful Outcome with Fluconazole

Table 4: Crosstab Age of patient with successful outcome with Fluconazole

COUNT		Success Fluconazole		Total	P value
		Yes	No		
Age Range	15-30 years	30	6	36	
	31-45 years	35	5	41	0.613
	46-60 years	23	6	29	
	60 n above	11	4	15	
Total		99	21	120	

Stratification of Age & Successful Outcome with Glucantime

There was no significant difference for age and gender in both the groups. Regarding location of lesion 128 (53.3%) patients had lesions on the face, 68 (28.3 %) had lesions on the neck and 44 (18.3 %) patients had lesions on their arms. Majority of the patients i.e. 93 (38.75 %) in both the groups had presented within two months while only 21 (8.75%) had presented by 1 year. 99 patients (82.5 %) in Group A showed successful resolution of the lesion while 109 patients (90.8%) had successful outcome in Group B with significant P value of 0.05.

The mean age of the patient was 35.2 ±12.5 year with a range of 14-70 year.

Table No.5: Crosstab Age of patient and successful outcome with Glucantime

COUNT		Success Glucantime		Total	P value
		Yes	No		
Age Range	15-30 years	34	3	37	
	31-45 years	39	4	43	0.506
	46-60 years	27	2	29	
	60 n above	09	2	11	
Total		109	11	120	

Stratification of Gender and Successful Outcome with Fluconazole

Table No.6: Gender Success Fluconazole Cross tabulation

COUNT		Success Fluconazole		Total	P value
		Yes	No		
Gender	Male	77	18	95	.416
	Female	22	3	25	
Total		99	21	120	

Stratification of Gender and Successful Outcome with Glucantime

Table No.7: Gender Success Glucantime Cross tabulation

COUNT		Success Glucantime		Total	P value
		Yes	No		
Gender	Male	86	9	95	.820
	Female	23	2	25	
Total		109	11	120	

Stratification of Duration of Disease & Successful Outcome with Fluconazole

Table No.8: Crosstab Disease duration with successful outcome with Fluconazole

COUNT		Success Fluconazole		Total	P value
		Yes	No		
Disease Duration	2 months	45	4	49	
	4 months	35	5	40	>.05
	6 months	19	6	25	
	1 year	0	6	10	
Total		99	21	120	

Stratification of Duration of Disease & Successful Outcome with Glucantime

Table No.9: Crosstab Disease duration with successful outcome with Glucantime

COUNT		Success Glucantime		Total	P value
		Yes	No		
Disease Duration	2 months	45	3	48	
	4 months	35	3	38	>.05
	6 months	29	3	32	
	1 year	0	2	02	
Total		109	11	120	

Table No.10: Stratification for Lesion on Face with Successful Out Come in Both Groups

Face	Success-ful	Not Success	Total	P value
Group A (Fluconazole)	54	12	66	<.05
Group B (Glucantime)	57	05	62	
Total	111	17	128	

Table No.11: Stratification for Lesion on Neck with Successful Out Come in Both Groups

Neck	Success-ful	Not Success	Total	P value
Group A (Fluconazole)	29	05	34	<.05
Group B (Glucantime)	32	04	36	
Total	61	09	70	

Table No.12: Stratification for Lesion on Arms with Successful Outcome in Both Groups

Arms	Success-ful	Not Success	Total	P value
Group A (Fluconazole)	16	04	20	<.05
Group B (Glucantime)	21	02	22	
Total	37	06	43	

SITE OF LESION *n=240*

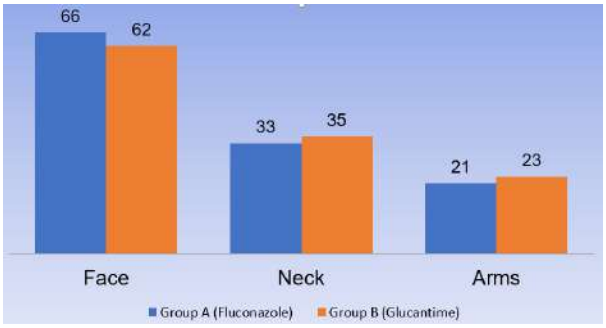

Figure No.1: Bar graph showing different sites involved in cutaneous leishmaniasis

DURATION OF DISEASE *n=240*

Figure No.2: Graph showing number of patients with duration of diseases in months

FINAL OUTCOME OF THE DISEASE n=240

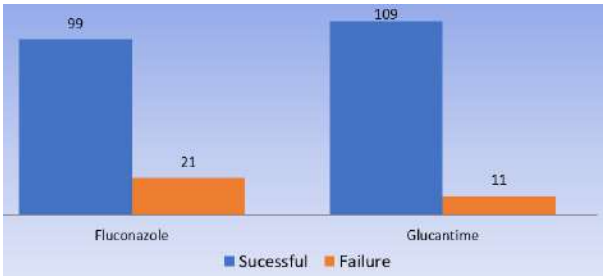

Figure No.3: Bar graph showing comparison of success and failure in both groups Pearson chi square p < .05.

A study done by Rifat Yasmin[13] in 2011 reported cure rate of 100 % but due to a small sample size of only 15 patients the results cannot be claimed with certainty, while our study is based on a larger sample size of 240 patients. Our study also deems better than the study by Firdous et al[14] (83 %) with a sample size of more than 200 patients and more elaborate than that of Munir A[15] who had a sample size of 20 patients and success rate of 75%. A study by Anastácio Q et al 16 in 2011 reported success rate of 89 % with oral Fluconazole while success rate of oral Fluconazole in our study was 82.5 % which matches national and international data.

The Pearson chi square has come to be significant p=0.001 in favor of intralesional Glucantime which matches the data. It is worth mentioning that oral Fluconazole is a clinically effective alternative; it is

tolerable due to a better side effects profile because of its oral route of administration and is also an affordable alternative. Therefore, based on the patient's situation, oral Fluconazole can be used as an effective alternative treatment of Cutaneous Leishmaniasis.

Our study, however, has not proved with certainty any significant association between age, gender, site of lesion and duration of disease for both the groups which are in accordance with literature.

DISCUSSION

At 8 weeks follow up it was found that effectiveness of intralesional Glucantime was seen in 109 patients (90.8%) compared to 99 patients (82.5 %) who were given oral Fluconazole. In our study the total number of male patients was 180 (75%) and 60 (25%) were female patients similar to Giavedoni P at al[8], Tallat et al[7], Singh A et al[9], who all reported CL to be more prevalent in male gender ranging from 60 -80 %. It shows that Cutaneous Lesihminiasis is more common in men. In our study the mean age of patients in both groups was about 35 years. Turhanoglu M.[10] study on 128 patients also reported that 70% of patients with Cutaneous Leishmaniasis age lies in range of 20-40 years. Results of our study also matches with study of Tallatet al[7] and Salman IS et al[11].

Regarding the duration of the disease, mean duration of illness reported by Giavedoni P et al[8] was 3 months and 3.4 months by Salman[11] respectively, while our study showed that 158 patients (65.83 %) out of total 240 in both groups had a history of 2-4 months' time with a mean duration of 3.2 months which is in accordance with national and international data. Regarding the involvement of site, our study showed that face and neck are the most commonly involved areas i.e. (82 %) in both groups while arms were involved in 18 %. Our this finding is duly endorsed by Hayani K et al[12].

CONCLUSION

Intralesional Glucantime is more effective than oral Fluconazole. However, Fluconazole is an effective alternative in patients with Cutaneous Leishmaniasis in selective situations.

Author's Contribution:

Concept & Design of Study:	Samina Sheraz
Drafting:	Kashif Kamal
Data Analysis:	Kashif Kamal
Revisiting Critically:	Samina Sheraz, Kashif Kamal
Final Approval of version:	Samina Sheraz

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

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Original Article

Evaluation of Total Leucocyte and Lymphocyte Count and its Correlation with Severity of Covid Infection

Leucocyte and Lymphocyte and its Co Relation with Co-vid Infection

Shahzeb[1], Muhammad Abbas[1], Sajjad Ali Shah[2], Zarka Sarwar[3], Jamal Nasar[1] and Jehandad Khan[1]

ABSTRACT

Objective: This was a new disease occurring in pandemic and nothing was known about it in detail, so main aim of the study was the curiosity about SARS – CoV -2.

Study Design: Descriptive /cross sectional study.

Place and Duration of Study: This study was conducted at the Mardan Medical Complex (M.M.C) from 20 March 2020 to 10 July 2020.

Materials and Methods: Adult male and female patients presenting with short history of fever along with respiratory symptoms and chest ray finding of bilateral pulmonary infiltrates were admitted. Then those whose PCR for corona virus was positive were included in the study.

Results: Majority of patients presented with lymphocytopenias and raised TLC in severe and critical cases. Critically ill patients who survived have average TLC low as compared to those who succumb to infection. Similar was the finding with lymphocytes count as well. While mild cases presented with almost normal TLC but lymphocytes count was slightly reduced.

Conclusion: It was concluded the disease was more aggressive in those patients having a high TLC and low lymphocytes count, high TLC may be due to superadded infections or highly virulent virus as those with mild disease presented with almost normal TLC.

Key Words: Hematological Abnormalities, Corona Virus, SARS – CoV -2

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INTRODUCTION

Corona virus disease 2019 is caused by severe acute respiratory syndrome corona virus 2 (SARS - CoV-2), which started as an epidemic outbreak in Wuhan China[1]. The Chinese authorities report this epidemic to W.H.O on December 31st 2019. Unfortunately this epidemic evolves into a pandemic affecting more than 15 million and killing more than six hundred thousand people worldwide till compiling this article on 20th July 2020.

This virus affects the lungs by binding to Angiotensin converting enzyme-2 receptors (ACE-2) and is very much similar to SARS – CoV[1].

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Though it affects mainly the respiratory system but the emerging data of the disease from all over the world confirmed it to be a systemic disease affecting cardio vascular, gastro intestinal tract, central nervous system, hematopoietic and immune system too[2, 3, 4]. Outbreaks of SARS-CoV and Middle East respiratory syndrome (MERS) in the past were more severe and deadly than SARS-CoV-2[5] but is more aggressive than common flu. Corona virus disease 2019 is found to be more aggressive and deadly in elderly and people having co morbidity such as chronic liver disease, diabetes, chronic obstructive air way disease, hypertension etc. Unfortunately some of the young and fit people who suffered from covid-19 have presented with more aggressive and lethal complications such as DIC, myocarditus[6,7].The novel corona virus was renamed as SARS-CoV-2 (2019) by W.H.O due to more than 79% similarity with SARS-CoV[8].

The reported clinical manifestation of the disease across the world were mainly from the patients admitted in hospitals but most of the covid-19 patients presented with mild respiratory tract infections which were grouped into simple infection type of W.H.O classification[9,10,11]. Hematological manifestations of covid-19 varied widely between simple, severe and critical cases. Severe ill covid-19 patients were defined as having respiratory rate of more than or equal to 30

breaths per minute, oxygen saturation of less than or equal to 93% on room air and having fever too[12]. Critically ill patients were considered those having sepsis with acute organs failure besides ARDS[12]. While simple cases presented with simple flu and lack all above mentioned features[12].

MATERIALS AND METHODS

Patients who presented to us with a short history of fever with severe bodyaches and respiratory symptoms of cough, sore throat, shortness of breath and oxygen saturation less than 96% on room air were admitted. Their respiratory secretions were then send for corona RT-PCR. Those who were found to be positive for corona RT-PCR were included in study or in other words patients with negative corona RT-PCR were excluded from study.

RESULTS

Majority of patients presented with lymphocytopenias and raised TLC in severe and critical cases. Critically ill patients who survived have average TLC low as compared to those who succumb to infection. Similar was the finding with lymphocytes count as well. While mild cases presented with almost normal TLC but lymphocytes count was slightly reduced.

Results clearly showed that critically ill patients who survived have a high TLC and lymphopeania which was even much more marked in those who expired.

Table No.1: Recovered

Dis. Severity	Average of TLC	Average of Lympho
Asymptom atic	8,656	10.3%
Critical	11,712	25.3%
Mild	8,633	14.0%
Moderate	10,423	14.7%
Severe	12,255	8.5%

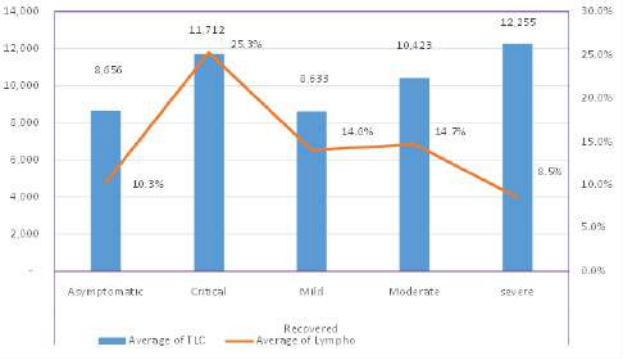

Figure No.1: Average of TLC and Lympho

Table No.2: Expired

Dis. Severity	Average of TLC	Average of Lympho
Critical	15,098	6.3%

DISCUSSION

Patients in our study with mild to moderate symptoms were having normal TLC and their lymphocytes count was only slightly reduced. As SARS-COV-2 have got high affinity for ACE receptors, which are present in lungs, heart, G.I.T. These receptors are also present on cell surface of lymphocytes[9]. As the virus becomes attached to ACE receptors it affects the above mentioned organs and lyses of lymphocytes which accounts for lymphopenia. When cytokine storm occurs cytokines causes lymphocytes apoptosis [10,12], and it also damages the lymphoid organs [13] and thus accounting for marked lymphopenia. In other words more the disease severe marked is the lymphopenia and this is what we concluded in our study too. Co – morbid conditions like malignancy or diabetes can be associated lactic acidosis which blocks the lymphocytes production [14,15] and causes marked lymphopenia. In our study patients were both critically and severely ill with co morbidity and were having marked lymphopenia too.

Guan et al concluded in his study which was done when the pandemic was originating from china in its very early days [16] that lymphopenia was present in 83.2% and leucopenia in 33.7% of patients. During the same period four other descriptive studies were done on confirmed 41, 99, 138 and 201 co vid patients [17,18,19] showed similar results. Among them Huang et al [19] and Wang et al[19] showed strong association with aggressiveness of disease and marked lymphopenia. Wu et al [20] concluded in his study that ARDS was more common in patients with marked rise in TLC and with extremely low lymphocyte count. Our results matched with above mentioned studies in china.

CONCLUSION

It was concluded in our study that low lymphocytes count occurred in almost cases and as the disease increases its severity the lymphocytes count falls further so that in critically ill patients lymphocytes count was lower than 10%. TLC presented in a different manner initially in mild cases it was normal but it raises as the co-vid infection increases its aggressivness so that almost all critically patients were having TLC more than 15000. Raised TLC may be due to superadded hospital acquired infection and it may need further work up.

Author's Contribution:

Concept & Design of Study:	Shahzeb
Drafting:	Muhammad Abbas, Sajjad Ali Shah
Data Analysis:	Zarka Sarwar, Jamal Nasar, Jehandad Khan
Revisiting Critically:	Shahzeb, Muhammad Abbas
Final Approval of version:	Shahzeb

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

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Original Article

Per-Operative Evaluation of Chronic Suppurative Otitis Media after Mastoid Exploration

Chronic Suppurative Otitis Media After Mastoid Exploration

Muhammad Aqil Jilani[1], Shehzad Ahmed[1], Shahid Hussain Soomro[2], Akleema Asad Abro[2], Abdul Sattar Abro[2] and Vaqar-e-Sahar Shah[3]

ABSTRACT

Objective: To describe the per-operative findings of chronic suppurative otitis media atticoantral type on mastoid exploration.

Study Design: Descriptive case series study.

Place and Duration of Study: This study was conducted at the Department of Oto-Rhino Laryngology Head and Neck Surgery, Shaheed Mohtarma Benazir Bhutto Medical College & Sindh Govt. Lyari General Hospital Karachi from March, 2019 to February, 2020 for a period of one year.

Materials and Methods: 30 patients of CSOM, atticoantral type with cholesteatoma, were operated through canal wall down technique for the per-operative examination.

Results: Among 30 cases 73% were male and 27% were female with mean age of 20.63 (SD ± 6.95). middle ear and mastoid with ossicular chain damage was the most prevalent one per-operative finding was observed.

Conclusion: Periphery living condition showed higher prevalence chronic CSOM. No data available for the post-operative evaluation as there was no follow up of patients.

Key Words: Otitis media, cholesteatoma, mastoid exploration

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INTRODUCTION

Inflammation of the middle ear cleft which is suppurative and chronic lasts more than 3 months results clinical deafness and discharge this condition known as chronic suppuratve otitis media (CSOM)[1]. CSOM can be of two types, tubotympanic and atticoantral. First one is less complicated and other one is associated with cholesteatoma with deep under lying bone inflammation[2]. Cholesteatoma has bone invasive properties which may be due to release of collagen and osteolytic enzymes from the subepithelial connective tissue and by the release of inflammatory mediators including the cytokine, interlukin 1a from macrophages and epidermal keratinocytes. Bilateral cholesteatoma is a rare presentation[3].

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Chronic suppurative otitis media may also be associated with extra cranial (0.5-1.4%) and intracranial (0.3-2%) complications[4]. Atticoantral type is considered to be highly chronic early treatment may be fruitfull[5]. There are reported two surgical techniques for CSOM patients one is open cavity mastoidectomy (canal wall down) and second is closed cavity mastoidectomy (canal wall up)[6]. Canal wall down (CWD) approach was done in this study to examine the per-operative condition of CSOM patients. The importance of this study is to observe per operative findings that the patients with atticoantral disease in accordance with damage to the surrounding structures, to help in reconstruction of middle ear and restoration of hearing.

The rationale of the study is that in tympano mastoid surgery we shall find the site of cholesteatoma and granulation tissues and its extension and implication of this pathological process to surrounding structures that is integrity of the ossicular chain, bone destruction, labyrinthine or facial nerve involvement, sigmoid sinus involvement.

MATERIALS AND METHODS

Ethical review board ERB of SMBBM College & Sindh Govt. Lyari General Hospital Karachi approved this descriptive case study and conducted at Department of Oto-Rhino Laryngology Head and Neck Surgery, Civil Hospital Karachi and the duration of this study was 12 months from 01 March 2019 to 28 February 2020. After taken the written informed consent from

the patients' per-operative observations and images were taken. Total 30 patients of CSOM were enrolled in this study.

Inclusion criteria: All the patients of either sex presenting with atticoantral type of chronic suppurative otitis media with cholesteatoma.

Exclusion Criteria: All the cases of tubo tympanic type of chronic suppurative otitis media.

Patient were evaluated by history, clinical examination of ear, nose and throat. Otoscopy and otomicroscopy of ear were also done. Observational parameters include Complete blood picture, urine examination, bleeding profile, aural pus swab for culture and sensitivity for every discharging ear, audiometry, radiological examination i.e., X-ray of mastoid, chest and PNS. CT-Scanning of the temporal bone advised in special cases. Canal wall down technique was used to per-operative findings on all the patients. Data was statistically analyzed through SPSS V10.

RESULTS

Among 30 subjects 66.66% were observed in 10 to 20 years of age (Table 1).

CSOM is highly prevalent in males as 73.33% (Table 2). and Under prevailed population (Table 3, 4). 73.33% subjects showed ear discharge (Table 6).

The Cholesteatomic condition was observed highest during the per-operative finding (Table 8)

Table No.1: Age Distribution (30 Cases)

S.no	Age in years	Number of cases	%age
1	0.5-10	03	10%
2	11 -20	20	66.66%
3	21-45	07	23.33%

Table No.2: Sex Distribution (30 Cases)

S.no	Sex	Number of cases	%age
1	Male	22	73.33%
2	Female	08	26.66%

Table No.3: Socio Economic Status (30 Cases)

S.No	Status	Number of cases	%age
1	Poor	20	66.66%
2	Fair	05	16.66%
3	Average	05	16.66%

Table No.4: Area Distribution (30 Cases)

S.no.	Area	Number of cases	%age
1	Rural	20	66.66%
2	Urban	10	33.33%

Table No.5: Side Predilection (30 Cases)

S.no	Ear	No. of Pts	%age
1	Right	20	66.66%
2	Left	10	33.33%

Table No.6: Discharge Observation (30 Cases)

S.No	Nature of discharge	Number of cases	%age
1	No discharge	08	26.66%
2	Thick purulent Foul smell Blood stained	22	73.33%

Table No.7: Management & Surgical Technique (30 Cases)

S.No	Management	Number of cases	%age
1	Mastoid Exploration	30	100%
2	CWD Technique i. Radical ii. Modified Radical	27 03	90% 10%

Table No.8: Per-Operative Findings (30 Cases)

S.No	Pathology seen	No.of cases	%age
1	Cholesteatoma extended to mastoid & Middle ear cavity	20	66.66%
2	Granulation tissues with Cholesteatoma	07	23.33%
3	Aural Polyp with Cholesteatoma	03	10%
4	Facial Canal dehiscence	10	33.33%
5	Ossicular chain involvement Malleus, incus and head of stapes involved & necrosed	20	66.66%
6	No ossicle was present	07	23.33%
7.	Preservation of supra structure only (Foot plate of stapes)	03	10%

DISCUSSION

Cholesteatoma is notorious to cause more damage. Potentially it is dangerous because of its capacity to destroy bone. This action allows the spread of infection beyond the middle ear and pneumatized areas of temporal bone, and may result in otologic and intracranial complications[7].

This study was conducted to determine the per-operative findings of chronic suppurative otitis media atticoantral type with cholesteatoma in 30 cases.

Chronic suppurative otitis media is a disease of children and young adults, its incidence decreases after the age of forty years and relatively low after sixty years[8]. The results of this study are, 66.66% of patients were under the age of 20 years which was comparable to the study of Murugan, N at Madurai[9]. Similar findings were obtained in the study of Goh BS, et al[10]. In our study males were (73.33%), effected more than females (26.66%) this ratio was comparable to the study of Sangeetha S, et al[11] while contradicting with the study of Sinnatamby CS[7] in which male and female ratio was (40% & 60%). In multiple studies it is reported that most of the patients belonged to underprivileged communities which seconds the result of this study[7,10,11].

In our study ear discharge was present in 22 patients (73.33%) at the time of operation while in 8 patients (26.66%) ears were dry on mastoid exploration.

In our study all the patients under went mastoid exploration by canal wall down technique and the per-operative findings were cholesteatoma, ossicular chain was involved and necrosed in (66.66%) cases, no ossicle was seen in (23.33%) cases, while the supra structure of the stapes was preserved in (10%) cases only which was comparable to the study of Baklacı D[12].

In our study 5 patients age ranged between 05 to 14 years in which behavior of cholesteatoma was more aggressive than in adults and a worse state of ossicular chain was observed which was comparable to the study of Zang J, et al[13] and Cassano, P. et al[14]. In our study cholesteatoma was present in the middle ear and mastoid with necrosis of multi ossicular chain, while contradicting with the study of Panetti G, et al.[15] in which they reported that attic cholesteatoma was present in (70%), mastoid involvement was present in (50%), extensive cholesteatoma was present in (38.7%) and sinus tympani involvement was present in (28%) cases in 70 patients. In our study there was deeper extension of cholesteatoma in sinus tympani in 12 patients (40%) and granulation tissues were present with destruction to the ossicles in 7 patients (23.33%) which was comparable to the review by Verma, B, & Dabholkar YG.[16] In our study facial canal dehiscence was observed in 10 patients (33.33%) out of them 7 patients (23.33%) were male and 3 patients (10%) were female which was comparable to the study of Kalcioglu, M. T et al[17] and Sharma S, et al[18] while contradicting to the study of Sangeetha, S. et al[11] at Tamil Nadu. Ossicular chain damage was observed as most common complication almost in all cases having cholesteatoma while temporal lobe abscess was present in 1 patient of seven years age this was compared with the studies of Toros SZ, et al[19] and Kahn SA, et al[20]. They had observed significant extra cranial and intra cranial complications.

According to study performed by Zang J, et al[21] a delayed ossicular reconstruction is the preferred option when extensive middle ear / mastoid surgery is performed but, in our setup, due to economical constrains the patients are unable to come for second stage procedure from far areas so single stage surgery is more practicable.

CONCLUSION

Prevalence of chronic supportive otitis media atticoantral type with cholesteatoma is equal in both sexes. And there is a high prevalence was observed in under privileged community and in age group of 10 to 20 years.

Author's Contribution:

Concept & Design of Study:	Muhammad Aqil Jilani
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Original Article

Comparison of Autologous Blood and Steroid Injection in Patients with Plantar Fasciitis

Amanul Haq[1], Inayat ur Rehman[2], Israr Ahmed[2] and Tufail Ahmad[3]

ABSTRACT

Objective: To compare the effectiveness of autologous blood injection and steroid injection in patient with planter fasciitis.

Study Design: Randomized Controlled trial study.

Place and Duration of Study: This study was conducted at the Orthopedics department of Trauma unit, Khyber Teaching Hospital, Peshawar for a period of 9 months from July, 2012 to March, 2013.

Materials and Methods: 43 patients with Planter Fasciitis of more than 6 weeks duration with moderate to severe pain were consecutively allocated in each Group A (autologous blood) and B (steroid injection). Patients were assessed at 6 weeks follow up for effectiveness in terms of improvement in at least one grade of pain on Visual Analogue Scale. Data was analyzed with SPSS 10.0 & presented in from of tables and graphs.

Result: There were 22 (51.2%) & 18 (41.9%) males and 21 (48.8%) &25 (58.1%) females in Groups A and B respectively (P=0.517). Effectiveness was in 25 (58.10%) and 31 (72.10%) in group A and B respectively (P=0.429). Mean age in group A and B were 37.37 years± 7.77 SD and 38.93 years± 6.80 SD respectively (P=0.396). Effectiveness according to age (P=0.410), gender (P=0.417), baseline grade of pain (P= 0.542) and duration of symptoms (P=0.757) were insignificant.

Conclusion: Autologous blood injections are not more effective than steroid injections in patients with planter fasciitis.

Key Words: Autologous blood injection; Steroid injection; Effectiveness; Plantar fasciitis.

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INTRODUCTION

Plantar fasciitis is the most common presenting cause of chronic heel pain.(1) About 10% population complain of heel pain in some part of their life.(1, 2) About 2 million people are affected per year in United States. It is among the top five causes of ankle and foot pain in runners and in professional football, basketball and baseball players. Incidence of plantar fasciitis peaks in people between the ages of 40-60 years.

There are various treatmen modalities for plantar fasciitis including conservative & surgical.Conservative treatment like Non-Steroidal Anti-inflammatory drugs, foot orthosis, stretching exercises, extra corporeal shock wave laser therapy, local steroid injections, autologous blood & blood product injections.(3) It is the mainstay of management & is successful in 80-90% of cases. Steroid injections are considered as first line treatment for most patients with plantar fasciitis. 80% of the patients recover spontaneously. But where the symptoms persist various treatment options are available such as interventional and surgical options. Conservative measures include Foot orthosis, extra corporeal shockwave laser therapy stretching exercises analgesic.(4) Interventional measures used are local steroid injection, autologous blood and blood product injections. The most common interventional treatment of Plantar fasciitis used is the corticosteroid injection. This treatment has been supported by various studies showing its efficacy in immediate pain relief.(5) Autologous blood injection contains bioactive growth factors which can result in tissue regeneration and healing of the plantar fascia and pain relief, has also showed promising results in management of chronic tendon disorders.(6)

The rationale of the study was that it will help us to identify the course of management of planter fasciitis in our population as literature suggested steroid injection effective at one place and autologous injection effective in other studies. Autologous blood provides growth factors locally and is more cost effective. The study results will be disseminated to other health

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professionals & suggestions are given regarding modification in current management principles of patients with planter fasciitis according to the results of the present study.

MATERIALS AND METHODS

The randomized controlled trial was conducted from 01-07-2012 to 31-03-2013 in the Orthopedics department of Trauma unit, Khyber Teaching Hospital, Peshawar. It was after obtaining permission from the Institutional Board of the hospital. Informed written consent was obtained from patients. 43 sample size was calculated in each group using success rate of autologous blood injection to be 48% and success rate of steroid injection to be 78%, 95% confidence interval and 90% power of the test, under WHO sample size calculations.

All patients with both genders presenting with age 20-50 years and diagnosed with Planter fasciitis of more than 6 weeks duration with moderate to severe pain were included from the study. Patients with prior surgery of heel, dislocation of ankle joint, planter fascia rupture, calcaneal fractures and fractures of tarsal and metatarsal bones were excluded by past medical/surgical History and clinical record. Bilateral planter fasciitis because the response of treatment can't be graded accurately. Patients who had received steroid or autologous blood injections with in three months evident by history & clinical record. Patient with history of anemia, (Hemoglobin less than 7 grams %), thrombocytopenia (platelets count less than 150 x 10^3 per micro liter), or bleeding disorders were excluded by doing full blood count and known clinical record were excluded from the study.

Patients were randomly allocated in two groups by lottery method; Group A & B received autologous blood & steroid injection respectively under supervision of a fellow of CPSP. A detailed history was taken followed by detailed physical and systemic examination. In Group A, 2 ml of venous blood was taken from the right or left forearm cubital vein, mixed with 1 ml of xylocaine 2% and was injected into the maximum tender point of heel at the medial side under aseptic condition. In Group B, 2 ml of Xylocaine 2% was mixed with 1 ml of Injection Depo Medrol containing 40 mg of Methylprednisolone Acetate and was injected into the maximum tender point of heel medial side under aseptic condition. After injection the patients of both groups were kept for 15 minutes under observation in the OPD for hemodynamic stability and then the patient was allowed to go to home. Patients were instructed to avoid weight bearing for 48 hours and then wear soft shoes. Follow up patients were assessed at 6 weeks to determine the intervention effectiveness in terms of improvement in at least one grade of pain on visual Analogue scale. All the above mentioned information including name, age, sex, address was recorded in a predesigned proforma.

Data was entered in SPSS 21. Age, duration of planter fasciitis pain was presented ad mean & standard deviation. Categorical data like gender, affected side and effectiveness were presented as frequencies & percentage. Effectiveness was stratified among age, gender, baseline grade of pain and duration of heel pain to see the effect modification. The results were presented as tables and graphs. Chi square test was used to compare the effectiveness in the both groups while keeping p value of < 0.05 as significant.

RESULTS

In our study, total 43 patients were included. The patients mean age with plantar fasciitis in group A & group B were 36.86 years$\pm$7.10 SD & 38.28 years$\pm$7.87 SD for male and 37.90 years $\pm$8.57 SD and 39.40 years$\pm$6.04 SD for female respectively. In Group A (autologous blood injection), there were 22 (51.2%) males & 21 (48.8%) females. In Group B (steroid injection), there were 18 (41.9%) males and 25 (58.1%) females. Two patients in group A and one patient in group B were lost in follow up. P value equals 0.516 and it is considered to be statistically insignificant. Table:1

Side distribution in patients with plantar fasciitis in group A & in group B were right side 28 (65.10%) and 22 (51.2%) and left side 15 (34.90%) and 21 (48.8%). P value is 0.274 which is insignificant. Autologous blood injection (group A) & steroid injection (group B) were effective in 25 (58.10%) and 31 (72.10%) respectively while they were ineffective in 16 (37.20%) and 11 (25.60%) respectively. 2 (4.7%) and 1 (2.3%) were missing in group A and group B respectively. P value in between both groups is 0.429 which is also insignificant. Table: 1

The patients mean age with plantar fasciitis in group A & group B were 36.86 years $\pm$7.10 & 38.28 years $\pm$7.85 for male & 37.91 years $\pm$8.56 SD and 39.40 years $\pm$6.04 SD for female. P value was insignificant 0.39. Mean duration of symptoms in patients fasciitis in (group A) and (groupB) as shown in Table: 2

Frequency of age groups in patients with plantar fasciitis in group A and group B were respectively 21 to 30 years were 10 (24.39%) and 5 (11.90%) and 31 to 40 years were 15 (36.58%) and 14 (33.33%) and 41 to 50 years were 16 (39.02%) and 23 (54.76%) P value is 0.235 & is insignificant statistically. Frequency of duration of symptoms in patients with plantar fasciitis autologous blood injection (group A) and steroid injection (group B) as shown in Table:3. Frequency of s 0.584 which is insignificant statistically.

Frequency of baseline grade of pain in patients with plantar fasciitis in group A & group B were respectively; moderate was 33 (75.60%) and 30 (71.42%) and severe were 10 (24.39%) and 13

(28.57%). P value is 0.627 & is insignificant. Age wise effectiveness in autologous blood injection (group A) & steroid injection (group B) respectively were; in 21 to 30 years old patients were 7 (28%) and 4 (12.90%), in 31 to 40 years old patients were 7 (28%) and 10 (32.25%) and in 41 to 50 years old patients were 11 (44%) and 17 (54.83%). P value is 0.410 which is insignificant. Gender wise effectiveness in both groups as shown in Table: 4 Effectiveness regarding baseline grade of pain in both group A & B respectively were; 20(80%) and 22 (70.96%) in moderate pain patients and 5 (20%) and 9 (29.03%) in severe pain patients. P value is 0.542 which is insignificant statistically. Effectiveness regarding duration of symptoms in patients with plantar fasciitis in group A & group B as shown in Table: 4. P value is 0.757 which is insignificant statistically.

Table No.1: Gender, Side& Effectiveness distribution of patients in Autologous blood injection (Group A) & steroid injection (Group B) in patients with planter fasciitis

	Group A (Autologous Blood Injection)		Group B (Steroid Injection)		P value
Distribution of Gender among patients	Male	Female	Male	Female	
	22(51.205)	21(48.80%)	18(41.90%)	25(58.10%)	0.57
Side Distribution among patients	Right	Left	Right	Left	
	28(65.105)	15(34.90%)	22(51.20%)	21(48.80%)	0.274
Effectiveness of planter fasciitis patients	Effective	Non-effective	Effective	Non-effective	0.42
	25(58.10%)	16(37.20%)	31(72.10%)	11(25.60%)	

Table No.2: Mean Age and Duration of symptoms in Autologous blood injection group (Group A) & steroid injection group (Group B) in patients with planter fasciitis

	Group A (Autologous blood injection)		Group B (Steroid Injection)	
Mean age of patients with planter fasciitis	Male	Female	Male	Female
	38.86 ± 7.10	37.90± 8.57	38.28±7.87	39.40±6.04
Duration of symptoms with planter fasciitis	2.36± 1.00 weeks	2.67± 1.97 weeks	2.56± 1.09 weeks	2.76± 1.16 weeks

Table No.3: Duration of years & duration of symptoms in Autologous blood injection group (Group A) & steroid injection group (Group B) in patients with planter fasciitis

		Group A	Group B	P value
Age Group	21-30 years	10(24.39%)	5(11.9%)	0.235
	31-40 years	15(36.5%)	14(33.3%)	
	41-50 years	16(39.02%)	23(54.7%)	
Duration of symptoms	>6 weeks	9(21.9%)	9(21.4%)	0.584
	>8 weeks	13(31.7%)	8(19.0%)	
	>10 weeks	9(21.9%)	12(28.5%)	
	>12 weeks	10(24.3%)	13(30.9%)	

Table No. 4: Effectiveness in different Age groups, Gender, Baseline grade of pain & duration of symptoms in Autologous blood injection group (Group A) & steroid injection group (Group B) in patients with planter fasciitis

		Group A	Group B	P value
Age Group	21-30 years	7(28%)	4(12.9%)	0410
	31-40 years	7(28%)	10(32.25%)	
	41-50 years	11(44%)	17(54.8%)	
Gender	Male	12(48%)	11(35.48%)	0.417
	Female	13(53%)	20(64.51%)	
Baseline Grade of pain	Moderate	20(80%)	22(70.96%)	0.54
	Severe	5(20%)	9(29.03%)	
Duration of symptoms	>6 weeks	4(16%)	7(22.5%)	0.75
	>8 weeks	9(36%)	7(22.5%)	
	>10 weeks	6(24%)	8((25.58%)	
	>12 weeks	6(24%)	9(29.03%)	

DISCUSSION

Plantar fasciitis is a common foot problem. Approximately it affects 2 million people yearly & affects as much as 11-15% of the population over the course of a lifetime. [7,8] Plantar fasciitis is a degenerative tissue condition that occurs near the site of origin of the plantar fascia at the medial tuberosity of the calcaneous. [9, 10] It is the most common presenting cause of chronic heel pain.(1)About 10% of population complains of heel pain in some part of their life. About

2 million people are affected per year in United States.[11]

Both gender are equally affected.[10] Usually it is observed in the 40-60 year age group, but has been reported in people from 7 to 85 years & appears to be common in females. In our study female predominance was observed.[12] However, age wise distribution is different in our study. Although all ages are affected by PF, in our study it was more common in the age group of 40-50 years. But the incidence increases between the ages of 40 and 60. Plantar fasciitis in group A and group B were also 41 to 50 years, 16 (39.02%) and 23 (54.76%) respectively. But regarding effectiveness of treatment, age and gender has no role. Zahid et al, results also similar in our study. [8]

Up to 20 % patients fail to respond to conservative treatment respond to conservative treatment.[13] But in our study ABI and CSI were ineffective in 16 (37.20%) and 11 (25.60%) respectively which are similar to those reported in another study (up to 30% failure rate of conservative treatment).[14]

In our study patients in both groups, with moderate grade of baseline pain showed increased effectiveness (70% to 80%) but literature searched has not mentioned whether baseline grade of pain affect outcome or not.

Pain is intense, sharp typically with first few steps in morning, aggravated by sprinting and jumping and walking bare foot. In addition to pain there may be stiffness in the foot and localized swelling in the heel. There is tenderness at the origin of or in proximal plantar fascia. Risk factors are intrinsic and extrinsic. Intrinsic risk factors include anatomical and functional, and degenerative.[11] Diagnosis can be made with reasonable certainty on basis of clinical assessment alone. 80% to 90% patients respond to conservative treatment. Conservative treatment modalities are orthosis, topical medications, oral non-steroidal anti-inflammatory drugs, heel cushions, physiotherapy, stretch exercises, local injections and extra corporal shockwave therapy and laser [15].

Local injections include steroids, autologous platelets and blood, botulinum toxin, hyperosmolar dextrose and lignocaine[1]. Surgical treatment is open or endoscopic release of plantar fascia. Complications are rupture of plantar fascia and atrophy of heel fat pad, soft tissue and skin. Autologous blood injection results in acute inflammatory response and reinitiating healing process. Complications include pain at injection site and infection.[2] Surgery is indicated when conservative treatment fails.[16]

Most of the international studies have been carried out in literate communities with good compliance of the patients, while we faced certain problems during this study. Many patients reporting to us had already taken multiple types of medication by themselves and most were from low socioeconomic and illiterate class. They came from rural or some far flung areas and they didn't know anything about the nature of the disease. They were treated by the hakeems or by the traditional healers in the villages and small towns. Some of the patients were taking antibiotics for the treatment of plantar fasciitis.

In a study ABI were found 30% less effective than steroid injections (48% vs. 78%).[17] Lee et al, also reported less effectiveness of ABI than CSI (51% vs. 65%).[18] These results are comparable to our study in which autologous blood injections were effective in 25 (58.10%) and steroid injection were effective in 31 (72.10%).Other studies has reported that ABI and CSI are equally effective (68% and 65% respectively).[19]

CONCLUSION

The conclusion of the study that investigating the effect of two treatment modalities in term of pain in people with plantar fasciitis. It is possible that some aspects of the protocol will limit the extent to which findings can be generalized to routine clinical settings. Also the study shows that females are slightly more affected. Middle age is more exposed to the plantar fasciitis. Right and left sides are equally affected. Corticosteroids are slight more effective but the difference is insignificant. This trial will provide high quality evidence for the use of corticosteroids and autologous blood injections in the management of plantar fasciitis.

Author's Contribution:

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Original Article

Electrocautery Verses Scalpel for Abdominal Incisions in Repeat Caesarian Section

Shafaq Mahmood[1], Zainab Maqsood[1], Bushra Munir[1], Syeda Batool Mazhar[1] and Meshal Azhar[2]

ABSTRACT

Objective: To compare the mean operative time, post-operative pain and blood loss with electrocautery verses scalpel in repeat caesarian sections for abdominal incisions.

Study Design: Randomized controlled trial study

Place and Duration of Study: This study was conducted at the MCH Centre PIMS Hospital, Islamabad from June, 2020 to December, 2020 for a period of six months.

Materials and Methods: Total 100 women with singleton pregnancy (assessed on USG) of gestational age 37-41 weeks (assessed by LMP) undergoing cesarean section of 18-45 years of age were selected and randomly divided into two groups of 50 women in each. Women with Gestational Diabetes, Primigravida, hepatic or renal impairment were excluded. Group A included woman who had incision with electrocautery. Group B included women who had incision with scalpel. All operations in both groups were done by same surgeon and operative time, post-operative pain and blood loss was measured.

Results: In our study, the mean operative time in Group A (Electrocautery group) was 66.92 ± 7.39 minutes while in Group B (scalpel group) was 86.98 ± 5.84 minutes (p-value = 0.0001). Mean blood loss in Group A (Electrocautery group) was 194.32 ± 56.01 ml while in Group B (scalpel group) was 418.96 ± 26.18 ml (p-value = 0.0001). Mean post-operative pain in Group A (Electrocautery group) was 1.84 ± 1.13 while in Group B (scalpel group) was 3.28 ± 1.37 (p-value = 0.0001).

Conclusion: This study concluded that the electrocautery incision is better than scalpel skin incisions in terms of incision time, blood loss and post-operative pain.

Key Words: caesarean section, electrocautery, blood loss

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INTRODUCTION

The caesarean section is the most commonly performed surgery in the female of reproductive age. There are many techniques of performing Caesarian section. Every technique has its own advantage and disadvantage. The skin incision may be vertical, midline, Para median and the most common being pfannensteil incision.[1] Electrocautery is an alternate method to open the skin by the use of an alternating current.[1]

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Electrocautery is time saving method with rapid haemostasis, rapid and precise tissue dissection and a reduced overall operative blood loss.[2] The complications for electrocautery include burns at the patient plate, explosion and fire, surgical smoke and ventricular fibrillation in patients with pacemakers.[1]

Skin incisions are routinely made with stainless steel scalpel which are supposed to be more bloody and painfull.[3] The disadvantages of steel scalpel include more blood loss, indistinct tissue separation, more operative time. The scalpel method requires use of foreign material in the wound leading to infection risk.

In Liaquat University Jamshoro Pakistan, Clinical trial on Diathermy and Scalpel incision in elective general surgery by surgery department shows that for Scalpel group the Mean incision time was 8.9025 sec/cm2 (SD ± 1.3666 sec/ cm2) and for Diathermy group the mean incision time was 7.3057 sec/cm2 (SD ± 0.9677 sec/cm2). Mean incision blood loss in Scalpel group was also found to be significantly higher i.e. 1.8262 mL/cm2 (SD ± 0.2984 mL/cm2) compared to Diathrmy group patients i.e 1.1346 mL/cm2 (SD ± 0.3399 mL/cm2). Postoperative pain on day one, two, and five

was assessed by Verbal Rating Scale (VRS). It was significantly higher in Scalpel group.[4]

Chalya et al in their study on diathermy versus scalpel incisions in elective midline laparotomy in general surgery at Tanzania showed the reduction in mean incision time with Scalpel was statistically significant. The mean loss of blood for Diathermy incisions was significantly less as compared to Scalpel.[5]

In a study at a teaching hospital in Sola, patients were allocated consecutively to have either scalpel or cutting electrocautery incisions. The incision time was significantly shorter and the blood loss was significantly less with the electrocautery compared to the scalpel.[6] Another study concluded that electrocautery use for the skin incision is having better cosmetic results with shorter healing time[7].

There are only a few studies conducted in Pakistan to compare electrocautery verses scalpel in abdominal surgeries. Caesarian section rate has increased over the last decade. The complications related to wound have also increased resulting in increased morbidity and increased use of hospital resources in a low income country. Our study results may provide better methodology that may be adopted in future for better outcome.

MATERIALS AND METHODS

After approval from ethical committee, a randomized control trial was conducted in MCH center PIMS Islamabad from June 30, 2020 to December 29, 2020. After taking written consent 100 women fulfilling following selection criteria were included in study.

Inclusion Criteria:

- Singleton pregnancy
- Elective repeat caesarian section (previously 1-4 caesarian sections).
- Gestational age at term, 37-41 weeks.
- Age 18-45 years.

Exclusion Criteria:

- Anemia with Hb <10 g/dl.
- History of steroids intake
- Severe hepatic, renal impairment or Gestational Diabetes
- Bleeding disorder
- History of pacemaker

Patients were divided randomly using computer gen into two equal groups. 50 patients in group A (Electrocautery) while 50 in group B (Scalpel).

All CS was carried out by a same surgeon of more than 2 years of experience. An observer noted the time from skin incision till the completion of procedure namely skin closure. At the end of the procedure suction bottle was measured and sponges were counted and weighed to see the total blood loss during the procedure. All women were evaluated for post op pain and pain intensity was calculated according to numeric rating scale at 12 hours. After the operation and during the post-operative stay in the hospital analgesia was given intra-muscularly three times a day to all patients according to hospital protocol.

All the data was entered and analyzed by using SPSS version 24.0. Age, gestational age and parity, operative time, pain and blood loss were presented as mean and standard deviation. Comparison of the mean operative time, pain and blood loss between both groups was analyzed by independent 't' test. P value ≤ 0.05 was considered as statistically significant. Effect modifiers like age, gestational age, number of CS and type of anesthesia were controlled by stratification.

RESULTS

Age range in this study was from 18 to 45 years with mean age of 28.13 ± 6.02 years. The mean age of patients in group A was 28.18 ± 6.37 years and in group B was 27.76 ± 5.55 years.

Table No.I: Comparison of mean operative time, post-operative pain and blood loss with electrocautery verses scalpel in repeat caesarian sections for abdominal incisions

Outcome	Group A (n=50)	Group B (n=50)	P-Value
	Mean ± SD	Mean ± SD	
Operation time (minutes)	66.92 ±7.39	86.98± 5.84	0.0001
Blood Loss (ml)	194.32± 56.01	418.96± 26.18	0.0001
Pain	1.84 ± 1.13	3.28 ± 1.37	0.0001

Table No.2: Stratification of Operative time with respect to age, gestational age, number of CS and type of anesthesia

Co-morbid conditions		Group A (n=50) Operative time (minutes)		Group B (n=50) Operative time (minutes)		P-value
		Mean	SD	Mean	SD	
Age (years)	20-30	68.31	7.56	85.31	6.65	0.0001
	31-45	65.42	7.05	87.76	5.35	0.0001
GA (weeks)	37-39	68.08	7.65	86.83	6.17	0.0001
	40-41	63.93	5.90	87.36	5.11	0.0001
Number of CS	1-2	66.89	7.28	87.54	6.11	0.0001
	3-4	67.0	7.90	86.27	5.55	0.0001
Type of anesthesia	GA	68.72	8.76	84.59	5.92	0.0001
	SA	65.91	6.43	88.21	5.49	0.0001

Mean gestational age was 38.76 ± 1.17 weeks. The mean gestational age in group A was 38.72 ± 1.11 weeks and in group B was 38.78 ± 1.23 weeks. Mean

parity was 2.21 ± 0.96. The mean number of previous CS in group A was 2.14 ± 0.95 and in group B was 2.35 ± 0.98. Only 9 out of 100 patients (9%) required general anesthesia, 5 out of 50 (10%) in group A while 4 out of 50 (8%) in group B. The remaining 91 patients were given spinal anesthesia.

In my study, the mean operative time in Group A (diathermy group) was 66.92 ±7.39 minutes while in Group B (scalpel group) was 86.98 ± 5.84 minutes (p-value = 0.0001). Mean blood loss in Group A (diathermy group) was 194.32 ± 56.01 ml while in Group B (scalpel group) was 418.96 ± 26.18 ml (p-value = 0.0001). Mean post-operative pain in Group A (diathermy group) was 1.84 ± 1.13 while in Group B (scalpel group) was 3.28 ± 1.37 (p-value = 0.0001) as shown in Table I.

Table No.3: Stratification of blood loss with respect to age, gestational age, number of CS and type of anesthesia

Co-morbid conditions		Group A (n=50)		Group B (n=50)		P-value
		Blood Loss (ml)		Blood Loss (ml)		
		Mean	SD	Mean	SD	
Age (years)	20-30	182.15	33.50	417.88	24.50	0.0001
	31-45	207.50	71.52	421.25	30.18	0.0001
GA (weeks)	37-39	188.94	33.61	421.58	24.38	0.0002
	40-41	208.14	92.19	412.21	30.27	0.0001
Number of CS	1-2	197.63	62.44	417.50	27.72	0.0001
	3-4	186.60	37.67	420.82	24.60	0.0001
Type of anesthesia	GA	239.22	68.58	416.82	23.53	0.0001
	SA	169.06	23.45	420.06	27.74	0.0001

Table No.4: Stratification of Post-operative pain with respect to age, gestational age, number of CS and type of anesthesia

Co-morbid conditions		Group A (n=50)		Group B (n=50)		P-value
		Post-operative pain		Post-operative pain		
		Mean	SD	Mean	SD	
Age (years)	20-30	1.81	1.23	3.15	1.37	0.0001
	31-45	1.88	1.03	3.56	1.36	0.0001
GA (weeks)	37-39	1.72	1.00	3.19	1.21	0.0001
	40-41	2.14	1.41	3.50	1.74	0.0001
Number of CS	1-2	1.83	1.22	3.54	1.32	0.0001
	3-4	1.87	0.92	2.95	1.40	0.0001
Type of anesthesia	GA	1.78	1.21	3.18	1.01	0.0001
	SA	1.88	1.10	3.33	1.53	0.0001

Stratification of Operative time with respect to age, gestational age, number of CS and type of anesthesia is shown in Table 2. Stratification of blood loss with respect to age, gestational age, number of CS and type of anesthesia is shown in Table 3. Stratification of post-operative pain with respect to age, gestational age, number of CS and type of anesthesia is shown in Table 4.

DISCUSSION

Electrocauterization or electrocautery is routinely used in surgery to remove unwanted or harmful tissue, i.e., tissue dissection, burn and seal blood vessels, and to create a surgical incision. It is also used increasingly to reduce or stop bleeding.[8] However, electrocautery, which is available in all surgical theaters, is less frequently used for skin incisions due to fear of tissue damage, poor wound healing, postoperative pain, and excessive scarring.[9] We have conducted this study to compare the mean operative time, post-operative pain and blood loss with electrocautery verses scalpel in repeat caesarian sections for abdominal incisions.

In our study, the mean operative time in Group A (diathermy group) was 66.92 ± 7.39 minutes while in Group B (scalpel group) was 86.98 ± 5.84 minutes (p-value = 0.0001). Chalya et al[5] in their study on diathermy versus scalpel incisions in elective midline laparotomy in general surgery at Tanzania showed the mean incision time with scalpel was 9.21 ± 1.40 sec/cm2 in comparison to 7.84 ± 0.82 sec/cm2 with diathermy incisions. The difference between the two groups with respect to the mean incision time was statistically significant. A randomized clinical trials, has shown that incision time was significantly longer for patients in scalpel group (p = 0.001).[10] In Liaquat University Jamshoro Pakistan, Clinical trial on Diathermy and scalpel incision in Elective general surgery by surgery department shows that for group A the Mean incision time was 8.9025 sec/cm2 (SD ± 1.3666 sec/ cm2) and for group B the mean incision time was 7.3057 sec/cm2 (SD ± 0.9677 sec/cm2) for group B patients.[4] Ly et al[11] in their systemic review and meta-analysis of fourteen randomized trials comprising of 2541 patients (1267 undergoing skin incision by cutting diathermy and 1274 by scalpel), found that diathermy may offer significant advantages in many variables including, operative blood loss, incision time and postoperative pain. A prospective non-randomized study[12] has shown significantly lesser incision time (6.6 min ± 3.1 min; t = 2.8; P = 0.006) compared to scalpel group. In a study at a teaching hospital in Sola, patients were allocated consecutively to have either scalpel or cutting electrocautery incisions. The incision time was shorter in the electrocautery group (P<0.001).[6]

Our study has shown the mean blood loss in Group A (diathermy group) was 194.32 ± 56.01 ml while in Group B (scalpel group) was 418.96 ± 26.18 ml (p-value = 0.0001). Mean incision blood loss in scalpel

group was also found to be significantly higher i.e. 1.8262 mL/cm2 (SD ± 0.2984 mL/cm2) compared to diathermy group patients i.e 1.1346 mL/cm2 (SD ± 0.3399 mL/cm2).[4] Ly et al[11] in their systemic review and metaanalysis of fourteen randomized trials comprising of 2541 patients (1267 undergoing skin incision by cutting diathermy and 1274 by scalpel), found significantly reduced amounts of blood loss (mean difference of 0.72 mL/cm (2); P < 0.001) as compared to scalpel incisions. The blood loss was less with the electrocautery compared to the scalpel (6.53±3.84 ml vs. 18.16±7.36 ml, P<0.001).[6] A prospective nonrandomized study [12] had a significantly low blood loss (18.1 g ± 16.1 g vs. 35.8 g ± 16.9 g; t = 4.1; P = 0.0001).

Mean post-operative pain in Group A (diathermy group) was 1.84 ± 1.13 while in Group B (scalpel group) was 3.28 ± 1.37 (p-value = 0.0001). Pain perception was found to be markedly reduced during the first 48 h in group A (p = 0.000).[10] In Liaquat University Jamshoro Pakistan, postoperative pain on day one, two, and five was assessed by VRS. It was significantly higher in diathermy group.[4] In one study by Kearns and colleagues [13] it was found that diathermy produces significantly less postoperative pain on the first and second postoperative day when compared to scalpel incisions. From the third postoperative day onwards, severity of pain after surgery became significantly different between the two groups. A prospective nonrandomized study [12] has shown that electrosurgery group also had a significantly lesser postoperative pain score at 6 h, 12 h, and 24 h.

CONCLUSION

This study concluded that the diathermy incision is better than scalpel skin incisions in terms of incision time, blood loss and post-operative pain. So, we recommend that diathermy should be used routinely in repeat caesarian sections for abdominal incisions for reducing the blood loss and post-operative pain which will in turn improve their quality of life by reducing post-operative morbidity.

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Original Article

Effects of Mulligan Traction Leg Raise versus Slump Stretching on Pain and Functional Disability in Lumbar Radiculopathy

Aqsa Irshad[1], Naveed Anwar[1], Muzammal Ahmad[2], Kehkshan Khalid[1], Aqsa Ilyas[1] and Maria Sohail[3]

ABSTRACT

Objective: To compare the effects of Mulligan Traction Leg Raise versus Slump Stretching on Pain and Functional Disability in Lumbar Radiculopathy.

Study Design: Quasi experimental study

Place and Duration of Study: This study was conducted at the Family Clinic Baghbanpura, Lahore from September 2020 to February 2021 for a period of six months.

Materials and Methods: Consecutive sampling technique was used to select a sample of 40 patients from Physiotherapy department of Family clinic, Lahore. Study was completed in 6 months. Patients randomly allocated into 2 groups. Group A treated with Mulligan Traction leg raise with lumbar stabilization exercises and Group B treated with Slump stretching with lumbar stabilization exercises. Patient evaluated for improvement in symptoms through numeric pain rating scale and oswestry disability index. Each group received treatment session 3 times per week for 4 weeks. Data was analyzed by using SPSS version 21.

Results: The result cleared that Group A Mulligan traction leg raise showed significant results in pain and disability with p value less than 0.05. Group A showed decreased in pain with mean value of 1.60±1.536 as compared to Group B which is 4.00±1.947. Where Group A showed improvement in disability with mean value of 16.35±10.038 as compared to Group B where mean value is 45.60±20.849. Group B showed improvement but not showed significant results in comparison of group A.

Conclusion: It is concluded that Mulligan traction leg raise with lumbar stabilization exercises is much better technique to improve pain and functional disability in lumbar radiculopathy patients. Slump stretching with lumbar stabilization exercises is also very effective but results showed more significant effects of Mulligan traction leg raise.

Key Words: Disability; Muscle stretching exercises; Pain; Radiculopathy; Traction

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INTRODUCTION

Lumbar Radiculopathy is the most common experienced diagnosis in orthopedic clinical practices. Patient describes radiculopathy symptoms like electric, sharp, and burning pain that radiates from back to downward in the legs.[1-3]

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The lower spinal region is the place from where the pain starts and is considered as Lumbar radiculopathy and sciatic pain can be associated with it. Due to lumbar radiculopathy, the area which is most affected is the lower back, buttocks region, and hamstrings. About 80% of people experience back pain at least 1 time in their life's according to the American Association of Orthopedic Surgeons.[3,4] From the level of L1-S4, nerve roots exit the spine cause nerve root compression and produce damage.[5] SIJ dysfunction, tightness, or spasm of piriformis lead to piriformis syndrome is also a major contributor to lumbar radiculopathy.[6] As a result of compression, patients report radiating pain, paranesthesia, tingling, occasional shooting pain, numbness, and often reports with feet or leg weakness and muscular stiffness around the spine.[3] Women develop symptoms at the age of 50-60 years whereas men mostly affected and produce symptoms at the age of 40.[1] It's a vital contributor approximately having sixty to eighty percent lifetime incidence of LBP[7] and

affecting both women and men with an estimated prevalence of 3-5% of the whole population.[8] Interventions related to Manual therapy have always shown significant improvements in functional outcomes and in pain of low back patients receiving treatment for both non-neural and neural type painful conditions.[9] The treatment technique used as an intervention widely for the dysfunction of low back pain is Mulligan's mobilization with movement (MWM). Mulligan Traction leg raise is a pain-free intervention that has instant benefits in patients with radiculopathy which has decreased range of hip flexion.[10,11] The slump test is a neuro-dynamic test that is suspected to evaluate the mechano-sensitivity of the neuro-meningeal structures within the vertebral canal.[12-14] In current research work, we find out the effects of Mulligan traction leg raise versus slump stretching on pain and functional disability in lumbar radiculopathy patients, to check beneficial technique in lumbar radiculopathy patients. Through the result of this study, researcher believe to contribute some knowledge regarding techniques either Mulligan traction leg raise versus slump stretching improve pain and decrease functional disability or not and which technique showed significant results.

MATERIALS AND METHODS

It was a quasi-experimental study. This study was conducted at Family Clinic Baghbanpura, Lahore, Pakistan. Study was conducted from September 2020 to february 2021. A sample size of 40 was calculated by using Open Epi, version 3. To conduct this study, Consecutive sampling technique used to collect data and on the basis of inclusion exclusion criteria 40 patients with lumbar radiculopathy were selected from the Family clinic's OPD. Informed consent was taken from the patients before starting treatment. Assessor was blinded which made this study a single blinded study. The investigator used lottery method to randomly allocate the participants into Group A (Mulligan traction leg raise) and group B (Slump stretching). All subjects with pre diagnosed lumbar radiculopathy, unilateral or bilateral radiation of pain in sciatic nerve distribution, with SLR test positive, both genders male and female, 18 to 50 years' age was the inclusion criteria for this study. Patients undergoing History of spinal surgery in previous 6 months, Knee and ankle pathology causing limitation of movement**,** Clinical conditions such as over sensitive skin, patient with cardiac pacemaker, pregnancy etc**,** Serious spinal condition e.g infection, tumors, osteoporosis, spinal fracture, Inability to hold slump stretching position, reproduction of symptoms on neck flexion part of slump test, Patients with cervicogenic headache, VBI, spinal deformities and ankylosing spondylitis was the exclusion criteria for this study. Group A Mulligan traction leg raise was allocated 20 participants and in the other group B slump stretching also 20 participants were allocated. The data collection tools used were Numerical pain rating scale for pain and Oswestry disability index scale for low back disability.

In group A the subjects received Mulligan traction leg raise and lumbar stabilization exercises. Treatment session was given 3 times per week for 4 weeks for 20 minutes. Lumbar stabilization exercises include static glutei, static back and static hamstring hold for 10 seconds with maximum 10 repetitions. While in Group B the subjects received Slump stretching and lumbar stabilization exercises. Treatment session includes 3 times per week for 4 weeks for 20 minutes. Lumbar stabilization exercises includes static glutei, static back and static hamstring hold for 10 seconds with maximum 10 repetitions. Evaluation was done before treatment and at the end of 4th week. The data was analyzed by SPSS version 21. The quantitative variables were presented as mean and standard deviation. For checking the normality in the data shapiro-wilk test used. Before/after comparisons was done by using parametric methods as data is normally distributed. For within group comparison Paired sample t-test and for between groups comparison independent t test was applied. An alpha-level of 0.05 was selected for level of significance.

RESULTS

40 individuals were chosen for the study. The patients who fall in the inclusion criteria were 40. 40 subjects then randomly scattered into two treatment groups (Group A: Mulligan traction leg raise; Group B: Slump stretching). Both groups socio-demographic information was similar at baseline. Participants in Group A Mulligan traction leg raise were presented with mean age of 34.15±9.366 years and in Group B Slump stretching with 33.95±9.976 years. Participants in Group A were presented with mean height of 1.6490±.05794 meters and in Group B with 1.6685±0.6327 meters. Participants in the Group A were presented with mean weight of 68.00±7.377 kg and in Group B with 70.80±9.823 kg. Participants in Group A were presented with mean BMI of 24.955±3.7214 kg/m2 and in Group B with 25.200±3.3479 kg/m2 as shown in Table 1.

The pre and post treatment numeric pain rating scale values between two groups was done using independent sample t test. Analysis revealed that there was statistically significant difference in both groups with p value < 0.05. Group A showed greater improvement in numeric pain rating scale value as shown in table 2. The pre and post treatment oswestry disability index values between two groups was done using independent sample t test. Analysis revealed that there was statistically significant difference in both groups with p value < 0.05. Group A showed greater improvement in oswestry disability index as shown in table 2.

Paired sample t-test was used to compare the values of numeric pain rating scale score and Oswestry disability index score within each treatment group. Results declared significant difference in both the groups but greater improvement was seen in Group A Mulligan traction leg raise.

Table No.1: Comparison with regard to Mulligan traction leg raise and Slump Stretching

Group		Mean	Std. Deviation
Mulligan traction leg raise (N=20)	Age (years)	34.15	9.366
	Height (meters)	1.6490	.05794
	Weight (Kg's)	68.00	7.377
	BMI (kg/m2)	24.955	3.7214
Slump stretching (N=20)	Age(years)	33.95	9.976
	Height(meters)	1.6685	.06327
	Weight(Kg's)	70.80	9.823
	BMI(kg/m2)	25.200	3.3479

Table No.2: Comparison with regard to Numeric pain rating scale and Oswestry disability index

Variable		Treatment group		p value
		Mulligan traction leg raise	Slumps stretching	
Numeric pain rating scale (NPRS)	Pre-treatment (Mean±SD)	6.40±1.81	6.95±1.73	0.000
	Post-treatment (Mean±SD)	1.60±1.53	4.00±1.94	
Oswestry disability index (ODI)	Pre-treatment (Mean±SD)	52.80±15.35	55.25±15.35	0.000
	Post-treatment (Mean±SD)	16.35±10.03	45.60±20.84	

DISCUSSION

The aim of this study was to compare two non-invasive treatment techniques, one was Mulligan traction leg raise and other was Slump stretching on pain reduction and functional mobility in lumbar radiculopathy patients.

In current study, there is statistically significant difference in results of numeric pain rating scale in between group analysis. Pain decreased to greater extent in post-treatment of Mulligan Traction leg raise group with mean value 1.60±1.536 as compared to Slump stretching group 4.00±1.947 of group. The results are in accordance with one study conducted in 2018 in which swati mishra found that numeric pain rating scale value decreased markedly by rehabilitating a patient with lumbar radiculopathy in Mulligan traction leg raise group. (6) Another study conducted in 2016 by Giovanni E Ferreira, showed results that numeric pain rating scale showed improved pain in post-treatment evaluation which supports the results of this study.[15]

Gustavo Plaza-Manzano conducted study in 2020 in lumbar radiculopathy patients and concluded that reduction in mechanical sensitivity is seen but not seen a greater change in pain or pressure pain threshold by using NPRS.[16] The decrease in pain in Group A is more due to the fact that Mulligan traction leg raise is more directed to specific functional movements of lumbar spine and so targets the joint restrictions. The improved blood circulation can further decrease the pain level. Group B also showed improvement but to limited extent as it includes general exercises that targets the general mobility and muscular strength.

The results of study showed that there was statistically significant difference between Post-treatment oswestry disability index score values of two groups. Group A showed greater improvement on oswestry disability index with mean value of 16.35±10.038 as compared to Group B with mean value of 45.60±20.849. These results were supported by another RCT done by Jaida NK, all in which they found that ODI measurements indicate that functionality improved after the last session and showed that technique was effective.[17]

Another RCT study administered by karthika and rajalaxmi and outcome measures showed significant results that disability is improved at the end session supports our study results.[18] Ali, Rehman, Ahmed also conducted RCT study in Pakistan and ODI scale showed significant results by decreasing disability using these techniques in chronic low back patients. (19)

Giovanni E Ferreira, in RCT study showed that outcomes measures of disability by using ODI not showed significant results, function is improved in the end session but no improvement seen is disability.[19]

Traction leg raise elongate muscle and hold this position provide greatest tolerated length so improve pain of restricted leg and elongation improve range and reduce disability. It mobilizes the nerve as well as stretch the muscle so symptom's relief and functional ability improves because traction not provoke symptoms. Also in two studies conducted by C. berlin and Larsson and pal showed significant improvement in pain and disability and strongly encouraged the mulligan traction leg raise. [20,21,6]

CONCLUSION

It is concluded that Group A Mulligan traction leg raise with lumbar stabilization exercises is much better technique to improve pain and function disability in lumbar radiculopathy patients. Group B Slump stretching with lumbar stabilization exercises is also very effective but results showed significant effects of Mulligan traction leg raise.

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Original Article

Effectiveness of Triamcinolone Acetonide Vs. Combination of Triamcinolone Acetonide and Betamethasone Dipropionate in Oral Lichen Planus. A Comparative Study

Effect of Triamcinolone and with Betamethasone

Muhammad Adeel[1], Shakeel Ahmad[2], Sana Zafar[3], Danish Javed[4], Hira Shafique[5] and Nayab Khalid[6]

ABSTRACT

Objective: The purpose of this study is to see if the combination therapy of topical triamcinolone acetonide and betamethasone dipropionate is more effective as compared to the alone use of topical triamcinolone acetonide or not.
Study Design: Prospective Study
Place and Duration of Study: This study was conducted at the Tertiary Care Hospital setting from February 2020 to January 2021 for a period of 11 months.
Materials and Methods: Two groups i.e., Group A and Group B were made by randomly dividing the patients. Group A received 0.1% Triamcinolone acetonide while Group B received combination of triamcinolone acetonide 0.1% and betamethasone dipropionate 0.05%. Patients were instructed to apply the medication three times a day and then followed up after 2 weeks, first month, second month and third month respectively. At each visit, size of the lesion and symptoms were evaluated and the data collected was analyzed.
Results: Combination of triamcinolone acetonide 0.1% and betamethasone dipropionate 0.05% is found better in improving the symptoms of oral lichen planus and reducing the size of the lesion as compared to the alone 0.1% triamcinolone acetonide. Combination therapy has also provided better complete resolution of the lesion.
Conclusion: The authors concluded that combination drug therapy has better results as compared to the single drug therapy in cases of oral lichen planus. Due to the ongoing research in this domain newer drugs and their combinations are being proposed for treatment of oral lichen planus. According to the study, combination of triamcinolone and betamethasone provided better relief as compared to the alone triamcinolone. It will be a cost effective and reasonable combination as well as compared to the other newly developed costly alternatives.
Key Words: Oral lichen planus, betamethasone dipropionate, triamcinolone acetonide, oral cavity.

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INTRODUCTION

Oral lichen planus is an inflammatory mucocutaneous disease with a chronic nature and have an incidence of about 0.5-2% in a general population. Females are more commonly affected as compared to males with a gender predilection of 1.4:1[1,8]. Different varieties of oral lichen planus are found like reticular, erosive, atrophic, ulcerative, papular, plaque-like and desquamative gingivitis, of which reticular is the commonest variety[8]. Reticular, plaque-like, and papular modifications tend to be asymptomatic varieties. Exact etiology of the disease is not known but stress, anxiety, depression, diabetes mellitus, hepatitis C, dental materials are considered to be the prompting factors[2,14]. Another group of researchers claim that it is an autoimmune disease that is characterized by CD8+ cells mediated apoptotic activity in the basal layer of epithelium leading to this disease [2,15]. Mostly the history taking and clinical findings are used to make diagnosis but biopsy is confirmatory. On histopathological examination, oral lichen planus show saw-tooth rete pegs along with civatte bodies[9].

A wide variation of treatment modalities and medications are available for this condition but none of them have been proved to provide a definitive cure. Corticosteroids are the leads followed by retinoids, tacrolimus, dapsone, cyclosporin, hydroxychloroquine, antibiotics, mycophenolate etc. Photodynamic therapy along with lasers are also used now to manage the condition [3,6]. As corticosteroids are playing

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leading role so considering it, we decided to compare the effectiveness of corticosteroids as a single drug therapy and combination drug therapy. Here we used triamcinolone acetonide 0.1% as a single drug and triamcinolone acetonide 0.1% along with betamethasone dipropionate 0.05% as combination drug therapy. Steroids work by modulating the immune response and inflammation[11,13].

MATERIALS AND METHODS

This study is a single blind prospective study that was conducted in a tertiary care hospital setting from February 2020 to January 2021 after being approved by the institutional ethical committee. Patients presented to the oral medicine OPD with white lesions having characteristic oral lichen planus were biopsied. After taking proper informed consent, those patients having confirmed histopathological report of oral lichen planus were included in the study

Inclusion Criteria: Patients with confirm histopathological report of oral lichen planus having no signs of malignancy and ready to come up for follow up with an age group above 20 years of either gender and haven't received any treatment before.

Exclusion Criteria: patients with an age less than 20 years, uncontrolled diabetes mellitus, pregnancy, lactating females, features of malignancy and have previously got some therapies were excluded from the study.

The selected patients (n=32) were divided in to two groups using a random number table. Group A (n=16) was given 0.1% triamcinolone acetonide alone and group B received 0.1% triamcinolone acetonide and 0.05% betamethasone dipropionate. Initial size of the lesion was noted by taking photographs and Vernier calipers and symptoms (pain and burning sensations) were distinguished by using a Ten-point visual analogue scale (VAS). All of the patients were taught to use the medication topically thrice daily after meal and continue using the medication for 3 months. The patients were given a follow up after two weeks, one month, two month and three months to check improvements. An improvement of 2 points on visual analogue scale for symptoms and reduction in size of the lesion by 25% of the initial size were taken as positive responses. At the end, we calculated the patients who got completely recovered, patients with partial recovery and patient with resistant lesions and the results of both groups were compared by using a chi square test.

RESULTS

Nine males and seven females were included in group A and eleven males and five females in group B. On evaluation of improvements in symptoms (pain and burning sensations), we found that 68.75% of patients in Group A and 87.5% of patients in Group B showed improvements after 2 weeks. This increased to 81.25% in group A and 93.75% in group B at 1st month follow-up. Then on 2nd month follow-up it increased to 87.5% in group A and 100% in group B. Similarly, the results found on 3rd month follow up showed improvements in 87.5% of patients in Group A and 100% in group B as shown in Chart 1. At the end of the study, it was found that 2 patients in group A had persistent symptom as shown in chart 3.

While considering improvements in the size of the lesion, Group B had showed better improvements than group A. It was statistically significant during the 2nd week, 1st month, 2nd month and 3rd month of evaluation as shown in chart 2.

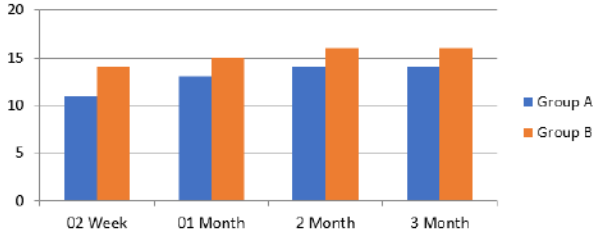

Figure No.1: Patients with improvements in symptoms (pain & burning sensations)

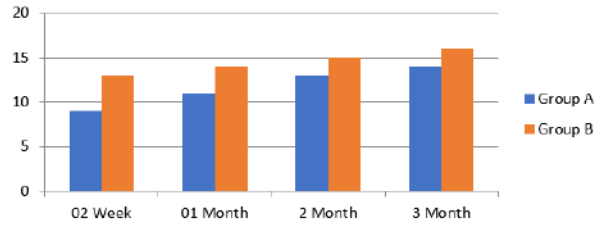

Figure No.2: Patients with reducing size of lesion

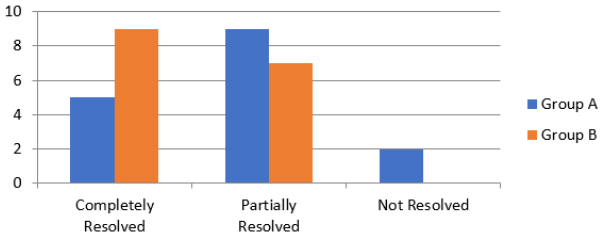

Figure No.3: Degree of Response showed by lesion in both groups

DISCUSSION

Currently, it is stressed that local therapy should be favored for managing oral lichen planus rather than systemic therapy[10]. It is due to the fear of the adverse effects of the systemic therapy. But in those cases where there is repeated recurrence of the lesion, systemic drug therapy may be the choice [2,11]. This study shows that 0.1% triamcinolone acetate is better in controlling the symptoms as well as size of the lesion of oral lichen planus but results are much better when combination of 0.1% triamcinolone acetate and 0.5% betamethasone dipropionate are used.

Le Cliech et al recommended topical corticosteroids as first line therapy for managing oral lichen planus.[4] In 2007, a randomized control study was carried out that showed by the use of 0.1% triamcinolone acetate there is 50% improvement in patients of oral lichen planus.[5]

Lodi, Giovanni et al also recommended that topical corticosteroids available in gel or similar preparations are found very effective in managing OLP[10].

Suresh SS et al conducted randomized control trials of different therapies for symptomatic OLP and they found that corticosteroids are the most common drugs providing relief to the patients of OLP[12].

Samimi M et al, conducted clinical trials comparing effectiveness of betamethasone dipropionate vs. rapamycin in treating oral lichen planus and they found out the betamethasone dipropionate is very much effective in relieving the pain and reducing the size of the lesion[16].

In the present study, Group B patients getting combination therapy showed better response in comparison to the patients of group A who had been treated with only 0.1% triamcinolone acetate. This is evident from the statistical variance between the two groups in the starting period of the study.

The final lesion was graded as completely resolved (no clinically detected lesion present), partially resolved (25% reduction in size of the lesion) and not resolved (less than 25% change in lesion). In Group A 31.25% showed complete resolution while in Group B 56.25% showed complete resolution. Similarly, in Group A 56.25% showed partial resolution as compared to Group B that showed 43.75% partial resolution of the lesion. Thogsparsom et al study showed equal (50%) figure of complete and partial resolution. In another study these numbers were 30% and 16% respectively [7].

CONCLUSION

The authors concluded that combination drug therapy has better results as compared to the single drug therapy in cases of oral lichen planus. Due to the ongoing research in this domain newer drugs and their combinations are being proposed for treatment of oral lichen planus. According to the study, combination of triamcinolone and betamethasone provided better relief as compared to the alone triamcinolone. It will be a cost effective and reasonable combination as well as compared to the other newly developed costly alternatives.

Author's Contribution:

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

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Original Article

Study Comparing the Clinical Profile of Patients with Stroke in Diabetic and Non-Diabetic Patients

Stroke in Diabetic and Non-Diabetic Patients

Muhammad Zafar Iqbal[1], Abrar Ahmad[2], Sajid Hussain[1] and Ashfaq Ahmad[2]

ABSTRACT

Objective: To evaluate outcome pattern, clinical characteristics of stroke and to compare outcome pattern in diabetic and non-diabetic patients.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the department of medicine at DG Khan Medical College & Teaching Hospital, DG Khan and QAMC Bahawalpur from July, 2019 to June, 2020.

Materials and Methods: Sixty patients of stroke were enrolled in study and allocated in two groups on basis of their diabetic status (Yes/No). Patients were treated and diagnosed as per ward protocol. All patients of age >20 years presenting with findings of stroke hemi anesthesia, hemiparesis, vertigo, language dysfunction and altered sensorium were included. Main outcomes were infarct size, hemorrhage and prognosis. SPSS version 23 was used for data analysis. Test of significance were applied and p value less than or equal to 0.05 was taken as significant.

Results: The diabetes was noted in 60.0% patients. Infarct is the predominant pattern occurring in 58.3% patients and hemorrhage was observed in 56.6% patients. Good prognosis was noted in 45.0% patients and bad prognosis was observed in 55.0% patients. The difference was statistically significant between prognosis and diabetes status, (p=0.000).

Conclusion: Undoubtedly diabetes is risk factor for stroke that should be watched and considered. Pattern of outcomes and prognosis is much different in diabetic stroke patients as compare to non-diabetics

Key Words: Diabetes, Stroke, Hemorrhage, Infarct, Prognosis

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INTRODUCTION

Stroke is a medical illness that affects vessels lying within the brain or leading to the brain, it is the leading cause of disability in United States and many other countries [1]. It occurs because of blockage or rupture of arteries within brain that carries oxygen to certain parts of body. After this incidence part of brain cannot obtain blood supply or oxygen and as a result death of brain cells occurs [2].

Routine investigations include random blood sugar, complete blood count, lipid profile, HbA1c, computed tomography, electrocardiogram and magnetic resonance imaging were performed for diagnosis of type of stroke[3].

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Classification of stroke was done as ischemic and hemorrhagic. Furthermore, ischemic stroke divided as cortical, sub cortical, cerebellum and brainstem[4]. Worldwide about two million people suffered from diabetes mellitus. Recently diabetes mellitus has been declared as risk factor of stroke. Incidence ratio of stroke is three folds more in diabetic people as compare to non-diabetic [5].

Stroke pattern is also much different in diabetic subjects as compare to non-diabetics [6]. A study was conducted on European diabetic population reported that diabetic patients most likely experience ischemic stroke about 77.5% in diabetic and 71.9% in non-diabetic. Similarly, incidence of hemorrhagic stroke was observed 85% in diabetic patients and 11.5% in diabetic patients [7].

Different modified risk factors for stroke are diabetes mellitus, hypertension, cigarette smoking, hyperlipidemia, drug abuse, cardiac disease, AIDS and alcohol consumption [8]. Presence of ischemic heart disease along with hypertension is a strong predictor of ischemic stroke [9]. Similarly, in diabetic patient risk factors of stroke are smoking, age, male gender, high blood pressure and hyperglycemia. Role of diabetes as a risk factor for hemorrhagic shock depends upon ethnicity and it is variables [10].

According to Honolulu Heart program it was suggested that diabetes is not associated with hemorrhagic stroke among American and Japanese population[11]. It has been

reporting that diabetes is strongly associated with stroke and post stroke mortality rate. Although established fact of stroke and diabetes association but some studies observed significantly reduced incidence of transient ischemic attacks in non-diabetics as compare to non-diabetics [12].

MATERIALS AND METHODS

Study was conducted at department of medicine at DG Khan Medical College & Teaching Hospital, DG Khan/ Quaid-e-Azam Medical College, (QAMC) Bahawalpur from 1ST July 2019 to 30th June 2020 in one-year duration. Study was started after ethical approval from hospital board and written informed consent from patients or their attendants. Non probability consecutive sampling technique was used.

All patients of age >20 years presenting with findings of stroke hemi anesthesia, hemiparesis, vertigo, language dysfunction and altered sensorium were included in study. Glucose metabolism of all patients was assessed. Patients with history of diabetes or random blood glucose >200 mg/dl were enrolled. Patients were enrolled in two groups on basis of their glucose status. Those patients having fasting glucose level >126 mg/dl treated with hypoglycemic agents or by insulin before stroke were included in diabetic group. Laboratory HbA1c was investigated. Patients presented with stroke but no history of diabetes were included in non-diabetic group.

Patients with history of head injury, use of steroids or anticoagulants before onset of stroke, stress hypoglycemia, elevated blood sugar at the time of stroke but normal HbA1c were excluded from study. Other risk factors like hypertension, dyslipidemia, smoking; ischemic heart disease and myocardial infarction were recorded.

Routine ward investigations like random blood glucose, complete blood count, fasting lipid profile, HbA1C computed tomography and magnetic resonance imaging were taken for identification of stroke. Type of stroke and its classification was done on basis of MRI and CT findings. Carotid Doppler ultrasound and echocardiography was done and noted.

SPSS version 23 was used for data analysis. Frequency percentages were calculated and presented for qualitative data like gender diabetic and non-diabetic patients. Mean and SD was calculated for continuous variables like age. Test of significance (t-test and chi square test) were applied to see association among variables.

RESULTS

Sixty patients were included in our study with mean age 54.98±3.21 years. Majority of the patients were male, i.e. (65.0%), (Table. I). The diabetes was noted in (41.6%) patients. Infarct was predominant pattern occurring in (58.3%) patients. Hemorrhage was observed in (56.6%) patients. The distribution of infarct and hemorrhage size versus diabetes chronicity was shown in table. 2.

Good prognosis was noted in (45.0%) patients and bad prognosis was observed in (55.0%) patients. The difference was statistically significant between prognosis and diabetes status, (p=0.000). (Table. 3).

Table No.1: Age and gender distribution of the study patients

Variable	Mean±S.D	N (%)
Age (years)	54.98±3.21	
Gender		
Male		33 (55.0)
Female		27 (45.0)

Table No.2: Distribution of infarct and hemorrhage size in diabetes status versus diabetes chronicity

	Small, N (%)	Medium, N (%)	Large, N (%)
Infarcts			
Diabetics	10 (28.6)	5 (14.3)	6 (17.1)
Non-diabetics	6 (17.1)	6 (17.1)	2 (5.7)
Total	35		
Hemorrhage			
Diabetics	12 (35.3)	10 (29.4)	2 (5.8)
Non-diabetics	7 (20.6)	2 (5.8)	1 (2.9)
Total	34		
Infarct and hemorrhage size vs. diabetes chronicity			
Chronicity (in years)			
Infarcts (n=26)			
<5	5 (19.2)	3 (11.5)	7 (26.9)
6-9	0 (0)	0 (0)	4 (15.38)
>10	1 (3.8)	0 (0)	6 (23.07)
Hemorrhage (n=8)			
<5	1 (12.5)	1 (12.5)	0 (0)
6-9	0 (0)	2 (25.0)	2 (25.0)
>10	0 (0)	1 (12.5)	1 (12.5)

Table No.3: Brunnstroms staging in diabetes status and gender

Variable		Prognosis		Test of sig.
		Good n=27 (45.0)	Bad n=23 (55.0%)	
Gender	Male	n=20 (51.3%)	n=19 (48.7%)	X^2=1.77, d.f=1 p=183
	Female	n=7 (33.3%)	n=14 (66.7%)	
Diabetes status	Yes	n=10 (37.0%)	n=15 (65.2%)	X^2=12.89, d.f=1 p=0.000
	No	n=17 (70.0%)	n=18 (34.8%)	

DISCUSSION

Cerebrovascular accident or stroke is one of leading incident in this modern era that can cause significant mortality and morbidity in survived individuals[13]. Numerous studies and reports has been conducted to record outcome patterns of stroke in diabetic and non-diabetic patients. This study is planned to assess the outcome pattern, clinical characteristics and to compare outcome pattern in diabetic and non-diabetic patients.

A study was conducted by Kumar et al[14] on this topic and concluded that poor outcomes following stroke are much higher in diabetic patients as compare to non-diabetics. Results of this study were clinically significant as p=0.0001. Hemorrhagic incidents are higher in ratio among diabetics and risk increases with increase in chronicity. In contrast a study by Ali et al[15] reported that ischemic stroke is more common in diabetic patients.

Another similar study was conducted by Sarkar et al[16] and concluded that ischemic stroke, lacunar stroke and transient ischemic attack are more common in diabetic patients as compare to non-diabetic patients. In our study hemorrhagic stroke is observed in more cases in non-diabetics but less in diabetics. In this it was observed that stroke occurs in older age group. Similar findings were reported by Zafar et al[17] that stroke occurs in 59.5 years of age and in non-diabetic stroke observed in 60.4 years of age group.

Our findings contrasted by another study by Mulnier et al[18] who reported that stroke mostly observed in younger population and in female gender. General Practice Research Database was used for collection and analysis of data. Not only female gender but increase in age along female gender is more prone to stroke incident. Another study by Ho et al[19] also reported similar findings that female prevalence is reported more in national and international journals.

In our study we observed large infarct size in a small proportion of patients but small and medium proportion is found in higher proportion. Our study was contrasted by Kissela et al[20] who reported that large infarct size is common in stroke patients and hemorrhagic incident is smaller in proportion in diabetics. Air et al[21] also concluded that large infarct size along with ischemic stroke is common finding in diabetic patients. Ischemic stroke is less likely observed in non-diabetics.

In a study conducted by Jorgensen et al[22] reported that diabetes influence stroke patients in several ways, in onset, recovery, age and mortality. Increased glucose level at the time of stroke in non-diabetic patients is also a risk factor but in cases of diabetes it is riskier and fatal for human life. In another study by Stegmayr and Asplund[23] it was reported that transient ischemic attacks, ischemic heart disease and stroke are strongly associated with diabetic risk factor. Diabetic patients are two time more prone to stroke incidence as compare to non-diabetic subjects.

Another study by Fritz et al[24] also reported similar findings that stroke is more common in diabetic peoples as compare to non-diabetic. Size of infarct and prognosis of stroke patients is also associated with diabetes mellitus.

CONCLUSION

Undoubtedly diabetes is risk factor for stroke that should be watched and considered. Pattern of outcomes and prognosis is much different in diabetic stroke patients as compare to non-diabetics.

Suggestions: Community awareness programs based on risk factors of stroke and possible preventions of diabetic stroke like glycemic control and good compliance suggested.

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

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Original Article

Comparative Immunohistochemical Staining for Chromogranin A and Synaptophysin in Intestinal Carcinoids

Zabihullah[1], Rania Hidayat[1], Shaista Alam[2], Shabir Ahmed Orakzai[3], Amara Hayat Awan[4] and Humaira Khan[2]

ABSTRACT

Objective: To study the immunohistochemical staining for Chromogranin A and Synaptophysin in Intestinal Carcinoids.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Ayub Teaching Hospital Abbotabad collected between 2017 to 2019.

Materials and Methods: Intestinal wall endocrine glands also seem to be optimistic for immunohistochemical chromogranin A known as CgA and synaptophysin known as SPY, the much more generally utilized stripes for neuron endo chemical cell types as well as tumors. Immunostaining CgA and SPY were conducted with four duodenal, fourteen ideals, five appendices, and seventeen colorectal. CgA with or without invasion of intestinal walls were strongly positive for duodenal and ileal carcinoids. CgA and SPY were weakly immuno-immunized in smaller appendix carcinoids.

Results: In particular, colorectal carcinoids with a low-grade tumor less than 1 centimeters with CgA negative coloration were more aggressive, whereas the bigger tumors less than 2 centimeters that infiltrate through the wall with often CIA's positive coloration. Duodenum, small gut, and colorectal CgA-positive carcinoids seem to be much attacking than CgA-negative tumors, most of which were just less than two centimeter, respectively. In the case of CgA with high serum CgA, while rectal hindgut cancers with low polyploidy tumors are CgA-negative but SPY-positive.

Conclusion: CgA-positive immunostaining can be used for gastroenteropancreatic neuroendocrine tumors, as an independent marker for potential malignancy, concerning the position and sort of the tumors. The immunostaining of CgA and SPY thus provides important carcinoid information.

Key Words: Carcinoid, Chromogranin A, Immunohistochemistry, Synatophysin

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INTRODUCTION

The much more frequent place of disease is a stomach, accompanied by the rectum 34 percent, the colon 16 percent, the stomach 11 percent, unfamiliar areas one percent; classic bowel cancer is of slow growth, and indolent malignant tumors are the most commonly reported. The Rectosigmoid in the hindgut in the large intestines in the midgut is the numerous generalplaces come after by the brain and transverse colons.[1] The slow-growing colorectal tumors are usually 5 years old with 90 percent colorectal carcinoids. The endocrine cells, which are less than one percent of mucous membranes, are usually dispersed to the exterior and the basic principle of the glandular epithelial organelles, especially gut crypts as well as coincident granules containing carcinoma ChadHurley, whereby different peptide hormone levels are released without hormones.[2] For epithelial and neuroendocrinal markers, the stain is positive for immunohistochemical stain. CEA at apical or lumen location is positive for epithelial markers and CK7 In nearly 10% of tumors and 25% for CK20. The positive markers are chromogranin A, synaptophysin, nerve cell specific enlace, leu seven, PGP 9.5, etc. As the second most commonly used immunochemical markers are CgA and Spy for neuropsynthetic and tumorcells, are routinely used in the typical carcinoid

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pathology laboratory.[3] The granite family is made up of eight-grain peptides, chromogranin A, B, C, secret graphs 3, 4, 5, 6, and VEGF. The CgA was limited to secretary granules with the immunoelectron microscopy, especially at the granules' peripheries, whereas the SPY cytoplasm was immunostained. CgA is usually good for cells like bowel, thyroid, parathyroid, early pituitary, endocrine pancreatic and other cells. CgA is generally good for cells like intestinal endocrine. CgA-ß cells are weak to moderately positive in the endocrine pancreas, while non-β-CGA cells such as α- β-pancreatic polypeptide and pancreatic polypeptide called PP cells are strongly beneficial.[4] The endocrine cells are CgA and SPY, but they are mostly located through all endocrine cells in the gastric intestinal tract, which is the position of the neurosecree granules, whilst the SPY occurs more diffusely through the cell cytoplasm outside of the secretary granules, which is equivalent to the distribution throughout the cytoplasm of synaptic vesicles. SPI is a member of a small SV family of proteins, including synaptotagmin, SNAP25, SNAP, sytataxine, Rab3A, and many more. SPY is one of the first synaptic proteins to be detected, but its relationship between structure and function remains ambiguous as SPY does not involve itself in the SV cycle. While neurological markers of both CgA and SPY were used for neuroendocrinal tumors including bowel carcinoids, the place, size of the tumors, and immunochemical stain of the gut carcinoids were not discussed in a thorough comparable immunohistochemical study. Pre-gut tumors with stomach, the first part of the duodenum, and a pancreatic tumor are 88 percent positive, and mid-gut tumors are 100 percent positive.[5]

MATERIALS AND METHODS

This study was conducted in Ayub Teaching Hospital Abbotabad collected between 2017 to 2019 in all cases of intestinal carcinoids.

Sample size: This study has included a total of 40 cases of duodenal carcinoids such as Zollinger Ellison, 14 ileal carcinoids, five appendicle carcinoids, 11 carcinoids of the colon, and 6 rectal carcinoids.

Data collection and procedure: All tumor tissues have been fixed in buffered formalin with neighboring normal tissues. The archives were newly separated for paraffin and within two weeks of separation, the paraffin sections were immune. Depaffinized sections with the application of a citrate buffer pH 6.2 were treated with monoclonal anti-CgA, and a dilution of 1: 100 was applied for SPY.[6] Immunostaining was performed with 20 sections per stain to achieve a good comparative intensity. The +++ ++ ++ + for CgA and SPY immunostaining control and lower immunostaining controls were listed as well as the adjacent standard intestinal mucosa in ++ and + and — chromosomes. The SPY in our hands was relatively lower in immune than the CgA. All tumors were well-differentiated WHO-classified neuroendocrine tumors. Even if one or more of the two markers CgA and SPY are positive in every case. Histopathological endocrine patterns were classified by tubular, trabecular, lobular, globular and solid patterns.[7]

RESULTS

The bulk of intestinal histological patterns present in small tumors less than 2 centimeters and the mix of mid-size solid patterns and lobular tumor peripheries less than 2 centimeters. Duodenal carcinoids were all cubs that clinical were submucosally situated in the distal duodenum of fewer than 2 centimeters. Most of them were trabecular motifs mixed with solid motifs. 9 cases were larger than 2 centimeters among the twelve main small intestinal carcinoids. Small Ileum intestinal carcinoids in ten persons have all been strongly CgA positive and weaker and/or negative. The proposed approach was a metastatic liver lesion, with strong positive CgA and SPY, while invading single tumor cells in sinusoidal diseases. SPY immunostaining, therefore, did not invade tumor cells in the sinusoids immunostaining individually. Incidentally, an appendix carcinoid was found at the top of the appendix sub mucosa, smooth muscle, in the microscopic sections of the appendectomy, measuring 0.2 to 1 cm. five elevated colons, a cross-colon case, 4 cases of the sigmoid colon, and six cases of the rectum were among seventeen cases of colorectal carcinogens. Of the sixteen primary colorectal carcinoids, nine cases consisted of 0.5 centimeters, six trabecular and two solid patterns, with 2 cases of solid design and five cases, combined with solid or trabecular patterns, consisting of a combined lobular pattern in 7 larger cases. Two cases were a solid pattern. Two cases for CgA, three cases larger than 2cm were negative. All sevens were weak to significantly positive for CgA and faintly positive for SPY of five cases of the upward and downward colons. Of the four sigmodal cases, two have had high CgA and 2 small CgA tumors, 2 of them were very positive 3 moderately to strongly positive for SPY. The smallest tumor was Case ten, 0.2 centimeters, which was negative for CgA and moderately beneficial for SPY. For CgA the case twelve was negative and 0.4 cm in size and for SPY was faintly positive. In less than one percent of tumor cells, strongly and diffusely positive in SPY This tumor invaded the colonic muscle deeper and had a strongly positive CgA positive and a strong positive effect for Spy less than five percent of tumor cells. All six cases of rectal carcinoids, including a large tumor of CgA, and all of them weak and strongly positive for SPY were adverse to CgA.

Table No.1: Carcinoids of duodenum, small intestine and appendix. Chromogranin A and synaptophysin Immunohistochemical Staining.

Duodenum					
	Age/Sex	Size (cm)	Histological Pattern	CgA	SPY
1	29/M*	0.8 × 0.5	Trabecular	+++	+++
2	31/M*	0.6 × 0.5	Trabecular > Solid	+++	+++
3	47/F	1.2 × 1.0	Solid	+++	+++
4	52/M	1.2 × 1.0	Solid > Trabecular	+++	+++
Small Intestine					
1	34/M	1.0 × 0.5	Solid > lobular	+++	+
2	34/M	0.3	Lobular	+++	+
3	41/M	0.3	Lobular > Trabecular	+++	-
4	41/F	Liver (Metastasis)	Lobular	+++	+++
5	50/M	0.5 × 0.4	Lobular > Solid	+++	-
6	58/M	3.0 × 2.5 × 2.0	Solid	+++	-
7	59/M	0.5	Lobular	+++	-
8	60/F	2.5 × 1.0 × 1.0	Solid	+++	+
9	65/M	0.8 × 0.5	Lobular > Solid	+++	-
10	66/M	Omentum (Metastasis)	Solid	+++	+++
11	70/M	2.0 × 1.0 × 0.5	Lobular > Solid	+++	-
12	71/F	1.0 × 0.6	Lobular > Trabecular	+++	-
13	76/M	1.2 × 1.0	Solid	+++	++
14	80/F	1.0 × 1.0	Lobular	+++	++
Appendix					
1	21/ F	0.2	Tubular	+	+
2	22/F	0.2	Tubular	+	+
3	25/F	0.3	Tubular	+	+
4	38/M	0.5	Tubular > Globular	+	+
5	62/M	1.0 × 1.0	Lobular > Trabecular	++	+

Table No. 2: Carcinoids of colon and rectum. Chromogranin A and synaptoph

	Age/Sex	**Size (cm)**	**Histological Pattern**	**CgA**	**SPY**
1	45/M A	0.4	Trabecular	+++	+
2	54/M A	0.4	Trabecular	+++	+
3	65/F A	1.5 × 1.0	Lobular > Solid	+++	+++
4	67/M A	0.8 × 0.5	Lobular > Solid	+++	+
5	70/F A	0.5	Trabecular	+++	++
6	80/F T	2.0 × 1.5 × 1.0	Lobular	+++	+
8	70/M S	0.7 × 0.5	Solid	++	++
9	73/F S	1.5 × 1.0	Lobular > Solid	+++	+++
10	74/F S	0.2	Solid	-	+++
11	76/M S	0.5	Solid	-	++
12	47/M R	0.4	Trabecular	-	+
13	54/F R	0.4	Trabecular	-	+
14	63/F R	4.8 × 2.3 × 2.3	Solid	-	+++
15	70/M R	0.8 × 0.5	Solid	-	+++
16	74/M R	0.5	Trabecular	-	++
17	76/M R	0.5	Trabecular	-	+

DISCUSSION

Carcinoid mediums usually have a carcinoid syndrome that includes washes, nausea, bronchiatric blockage, and correct cardiac failure because of stress hormones, tacykininine, bradykinin, and prostacyclin exudation.[8] The appendix is considered to be innocuous if the tumors are less than 2 centimeters, where clinical signs are not present. Carcinoids in hindguts are often not active tumors that grow slowly, but without hormone-relating clinical symptoms they can produce PYY, HCG alpha, and β. Carcinoids with a retinal adenocarcinoma have duplication duration of more than

80 months compared to 109 days estimated. Compared to colonic adenocarcinoma at the time of diagnosis, the general appearance of colorectal carcinoids is lower than adenocarcinomas; therefore better predictions are achieved through early colonoscopy detection. For CgA as well as SPY all four duodenal carcinomas were very positive where gastric is co-secreted with CgA. Thus, CgA was very positive for all small intestinal carcinoids, with two cases. This strong, ileal carcinoid-immunostaining CgA is the co-section of carcinoids in CgA and catecholamine's. The aggressive, CgA-positive small intestinal cancers support Cg A as an indicator for possible biological malignancy. In the microscopic part of the subaqua appendectomy, all five appendix carcinoids were found without serious extension in the microscopic and smooth muscle layers, all focused positively on CgA and in the tubular histologist, weakly positive, supporting their non-aggressive nature. Of the 16 cases of primary CBC, only 2 cases were larger than two centimeters and six were negative to 0.5 centimeters of the nine small tumors total 0.5 centimeters, but six were positive of the SPY. All 5 CgA colonic midgut carcinoids, including Case 6, have been positive. In hindgut carcinoids, two out of four sigmoid colon tumors were positive for CgA, while another two were negatively affected for CgA. A transverse, intramuscular tumor cell (CBC) less than one percent CgA was found to be positive at the surface when invading CBC >10 percent, suggesting that the CBC is aggressive.[9,10] Immuno-CgA has always been strong for midgut carcinoids, including distal duodenal and ileal.

CONCLUSION

Neuroendocrine cells, including pancreatic islet cells, have been suggested to secrete pancreatic peptide hormones mainly via exocytose of cell membrane secret granule that is the 2nd step of insulin release, while first insulin spikes are released by sympathetic nerve through SV Endocytosis since neuropathic cells are equipped with Neuroendocrine.

Author's Contribution:

Concept & Design of Study:	Zabihullah
Drafting:	Rania Hidayat, Shaista Alam
Data Analysis:	Shabir Ahmed Orakzai, Amara Hayat Awan, Humaira Khan
Revisiting Critically:	Zabihullah, Rania Hidayat, Shaista Alam
Final Approval of version:	Zabihullah

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

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Original Article

Comparative Analysis for Reduction in $A1_c$ in Dapagliflozin Versus Glimepiride Monotherapy in Non-Obese Type 2 Diabetic Patients

Muhammad Kamran Yousuf[1], Mehr Fatima[1], M.Sajid Abbas Jaffri[1], Sadaf Haris[1], Khalid Mustafa[1] and Shahid Mustafa Memon[2]

ABSTRACT

Objective: To compare the efficacy and safety profile of dapagliflozin and glimepiride in type 2 diabetic non-obese patients.

Study Design: Randomized controlled trial study.

Place and Duration of Study: This study was conducted at the National Medical Center, Karachi from June 2019-December 2019.

Materials and Methods: A total of 200 diabetic patients had body mass index ≥ 28- ≤29.9 Kg/m^2, body fat percentage ≥ 21- ≤31 in female, and ≥ 14 - ≤ 24 in male, baseline fasting blood sugar ≥ 126 mg/dL and glycated haemoglobin between ≥ 7.5 - ≤10% were recruited in the study. All the eligible patients were divided into two groups: dapagliflozin 10 mg and glimepiride 04 mg. The endpoint assessment included change of fasting plasma glucose (FPG), A_{1c}, liver function test, renal function test, lipid profile and urinalysis. The analysis of the data performed by using statistical package of social sciences (SPSS) version 25.

Results: Both combination therapy led significant reductions in FPG and $A1_c$ levels as compared with baseline at 12^{th} week. The monotherapy of dapagliflozin comparatively improve more level of $A1_c$ at short time than other intervention. Both of these therapies were shown safe levels of lipid profile, liver function test, renal function test and urinalysis among groups. None of the incidence of hypoglycemia, and urinary and genital tract infection were reported during the entire period of the study.

Conclusion: The treatment with dapagliflozin or glimepiride was generally well tolerated and effective for the improvement of glycemia in T2D patients. Dapagliflozin monotherapy with metformin relatively more effective in reducing FPG and $A1_c$ even in short time.

Key Words: Dapagliflozin, Glycemia, Glimepride, Obese, Type 2 diabetes mellitus

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INTRODUCTION

The foremost cause of increased type 2 diabetes mellitus (T2DM) prevalence is the epidemic of obesity in both developing and un-developing countries.[1] Whereas many T2DM patients of European and, more particularly, Asian countries have normal body weight.[2] The earlier study has found disproportionally decrease levels of insulin secretion and reduced insulin resistance in non-obese T2DM compared to obese T2DM patients.[3] In Pakistan, Sindh had high incidence level, i.e., 19.25%, followed by Punjab (18.52%), Baluchistan (15.25%), and Khyber Pakhtunkhwa (13.98%)[4], and the incidence ratio became worst gradually. The diversity of diabetic probability among countries and even in regions may be due to a neglected focus on identifying specifically obese and non-obese T2DM prevalence, as globally, the diverse probability of obesity exists in diabetic patients.

Earlier studies define metformin has equal potency in non-obese as obese. Previously, reduced $A1_c$ levels in the obese and non-obese group observed. However, reduced dose of metformin needed to improve $A1_c$ in normal weight diabetic participants without producing an effect in BMI during the entire observational period.[5] Another study found similar A1c levels among metformin-treated groups based on BMI. Moreover, the duration of successful improvement in glycemia

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followed by metformin in normal and overweight diabetic participants and their frequency of progressing diabetes-associated impairments duration was not inferior compared to diabetic obese subjects.[6] However, bodyweight estimation by using BMI in these earlier reported studies may be inadequate to categorize patients according to "leanness." Instead, the degree of adiposity reflects the amount of adipose tissue in total body mass and the degree of central obesity (abdominal). [(7)] Besides, most of the other anti-diabetic drugs are associated with serious clinical events. Hence, the identification of effective and tolerable option that improves glycemia in non-obese patients.

Among numerous conventional anti-diabetic agents with diverse mechanisms of action, the efficacy of sodium-glucose cotransporter-2 inhibitors (SGLT-2i) and sulphonylureas are well-documented. SGLT-2i acts via reabsorbing glucose from glomerular filtrate, and sulphonylureas acts as insulin secretagogues.[8,9] The earlier study found decrease in $A1_c$ in the treatment-naive obese diabetic patients followed by taking treatment of SGLT-2i and sulphonylureas as monotherapy or combination therapy.[10-12] However, the comparative analysis of efficacy and toleberity between dapagliflozin and glimepiride monotherapy in non-obese diabetic participants was a neglected area.

Besides, the population of Pakistan is diverse according to their body weight, genotype, demography, and culture than the population of Western countries.[13-14]. These modifications lead effect in the clinical response of the effective anti-diabetic drug among non-obese patients. Therefore, the present study aims to compare safety and efficacy of dapagliflozin and glimepiride monotherapy efficacy to control glycemia in newly diagnosed non-obese diabetic patients.

MATERIALS AND METHODS

This 12-week randomized control trial was conducted in 200 diabetic patients at the National medical center, Karachi, Pakistan during June-2019 to Dec-2019. An Ethical Research Committee (ERC) of Bahria University approved the study protocol, and all enrolled diabetic participants gave written, informed consent.

Patients with $A1_c$ between ≥7.0% - ≤ 10.0 % were divided randomly into two groups; group A: dapagliflozin and group B: glimepiride. The patients' age was between 45-55 years, body mass index ≥ 28-≤29.9 Kg/m^2, body fat percentage ≥ 21- ≤31 in female, and ≥ 14 - ≤ 24 in male, and had normal liver function test, renal function test, lipid profile, and white blood cell counts (WBC). Treatment with oral antidiabetic drugs within 12-weeks before enrollment was not allowed. All the participants had a liver impairment, type 1 diabetes (T1DM), congestive heart failure, cancer, terminal illness, > 270 mg/dL of FPG, < 50 mL/min of creatinine clearance level, < 40% of left ventricular ejection fraction and ≥170 mmHg of systolic blood pressure or ≥110 of diastolic blood pressure were excluded from current randomized control trial.

The population size of diabetic patients was estimated *via* OpenEpi, Version 3. Group A patients were given a fixed dose of 10 mg of dapagliflozin, whereas group B was given 04 mg of glimepiride throughout the 12-weeks of treatment. All subjects were restricted to take a sugary meal.

The primary endpoints were change in $A1_c$ and FPG from baseline to week 12. Key secondary endpoints were changed in liver function test, [serum glutamic pyruvic transaminase (SGPT; IU/L), serum glutamic-oxaloacetic transaminase (SGOT; IU/dL), alkaline phosphate, bilirubin (mg/dL)], lipid profile [high-density lipoprotein-cholesterol (HDL-c; mg/dL), low-density lipoprotein –cholesterol (LDL-c; mg/dL), triglyceride (TG; mg/dL), and cholesterol (CHO; mg/dL)], renal function test [urea (mg/dL), creatinine (mg/dL)], blood pressure [diastolic and systolic blood pressure (MM/Hg)], body mass index (kg/m^2), body fat mass (%) and hypoglycemic events from baseline to week 12. The hypoglycemic events were categories based on FPG levels and diabetic symptoms such as ≤ 70, ≤ 54, ≤ 50, ≤ 70 with asymptomatic hypoglycaemic episode, and > 70 mg/dL with another hypoglycaemic event.

All continuous variables were represented in mean ± St. Dev (standard deviation). The significant clinical difference between before and after treatment were estimated by applying parametric t-test and paired t-test. P-values < 0.05 were considered significant in the present randomized control trial. The statistical analysis was conducted through the IBM statistical package of social sciences (SPSS) version 25.

RESULTS

The analysis for the efficacy and safety of dapagliflozin and glimepride was conducted in 200 newly diagnosed diabetic patients. Among them, 48% were male, and rest of the non-obese diabetic patients were female. As per ADA guidelines, metformin is the first-line therapy to control glycated hemoglobin (hemoglobin A1c) below or around 7% and subsequently prevent the development of secondary complications of T2D. But, it was recommended for obese diabetic patients, and studies suggested significant role in non-obese patients based on BMI and limit to show mean percent body fat in patients. [(5-7)] Therefore, subjects were divided into two groups equally based on pharmacotherapy; group A: dapagliflozin, group B: glimepiride. The baseline characteristics (included age, BMI, body fat percentage, A_{1c}, FBG, blood pressure, RFT, LFT, lipid profile, and urinalysis) were similar between both groups at week-0. None of the patients rejected to receive respective therapy entire study period.

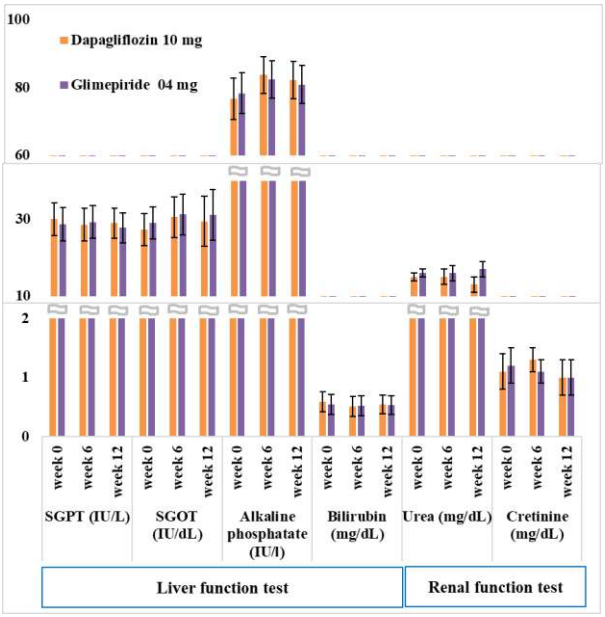

Figure No.1: Liver and renal function test in T2D patients followed by monotherapy.

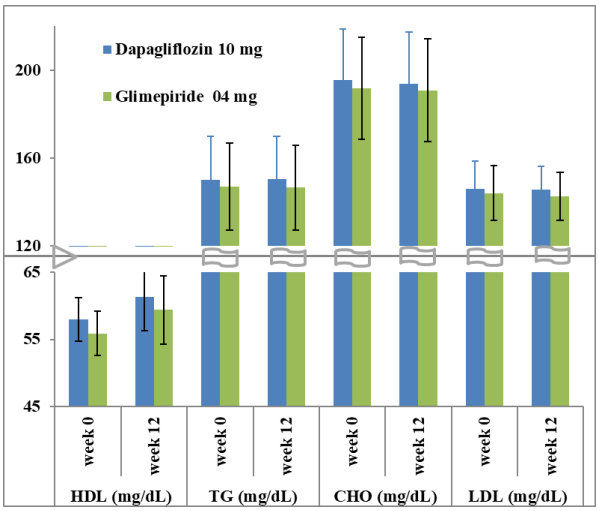

Figure No. 2: Lipid profile in T2D patients followed by monotherapy.

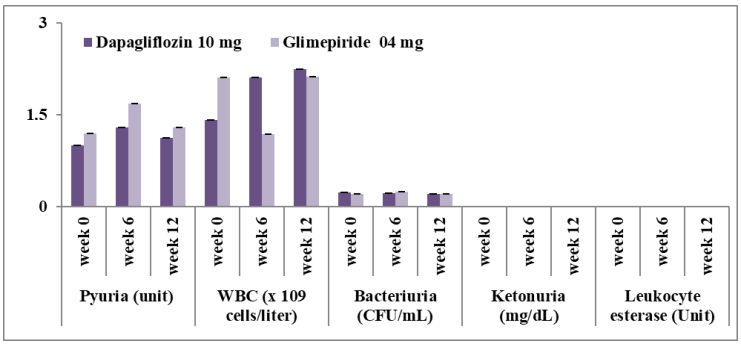

Figure No.3: Urinalysis in T2D patients followed by monotherapy.

First, to achieve the aim, it was identified whether dapagliflozin/glimepride decline hyperglycemia in diabetic patients. Hence, paired t-test was applied to estimate the statistical differences in the levels of FPG and $A1_c$ of diabetic patients followed by receiving treatment. The results revealed significantly reduced levels of FPG after 6 weeks (dapagliflozin: 147.13 ± 12.14; glimepiride: 166.14±13.4 mg/dL) of interventions in both groups compared to baseline (dapagliflozin: 189.78±41.22; glimepiride: 185.41±3.52 mg/dL ; P: 0.083). Moreover, at the 12th-week follow-up, FBG and $A1_c$ reduced significantly in these two groups compared with the baseline values by showing P-value < 0.05 (FBG: dapagliflozin: 105.64±11.52; glimepiride: 128.42±10.52%; P : 0.03 ; $A1_c$). However, dapagliflozin group produced comparatively more reduction in FPG and $A1_c$ than glimepiride and even almost maintained almost euglycemia in patients. Moreover, diabetic patients in group A were more improve glycemia in a shorter time, i.e., the 6th week, than another invention.

The mean BMI (Kg/m^2) was in group A at 0-week 32±2.43, at 6th week 32±1.82 and at 12th week 30±3.02. The mean BMI was in group B at 0-week 32±2.41, at 6th week 32±3.21 and at 12th week 32±2.45. There was no significant difference found among different groups. At 0-week 0.071, at 6th-week and at 12th-week 0.08.

The mean value of percent body fat (%) was in group A males at 0-week 23±1, at 6th week 24±2 and at 12th week 23±3.The mean percent body fat was in group B males at at 0-week 23±2, at 6th week 23±1 and at 12th week 23±3. There was no significant difference found among different groups. At 0-week 0.81, at 6th-week 0.72 and at 12th-week 0.90.

The mean value of percent body fat (%) was in group A females at 0-week 28±2, at 6th week 27±1 and at 12th week 28±4.The mean percent body fat was in group B females at at 0-week 27±1, at 6th week 28±3 and at 12th week 28±3. There was no significant difference found among different groups. At 0-week 0.87, at 6th-week 0.62 and at 12th-week 0.88.

The mean value of systolic blood pressure (SBP; mm/Hg; Mean ± St.Dev)) was in group A at 0-week

130±11.22, at 6th week 131±11.20 and at 12th week 127±12.14.The mean systolic blood pressure was in group B at 0-week 135±6.03, at 6th week 132±13.52 and at 12th week 133±4.12. There was no significant difference found among different groups. At 0-week 0.052, at 6th-week 0.064 and at 12th-week 0.073.

The mean value of diastolic blood pressure (DBP; mm/Hg; Mean ± St.Dev)) was in group A at 0-week 92±1.52, at 6th week 92 ±1.62 and at 12th week 90±4.12.The mean diastolic blood pressure was in group B at 0-week 94±6.32, at 6th week 95±3.31 and at 12th week 95±3.64. There was no significant difference found among different groups. At 0-week 0.075, at 6th-week 0.062 and at 12th-week 0.082.

The frequency of glucosuria (%) was measured in both groups. At 0-week , 99% mild, 0 % moderate and severe in group A. At 0-week , 98% mild, 2 % moderate, and 0% severe in group B. There was no significant difference among group at week 0 by showing p value > 0.05.

The frequency of glycosuria (%) was measured in both groups. At 6-week, 14% mild, 87 % moderate and 7% severe in group A. At 6-week, 97% mild, 3 % moderate, and 0% severe in group B. There was significant difference among group at week 6 by showing p value < 0.01.

The frequency of glycosuria (%) was measured in both groups. At 12-week, 0% mild, 8 % moderate and 91% severe in group A. At 12-week, 99% mild, 1 % moderate, and 0% severe in group B. There was significant difference among group at week 12 by showing p value < 0.001.

Followed by the identification of efficacy levels among the groups, the safety profile was evaluated. No clinically significant severe hypoglycaemic events or other serious adverse events were observed in either group. The levels of LFT, RFT, lipid profile, and urinalysis were found similar between the dapagliflozin and glimepiride groups. Of note, diabetic subjects of group A exhibited insignificant weight loss and decreased blood pressure compared to another group at week 12 (Figure 1,2,and 3).

DISCUSSION

This randomized control trial demonstrates SGLT-2i and sulphonyl urea with dapagliflozin and glimepride, respectively, can significantly maintain glycemia followed by instigating pharmacotherapy. The increased prevalence of diabetes is particularly due to epidemic of obesity in developing and un-developing countries. Whereas many diabetic patients of European and, Asian countries are non-obese, and earlier studies recommended metformin for obese diabetic patients, however recent studies found similar outcomes in obsess and non-obese patients but the identification of obesity was based on BMI, not percent body fat i.e., comparatively more recommended scale. Therefore, the present study was conducted to identify the efficacy and safety of dapagliflozin and glimepiride in non-obese diabetic population of Pakistan.

Patients treated with dapagliflozin showed a more reduced mean level of FPG and $A1_c$ than patients who received glimepiride. Previously, many clinical trials have shown improvement in glycemic profile followed by the treatment with combination of metformin with various other antidiabetic agents that differ in mechanisms. [15], but they had an adverse effect and based on obese individuals. The decrease in $A1_c$ found in the treatment-naive obese followed by dapagliflozin-monotherapy and combination therapy. [10] The study of Nauck MA et al. compared dapagliflozin- metformin vs. glipizide- metformin combination in obese diabetic patients and observed high glycemic stability, increase weight reduction, decreased blood pressure, and low hypoglycemic events but frequent incidence of genital and urinary tract infections in the dapagliflozin-metformin combination group.[11] Moreover, the comparative analysis between canagliflozin-metformin, SGLT-2i, and glimepiride- metformin found more A1c reduction in obese patients of canagliflozin group than glimepiride group.[14] The findings of present study showed that dapagliflozin-metformin group produced comparatively more reduction in FPG and $A1_c$ than glimepiride monotherapy and even almost maintained almost euglycemia in non-obese diabetic patients without producing adverse effect. Moreover, diabetic patients in group A were more improve glycemia in a shorter time, i.e., the 6th week, than another invention (Table 1).

Dapagliflozin acts unique mode of action and consequently provides a different therapeutic profile. In the current randomized study, the rate of hypoglycaemic events was not found in both treatment groups. Dapagliflozin improves glycemia by preventing SGLT-2 from eliminating glucose in urination. Subsequently, excess level of glucose removes from the body directly instead of metabolized in tissues. The unique mechanism of dapagliflozin improves more glycemia as compare to other treatment. The glimepiride increases the production of insulin in pancreatic beta cells to accelerate the glucose regulation and subsequently prevent hyperglycemia.

Followed by identifying the efficacy of the invention, safety of these combination therapies were evaluated. T2D patients are more susceptible to developed liver dysfunction, cardiovascular impairment, and renal failure due to drug-mediated toxicity. The liver function is determined in the current study as drug toxicity likely to produce acute or chronic liver impairment instigated by cytochrome P450 action. Our findings revealed that both of the intervention showed similar and normal levels of liver enzymes and bilirubin, and thus likely present that these did impaired physiological regulations (Figure 1).

The renal function and urinalysis followed by the treatments was normal in both groups to suggest that these interventions are non-toxic and retain physiological mechanism of the kidney (Figure 1 & 3). Previous studies reported glucosuria is due to the inhibition of SGLT2, which is linked with the development of urinary tract or genital infection.[16, 17] These findings are inconsistent with present study, as none of the incidences of these infections is observed in the co-administration of dapagliflozin. Another previous study elucidated the safety of dapagliflozin-metformin and found mild or moderate in the intensity of vulvovaginitis and balanitis, which were resolved easily with self-treatment or taking conventional drugs, and hardly withdrawal from the clinical trials.

Moreover, the lipid profile was identified and found similar HDL levels, LDL, CHO, and triglycerides b groups (Figure 2). In contrast, significant LDL and triglycerides levels were found in previous studies by using dapagliflozin as compared to placebo group.[18] The increased invention period likely to produce significant advantage for lipid levels.

The incidence of hypertension and obesity is high in T2DM of the Southeast Asian region of Pakistan. Studies suggested that dapagliflozin is a promising therapeutic approach to halt the increased ratio. [19, 20] Compared with glimepride, an insignificant mean drop of blood pressure was found in patients treated with dapagliflozin. The increased period of study might produce significant improvement in blood pressure.

The major assesses of this randomized clinical trial is the comparison dapagliflozin and glimepiride to improve glycemia in non-obese T2DM patients. As far as our knowledge, this study first compares the effect of two frequently prescribed inventions in non-obese diabetic patients as first-line therapy. The determination of efficacy in FBS was performed in two intervals followed by the intervention to more assured with hemoglobin A1c. Moreover, the safety of combinations were carefully identified in hepatic functions, urinary tract, and cardiovascular system at different intervals (6th and 12th- week) to prevent the onset of secondary diabetic complications. Whereas, the current study is limited to provide the effect of invention in long-term glycemic efficacy and safety profile on liver and heart physiology and heart, moreover this study is restricted in a limited dose of drug.

CONCLUSION

Dapagliflozin and glimepiride monotherapy improves glycemia, and both interventions are well tolerated for patients with type 2 diabetes. The dapagliflozin is superior to glimepiride in reducing FPG and $A1_c$ levels in non-obese diabetic patients.

Author's Contribution:

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

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Original Article

Prevalence of Blood Transfusion Diseases among Blood Donors

Akmal Khurshid Bhatti[1], Quratulain Waheed[1], Meshal Azhar[2], Tahir Mehmood Butt[1], Hamid Rafiq[1] and M Mohsin Abid[1]

ABSTRACT

Objective: To study the Prevalence of Blood transfusion diseases among blood donors.
Study Design: Observational study
Place and Duration of Study: This study was conducted at the Department of Community Medicine & Medicine, Sialkot Medical College, Sialkot during Jan 2019 to March 2020.
Materials and Methods: Four hundred individuals of both genders who consented to give blood, were taken for study of presence of pathogens causing blood borne diseases. The individuals whose age was less than 20 years, body weight less than 50 kg and hemoglobin level less than eleven point eight mg/dl were rule out from research. The Ethical Committee permission was also taken before collection of data and get publishing in the Medical Journal. The Data was analyzed for results by SPSS version 10.
Results: The prevalence of donors of blood transfusion were maximum 165 (41.25%) at age group 26-30 years and minimum 12 (3.0%) at age group 41-45 years. The prevalence of donors of blood transfusion were of male were 345 (86.25%) and female 55 (13.75%). The prevalence of donors of blood transfusion were infectious diseases was maximum 9(34.61%) of HCV and minimum 1(3.84%) of HIV.
The prevalence of blood donors was maximum 160(40%) of Graduate and was minimum 20(5%) of Primary education blood donors.
Conclusion: Low socioeconomic conditions may lead to various blood born diseases. Lack of health education may be an important cause of dissemination of these infections. Poor economic condition prevents individuals to get costly opinions. Health education by Government may lessen the occurrence of these infections.

Key Words: Blood transfusion, Transfusions transmittable infections, Syphilis, HIV, HCV and Malaria

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INTRODUCTION

After an act of transferring donated blood, blood passed contamination is the more common cause of mortality. All those who have to take either whole blood or any component of it have greater chances of getting diseases propagating through blood as a whole or through its any component. All hospitals whether public or private have constructed blood bank unit as an essential component of hospital. These units have almost all necessary equipment to bleed, store and transfuse whole blood or its components after a thorough laboratory tests for major blood borne diseases. As blood may be required in multiple diseases like low hemoglobin levels, abnormally structured hemoglobin or excessive loss of blood[3].

A very high percentage of individuals having Hepatitis C infection don't show any clinical features or if any very mild[4,5]. Similarly a very huge number of individuals have Hepatitis B infection. Chronic carriers of Hepatitis B Virus may have such a less level of that it can easily escape lab detection. So some centers have started testing antibodies against Hepatitis B Virus core protein (anti HBc)[6].

Another blood born infection propagated by Treponema pallidum called Syphilis which may also be caused by semen or vaginal fluid or from mother to the neonate[7]. Malaria is an important parasitic infectious disease worldwide, caused by four species of Plasmodium, namely vivax, ovale, malaria and falciparum. Sick persons of old hemolytic anemia, as of thalassemia are on regular packed RBC's infusion and are at danger for malaria[8]. HIV is also propagated by semen, vaginal fluid and blood. More easily spreads in drug addicts.

The current work involves study percentage of all those diseases born by blood or its components [2].

MATERIALS AND METHODS

Four hundred individuals of both genders who consented to give blood, from Sialkot Medical College

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Sialkot during Jan 2019 to March 2020, were taken for study of presence of pathogens causing blood borne diseases. The individuals whose age was less than 20 years, body weight less than 50 kg and hemoglobin level less than eleven point eight mg/dl were rule out from research. The Ethical Committee permission was also taken before collection of data and get publishing in the Medical Journal. The Data was analyzed for results by SPSS version 10.

Inclusion Criteria: All donors above the age 20 years, weight more than 50 Kg and Hemoglobin (Hb) more than 11.8 mg/dl were included from the study.

Exclusion Criteria: Blood donating persons having age less than twenty years, weight less than fifty Kg and Hemoglobin (Hb) less than eleven point eight mg/dl were rule out from the work.

RESULTS

The prevalence of donors of blood transfusion were maximum 165 (41.25%) at age group 26-30 years and minimum 12 (3.0%) at age group 41-45 years as shown in table no 1.

Table No 1: Age distribution of donors of blood transfusions

Sr No	Age (years)	Number of cases	Percentage%
1	21-25	102	25.5%
2	26-30	165	41.25%
3	31-35	107	26.75%
4	36-40	14	3.5%
5	41- 45	12	3.0%
Total		400	100%

Table No 2: Gender distribution of donors of blood transfusions

Sr. No.	Gender	Number of cases	Percentage%
1	Male	345	86.25%
2	Female	55	13.75%
Total		400	100%

Table No 3: Infectious diseases distribution of donors of blood transfusions

Sr. No.	Infectious diseases	Number of cases	Percentage%
1	HCV	9	34.61%
2	HBV	5	19.23%
3	MALARIA	8	30.76%
4	SYPHILIS	3	11.53%
5	HIV	1	3.84%
Total		26	100%

The prevalence of donors of blood transfusion were of male were 345 (86.25%) and female 55 (13.75%) as shown in table no 2.

The prevalence of donors of blood transfusion were infectious diseases was maximum 9(34.61%) of HCV and minimum 1(3.84%) of HIV as shown in table no 3.

The prevalence of blood donors was maximum 160(40%) of Graduate and was minimum 20(5%) of Primary education of blood donors as shown in table 4.

Table No 4: Literacy status of blood donors

Sr. No.	Literacy Status	No (%age %)
1	Illiterate	30 (7.5%)
2	Primary	20 (5%)
3	Secondary	90 (22.5%)
4	Graduate	160 (40%)
5	Master	100 (25%)
Total		400 (100%)

DISCUSSION

Transferring donated blood Transferred contaminations are major problems in transferring donated blood to the receiving persons of Blood or Blood parts. Post transfusion infections are potential risk for the recipients[9,10]. According to World Health Organization's (WHO) recommendation, the screening should be performed for at least five WHO recommended transfusion transmitted infections which include HCV, HIV, HBV, malaria parasite and syphilis. Incidence of these communicable diseases differs from place to place due change in medical practices [10-13]. In current study, percentage of occurrence is equal in both genders. Chronic presence of blood borne diseases may be due to low socioeconomic conditions,[14-17]. Similarly occurrence of syphilis in males might be due to inability to alter bed sheets no. Preventive measures with respect to better health are essential [11, 18-20].

CONCLUSION

Low socioeconomic conditions may lead to various blood borne diseases . Lack of health education may be an important cause of dissemination of these infections. Poor economic condition prevents individuals to get costly opinions. Health education by Government may lessen the occurrence of these infections.

Author's Contribution:

Concept & Design of Study:	Akmal Khurshid Bhatti
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

Comparison of Efficacy of Oral Ibuprofen and Oral Indomethacin in the Treatment of Patent Ductusarteriosus in Premature Neonates

Bibi Asma[1], Mohammad Shafiq[4], Sara Gul[2], Faiza Akram[5], Sajjad ur Rehman[6] and Asma Khan[3]

ABSTRACT

Objective: To compare the efficacy of oral ibuprofen and oral indomethacin in the treatment of patent ductusarteriosus in premature neonates.

Study Design: Comparative study

Place and Duration of Study: This study was conducted at the Neonatal care unit Bacha Khan Medical Complex Shah Mansoor Swabi from April 2018 to March 2020.

Materials and Methods: Through non-probability consecutive sampling technique, 120 premature neonates with patent ductusarteriosus (diagnosed as per criteria mentioned in operational definitions) were enrolled for this study and divided into two groups A & B, each with sample size 60. Group A was given oral ibuprofen (10 mg/kg stat followed by 2 doses of 5 mg/kg at 24 hours interval) and group B was given oral indomethacin (0.2mg /kg for 3 doses at 24 hours interval). Chi-square test was used to compare the efficacy between ibuprofen and indomethacin (in term of complete closure of PDA). The informed written consent was taken from parents of each patient. The permission of Ethical Committee was taken before collecting of data and gets publishing in Medical Journal. The finding of data was analyzed for results by SPSS version 20.

Results: In our study, there were 60 patients in each group. The mean age of patients in group A and group B were 8.45 days ±4.827 SD and 8.57 days ±4.996 SD respectively. The male to female ratio in group A &B was 1:1.14 and 1:1.40 respectively. The efficacy of PDA closure in group A was 78.3% (47/60) and in group B was 73.3% (44/60) with a p- value of 0.522 which was statistically not significant.

Conclusion: In our study, oral ibuprofen is as effective as oral indomethacin in the treatment of PDA in premature neonates and is thus an easily available and cost effective alternative to indomethacin in treatment of PDA in premature neonates.

Key Words: Patent ductusarteriosus (PDA), premature neonates, ibuprofen, indomethacin

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INTRODUCTION

Fetal circulation is dependent on patency of ductusarteriosus. DA connects pulmonary artery to aorta and shunts blood away from lungs into umbilical placental circulation where gas exchange takes place. At birth, closure of DA is an important part of postnatal circulation.[1] In term neonates, the ductusarteriosus usually closes functionally within first few days of life which is followed by anatomical closure with vascular remodeling. In preterm neonates, the closure of ductus is either delayed or does not occur at all. The persistence of PDA in preterm neonates increases with decreasing gestational age and birth weight.[2] The incidence of PDA is 70% in premature neonates of less than 29 weeks gestational age and weighing less than 1000 grams. Male to female ratio is 2:1.[3]

PDA is one of the most common clinical findings and most frequent source of complications in premature neonates especially in association with respiratory distress syndrome(RDS).[4] Depending on the size of shunt through PDA, volume overloading usually results in congestive cardiac failure and increased interstitial edema eventually leading to respiratory distress,

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respiratory failure, apnea and increased risk of Broncho-pulmonary dysplasia. Also the steal phenomenon with diastolic run-off into the lungs via PDA results in reduction in blood flow in splanchnic, renal and cerebral blood flow leading to necrotizing entero-colitis(NEC), bowl perforation, worsening of renal function and intracranial hemorrhage(ICH)in premature neonates.[5.]

The classical signs of PDA are a hyper dynamic circulation, bounding pulses and increased pulse pressure, hepatomegaly and a left infraclavicularsystolic murmur.[6]. The identification was established by echocardiographic visualization of a Patent Ductus Arteriosis with Doppler flow demonstrating left to right or both direction shunting. There are three treatment options for PDA closure which include conservative management, pharmacological therapy and surgical ligation. The effectiveness of conservative management is controversial and Sekar SC in 2008 revealed that conservative management is associated with increased failure rate especially in low birth weight neonates.[7] Also, Surgical ligation which involves thoracotomy is associated with significant complications such as pneumothorax, chylothorax, infection, laryngeal nerve palsy, respiratory compromise, alteration in blood pressure, retinopathy of prematurity and death.[8, 9.] Thus, pharmacotherapy is considered to be the therapy of choice for the treatment of hemodynamically significant PDA.[7]. initially intravenous indomethacin was a conventional treatment for hemodynamically significant PDA in premature neonates but its use was associated with various side effects. Patel et Al in 1995 proposed intravenous ibuprofen to be an effective alternative to indomethacin in closure of PDA in premature neonates.[10] Similarly, double blind randomized multicenter controlled trial by Von Overmiere et Al in 1997 and in 2000 revealed that I/V ibuprofen is as effective as IV indomethacin in treatment of PDA in premature neonates with less side effects as regards to oliguria and raised serum creatinine[11,12]. Due to costs involved and difficulty obtaining IV medications in developing countries, Heyman et Al in 2003 conducted a pilot study using oral ibuprofen which revealed that oral ibuprofen suspension can be used as an effective and safe alternative for treatment of PDA in premature neonates. [13.] Cherif et Al in 2008 conducted a study comparing the efficacy of oral versus IV ibuprofen in PDA closure in premature neonates and demonstrated a better closure rate with oral ibuprofen versus IV ibuprofen (84.3% vs 62.5%) with less adverse events. Also studies have shown that oral ibuprofen is an equally effective and safe alternative to indomethacin in treatment of PDA in premature neonates[4,14,15]. As oral ibuprofen is easily available and associated with less side effects, the rationale of my study is to compare the efficacy of oral ibuprofen with that of oral indomethacin in treatment of PDA in premature neonates in our setting.

MATERIALS AND METHODS

This study was conducted at neonatal care unit Bacha Khan Medical Complex Shah Mansoor Swabi from 1st April2018 to 31st March2020. Through non-probability consecutive sampling technique, 120 premature neonates with patent ductusarteriosus (diagnosed as per criteria mentioned in operational definitions) were enrolled for this study and divided into two groups A & B, each with sample size 60. Group A was given oral ibuprofen (10 mg/kg stat followed by 2 doses of 5 mg/kg at 24 hours interval) and group B was given oral indomethacin (0.2mg /kg for 3 doses at 24 hours interval). Chi-square test was used to compare the efficacy between ibuprofen and indomethacin (in term of complete closure of PDA). The informed written consent was taken from parents of each patient. The permission of Ethical Committee was taken before collecting of data and get publishing in Medical Journal. The data was analyzed for results by SPSS version 20.

RESULTS

There were 60 patients in each group. In Group A, there were 28(46.7%) males and 32(53.3%) females. In Group B, there were 25 (41.7%) males and 35(58.3%) females. P value equals 0.581 and it is considered to be statistically not significant. The male to female ratio in Group A and B was 1:1.14 and 1:1.40 respectively.

The ages of premature neonates in Group A and B respectively were;

From 1 to 5 days of age were 18(30.0%) and 16(26.7%), From 6 to 10 days were 23(38.3%) and 25(41.7%), From 11 to 15 days were 12(20.0%) and 11(18.3%) and from 16 to 20 days were 7(11.7%) and 8(13.3%).

The mean age of patients in Group A and Group B were 8.45 days ± 4.827 SD and 8.57 days ± 4.996 SD respectively with an overall mean age of 8.51 ± 4.892 SD. P value equals 0.897 which is considered to be statistically not significant. (Table No.1).

Table No 1: Age Distribution of PDA Patients in Group A And Group B

Age in days	Group A N(%)	Group B N(%)		
1-5 days	18(30.0%)	16(26.7%)		
6-10 days	23(38.3%)	25(41.7%)		
11-15 days	12(20.0%)	11(18.3%)		
16-20 days	7(11.7%)	8(13.3%)		
Mean age ± SD	8.45±4.827	8.57±4.996	Total 8.51 ± 4.892	P value 0.897
Total	60(100%)	60(100%)		

The efficacy of PDA closure in premature neonates in Group A and B was 78.3%(47/60) and 73.3% (44/60) respectively with a P value of 0.522 (Chi square) and it is considered to be statistically not significant. (Table No.2).

Table No 2: Efficacy of PDA Closure in Group A And Group B

Efficacy	GroupA	GroupB	Total	P value (chi square)
Yes	47(78.3%)	44(73.3%)	91(75.8%)	
No	13(21.7%)	16(26.7%)	29(24.2%)	
Total	60(100.0%)	60(100.0%)	120(100.0%)	**0.522**

The age wise distribution of efficacy in Group A & B was as follows:
from 1-5 days of age it was 88.8%(16/18) in Group A and 87.5%(14/16) in Group B, from 6-10 days 86.8%(20/23) in group A and 80.0%(20/25) in group B, from 11-15days 66.6%(8/12) in Group A and 54.5% (6/11) in Group B and from 16-20 days it was 42.8%(3/7) in group A and 50.0%(4/8) in group B.
The gender wise distribution of efficacy in Group A & B was as follows: in group A the rate of ductal closure was 82.1%(23/28) in males and 75.0%(24/32) in females and in group B it was 72.0%(18/25) in males and 74.1%(26/35) in females. (Tables No.3).

Table No.3: Gender Distribution Efficacy

Gender	Group A		Group B	
	Total patients	Efficacy	Total patients	Efficacy
Male	28	23(86.1%)	25	18(72.0%)
Female	32	24(75.0%)	35	26(74.1%)

DISCUSSION

In this study, we compared the efficacy of oral ibuprofen with that of oral indomethacin in term of complete closure of PDA in premature neonates. In our study, the efficacy of PDA closure in ibuprofen group was 78.3%(47/60) and in indomethacin group was 73.3%(44/60) with a p- value of 0.522. Our this result is supported by a study conducted by Pourarian SH et al[4]in which the rate of ductal closure was 80%(8/10) in ibuprofen group and 70%(7/10) in indomethacin group with a p- value >0.05. Similar results had been shown by other studies comparing oral ibuprofen and indomethacin. Fakhree SH et al in 2007 conducted a Randomized controlled trial in Iran using oral ibuprofen and indomethacin for the treatment of PDA in premature neonates and revealed that oral ibuprofen is as efficacious as oral indomethacin for treatment of PDA in premature neonates (100% vs 83.3% with a p-value > 0.05).[16.]Suppapannachat et al[17] compared 18 babies less than 34 weeks of gestational age with PDA and who were randomly assigned to treatment to either oral or IV indomethacin versus oral ibuprofen. They found comparable closure rates (78% in ibuprofen group and 89% in indomethacin group with a p-value > 0.05) in their small sample size with ibuprofen group having better urine output and concluded that oral ibuprofen therapy is as effective as indomethacin for the treatment of PDA in premature neonates with less renal side effects. Chotigeat et al [18] conducted a Randomized trial comparing efficacy of oral ibuprofen and indomethacin for treatment of PDA and concluded that ibuprofen has same efficiency as indomethacin (46.6% vs 66.6% RR 0.669; 95% CI. 0.328-1.364: p=0.462) in the treatment of symptomatic PDA in premature neonates with less chances of NEC and renal toxicity.
Neumann R et al[19] performed a systemic review and meta-analysis in 2012 and concluded that oral ibuprofen is almost equally effective to IV ibuprofen and IV indomethacin in the treatment of PDA in premature neonates. Lee SJ et al [14] compared the efficacy of oral ibuprofen and IV indomethacin and concluded that oral ibuprofen has advantages of simple administration and lower cost while being as effective as indomethacin (88.9% vs 87.5%). Similarly, Yang EM et al [20] conducted a randomized controlled trial in 2012 comparing the efficacy of oral ibuprofen and IV indomethacin for the treatment of PDA in extremely low birth weight(ELBW) neonates and concluded that in ELBW neonates, oral ibuprofen has same efficacy as IV indomethacin for treatment of PDA (81.8%vs 88.5%)with no difference between two drugs with respect to safety and thus oral ibuprofen can be used as an alternative agent for treatment of PDA in ELBW neonates. In 2014, Yadav S et al [21] compared the efficacy of oral ibuprofen and oral indomethacin for PDA closure in Indian preterm neonates and concluded that oral ibuprofen is as effective as oral indomethacin (60% vs 65.7%)with closure rates significantly higher at an early postnatal age. Almawazini AM et al [21] in 2015 also conducted a randomized controlled trial comparing the efficacy of oral ibuprofen versus IV indomethacin for treatment of PDA in preterm neonates and revealed that oral ibuprofen is equally effective to IV indomethacin for closure of PDA (91.3% vs 89.4%) and is associated with significantly less complications. Recent Cochrane review conducted in 2020 which comprises of 39 studies enrolling 2843 neonates concluded ibuprofen to be as effective as indomethacin in closing a PDA with reduced risk of NEC and transient renal insufficiency and thus appears to be the drug of choice. Oral administration of ibuprofen is equally effective to IV administration. [21]
In our study, efficacy of ductal closure in both groups decreased as the age of patients increased. This is supported by studies that showed a waning role of prostaglandins in maintaining ductal patency with increasing postnatal age[21].

CONCLUSION

From the results of this study, it is concluded that oral ibuprofen is as effective as oral indomethacin in the

treatment of patent ductusarteriosus in premature neonates. As oral ibuprofen is cheap and easily available, it can be used as an effective alternative to indomethacin in premature neonates in our setting.

Author's Contribution:

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

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Original Article

Frequency of Proximal Migration of Urinary Stone during Ureteroscopic Pneumonic Lithotripsy in KPK

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ABSTRACT

Objective: To Study the Frequency of Proximal Migration of Urinary Stone During Ureteroscopic Pneumonic Lithotripsy.

Study Design: Descriptive Cross Sectional Experimental Study

Place and Duration of Study: This study was conducted at the department of Urology Lady Reading Hospital Peshawar, Nawaz Shareef kidney hospital swat, DHQ teaching hospital Sawabi, Women medical college Abbottabad from January, 2019 to May, 2020.

Materials and Methods: Sample size was calculated using WHO calculator and total 160 patients were enrolled with 5% margin of error and 95% confidence interval and consecutive nonprobability sampling technique was used. All patients having urinary stone of size less than or equal to fifteen millimeters, age thirty to seventy years and male and female were included in the study whereas all those who had previous history of Extracorporeal shock wave lithotripsy, DJ stent placement, age less than 30 and > 70 were excluded from the study.

After ethical committee permission from of the hospital, patients were admitted in the department and informed consent was taken. Data was recorded on a predesigned profarma and was analyzed using the statistical program SPSS version 20. Descriptive statistics like mean ± standard deviation was calculated for numerical variable age and size of stone.

Results: During the study period 160 cases (83 males and 77 female) of ureteric stones were included in the study. In total 20 (12.5%) patients proximal stone migration was observed.

Conclusion: It was estimated from study that proximal stone migration during pneumatic lithotripsy was major complication.

Key Words: pneumatic lithotripsy, proximal migration of urteric stone, intra corporeal lithotripsy

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INTRODUCTION

Urinary stone is a major clinical and economic burden for health care system. Prevalence of stone is increasing as suggested by International epidemiological data[1]. Worldwide 2 and 20% of population has stone disease, Prevalence of urolithiaisis in Pakistan is from 4% to 20%, Ureteric stones most often present with acute flank pain and hematuria[2]. Patients can present with severe pain in emergency.

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Most common between 30 to 60 years. Most of the stones pass by itself without intervention. 77% of stones having size less than 5mm pass spontaneously, while more than 5 mm have a lesser than 46% chances of spontaneous passage. Distal and proximal ureteric stones have chances of spontaneous passage of 71% and 22% respectively. Intervention is required in patients having solitary obstructed kidney, unbearable pain, failure of conservative treatment, uro sepsis due to stones and sometimes on patient choice. Treatmentoptions for ureteric stones include extracorporeal shock wave lithotripsy (ESWL), ureteroscopic lithotripsy, and ureterolithotomy (open and laparoscopic). Choice of Treatment is dependent upon stone size, location, patient's preference and end urological facilities availability.

Ureteroscopy (URS) with lithotripsy is most commonly performed procedure[2]. Transurethral lithotripsy (TUL) is the treatment of choice for lower and middle ureteral calculi. It has also been used for treatment of upper ureteral and renal stones. Based on recent studies, its use as a tary treatment modality for upper third ureteral stones has become popular; however, extracorporeal

shockwave lithotripsy (ESWL) is still the treatment of choice[4]. In early 1990 Pneumatic lithotripsy (PL) was introduced Several reports indicate very high success rates.[2] It is less-costly and simple to manage as compared to laser, ultrasonic and electrohydraulic lithotripsy. Ien for larger stones it is safe ang highly efficacious procedure particularly in distal ureter[5]. Complication of Pneumatic Lithotripsy include ureteral perforation, mucosal trauma, avulsion, ureteric stricture, urospesis, stone migration, postoperative hematuria, fever, flank pain[1,5]. Proximal stone migration is a common problem during ureteroscopic lithotripsy, especially when the pneumatic lithotripter is used[7]. The documented incidence of stone migration is 11.36%[6].

MATERIALS AND METHODS

A descriptive cross sectional study was performed in the department of urology Lady Reading Hospital Peshawar, Nawaz shareef kidney hospital swat, DHQ teaching hospital Sawabi, Women medical college Abbottabad, Dadar General Hospital Mansehra from 1st Jan 2019 to 30th May 2020. Sample size was calculated using WHO calculator and total 160 patients were enrolled with 5% margin of error and 95% confidence interval and consecutive nonprobability sampling technique was used. All patients having urinary stone of size less than or equal to fifteen millimeters, age thirty to seventy years and male and female were included in the study whereas all those who had previous history of Extracorporeal shock wave lithotripsy, dj stent placement, age less than 30 and > 70 were excluded from the study.

After taking permission from ethical committee of the hospital, patients were admitted in the department and informed consent was taken. Data was recorded on a predesigned proforma and was analyzed using the statistical program SPSS version 20. Descriptive statistics like mean ± standard deviation was calculated for numerical variable age and size of stone.

All results organized in the form of tab.

Inclusion Criteria: Proximal Migration of Urinary Stone During Ureteroscopic Pneumonic Lithotripsy

Exclusion Criteria: All the patients without stone of kidney were excluded from the study.

RESULTS

Duration of my study was from 1st jan 2019 to 30th May 2020.

A total of 160 patients (51.8%) males and (48.2%) female) were included (table 1)

Proximal migration of stone noted in twenty sick persons (twelve point five percent). (TABLE 2)

Among the male patient 11(13.25%,) and in female 11.6 % were noted with stone migration. P value > 0.05(0.924). (Table 3)

Patients further categorized on basis of stone size.

Group 1 (stone size from 8-10mm), including 46 patients. Stone migrated in 5(10.86%) patients.

Group 2 (stone size from eleven to fifteen millimeters, including one hundred fourteen sick persons. Stone migration occurred in 15(13.15%). P-value 0.846 (>0.05). (Table 4)

Age limit was 31 -70 years. Further distributed in 4 groups.

Group A age limit (31-40 years) include 62 patients. Stone migration was noted in 8(13.33%) patients.

Group B age limit (41 -50 years) included 56 patients. Stone migration was noted in 6(10.7%) patients.

Group Cage limit (51 - 60 years) included 26 patients and stone migration reported in 3 (11.5%).

Group D age limit (61 -70 years) including 16 patients with incidence of stone migration in 2 patients (12.5%). P value was <0.05(0.867) non-significant. (table 5)

Mean age of the patient is 45 years and standard deviation of 10.1. Mean of stone size is 11.9 mm and stander deviation 2.1(table 6).

Table No.1: Frequency distribution of gender (n=160)

Gender	Frequency	Percent
Male	83	51.8
Female	77	48.2
Total	160	100.0

Table No.2: Frequency distribution of upward stone migration (n=160)

Stone Migration	Frequency	Percent
Yes	20	12.5
No	140	87.5
Total	155	100.0

Table No.3: Cross table of gender with upward stone migration (n=160)

Gender	No. of patients	Stone Migration	%tage	p-value
Male	83	11	13.25%	0.912
Female	77	9	11.6%	
Total	160	20	12.5%	

Table No.4: Cross table of upward stone migration with stone size (n=160)

Stone size	No of Patients	Frequency of stone migration	%age	P-value
8 to 10 mm	46	5	10.86%	
11mm to 15mm	114	15	13.15%	0.814
Total	**160**	**20**	**12.5%**	

Table No.5: Cross Table of age with Upward Stone Migration (n=160)

Age Groups (years)	No of patients	Frequency of stone migration	%tage	p-value
31 - 40	62	9	14.51%	0.867
41 - 50	56	6	10.7%	
51 - 60	26	3	11.5%	
61 - 70	16	2	12.5%	
Total	**160**	**20**	**12.5%**	

Table No.6: Mean and Standard deviation of stone size and age (n=160)

	n	Minimum	Maximum	Mean	Std. Deviation
Stone Size	160	8mm	15mm	11.919	2.1656
Age of Patient	160	31years	70	44.20	10.149

DISCUSSION

Urolithiasis has a high incidence in the countries of Afro-asian stone belt having urological workload of 40-50%.

In hospitals. Management of ureteric calculi depends upon the size and location, stone of <5 mm in distal ureter has chances of spontaneous passage up to 98%, for stone of size upto 1cm in proximal ureter ESWL should be the first option, ESWL and ureteroscopy are the available options for ureteric stones. ESWL is minimally invasive and needs no anesthesia but the retreatment rate is high, URS gives higher stone clearance, but need anesthesia. In our experience Pneumatic lithoclast was found cost effective and more users friendly[8.]

In a study reported the comparison of ESWL and ureteroscopy both has an excellent stone-free rate (86% to 90%) for stones smaller than 1cm, whereas ureteroscopy have better result for larger stones i.e Ureteroscopy vs shock wave lithotripsy (67% vs 73%). In bleeding diathesis and pregnancy preference was given to ureteroscopy over ESWL.[9].

SWL is noninvasive and due to this generally accepted as the prior treatment option for ureteral stones, but PL with ureteroscopy has the advantage of higher and quick stone clearance rate and is good alternative. Pnumatic lithotripsy is preferred over ESWL in cases where quick stone removal is desired like for larger ureteric stones with more chances of obstruction, impaction and infection apart from this, PL may be chosen as the first line treatment rather than SWL for stones larger than 1cm. Main complications observed were migration of a complete stone or its fragments (7.1%), urosepsis (4.5%) and perforation of ureter (1.3%)[10].

Some Perioperative complications associated with PL includes proximal stone migration into the kidney 7.2%, Damage to ureteric mucosa in (3.5%), ureteral perforation (1.7%), avulsion of ureter in (0.4%), and in (0.2%). cases it is converted to open surgery. Early postoperative complications included, Loin pain (18.4%), pelvic discomfort (5.5%), hematuria (7.3%), and urinary tract infection (5%) [11]. Proximal stone fragments migration during pneumatic ureteroscopic lithotripsy is a common issue[7]. A study has documented this incidence of stone migration about 11.36%[6]. Another study has reported 3.1 % in lower and 7.6% in upper ureteric stone.[12-16]

CONCLUSION

It was estimated from study that proximal stone migration during pneumatic lithotripsy was major complication.

Author's Contribution:

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

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Original Article

Pre-Eclampsia and Pregnancy Outcome: A Population Based Case Control Study in Karachi Pakistan

Sadia Rashid[1], Safia Izhar[2], Shazia Kadri[1], Saira Ghafoor[1] and Asma Abdullah[2]

ABSTRACT

Objective: To determine the pregnancy outcomes in women presented with severe pre-eclampsia in Karachi Pakistan.

Study Design: Case control/Prospective study.

Place and Duration of Study: This study was conducted at the Medicare Cardiac & General Hospital Karachi during from July 2016 to June 2018.

Materials and Methods: One hundred and ten patients with ages 18 to 45 years presented with pre-eclampsia were included in this study. Patients detailed demographic including age, parity, gestational age, and body mass index were recorded after taking written consent. Patients complete blood picture was examined. Complications associated with preeclampsia were examined.

Results: Twenty-two (20%) were ages <20 years, 48 (43.64%) were ages 20 to 30 years, 36 (32.72%) were ages 31 to 40 years and 4 (3.64%) were ages above 40 years. 42 (38.18%) were prim gravida while 68 (61.82%) were multigravida. Mean gestational age was 33.45±4.68 weeks. HELLP syndrome found in 20 (18.18%) patients, 10 (9.09%) patients had eclampsia, and 14 (14.55%) patients had placental abruption, coagulopathy found in 3 (2.73%) patients, 2 (1.82%) patients developed acute renal failure and 2 (1.82%) patients were died.

Conclusion: Pre-eclampsia is highly associated with major maternal complications such as HELLP syndrome, eclampsia, placental abruption and maternal mortality.

Key Words: Pre-eclampsia, HELLP Syndrome, Placental Abruption, Eclampsia, Mortality

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INTRODUCTION

Preeclampsia, a moderately basic hypertensive issue during pregnancy, shows dynamically and regularly offers ascend to genuine maternal and perinatal difficulties. While the etiology of preeclampsia isn't clear, it is described by vasospasm and endothelial enactment, with hypertension and proteinuria, after week 20 of pregnancy.[1] The occurrence of preeclampsia is variable, since numerous examinations have utilized estimations dependent on emergency clinic tests - a circumstance that could clarify the moderately every now and again detailed figure of up to 5-10%, contingent upon the medicinal services levels of the emergency clinics in which the investigations are made. It has been assessed that 7% of every single pregnant lady create preeclampsia[2], however the rate could be higher in less ideal financial settings, and in nations with a higher predominance of cardiovascular malady.[3] Albeit little estimation has been made in Spain, the current information point to a rate of 1-2%.[4]

Five percent of all instances of preeclampsia thusly at last advancement toward eclampsia[5] and in up to 19% of the cases the condition can show as HELLP disorder, which is related to expanded horribleness mortality.[6] The adverse maternal results in preeclampsia are on a very basic level owing to brokenness of the focal sensory system, liver or kidneys (hemorrhagic stroke, liver crack or intense renal disappointment), and to draining related to thrombocytopenia. Preeclampsia-eclampsia is one of the three most basic reasons for mortality in pregnant ladies, together with thromboembolic malady and baby blues discharge.[7]

Despite the way that few investigations have been led focusing on the distinguishing proof of maternal demise related dangers factors, concentrates carefully centering patients with preeclampsia/eclampsia are uncommon.[8,9]

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Thinking about the as yet existing inconceivability of preeclampsia anticipation (most of clinical articles flopped in showing the viability of various treatments, for example, anti-inflammatory medicine, calcium and different modalities), we felt it was imperative to distinguish, among patients with serious preeclampsia/eclampsia, the ones conveying the more serious hazard for maternal deaths.[10]

MATERIALS AND METHODS

This prospective/observational study was conducted at Medicare Cardiac & General Hospital Karachi from 1st July 2016 to 30th June 2018.A total of 110 patients with ages 18 to 45 years presented with pre-eclampsia were included in this study. Pre-eclampsia was defined as systolic blood pressure >160 mmHg and diastolic BP >110 mmHg and having significant proteinuria. Patients detailed demographic including age, parity, gestational age, and body mass index were recorded after taking written consent. Patients with cardiovascular disease, patients with chronic renal failure and patients with other abdominal surgeries were excluded from this study.

Patients complete blood picture was examined. Laboratory investigations were sent after assessment. Patients were managed as indoor patients according to unit protocols and were observed for eclampsia, abruption placentae, HELLP syndrome, Global complications such as heart failure, coagulopathy, renal and maternal mortality. In patients who developed these complications, pregnancy was terminated and the condition managed. All the data was analyzed by SPSS 24.

RESULTS

Twenty-two (20%) were ages <20 years, 48 (43.64%) were ages 20 to 30 years, 36 (32.72%) were ages 31 to 40 years and 4 (3.64%) were ages above 40 years. 42 (38.18%) were primigravida while 68 (61.82%) were multigravida. Mean gestational age was 33.45±4.68 weeks. Mean body mass index (BMI) was 20.18±3.86 kg/m^2 (Table 1).

Table No.1: Characteristics of all the patients

Characteristics	No.	%
Age (years)		
<20	22	20
20 to 30	48	43.64
31 to 40	36	32.72
>40	4	3.64
Gravidity		
Primigravida	42	38.18
Multigravida	68	61.82
Mean gestational age	33.45±4.68	
Mean BMI (Kg/m)	20.18±3.86	

According to the complications, HELLP syndrome found in 20 (18.18%) patients, 10 (9.09%) patients had eclampsia, and 14 (14.55%) patients had placental abruption, coagulopathy found in 3 (2.73%) patients, 2 (1.82%) patients developed acute renal failure and 2 (1.82%) patients were died (Fig. 1).

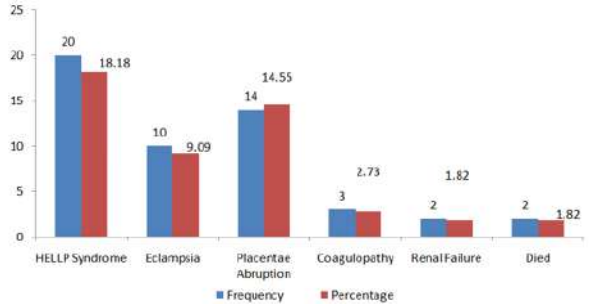

Figure No.1: Complications found in all the patients

DISCUSSION

Pre-eclampsia is a common gynecological and obstetrical disorder associated with high rate of morbidity and mortality.[11] We conducted this study to examine the major maternal complications associated with pre-eclampsia. In this regard we included 110 patients presented with pre-eclampsia. Majority of patients 43.64% were ages 20 to 30 years followed by 32.72% had ages 30 to 40 years. These results showed similarity to many of previous studies in which the average age of patients was 35 years.[12,13]

In the present study, 42 (38.18%) were primigravida while 68 (61.82%) were multigravida. Mean gestational age was 33.45±4.68 weeks. Mean body mass index (BMI) was 20.18±3.86 kg/m^2. A study conducted by Curiel-Balsera et al[14] reported that in pre-eclamptic patients the mean gestational age was 32±4 weeks. Seid et al[15] reported that 54% patients were primigravida while 46% were multigravida.

In present study, overall complications found in 51 (46.36%). Among all the complications the most frequent complication was HELLP syndrome and found in 20 (18.18%) patients followed by placental abruption in 14.55%, eclampsia in 9.09%, coagulopathy in 2.73%, and acute renal failure in 1.82% patients. A study conducted by Nankali et al[15] reported that 22 cases (6.3 %) who had suffered from eclamptic seizers, 1 (0.3 %) patient was demonstrated to have HELLP syndrome. Placental abruption was obstetric complication in 7.7 % (27 cases). Ngwenya[16] reported the most common complication in pre-eclamptic patients was HELLP syndrome 9.1% out of 118 patients.

A study conducted by Gao et al[17] regarding outcomes of pre-eclampsia, in their study the eclampsia was the most frequent complication found in 21% followed by renal failure, abruption and HELLP syndrome.

This study showed that 2 (1.82%) patients were died and 1 of them associated with acute renal failure and 1

had HELLP syndrome. These results were comparable to some previous studies.[18-20].

CONCLUSION

Pre-eclampsia is highly associated with major maternal complications and these complications has major contribution to increase maternal and fetal mortality. We concluded from this study that HELLP syndrome was the most frequent complication followed by eclampsia, abruption and coagulopathy. The mortality rate was 1.82%. Also we concluded that proper and early management can helps to reduce the morbidity and mortality.

Author's Contribution:

Concept & Design of Study:	Sadia Rashid
Drafting:	Safia Izhar, Shazia Kadri
Data Analysis:	Saira Ghafoor, Asma Abdullah
Revisiting Critically:	Sadia Rashid, Safia Izhar
Final Approval of version:	Sadia Rashid

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

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Original Article

Diagnosis of Obstructive Sleep Apnea

Validation of Screening Tools and Comparison of Anthropometric Characteristics in Diagnosis of Obstructive Sleep Apnea

Saima Akhter, Nausheen Saifullah, Fatima Zaina, Noureen Durrani and Mirza Saifullah Baig

ABSTRACT

Objective: To determine the validity and also compare screening questionnaires and anthropometric characteristics in diagnosis of obstructive sleep apnea in Pakistani population.

Study Design: Cross-sectional study

Place and Duration of Study: This study was conducted at the Department of Pulmonology, Jinnah Postgraduate Medical Center Karachi from January 2019 to December 2019.

Materials and Methods: Sixty-nine patients came for sleep study and underwent Polysomnography. Apnea Hypopnea Index ≥5 was considered as positive for OSA.

Results: Forty-one (59.42%) were males and 28 (40.58%) were females with average age of 49.71±10.67 years. All patients underwent PSG and 60 (86.96%) were diagnosed positive for OSA. Patients' anthropometric characteristics and all four questionnaires were not significantly different among OSA positive and negative except neck circumference (p=0.009). ROC curve showed that the highest AUC was observed for NC which was 0.741 (95% CI: 0.541–0.940, p=0.018) and the optimal cut-off value was ≥40cm. The lowest AUC was 0.522 (95% CI: 0.408–0.635, p=0.701) for Berlin questionnaire. AUC determined for all screening tools excluding NC depicted poor predictive ability of these tests and these tests were not good in discriminating the OSA positive and OSA negative patients.

Conclusion: Neck circumference was independent screening tool to predict OSA. Interestingly screening questionnaires BQ, ESS, SBQ and Mod-ESS are not accurate tool for prediction of OSA in our population.

Key Words: Berlin questionnaire, Epworth Sleepiness Scale, Modified Epworth Sleepiness Scale, Neck Circumference, Obstructive sleep apnea.

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INTRODUCTION

Obstructive sleep apnea (OSA) is a frequent medical condition and sleep disorder characterized by recurrent events of either complete or partial and both collapse of upper airways (particularly in oropharyngeal tract) resulting in reduction/cessation of the airflow.

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Approximately 2–4% adult population is affected by OSA and middle-aged men are more frequently affected.[1] The reported OSA prevalence in India is around 13.74%.[2] In Bangladesh, the OSA prevalence in men and women was 17.3% and 6.25% respectively.[3] Hypopnea and apnea appear during sleep, as a result most of the patients are unaware of the condition and about 80% of the patients with OSA of moderate to severe degree remain undiagnosed and hence untreated.[4]

Literature demonstrates obesity as one of the major predictive risk factors of OSA. Several anthropometric measures are used to grade obesity including body mass index, hip circumference, abdominal circumference, neck circumference and modified Mallampati Index. The point of interest is to determine which of these parameters are better in detecting obesity. OSA patients may be mostly asymptomatic[5,6] but are associated with major health related problems which include cardiovascular diseases, glucose intolerance, premature death, cerebrovascular and motor vehicle accidents, decreased functional ability, type 2 diabetes, impotence and nocturnal arrhythmias.[7,8] Thus as a matter of fact, timely screening of OSA patients has utmost

importance in avoiding the associated public health issues.

The gold standard to diagnose OSA is polysomnography (PSG) which is non-invasive technique and monitor multiple physiological variables such as eye movement, electroencephalography, muscle tone, airflow, oxygen saturation and respiratory effort.[9] However, PSG is non-affordable, complex and time consuming procedure which requires highly skilled personnel. Since the gold standard to diagnose PSG is unaffordable and inaccessible for all patients, thus many screening questionnaires such as Epworth sleepiness scale (ESS)[10], Stop-Bang questionnaire (SBQ)[11], Berlin questionnaire (BQ)[12] have been developed as a part of pre-selection process.

In our local settings, it is practically difficult to recommend to PSG due to affordability issue to every patient which yields the need of some scoring tool to triage the patient. To the best of our knowledge, no study has been conducted in Pakistan yet to validate SBQ and BQ in our local population. Therefore, the current study was aimed to determine the validity of screening questionnaires and compare anthropometric characteristics in classification of obstructive sleep apnea in our population.

MATERIALS AND METHODS

This cross-sectional study was conducted at Jinnah Postgraduate Medical Center from 1st January 2019 to 31st December 2019. Sixty-nine patients referred to Pulmonology Department of JPMC who were advised to visit sleep clinic were recruited into the study. Patients of any gender and age of 18 years or above and referred for sleep studies were included into the study. Patients with previous history of chronic obstructive pulmonary disease and/or asthma, were excluded from the study. Patients with neurological and muscular disorder were also excluded.

Patients' demographic (age in years and gender) and anthropometric data including height (in meter), weight (in Kg), body mass index (in kg/m^2), neck circumference (in cm), were documented in pre-designed proforma. Body mass index was determined by dividing weight with square of height. Measurement for neck circumference (NC) was made at midway of the neck i.e. just below Adam's apple along a parallel line with one decimal place observation. Threshold of more than 40cm was used to label patient as high risk for OSA. Attending physician filled three screening questionnaires before performing sleep study.

All patients underwent PSG. The standard diagnostic computerized PSG was performed American Association of Sleep Medicine guidelines were followed for scoring of sleep stage.[13] Apnea Hypopnea Index (AHI) index was determined as number of apnea and/or hypopneas per hour of total sleep time. OSA was defined on basis of AHI index. AHI<5 was considered as OSA free patients whereas OSA was considered for AHI≥5.

Berlin Questionnaire: Berlin questionnaire was developed in 1999 and has ten items and three categories. First category is related to snoring and comprises of first 5 questions. First category is taken as positive if total score is ≥2 points. Second category is related to daytime sleepiness and fatigue and includes Q6, 7 & 8. Second category is positive if total score is ≥2 points. Third category is about hypertension and body mass index which is considered positive either patients is hypertensive or BMI is higher than $30kg/m^2$. Patients are labeled as high risk for OSA if at least 2 categories are positive otherwise low risk.[12]

Stop-Bang Questionnaire: Stop-bang questionnaire is an eight items tool of which four items are subjective which includes snoring, tiredness, observed apnea and high blood pressure (STOP) and four are demographic including BMI, age, neck circumference and gender (BANG). Patients were classified as high risk for score ≥3 otherwise low risk.[11]

Epworth Sleepiness Scale: Epworth sleepiness scale is a tool for measuring daytime sleepiness that contains total 8 items with score of 0-3 for each question. ESS score ranges from 0 to 24. Patients were labeled OSA high risk for score >10.[10]

Modified Epworth Sleepiness Scale: Modified Epworth sleepiness scale is modified form of ESS. BMI and NC were added in addition to ESS to determine modified ESS. Patient was considered high risk for OSA if ESS>10 and BMI>$35kg/m^2$ and NC>40cm.[14]

Qualitative variables were summarized in terms of frequency and percentage. Mean ± standard deviation or median and inter-quartile range was used to summarize quantitative variables based on assumption of normality. Shapiro-Wilk test was used to test the assumption of normality. Independent t-test or Mann-Whitney U test was used to compare continuous variables among OSA positive and OSA negative patients. Chi-square or Fisher Exact test was used to compare categorical variables among disease positive and disease free patients. Diagnostic accuracy of screening tools was determined using sensitivity, specificity, positive predictive value, negative predictive value and 95% confidence intervals for these parameters were also computed. Area under the curve was determined for screening tools using receiver operating characteristic curve to determine their classification ability. P-value <0.05 was taken as statistically significant. Stata version 14 was used to perform data analysis.

RESULTS

Sixty (86.96%) patients were labeled positive for obstructive sleep apnea whereas 9 (13.04%) were identified as negative for OSA using gold standard. Overall average age of the study participant was 49.71

± 10.67 years. Most of the study participants were male (n=41, 59.42%). The two groups of patients didn't differ based on age (p=0.078), BMI (p=0.068), hip to waist ratio (p=0.90), and gender (p=0.144). Average NC was significantly higher in OSA positive patients as compared to OSA free patients (p=0.009). Frequency of high risk for OSA using all four tools was also not statistically different among two groups (Table 1).

BQ identified total 64(92.8%) patients as high risk to develop OSA yielding the sensitivity and specificity of 93.33% and 11.11% respectively. Using cut-off of ≥3 for OSA high risk patients, Stop-Bang questionnaire predicted 67(97.1%) patients as high risk for OSA with sensitivity and specificity of 98.33% and 11.11% respectively. 52(75.4%) patients were categorized as high risk for OSA using ESS at cut-off >10. 78.33% and 44.44% was sensitivity and specificity respectively. Only 29(42%) patients were predicted as high risk for OSA by MESS with sensitivity and specificity of 45% and 77.78% respectively. Sensitivity and specificity for NC against the threshold more than 40cm for high risk of OSA was 80% and 66.67% respectively (Table 2).

Area under the curve was also calculated to determine the predictive ability of the screening tools. The highest AUC was observed for NC which was 0.741 (95% CI: 0.541–0.940, p=0.018) which shows good discrimination ability of NC. Optimal cut-off value of NC for identifying high risk OSA patients was 40cm and above. The lowest AUC was 0.522 (95% CI: 0.408–0.635, p=0.701) for Berlin questionnaire. The AUC determined for all screening tools excluding NC depicted poor predictive ability of these tests and these tests were not good in discriminating the OSA positive and OSA negative patients (Fig. 1).

Table No.1: Patients' characteristics with OSA

Patients' Characteristics	OSA Present (n = 60) Mean±SD OR No. (%)	OSA Absent (n = 9) Mean±SD OR No. (%)	p-value
Age (years)	48.83±10.99	55.56±5.61	0.078
Gender (male)	38 (92.7%)	3 (7.3)	ǂ0.144
BMI (kg/m^2)	38.78±7.21	33.82± 9.17	0.068
Hip to waist ratio (cm)#	0.95 (0.93-0.98)	0.94 (0.92-1.03)	0.893
Neck circumference(cm)	43.77± 4.19	39.73±4.45	*0.009
Berlin (high risk)	56 (87.5)	8 (12.5)	ǂ0.514
Stop-Bang (high risk)	59 (88.1)	8 (11.9)	ǂ0.246
ESS (high risk)	47 (45.2)	5 (6.8)	ǂ0.209
MESS (high risk)	27 (25.2)	2 (3.8)	ǂ0.285

#:non-normally distributed variable expressed as median (Inter-quartile range) ǂ:Fisher-Exact test is reported *P-value <0.05

Table No.2: Diagnostic Accuracy of Berlin Questionnaire, Stop-Bang questionnaire, ESS, MESS & Neck circumference against gold standard

Variable	Sensitivity (95% CI)	Specificity (95% CI)	PPV (95% CI)	NPV (95% CI)	AUC (95% CI)	p-value
Berlin questionnaire	93.33 (83.80–98.15)	11.11 (0.28–48.25)	87.50 (76.85–94.45)	20.00 (0.51–71.64)	0.522 (0.408–0.635)	0.701
Stop Bang questionnaire	98.33 (91.06–99.96)	11.11 (0.28–48.25)	88.06 (77.82-94.70)	50 (1.26–98.74)	0.554 (0.350–0.758)	0.606
MESS	45 (32.12–58.39)	77.78 (39.99–97.19)	93.10 (77.23–99.15)	17.50 (7.34–32.78)	0.614 (0.456–0.771)	0.156
ESS	78.33 (65.80–87.93)	44.44 (13.70–78.80)	90.38 (78.97–96.80)	23.53 (6.81–49.90)	0.619 (0.391–0.846)	0.308
Neck circumference	80 (67.67–89.22)	66.67 (29.93–92.51)	94.11 (83.76–98.77)	33.33 (13.34–59.01)	0.741 (0.541–0.940)	0.018

PPV - Positive predictive value, NPV - Negative predictive value, AUC – Area under the curve.

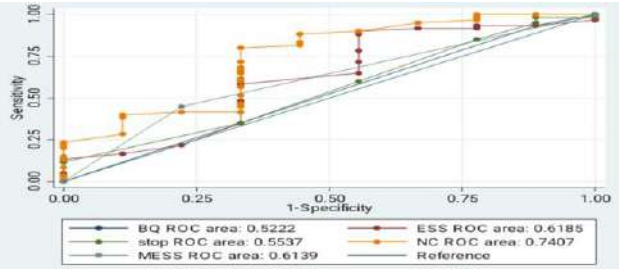

Figure 1: Receiver Operating Characteristic Curve (ROC) for Berlin questionnaire (BQ), Stop-Bang questionnaire (STOP), Epworth Sleepiness Scale (ESS), Modified Epworth Sleepiness Scale (MESS) and Neck circumference (NC).

DISCUSSION

In the current study highly suspected OSA patients were recruited and 86.96% of them actually had positive OSA diagnosis as determined by PSG. Among all patients' characteristics, only neck circumference was significantly different between patients with and without OSA. However, various researcher in previous studies observed that age[8,15] gender distribution[8,16], body mass index[8,15] and neck circumference[15,16] were significantly different among patients with and without OSA.

The current study validated the use of BQ, SBQ, ESS, MESS and NC in screening of high risk OSA patients. Three screening questionnaire BQ, ESS and MESS were not identified as reliable screening tool to detect presence of OSA. Similar to the present study, previous studies conducted in Asia, also reported the unreliability of BQ in predicting OSA.[17,18] A study conducted in Singapore concluded that BQ was sensitive screening tool when applied in general population and was good in discriminating OSA patient for AHI ≥30. In the same study it was also documented that discrimination ability was moderate when BQ was used for AHI ≥15.[19] It appears that reliability of screening questionnaire dependents on both patients' characteristics and AHI diagnostic threshold values.[20,21]

We observed the high sensitivity and low specificity of SBQ while discrimination ability on ROC was not good (55.4%). Highly suspicious OSA patients were enrolled into the study that might be the reason for high sensitivity and low specificity. In contrast to the current study, multiple researchers validated the use of SBQ on OSA suspected patients and identified SBQ as good screening tool.[22,23] The discrimination ability of ESS in our study for detecting OSA patients was poor which was consistent with other studies.[23,24]

MESS used in the study is updated version of ESS in which BMI and NC were added. This screening tool had low sensitivity and specificity was high but area under the curve indicated that tool was not sufficient in detecting high risk OSA patients. Hence adding BMI and NC in ESS didn't make any significant improvement in its predictive ability. A study was conducted in Pakistan in which accuracy of ESS and MESS was compared and researcher found that MESS was better in identifying OSA patients than ESS. However, the conclusion was made based on sensitivity, specificity, PPV and NPV. The author didn't determine and compare the predictive ability in terms of area under the curve for the two screening tools which makes the study findings arguable.[14]

In the current study, only NC was identified as good predictive marker with fair area under the curve (74.1%). It is documented in literature that NC reflects upper body obesity and is considered to be a better marker than BMI for OSA.[25] A study conducted in Asia also reported that neck circumference is useful indicator for prediction of OSA presence and its severity in snoring patients.[16]

The present study aimed to identify the best screening tool to predict OSA in Pakistani population. In the current study, highly suspicious patients were recruited into the study that either visited or referred for sleep study. The study didn't reflect features of general population. The study findings could be affected by change of study population. Moreover, the study evaluated the predictive abilities of the screening tool against only AHI ≥5 which is also one of limitations of the study. Therefore, to further confirm the findings of the present study, it is recommended to the replicate the present study in Pakistan but on general population with accuracy assessment of screening tools against different threshold of AHI.

CONCLUSION

The study shows we could not use these three screening for prediction in Pakistani Population and consideration must be given to anthropometric features for better understanding of disease.

Author's Contribution:

Concept & Design of Study:	Saima Akhter
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Data Analysis:	Noureen Durrani, Mirza Saifullah Baig
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

Maternal and Neonatal Outcomes in Pregnant Women Presented with or Without COVID-19 Disease

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ABSTRACT

Objective: To compare the maternal and neonatal outcomes in patients with or without coronavirus disease.
Study Design: Prospective/observational study
Place and Duration of Study: This study was conducted at the Obstetrics & Gynaecology department, Liaquat College of Medicine and Dentistry Darul Sehat Hospital, Karachi for duration of six months April, 2020 to September, 2020.
Materials and Methods: One hundred eighty patients with ages 18 to 35 years and gestation age >24 weeks were included. Patient's demographical detail including age, residence, education and socioeconomic status were recorded. All the patients were divided into two groups; Group A consists of 90 patients presented with COVID-19 and Group B with 90 patients without COVID-19. Maternal outcomes were recorded. Neonatal outcomes such as admission to NICU, birth weight, Apgar score and mortality were recorded.
Results: There were no significant difference in term of age between Group A and B 28.5 years and 28.76 years. Mean BMI in group A was 25.85±2.65 kg/m^2 and in group B it was 26.89±2.48 kg/m^2.In group A frequency of C-section was higher 56 (62.22%) and in group B it was 24 (26.7%). Frequency of preterm in group A was 22 (24.44%) while in group B was 10 (11.11%). In Group A 33.3% neonates need to NICU. Low birth weight was 26 (28.89%) higher in Group A patients. 4.44% neonatal death was recorded in Group A while none in Group B.
Conclusion: The pregnant women with COVID-19 disease had more complications and higher rate of lower segment cesarean section and preterm delivery as compared to normal pregnant women.
Key Words: C-sections, Maternal outcomes, Neonatal, Morbidity, Mortality

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INTRODUCTION

The global pandemic from the extreme acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has grown at an accelerating pace as more than 1 million people are infected. The growing mortality level ensures that vulnerable groups in society are recognised and covered.

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Awareness of earlier outbreaks of human body coronavirus, the severe acute coronavirus syndrome (SARS-CoV) and Middle Eastern breathing syndrome (MERS-CoV), implies a specific vulnerability for pregnant women and their foetuses to bad effects. Intensive treatment admission is normal and up to 35 percent mortality rates have been documented.[1,2]

Mother is more vulnerable to serious infections as a result of physiological changes in pregnancy.[3] Anatomical changes, such as a rise in the transverse diamyer, and a high diaphragm level, lower maternal tolerance to hypoxia.[4] Change in lung volume and vasodilation may result in mucous oedema and increased secretions in the upper respiratory tract. In turn, cell-mediated immunity changes lead to a growing vulnerability of progressive women to intracellular disease, such as viruses.[5] The immaturity of the inborn and adaptive immune system in comparison to the foetusand the neonate makes them highly susceptible to infections.[6]

The immatureness of the infectant and the adaptive immune systems makes them very vulnerable to infection with the foetus and newborns.[6] Dysregulation of factors such as cytokines and the complement cascade may have deleterious consequences for development of the brain and its function.[7] Therefore, it

is of special interest to find out whether the infectious agent will infect the foetus or newborn by means of vertical transmission.[8] The possible risk groups in the current COVID-19 pandemic of pregnant women and their infants should be evaluated.

With minimal knowledge on the novel coronavirus and the significantly growing burden of the disease[9], it is vital to share science about the disease in a succinct and realistic way. Data on the maternal and perinatal results of SARS-CoV-2 infected pregnant women are restricted to a few case reports and episodes. The sample measurements are small and the results differ. Changes to health policies in pandemic nations, ever changing standards and uncertainties about the reliability of the findings make it difficult to grasp the results of these studies.

We intended to perform an in-depth review of the publication of available literature on COVID-19 pregnancies.

MATERIALS AND METHODS

This observational study was conducted at Obstetrics & Gynaecology department, Liaquat College of Medicine and Dentistry Darul Sehat Hospital, Karachi for duration of six months April, 2020 to September, 2020. A total of 180 patients with ages 18 to 35 years and gestation age >24 weeks were included in this study. Patient's demographical detail including age, residence, education and socioeconomic status were recorded after written consent. Patient's maternal cardiac ailments and less than 20 years of ages were excluded from the study. All the patients were divided into two groups; Group A consists of 90 patients effected by COVID-19 and Group B with 90 patients with negative COVID-19 results. Maternal outcomes were assessed. Neonatal outcomes such as admission to NICU, birth weight, Apgar score and mortality were recorded. Compare the results between both groups. All the statistical data was analyzed by SPSS-21. P-value <0.05 was considered as statistically significant.

RESULTS

There was no significant difference in term of age between Group A and B 28.5±4.26 years and 28.76±3.44 years. Mean BMI in group A was 25.85±2.65 kg/m^2 and in group B it was 26.89±2.48 kg/m^2. 50 (55.6%) patients and 56 (62.22%) patients in Group A and B had urban residence while 20 (44.4%) and 37.78% patients in Group A and B had rural residency. 42 (46.7%) patients in Group A and 52 (57.8%) in Group B were prim parous while 48 (53.3%) in Group A and 38 (42.22%) in Group B were multiparous (Table 1).

In group A, C-section was higher 56 (62.22%) and in group B it was 24 (26.7%). Normal delivery was lower 37.78% in group A as compared to group B 66 (73.3%). The preterm in group A was 10 (22.22%) while in group B was 10 (11.11%) (Table 2).

In Group A 33.3% neonates need to NICU. Low birth weight was 26 (28.89%) higher in Group A patients. 4.44% neonatal death was recorded in Group A while none in Group B (Table 3).

Table No.1: Baseline characteristics of all the patients

Variable	Group A	Group B	P value
Age (years)	28.5±4.26	28.76±3.44	>0.05
BMI (kg/m^2	25.85±2.65	26.89±2.48	N/S
Residence			
Rural	40 (44.4%)	34 (37.78%)	>0.05
Urban	50 (55.6%)	56 (62.22%)	
Parity			
Primiparous	42 (46.7%)	52 (57.8%)	0.042
Multiparous	48 (53.3%)	38 (42.22%)	

Table No.2: Maternal outcomes between both groups

Outcome	Group A	Group B
Term	70 (77.78%)	80 (89.89%)
Preterm	20 (22.22%)	10 (11.11)
Mode of Delivery		
LSCS	56 (62.22%)	24 (26.7%)
Vaginal	34 (37.78%)	66 (73.3%)

Table No.3: Neonatal outcomes between both groups

Outcome	Group A	Group B	P-value
NICU admission	30 (33.3%)	6 (6.7%)	0.02
Low birth weight	26 (28.89%)	16 (17.8%)	0.04
Death	4 (4.44%)	-	N/S
Apgar score at 5 min			
<7	8 (8.9%)	12(13.33%)	N/S
>7	82 (91.1%)	78(96.67%)	N/S

DISCUSSION

The global population of COVID-19 infected people is now rising exponentially with pregnant women being a large proportion of them. Although this significant population is particularly at high risk of negative outcome, data on the effect of COVID-19 on this particularly vulnerable population are limited in the form of case reports and review publications. This is the first of its kind to tackle premature birth, foetal distress and vertical transmission of COVID-19 infected pregnant women in the Indian subcontinent. A total of 38 patients were examined on infected pregnant women, all of whom were in the third pregnancy trimester. Among COVID-19 positive cases, there was a propensity for higher early births. The effect of numerous interleukins released in response to viral infection may be stress, both psychological and physiological. It is appropriate to note that 5 out of 8 pre-term births were born after spontaneous work, as COVID-19 is more likely to lead to premature work, due to normal vaginal delivery.

There was no significant difference in term of age between Group A and B 28.5 years and 28.76 years. Mean BMI in group A was 25.85±2.65 kg/m2 and in group B it was 26.89±2.48 kg/m2. In group A, C-section was higher 56 (62.22%) and in group B it was 24 (26.7%). The normal delivery was lower 37.78% in group A as compared to group B 66 (73.3%). The preterm in group A was 20 (22.22%) while in group B was 10 (11.11%). Our results showed resemblance to the previous some studies.[10-12] As regards the mode of delivery, a caesarean section was undertaken in most cases and the reason for this decision has been cited by several writers as foetal distress.[13-15]

This study showed that in group A 33.3% neonates need to NICU. Low birth weight was 20 (22.22%) higher in Group A patients. 4.44% neonatal death was recorded in Group A while none in Group B. A review of Zimmermann et al[16] found that the intravascular coagulation (3%), asphyxy (2%) and two perinatal deaths have been disseminated by neonatal pulmonary disease (18%). The positive SARS-CoV-2 was identified in four neonates (3 with pneumonia). Another research by Hassan N t al 79% was delivery in terms of term and 21% was delivery in advance. The vaginal delivery (60%) was made, one mother was admitted to ICU, and one died (39.5%).[10] In other research, Ashishet al[17] studied 21760 pregnant mothers without COVID-19 in 2020, showing institutional death rates of 13/1000 live births increased to 21/1000 live and neonatal mortality increased to 40/1 000 live births from 13/1000 to 14/1000.

This meta-analysis found that, because of motherly complications and foetal compromise related to COVID-19, the majority of pregnant women with COVID-19 were caesarean.

CONCLUSION

The pregnant women with COVID-19 disease had more complications and higher rate of LSCS and preterm delivery as compared to normal pregnant women. This results in lower birth weight and high rate of NICU admission and deaths.

Author's Contribution:

Concept & Design of Study:	Nazish Ali
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Data Analysis:	Aliya Waheed, Saira Ghafoor, Fehmida Saleh
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Original Article

Comparison of Anterior Knee Pain in Adolescent Athletes Participating in Single Sport and in Multiple Sports

Sharon Alexander[1], Mahwish Anees[1], Amna Zia[1], Samrood Akram[1], Hafiza Sana Ashraf[2] and Naveed Anwar[3]

ABSTRACT

Objective: The objective of this study was to determine that whether the occurrence of anterior knee pain is greater in athletes excelling in single sports other than those participating in multiple sports. The secondary objective of this study was to give awareness to athletes.

Study Design: A cross-sectional analytical study

Place and Duration of Study: This study was conducted at the Physiotherapy Department, Fatima Memorial Hospital, Lahore. The duration of this study was 4 months after approval of synopsis.

Materials and Methods: This was a cross-sectional analytical study conducted on 108 adolescents aged between 13-18 years. Non-probability convenient sampling technique was used. Standardized questionnaire Anterior Knee Pain Scale (AKPS) was instrumental tool for this research and Mann-Whitney U test was used to analyze data.

Results: Mean age of athletes was 15.89±1.726 years with minimum of 13 years and maximum of 18 years. Among all the participants, 47.2% were males and 52.8% were females. Results showed a significant difference in the pain between the groups, with greater pain in single sport group than in multiple sports group, with p-value = <0.01.

Conclusion: For athletes, to participate in multiple sports, is more beneficial than to participate in single sport. Participation in multiple sports would reduce the chances to have acute and chronic knee problems mainly the patellofemoral pain.

Key Words: Anterior knee pain, athletes, overuse injuries, patella-femoral pain, sports

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INTRODUCTION

Anterior knee pain due to overuse, fractures, sprains and strains are some common sports injuries.**(1)** Anterior knee pain is also commonly known as "runner's knee or patellofemoral pain syndrome. 30% of the adolescent population is affected by anterior knee pain and 2 to times more prevalent in female. In athletes the prevalence of anterior knee pain is greater than 20% than other population[(2)] 1 in 4 athletes have anterior knee pain, 70% of whom are between the ages of 16 and 25. As the patellofemoral joint is one of the most highly loaded joints in the human body, the prevalence of anterior knee pain is obvious.

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Athletes having AKP present a significant diagnostic and therapeutic challenge for the sport medicine caregiver.[(3)]

74% of the athletes have to limit their sport participation and in some cases to cease sport participation altogether because of anterior knee pain. The pain affects the quality of life of the athletes [(5)]

70% to 90 % of athletes with anterior knee pain have recurrent or chronic pain. Furthermore, anterior knee pain is also associated with the future development of patellofemoral osteoarthritis. Rather than pain, disability is another element found in patients with anterior knee pain[(6)] Overloading on patellofemoral joint and intense physical activity leads towards the development of anterior knee pain.[(6)] Patella is supported and stabilized in the femoral groove by the surrounding soft tissues and bony attachments

Abnormal tracking and malalignment and of the patella contributes to anterior knee pain.[(7) (8)] Sports have been a major leisure activity.[(9)] Adolescent participating in multiple sports in accordance to their interest get good mental and physical health.**(10)** The repetition of the same activity with the same pace and for various hours, leads mainly to overuse injury.**(11)** There is a direct relation between training duration, intensity and over-use injury. Focusing in specialization in single sport leads to the repetition of the same movement in the

same way over and over again. [12] The rationale of this study is to aware the parents and trainers not to force children to pursue a single sport to specialize without understanding proper precautions, to aware the teenagers the benefits of multi-sport, to help the institutions to set a balanced duration and intensity of the sport being played and to tell them the consequences if they continue to pursue single sport without proper guidance.

MATERIALS AND METHODS

This was a cross-sectional analytical study. The duration of this study was 4 months after approval of synopsis. Sample size was calculated by using following formula:

$$n = \frac{\left\{z_{1-\alpha}\sqrt{2\bar{P}(1-\bar{P})} + z_{1-\beta}\sqrt{P_1(1-P_1)+P_2(1-P_2)}\right\}^2}{(P_1-P_2)^2}$$

$$n = 108$$

Keeping confidence interval 99%, anticipated population proportion P_1 = 0.34 and anticipated population proportion P_2 = 0.65 [14] and absolute precision 0.01

Group 1 (Single Sport) = 54

Group 2 (Multiple Sports) = 54

Athletes aging between 13-18 years[14] who were in sports for at least 2-3 years, used to have training hours between 2-3 hours for 4 days a week[1] were included. In addition, athletes who had history of trauma, surgical history, any structural or congenital abnormality in hip, knee and foot joint which may cause anterior knee pain, had muscular weakness were excluded. Data were collected by using non probability convenient sampling technique from Forman Christian College, Kinnaird College, Sacred Heart Convent School, Lahore College, Crescent and other schools/universities/colleges having a sports setup where there were regular and occasional training programs. After the permission was taken from the respective institute and coach and once the inclusion, exclusion criteria met the participants and the athletes had shown willful interest, they were given a brief description proceeding forward to data collection. Data of anterior knee pain in the athletes were taken through the standardized questionnaire, Anterior Knee Pain Scale (AKPS- have high internal consistency; α_{coef} = 0.83 to 0.9)[15] which is broadly used to assess the signs and symptoms of patellofemoral pain in orthopedic and sports medicine. Ethical approval was taken from ethical review committee of Kanaan Physiotherapy & spine clinic with ref. no. PT/2020/REC/IRB/118

Data Analysis: Statistical packages for social sciences version 23 (SPSS 23.0) was used to analyze data. Descriptive statistics including frequencies and percentages were extracted for qualitative variables. Mean and Standard deviation was calculated for the continuous variables. Data were checked primarily for its normal distribution by applying normality tests (Shapiro-Wilk test & Kolmogorov-Smirnov test). Both tests showed value less than 0.05 (α = <0.001) which meant data were not normally distributed. Hence, to test the hypothesis, Mann-Whitney U test; non parametric test for independent t-test was used.

RESULTS

The study conducted, focuses on comparing anterior knee pain in athletes participating in single and multiple sports. Following tables and graphs are presented which help to conclude the results to determine which group of athlete presented with greater pain in knee.

Table No.1: Descriptive statistics for age and anterior knee pain score

Age (years)	Mean	15.89
	Standard Deviation	±1.726
	Minimum	13
	Maximum	18
Anterior Knee Pain Score	Mean	88.09
	Standard Deviation	±13.55
	Minimum	38
	Maximum	100

This table showed the statistics of age of the subjects involved in the study. The distribution of subjects according to age shows a mean value 15.89±1.726.

Table No.2: Descriptive statistics for Anterior Knee Pain Scale score

Anterior Knee Pain Scale's Score in Single Sports Group		
Mean		Standard Deviation
Statistics	S.E Mean	Statistics
82.43	2.072	15.227
Anterior Knee Pain Scale's Score in Multiple Sports Group		
Statistics	S.E Mean	Statistics
93.76	1.166	8.565

Table No.3: Descriptive statistics for gender and sports groups of participants

Variable	Construct	Frequency	Percentage
Gender	Male	51	47.2%
	Female	57	52.8%
Sports Group	Single sports	54	50.0%
	Multiple sports	54	50.0%

The table shows the statistics of the gender of athletes involved in the study, out of which 47.2% were male and 52.8% were female. This table shows that the participants included in each sports group were equal in number according to the sample size.

Normality tests were applied to evaluate data distribution, the results of tests of normality (Kolmogorov-Smirnov, Shapiro-Wilk test) showed a p-

value of less than 0.05 that meant insignificant results and the data not normally distributed thus, a non-parametric test, Mann-Whitney U test was applied. (Table-4).

Table No.4: Tests of Normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
AKPS scoring	0.190	108	0.000	0.814	108	0.000

DISCUSSION

In the study 108 athletes have participated with minimum age of 13 and maximum age of 18 years ± 1.726. There were 42.7% male and 58.3% female participants. The results of the study showed that there is a significant difference, with p value being 0.00, in the occurrence of anterior knee pain in both single and multiple sports athletes. The significant difference shows that if athletes participate in single sports rather than multiple sports, they will go through knee problems in near future. Similar to the current study another study conducted by Robert M. Malina on the young athletes concluded that such isolation and focus on a single sport causes growth impairments and place a risk for overuse injuries.[16]

A clinical case control study conducted by Neeru A. Jayanthi on 1214 athletes from ages 7-18 years concluded that sport specialization is an independent risk factor for injury with p value= <0.01.[1] The results of the study is in accordance with the results of the current study both the studies are proposing that the for adolescent athlete single sport specialization is an independent risk factor for injury, with a greater percentage of injury to the knee.

In contrast to the current study a study worked on the relationship between body-composition of female athlete and patellofemoral pain. The study concluded that though the number of athletes having PFP increased over the course of study, it was not found to be related to their BMI, as it remained constant or nearly constant. The concluded that increases in PFP is due to other risk factors which needed to be documented.[17] Therefore exclusion of these factors leads us to find the factors which caused PFP in adolescent female athlete. Which the current study determined to be: excess focus on specialization in a single sport and adolescent age.

Just like the current study Job Fransen conducted a study to find out the difference in physical fitness and gross motor coordination among boys (6-12 years old) who participated in single and multiple sports. In contrast to current study this study worked on boys only. This study concluded that boys participating in multiple sports had better flexibility, speed, strength, cardio-vascular endurance and gross motor coordination, than boys participating in single sports.[18] The results of this study highly correlate with the current study conducted, stating that participating in multiple sports is beneficial in many ways to the athlete, than single sport. Current studies goes with the literature as many studies found that there are greater chances of knee injuries in athletes who participated in single sport rather than multiple sports.[11] [10, 19] So, it is recommended to the athletes to engage themselves in multiple sports and to take breaks between their sports practicing regime to avoid such sports injuries.

CONCLUSION

Athletes who take part in a single sport have greater occurrence of anterior knee pain than those who participate in multiple sports.

Acknowledgements: Authors would extend their gratitude towards all the sports participants who gave their contribution for competition of this research work.

Limitations and Recommendations: There was less diversity in sample. Athletes were reluctant in accepting their problems, as they thought it as a norm due to lack of awareness. Non-cooperative male athletes hindered the collection of data and reduced diversity.

Further extensive and exploratory researches should be done to find out sports specific factors and pain relationships with larger sample populations. Coaches and parents should not force adolescent athlete to excel in a single sport only for material purposes. Coaches should promote the participation of athletes in multiple sports. It is recommended that as vigorous training in a single sport would cause, acute or delayed knee functional disability, therefore training hours and the number of sports should be managed according to the health concerns of the athlete.

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Original Article

Poor Apgar Score Among Neonates

Frequency of Poor Apgar Score Among Neonates Delivered by Women with Normal Versus Abnormal Cardiotocography

Aqsa Mandvia[1], Pushpa Bai[1], Raveesha Kumari[2], Nazia Wagan[3], Afshan Sultana Zia[2] and Muhammad Nadeem Chohan[4]

ABSTRACT

Objective: To compare frequency of poor APGAR SCORE among neonates delivered by women with normal versus abnormal cardiotocography.

Study Design: Prospective cohort study

Place and Duration of Study: This study was conducted at the Study was conducted at Gynae / Obs Unit - I, Dow University of Health Sciences, Karachi from January to June 2019 for a period of 6 months.

Materials and Methods: All patients who fulfilled the inclusion criteria and visited OPD of Department of Gynae/Obs Unit - I, Dow University of Health Sciences, Karachi were included in the study. After ethical approval and informed and written consent patients were divided into two groups. Group A (exposed i.e. abnormal CTG) & B (non-exposed i.e normal CTG). Outcome was checked by comparing both the groups for APGAR score at 5 minutes.

Results: Total 120 low risk pregnant patients were included. The mean age of women was 27.90+4.527 years. The mean APGAR score in group A was 5.562+1.453, while in group B the mean APGAR score was 7.083+0.577.2.

Conclusion: In this study women having normal CTG has better APGAR score in their newborns as compared to abnormal CTG. CTG is a useful and indispensable adjunct to monitor the condition of endangered fetus. The number of patients having abnormal CTG in low risk pregnancies is not negligible. Abnormal CTG necessitates cesarean section. Therefore, adjunctive methods are required to improve the sensitivity and specificity of fetal monitoring if unnecessary interventions are to be avoided.

Key Words: Cardiotocography, Low risk pregnancy, APGAR score, Neonates

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INTRODUCTION

The use of Cardiotocography (CTG) is increased in near past to reduce fetal and neonatal mortality. CTG is the graphic representation of fetal heart contractions and uterine contractions. An abnormal CTG suggests fetal distress, while normal CTG suggests normal fetal wellbeing [1].

CTG was developed in 1950 and its commercial use was initiated in 1960. Fetal monitoring can be done with various methods like fetal movement assessment, periodic fetal heart rate auscultation, continuous fetal heart rate monitoring, fetal biophysical profile, amniotic fluid analysis, fetal blood evaluation and Doppler velocimetry [2]

In 1952, Virginia Apgar MD, proposed "Apgar Score" which is predictive of poor neurological prognosis in neonates[3]. In a study by Alpaslan Kabar, et al, two groups of patients were compared based on cardiotocography, they found no significant difference was found in terms of APGAR score[4]. While a study by Bosnia Journal statistics found a significant difference (x2=3.841, p<0.05%), concluding that abnormal cardiotocography records very likely indicates presence of perinatal asphyxia[5]. Another study carried out in India institute of medical sciences also concluded that abnormal cardiotocography had no significant difference in immediate adverse neonatal outcome [6] In a study conducted in Bangladesh, the mean 5 minute APGAR score of patients with normal cardiotocography was 9.3 ± 1.2, while with abnormal cardiotocography, it was 8.6 ±1.6, p=0.014 [7].

In the current situation, almost all women are monitored Cardiotocographically, which in some cases leads to an unnecessary increase in number of caesarian sections being performed. Advantages of

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cardiotocography are generally accepted and certainly the most widely used noninvasive technique of fetal monitoring comes out from the fact that for its implementation there are no contraindications and the cardiotocography findings can be written that is documented. The drawback of electronic fetal monitoring is its high sensitivity of 81% and low specificity 33%, leading to increase false positive result.

As the local data in this regard is sparse, this study is conducted to see frequency of poor APGAR SCORE among neonates delivered by women with normal versus abnormal cardiotocography. As the population data in this regard is controversial, so this study will clarify and reduce unnecessary caesarean section and thereby reducing maternal and neonatal morbidity.

MATERIALS AND METHODS

Operational definition:

Normal CTG: When all of the following features are present.

Fetal heart rate: 110-150 beats/min Variability: 5-25beats/min, Accelerations: upward deflection from baseline, fetal heart Rate of at least 15 bpm lasting for 15sec in 20 minutes time period. Abnormal CTG: CTG was considered "ABNORMAL" when any one of the following are present

Fetal heart rate: >150 beats/min for 15 sec. Accelerations: absence of upward deflection from baseline fetal heart rate of at least 15 bpm lasting for 15 sec. Variability: beat to beat variability< 7 at 5 minutes was taken by paedriatician at the time of birth having 2 or more years of experience.

Low risk pregnancy: Pregnancy without any known disease like hypertension, diabetes, anemia, cardiac, renal, fetal growth restriction, antepartum hemorrhage, previous caesarean section as assessed by history.

This Prospective cohort study was conducted by Non probability, consecutive sampling technique at Gynae/Obs Unit - I, Dow University of Health Sciences, Karachi from 1st January to 31st May 2019 (Total 6 months duration). All patients who fulfilled the inclusion criteria and visited OPD of Department of Gynae/Obs Unit - I, Dow University of Health Sciences, Karachi were included in the study. After ethical approval and informed and written consent patients were divided into two groups. Group A (exposed ie abnormal CTG) & B (non-exposed i.e normal CTG). Outcome was assessed by comparing both groups for APGAR score at 5 mins.

Sample size was calculated by taking Poor APGAR SCORE of abnormal CTG: 8.6 Poor APGAR SCORE of normal CTG: 9.3 by using WHO calculator, considering statistics for poor APGAR SCORE in normal as 84% and abnormal as 16%, power of test =90% the total sample size was 60 in each group. The total sample size was 120.

All women having age between 20-35 years, Parity 1-4. Gestational age 37+0 to 41+6 weeks based on 1st trimester ultrasound, Singleton pregnancy confirmed by ultrasound, Cephalic presentation confirmed by ultrasound and Latent phase of labor (cervical dilation) were included in the study. Women having any chronic disease like hypertension, diabetes, renal or cardiac disease were excluded from the study. Women having the Obstetrical complications like antepartum hemorrhage, intra uterine growth restriction (assessed by history and clinical examination), history of ruptured membranes, known fetal death and multiple gestations confirmed by Ultrasound were also excluded from the study

Patients were selected according to inclusion and exclusion criteria from labor room of Civil Hospital Karachi, and was followed till delivery and APGAR SCORE was assessed by paedriatician at the time of birth. Their case files were reviewed and patients were divided into two groups according to cardiotocography; patient with abnormal CTG was taken as exposed, while those with normal CTG will be taken as non-exposed. Pregnant women 'exposed' with abnormal cardiotocography were followed till delivery of baby. Pregnant women 'unexposed' with normal cardiotocography were also followed till delivery of baby. APGAR score of neonates at 5 minutes, and birth weight was also recorded.

Data was entered and analyzed by using SPSS version 20. Numerical variables like maternal age, parity, height, weight, gestational age, duration of labor (hours), birth weight, and APGAR score at 5 minutes was presented as mean and standard deviation. Categorical variables like mode of delivery, meconium staining and parity was presented as frequency and percentages.

The APGAR SCORE between two groups was compared using Chi square test. Level of significance was taken as <0.05. Effect modifiers such as maternal age, parity, body mass index (BMI), duration of labor (hours), meconium staining of liquor, mode of delivery, birth weight, was controlled through stratification. Post stratification Chi square test was also applied.

RESULTS

A total of 120 low risk pregnant patients were selected to conduct this study. Patients were divided into two groups, group A includes patients with abnormal CTG, while in group B patients with normal CTG were included. The mean age of 27.90+4.527 years. The descriptive statistics of age is presented in Table-1. In group A 23 patients (19.2%) were nulliparous and 37 (30.8%) were multiparous while in group B 18 patients (15%) were nulliparous and 42(35%) were multiparous. In group A gestational age was 38-39 weeks in 30 patients (25%) and was 40- 41 weeks in 30(25%), while in group B gestational age was 38-39 weeks in

19(15.2%) and was 40-41 weeks in 41(34.8%), as shown in Table-1

In group A the mean duration of labor was 2.550+1.049 hours, while in group B the mean duration of labor was 2.008+0.895 hours, as shown in Table-2 In group A the meconium staining of liquor was seen in 30(25%), while in group B the meconium staining of liquor was seen in 22(18.3%), as shown in Table-2 In our study the mean APGAR score in group A was 5.562+1.453, while in group B the mean APGAR score was 7.083+0.577, as shown in Table-3. Stratification of APGAR Score (at 5 minutes) between Exposed (abnormal CTG) & Non exposed (normal CTG) groups with respect to age is shown in table 4. Stratification of APGAR Score (at 5 minutes) between Exposed (abnormal CTG) & Non exposed (normal CTG) groups with respect to Gestational age is shown in table 5.

Table No.1: (Age, Parity, Gestational age and height Distribution with respect to groups)

Age Groups	Age (normal) CTG)	Age (Abnormal CTG)	Overall
20..28 year.1	42(35%)	19(15.2%)	61(50.2%)
29-35 years	18(15%)	4 1(34.8%)	59(49.8%)
Total	60(50%)	60(50%)	120(100%)
Mean ± SD	25.98±4. 119	29.84±4.11 1	27.90±4.527
Parity Groups	Parity (Normal CTG)	Parity {A bnom1a l CTG)	Overall
Multi parous	37(30.8%)	42(35%)	79(65.8%)
Nulli parous	23(19.2%)	18(15%)	41(34.2%)
Total	60(50%)	60(50%)	120(100%)
Gestational age (weeks) Groups	Gestational age (Normal CTG)	Gestational age {A bnom1a l CTG)	Overall
38-39	30(25%)	19(15.2%)	49(40.2°/e)
39.1-40	30(25%)	4 1(34.8%)	71(59.8%)
Total	60(50%)	60(50%)	120(100%)
Mean + SD	39.050+ (l.581	39.245+0.54 1	39.148+ (l.586
Height (meters) Groups	Height (Normal CTG)	Height (Normal CTG)	Overall
1-4-1.6	32(26.66%)	45(37.5%)	77(64. 16%)
1.7-1.8	28(23.34%)	15(12.5%)	43(35.84 0)
Total	60(50%)	60(50%)	120(100%)
Mean+, SD	1.602+0.143	1.652+0.13I	1.582+(l. 138

Table No.2: (Weight, BMI, and Duration of labor and Meconium staining of liquor Distribution with respect to groups)

Weight (Kilograms) Groups	Weight (Norma l CTG)	Weight (Abnormal CTG)	Overall
55-78	52(43.34%)	48(40%)	100(83.34%)
79-100	8(6.66%)	12(10%)	20(16.66%)
Total	60(50%)	60(50%)	U0{100%)
Mean+5D	67.07 +9.359	69.47+13.291	68.27+ 11.509
BMI {Kg/m1) Groups	BMI {Norma l CTG)	BMI {Abnormal CTG)	Overall
18-26	36(30%)	44(36.66%)	80(66.66%)
27-33	24(20%)	16(13.36%)	40(33.36%)
Total	60(50")	60(50%)	120{100%)
Mean+5D	23.310+3.787	25.472+3.08S	24.39l+3.606
Duration of labor hours) Groups	Duration of labor {Normal CTG)	Du ration of labor {Abnormal CTG)	Overall
1-2	30(25%)	45(37.5%)	75(62.5%)
3-4	30(25%)	15(12.5%)	45(37.5%)
Total	60(50")	60(50%)	U0(100%)
Mean;t5D	2.55O+1.049	2.008+0.895	2.279;t1.008
Meconium staining of liquor Groups	Meconium staining of liquor {Normal CTG)	Meconium staining of liquor {Normal CTG)	Overall
No	30(25%)	38(31.7%)	68(56.7%)
Yes	30(25")	22(18.3")	52(43.3"1
Total	60(50")	60(50%)	UO(l00%)

Table-3 (Mode of Delivery, Birth weight and APGAR score Distribution with respect to groups)

1ode of Delivery Groups	Mode of Delivery Normal CTG)	Mode of Delivery (Abnormal CTG)	Overall
Caesarean	20(16.7%)	1 1(9.2%)	31(25.9o/o)
Vaginal	40(33.3%)	49(40.8%)	89(74.1°/o)
Total	60(509/o)	60(50°/o)	120(100%)
Birth weight (grams)Groups	Birth weight Normal CTG)	Birth weight (Abnormal CTG)	Overall
2-3.5	22(18.33%)	7(5.83%)	29(24.l 6o/o)
3.6-5	38(3 1.67%)	53(44.17%)	91(75.77°/o)
Total	60(509/o)	60(50%)	120(100°/o)
Mean ± SD	3.735± 1.00 1	4.255+- 0.745	3.995+- 0.916
APGAR score (at 5 minutes) Groups	APGAR score (Abnormal CTG)	APGAR score normal CTG)	Overall
2-5	20(16.66%)	0	20(16.66%)
5-1-8	40(33.34%)	60(50%)	100(83.34%)
Total	60(509/o)	60(50%)	120(100°/o)
Mean+SD	5.562±1.453	7.083+- 0.577	6.323±1.340

Table No.4: (Stratification of APGAR Score (at 5 minutes) between Non Exposed (Normal CTG) & exposed (Abnormal CTG) groups with respect to age :(n=120)

Age Group30s	Groups	APGAR Score (at 5 minutes) Groups		Total	P value
		2-5	5.1-8		
20-28 years	Group A Exposed (Abnormal CTG)	12(10%)	30(25%)	42(35%)	0.450
	Group B. Non Exposed (Normal CTG)	0	21(17.5%)	21(17.5%)	
29-35 years	Group A exposed (Abnormal CTG)	7(5.84%)	11(9.16%)	18(15%)	
	Group B. non Exposed (Normal CTG)	0	39(32.5%)	39(32.5%)	
Total		19(15.84%)	101(84.16%)	120(100%)	

Table No.5: (Stratification of APGAR Score (at 5 minutes) between Exposed (abnormal CTG) & Non exposed (normal CTG) groups with respect to Gestational age :(n=120)

Gestational age (weeks) Groups	Groups	APGAR Score (at 5 minutes) Groups		Total	P-Value
		2-5	5.1-8		
38-39	Group A	6(5%)	24(20%)	30(25°/o)	0.279
	Group B	0	19(15.84%)	19(1S.84°/o)	
39.1-40	Group A	15(12.5%)	15(12.5%)	30(250/o)	
	Group B	0	41(34. 16%)	41(34.16°/o)	
Total		60(50°/o)	60(50%)	120(100%)	

DISCUSSION

CTG and ultrasonography are the essential tools for the obstetricians. The role of CTG is increasing for the detection of fetal distress and possible Caesarian section. In 20th century about 74% pregnancies were monitored by CTG. In high risk pregnancies abnormal CTG is higher as compared to low risk pregnancies ie about 7.8%. Mothers having abnormal CTG delivers 3 times higher asphyxiated newborn as compared to normal CTG women that has a higher chance to develop cerebral palsy. There is 7 times more chance of neonatal death in case of abnormal CTG. The wide use of CTG is resulting in higher rates of Cesarean Section. A higher Cesarean Section rate (72.72%) was observed in a study in the presence of pathological pattern of CTG.

An international study revealed that intrapartum fetal heart rate variability is very important in detecting fetal distress and it can be used as predictive element of APGAR score [8]. In our study the mean APGAR score in normal CTG group was 5.56, while it was 7.08 in neonates whose mothers CTG was abnormal. An unsimilar study concluded that the APGAR score was lower in neonates whose mothers CTG was abnormal as compared to mothers whose CTG was normal. They concluded that CTG is better screening tool for fetal distress. Abnormal CTG can predict poor APGAR score at five minutes. Women having the abnormal CTG had higher Caesarean section and their newborns needed the resuscitation at birth [9]. In another un-similar study there were mixed results ie out of 249 newborns 117 had < 7 APGAR score at 5 minutes whose mother had abnormal CTG, while 128 neonates had normal APGAR score at 5 minutes [10].

In another study abnormal CTG was associated with higher neonatal admissions at NICU as compared to normal CTG i.e. (75.7% v/s 22.8%). Cesarean section rate was also higher in abnormal in non-reactive CTG group as compared to normal CTG group ie (87.8% versus 20.5%)[11]. Neonatal admission to neonatal intensive care (NICU) was required in 76.2% of patients with an abnormal CTG test result while only 36.5% of patients with the normal CTG test required NICU admission [12].

Another study had the similar results showing higher NICU admission in nonreactive group as compare to reactive group (75.7%v/s 22.8%). This study concluded that there is statistically significant role of reactivity of CTG and NICU admission. (P< 0.001)[13]. Another study concluded that CTG does not identify all infants at risk of Neonatal Encephalopathy, so further investment in new approaches to fetal surveillance in labor is needed[14].

In our study the mean age of mothers was 27.90+4.527 years. In group A gestational age was 38-39 weeks in 30 patients (25%) and was 40- 41 weeks in 30(25%), while in group B gestational age was 38-39 weeks in 19(15.2%) and was 40-41 weeks in 41(34.8%). In group A 23 patients (19.2%) were nulliparous and 37 (30.8%) were multiparous while in group B 18 patients (15%) were nulliparous and 42(35%) were multiparous.

In a similar study the mean age of mothers was 25.61±5.65 years varied from 19 to 38 years in normal CTG and 24.82±3.81 years varied from 19 to 38 years in abnormal CTG. Majority patients were prim parous in both groups (56.0% vs. 52.0%). At 1-minute APGAR score >7 was found 94.0% babies in normal CTG and 78.0% in abnormal CTG.

CONCLUSION

In this study women having normal CTG has better APGAR score in their newborns as compared to abnormal CTG. CTG is a useful and indispensable adjunct to monitor the condition of endangered fetus. The number of patients having abnormal CTG in low risk pregnancies is not negligible. Abnormal CTG necessitates cesarean section. Therefore, adjunctive methods are required to improve the sensitivity and specificity of fetal monitoring if unnecessary interventions are to be avoided.

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

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Original Article

Identifying Frequency of Dementia in Parkinson's Disease

Dementia in Parkinson's Disease

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ABSTRACT

Objective: The objective of the study was to determine the frequency and characteristics of dementia in Parkinson's disease.

Study Design: A descriptive / cross sectional study

Place and Duration of Study: This study was conducted at the Department of Medicine, Liaquat College of Medicine & Dentistry and Neuro Clinic & Falij Care, Karachi from October 2018 to March 2019.

Materials and Methods: This study was conducted on 35 patients presenting with memory impairment at the obtaining ethical approval from IRB-Liaquat College of Medicine and Dentistry. Adult patients of more than 18 years of age presenting with multiple cognitive deficits with a score of 23 or less out of 30 on Folstein mini-mental state examination were included in the study. The results were tabulated and analyzed using SPSS-21.

Results: A sample of 35 cases (23 males and 12 females) with PD was included. The mean age of patients was 57.4 ± 13.9 years and range between 40-85 years. Out of 35 cases six (17.1%) had PD with dementia (PDD); while 29 (82.85%) out of 35 were non-demented. Out of six demented patient's five (83%) were males and one (17%) was female. The average values of outcome of different variables were: Time Orientation 3.1 ± 1.8 , Registration 1.7 ± 1.3, Attention and Calculation 1.4 ± 1.7, Recall 1.4 ± 1.4, and Language 4.5 ± 3.2. The average score of Mini Mental Score Examination was 15.3 ± 10.36.

Conclusion: In conclusion, this study revealed that the frequency of developing dementia in PD was less than one third in study sample.

Key Words: Dementia, Parkinson's disease, Prevalence, Non-motor symptoms, Parkinson's disease dementia, Cognition

Citation of article: Malik A, Taimuri BA, Saeed S, Shaheen S, Ahmed K, Khan MA. Identifying Frequency of Dementia in Parkinson's Disease. Med Forum 2021;32(6):125-128.

INTRODUCTION

Dementia is a general term that illustrates the cognitive decline in brain function. There are numerous causes for this condition like Alzheimer's disease, vascular dementia, Parkinson disease, Huntington disease etc.[1] Parkinson's disease (PD) is a neurological ailment that manifests itself in a variety of ways. Non-motor symptoms (e.g. cognitive impairment, sleep difficulties, depression, and hallucinations) are now commonly recognized as part of the clinical spectrum, in addition to the traditional motor aspects (i.e. tremor, rigidity, bradykinesia, and postural instability).[2]

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Parkinson's disease (PD) is characterized by a clinical trial of bradykinesia (slowness of movement), rigidity (stiffness), and localized tremor, which can occur even while the patient is at rest. Aside from these key symptoms, PD has a wide range of clinical manifestations.[3]

Parkinson's disease is the second most common cause of age-related neurodegeneration. It is estimated that 10 million people worldwide suffer with Parkinson's disease.[4] The reported prevalence of Parkinson's disease (PD) in different parts of the world varies considerably.[5] About 450,000 people in Pakistan suffer from PD in a population of about 182 million that accounts about 219 individuals with PD in every 100,000 individuals. Recently, reported that more than 600,000 people are living with PD in Pakistan.[6]

Specifically, the presence of dementia in (PD) is perhaps the main non-motor symptom, particularly in further advance illnesses.[2] From early to late stages of the disease, up to 90% of PD patients report non-motor symptoms (NMS). Mukhtar S et al. reported that NMS is very common in PD in our population. Compared with men, certain NMS are more common in women. Autonomous diseases such as constipation (56%), nocturia (49%) and memory problems (45%) are the most common NMS, while 35% of patients report urgency.[7,8] It is worth noting that this decline in

cognitive capabilities is related to the increase in mortality, the hindrance of prosperity, the burden of the number of parents, and the increase in clinical considerations and supervision costs.[9] Therefore, due to the huge impact, the risk of PD dementia is usually an important point for patients and their families.

Information about which patients will eventually develop dementia may be useful for the patient, caregiver and physicians to plan future treatment. The key to dealing with these patients' cognitive deterioration, however, is early detection. The non-motor symptoms are also considered to be a problem of severe disease and thus routinely ignored in early disease by practicing physicians. There is a scarcity of literature in Pakistan on many aspects of dementia. The impact of this condition has been underestimated due to a lack of awareness and inadequate study.[1]

MATERIALS AND METHODS

A cross sectional study was conducted on 35 patients presenting with memory impairment at the Department of Medicine, Liaquat College of Medicine & Dentistry and Neuro Clinic & Falij Care, Karachi from October 2018-March 2019 after obtaining ethical approval from IRB-Liaquat College of Medicine and Dentistry. Adult patients of more than 18 years of age presenting with multiple cognitive deficits with a score of 23 or less out of 30 on Folstein mini-mental state examination were included in the study. Informed consent was given by the next of kin. Patients with acute delirious state, electrolyte abnormalities of hyponatremia and hypernatremia, hypoglycemia or hyperglycemia, hepatic encephalopathy, uremic encephalopathy were excluded.

After addressing the ethical issues (consent, confidentiality) all patients enrolled in the study were undergo a detailed history including history of presenting illness, past history , family history drug history and through physical and neurological examination on a Performa. The results were tabulated and analyzed using SPSS-21 (Statistical package for social sciences version 21). Discrete variables like gender, impaired of memory, impairment of other cognitive domains, past history of diseases, motor examination, planters, etc. were expressed by frequencies & percentages whereas age, pulse, blood pressure, laboratory investigations & MMSE were presented in Mean $\pm$ SD.

RESULTS

A total of 35 people with Parkinson's disease were chosen, comprising 23 men and 12 women. The mean age of patients was 57.4 ± 13.9 years and range between 40-85 years (Table-1). Six (17.1%) of the 35 individuals had PD with dementia (PDD), while the remaining 29 (82.85%) were non-demented. (Figure-1).

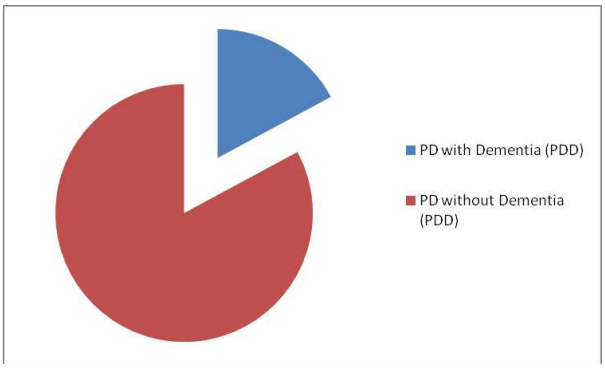

Figure No.1: Parkinson Disease (PD) with Dementia & without Dementia

Table No.1: Baseline Characteristics of Study Participants

Variable	N	%
Impairment of Other Cognitive Domain		
Onset of Symptoms		
Acute	13	37.1
Insidious	22	62.9
Progression of Symptoms		
Yes	17	48.6
No	18	51.2
Past History - DM		
Yes	09	25.7
No	26	74.3
Past History - HTN		
Yes	12	34.3
No	23	65.7
Past History - Smoking		
Yes	06	17.1
No	29	82.9
Past History - Alcohol & Other Substances Abuse		
Yes	05	14.3
No	30	85.7
Past History - Cerebrovascular Disease		
Yes	16	45.7
No	19	54.3
Family History of Dementia		
Yes	05	14.3
No	30	85.7
Gait		
Normal	19	54.3
Abnormal	16	45.7

Five (83%) of the six demented patients were males, whereas one (17%) was female (Figure-2). On the basis of the existence or absence of dementia features among the patients, we separated the sample into two groups. The majority of those with PDD developed dementia symptoms after the sixth decade. Four (64%) of the six people with dementia were between the ages of 61 and 75, while the remaining two (36%) were over 75, indicating that older people with PD have higher

memory impairment than younger people. When compared to Parkinson's disease patients with dementia, the duration of Parkinson's disease was fewer than 10 years in all non-demented patients. The average values of outcome of different variables were: Time Orientation 3.1 ± 1.8 , Registration 1.7 ± 1.3, Attention and Calculation 1.4 ± 1.7, Recall 1.4 ± 1.4, and Language 4.5 ± 3.2. The average score of Mini Mental Score Examination was 15.3 ± 10.36.

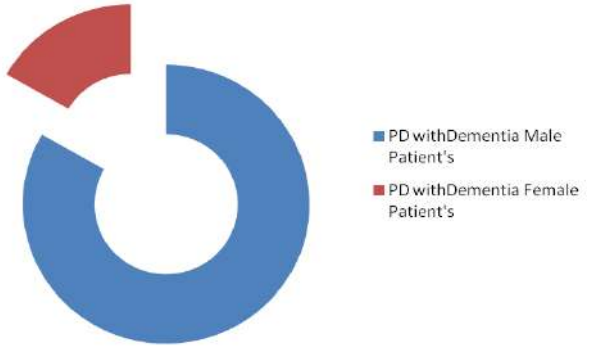

Figure No.2: Parkinson Disease (PD) with Dementia- Gender Ratio

Table No.2: Impairment of Other Cognitive Domain of Study Participants

Variable	n	%
Language		
Yes	25	71.4
No	10	28.6
Motor Activities		
Yes	26	74.3
No	09	25.7
Sleep		
Yes	22	62.9
No	13	37.1
Behaviour		
Yes	21	60
No	14	40
Incontinence		
Yes	12	34.3
No	23	65.7
Activity of Daily Living		
Yes	32	91.4
No	03	8.6

DISCUSSION

Compared with developing countries (4-5%), the burden of neurological diseases in developed countries (10-11%) is higher, and the overall burden of neurological diseases in the world is about 6.5%. Neurological illnesses are a leading cause of death and disability, with stroke, dementia, migraine, epilepsy, and triple tetanus being the most common. Like developed countries, the incidence of neurological illnesses is rising in developing countries due to a variety of causes including urbanization, higher life expectancy, lifestyle changes, and improved diagnostic facilities.[10]

Patients with idiopathic Parkinson's disease, with an average age of 57 years, were included in this study. We found that almost 17% of the study participants with PD developed dementia. LMICs are home to 58 percent of the dementia population, which is expected to increase to 71 percent by 2050. In Pakistan, there have been no population-based reports on dementia prevalence. [11,12] The pathophysiology of dementia in PD comes out to be of a various factors, include sub cortical and cortical neuronal populations. Our observation reveals that the patients with dementia having PD who had an early onset of symptoms (age > 60 years) showed lower score of the mini mental score examination (MMSE). There was a significant difference in MMSE scores between patients with PD who were younger than 60 years old. The Sydney multi-center study represents the main extensive natural history study to track the most recently diagnosed PD patients (with a normal time of beginning of roughly 60 years) and the clinical history of the next 20 years. Based on the evaluation data 10-13 of these patients at 5, 10, 15 and 20 years, the authors report that at the time of the final review (approximately 80 years old), 25 of the remaining 30 patients (83%) The initial research has developed into dementia.[13,14] The MMSE scores of patients with Parkinson's disease who were younger than 60 years old differed significantly.[15], while in our study keeping in view that our number of participants are not comparable to the Indian study but had late onset of dementia among the Parkinson's patients, with the mean age of patients was 57.4 ± 13.9 years.

In this study, patients with PD who also had dementia had a more pronounced functional decline and worse clinical state than those who did not have dementia. A difference was also found between the happening of dementia and motor conciliation in patients with PD, this finding is comparable to the study previously reported from the Indian population[15]. The finding that dementia happens all the more commonly in patients with progressive movement disorders is consistent with past work.[16,17] We found 05 out 35 patients had a family history of dementia. Supplementary family data from Australian cohort showed that only 4 of the 18 patients had PD family background, and 3 of them did not progress dementia.[18] More than half of patients report cognitive impairment. A 16-year outcome evaluation report of the Denbighshire cohort stated that Parkinson's disease has mild cognitive impairment and is an important predictor of PDD progression.[19] Burn and Alves found that the PIGD motor subtype is associated with a faster rate of cognitive decline in PD and may be considered a risk factor for incident dementia in PD.[20,21]

CONCLUSION

In conclusion, this study revealed that the frequency of developing dementia in PD was less than one third in study sample. This study also found a significant number of males developed the dementia in PD as compared to females.

Author's Contribution:

Concept & Design of Study:	Abdul Malik
Drafting:	Bushra Ammad Taimuri, Shabana Saeed
Data Analysis:	Sadaf Shaheen, Kamal Ahmed, Muhammad Athar Khan
Revisiting Critically:	Abdul Malik, Bushra Ammad Taimuri
Final Approval of version:	Abdul Malik

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

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Original Article

Antioxidant Effects of Methylcobalamin on Cerebellar Granule Cells (A 6 Week Quantitative Study in Albino Rats)

Tazeen Kohari

ABSTRACT

Objective: As there is deficient text on the regenerative capacity of Methylcobalamin on neuronal tissue therefore this original study was carried out to document its effects on granule cell degraded by lithium carbonate.
Study Design: Observational Experimental study
Place and Duration of Study: This study was conducted at the Animal House of Basic Medical Sciences Institute (BMSI) JPMC, Karachi from 1st June and ended at 14th July 2013.
Materials and Methods: 15 male albino rats were selected weighing 195-200 grams and divided according to the treatment duration of the research was 6 weeks. Group A had 5 animals on lab diet, Group B consisted of 5 animals on lithium carbonate .Lithium carbonate (Adamjee pharmaceuticals) was given 25 mg/kg/day in saline once every day for six weeks. Group C had 5 animals on Injection Methylcobalamin (Amson vaccines and pharmaceuticals) 200 µgkg/day / intraperitoneally for 6 weeks.
Results: Group C showed restoration of the number of granule cells
Conclusion: Our present study proved that Methylcobalamin plays a vital role as an antioxidant vitamin
Key Words: Antioxidant, Granule cell, Scavenger, Superoxide radical

Citation of article: Kohari T. Antioxidant Effects of Methylcobalamin on Cerebellar Granule Cells (A 6 Week Quantitative Study in Albino Rats). Med Forum 2021;32(6): 129-131.

INTRODUCTION

Neuronal cell stabilizer Methylcobalamin [1] discovered more than seventy years ago [2] is available in active form of cobalamin a vitamin essential for many cellular functions like DNA synthesis.[3]It augments the vascular endothelial cell metabolism and antioxidant capacity of nerves.[4]

VitaminB12 decreases the chances of central nervous system degeneration[5]and it is a potent scavenger of superoxide radicals.[6]

The beneficial effects of vitamin b12 are well documented and its role is appreciated in reversal of cerebellar disease. [7.]

Cerebellum is considered as a focal structure responsible for major Central nervous system disorders,[8] it is the major part of hindbrain[9], consisting of two cerebellar hemispheres each hemisphere comprises a white and gray matter.

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The gray matter has three layers the outer molecular layer middle, Purkinje cell layer and innermost is the granule cell layer, [10] and it consists of 99 percent of granule cells .[11]

Lithium destroys cerebellar granule cells.[12] which leads to irreversible cerebellar damage.[13]

MATERIALS AND METHODS

MY experimental research was conducted at Basic Medical sciences institute JPMC Karachi for a period of six weeks. Fifteen male albino rats weighing 190-200 grams were kept in the animal house for six weeks. The selected albino rats were randomized into three groups .Group A was the control on lab diet, Group B received Lithium carbonate taken from Adamjee Pharmaceuticals at a dose of 25 mg/kg/day[14]in saline solution once every day for six weeks, Injection Methylcobalamin 200mcg/kg/day IP [15] for six weeks. The albinos were fed laboratory chow and then they were decapitated. The brain was then removed and hindbrain was identified, then the cerebellum after removal from the surrounding structures was preserved granule in haematoxylin and eosin and the other half in formal thionin. Section 4 microns thick were made and stained for micrometry under light microscope. My results of granule cells count were done with counting reticule for all three groups. Analysis of the data was completed by using student T test.Results were expressed as mean SEM $p<0.001$ was considered statistically highly significant and calculations then

were documented by using computer software SPSS version 16.

RESULTS

The granule cells count of Group C at 6 weeks was highly significantly increased as compared to that of in group B in which the granule cells count were highly significantly decreased p<.001 as compared with Group A and Group C.

Table No.1: Mean values of the cerebellar Granule cells count (cells/µm)^2 among various groups

Major Groups	No. of Subjects	6th Week		P-Value
		Mean	SEM	6th Week
A2 Normal Diet (ND)	5	68.4	0.19	0.001
B 2ND + Lithium Carbonate	5	49.2	0.23	0.001
C2 ND + Lithium + Inj. Methy	5	65.4	0.14	0.001

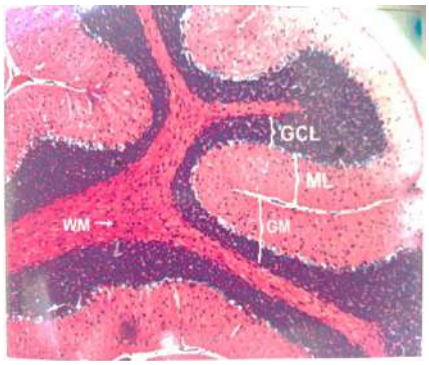

Figure No.1: Haematoxylin and eosin stained 4µ section of cerebellar cortex of Group A 2 (animals on lab diet) shows a highly significantly increased granule cells in GCL

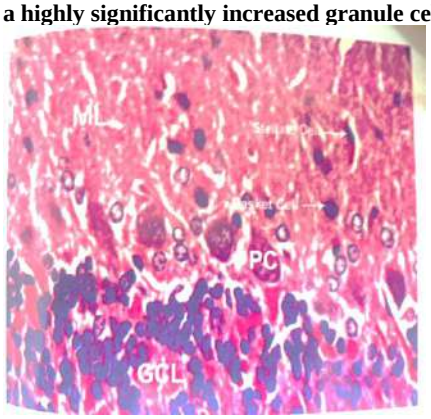

Figure No.2: Haematoxylin and eosin stained 4µ sections of Group B2 (animals on lab diet +Lithium carbonate) shows highly significant decreased granule cell count and apoptotic granule cells

A highly significantly increased granule cells count was observed in Group A at six weeks. A highly significantly decreased granule cells count was documented in animals of Group B treated with Lithium carbonate at six weeks. The Group C showed a highly significantly increased granule cells count as the animals were injected with Methylcobalamin

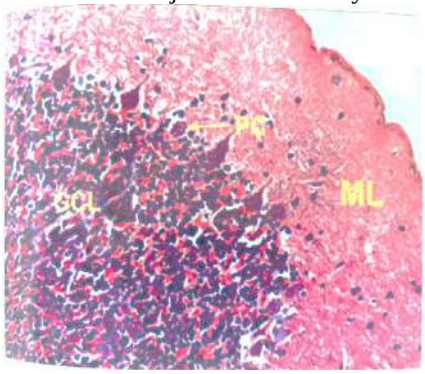

Figure No.3: Haematoxylin and eosin stained 4µsections of Group C2 shows a highly significantly(animals on lithium carbonate and methylcobalamin) increased granule cells count and normal morphology of granule cells

DISCUSSION

Cerebellum is the key stone for co-ordination, muscle tone and equilibrium. It consists of two cerebellar hemispheres .The cerebellar hemispheres has three well defined cerebellar cortex which are outer Molecular layer ,the middle Purkinje cell layer, the innermost is the Granule cells layer.[16]

The innermost Granule cells are the largest group of cerebellar neuronal cells. The Granule cells in the innermost layer of cerebellar cortex form the thickest neuronal layer of the cortex and are essential for motor learning. They have a small cell body with few dendrites, receiving input from a single mossy fiber.[17]

My research showed a paucity of granule cells count in Lithium treated group B as my findings are in agreement with Yousafani[18] (et al 2020) they in their study have proved that lithium causes cellular oxidative stress due to lysosomal membrane leakage.

Lysosomal disruption enhances reactive oxygen species (ROS).This ROS causes mitochondrial damage leading to apoptotic or cell death[19].

Granule cell degradation[20] may be due to increment of Caspases 3 causing the neuronal nucleus catastrophe and death.

Wang and Xu[21] have documented in their study that Methylcobalamin is a scavenger of reactive oxygen species which decreases intracellular oxidative stress and neuronal cell apoptosis, the same is in accordance with our experimental research as we found an increase of granule cells count in group C in which my animals ingested lithium carbonate and they were injected with Methylcobalamin. This may be due to the fact that vitamin B12 treatment obviously decreased the amount of Caspases in neurons, resulting in decreased cell death. Our research proved that the vitamin B12-treated

group C had attenuated Lithium induced neuronal cell apoptosis.

CONCLUSION

Our study proved the beneficial effects of Methylcobalamin decreased the toxic effects of light metals like lithium carbonate on cerebellar cortex. This study plays a role model for neurologists to prescribe Methylcobalamin frequently in cerebellar neuronal diseases.

Author's Contribution:

Concept & Design of Study:	Tazeen Kohari
Drafting:	Tazeen Kohari
Data Analysis:	Tazeen Kohari
Revisiting Critically:	Tazeen Kohari
Final Approval of version:	Tazeen Kohari

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

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Original Article

Severe Acute Malnutrition in Children

Clinical Profile and Outcomes of Children Aged 6 to 59 Months Admitted to a Tertiary Care Hospital with Severe Acute Malnutrition

Abdul Hameed Radhan, Ghulam Shabir Laghari, Saeed Ahmed Shaikh, Saroop Chand, Mushtaque Ali Shah and Muhammad Touseef

ABSTRACT

Objective: The present study was conducted with the objective of determining the prevalence of SAM and the clinical profile associated with SAM like risk factors, co-morbid conditions, type of SAM and to find out the outcome of SAM after hospitalization and treatment.

Study Design: Hospital based prospective observational study

Place and Duration of Study: This study was conducted at the department of Pediatrics, Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan from July 2019 to June 2020.

Materials and Methods: 50 SAM children of aged 6 months to 59 months were included into the study after meeting the inclusion criteria. Historical, clinical and laboratory data were recorded in a predesigned proforma. Data were analyzed using appropriate statistical method.

Results: The prevalence of severe acute malnutrition is 2.7%.The mean age of study population is 21.86 ± 14.85 months.68%were male and 32% were female out of the 50 SAM children. No edematous SAM were more (56%) than the edematous SAM (44%).Highest incidence of SAM were in the age group of 6 -24 months (68%).Almost all the cases (96%) belonged to low SES.78% mothers were either illiterate or primary school educated. EBF up to 6 months of age were only in 16% of cases. Major clinical presentation was diarrhea (70%), fever (68%), anorexia (66%), ARI (56%), vomiting (38%), eye problems (38%).Comorbid conditions associated with SAM were anemia (86%), pneumonia (42%), worm infestation (40%) followed by UTI (38%) & tuberculosis (16%). Recovery rate is 54%. Mean hospital stay is 10.28± 5.84 days. 2 children (4%) died during hospital stay.

Conclusion: Severe acute malnutrition is the most severe life threatening form of malnutrition which requires urgent attention. Timely identification and intervention of various risk factors, clinical and comorbid condition is likely to break the vicious cycle of under nutrition, infection and SAM and thereby improve outcome.

Key Words: Severe acute malnutrition, female literacy, socio-economic status, wasting

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INTRODUCTION

Malnutrition in children is the most serious health problem affecting globally till twenty first century with much more prevalent in the developing countries including Pakistan. Many children die every day directly or indirectly from malnutrition. With proper attention and nutritional therapy most of these deaths can be prevented.[1]

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Severeacute malnutrition (SAM) is an unique type of severe malnutrition. It is the most severe and life threatening form of malnutrition in children and is responsible for high morbidity and mortality among malnourishedchildren.[2] Globally approximately 19 million children under five years of age suffered from SAM in 2015.[3] The World Health Organization (WHO) has recommended this special classification for identifying and managing children with life threatening malnutrition. Severe acute malnutrition is defined as presence of any of the following I) weight for height/length below-3 standard deviation (SD or Z score) of the median WHO growth reference ii) presence of bipedal nutritional edema or iii) mid upper arm circumference below 115 mm in the age group of 6 months to 59 months.[4] A vast majority (over90%) of children with SAM is located in south and southeast Asia and Sub Saharan Africa. India has the greatest population of severely malnourished children in the world and accounts for over 20% of under-five childhood death every year and around 2.1 million children in this country do not survive to celebrate their

first birthday.[5]According to National Family Health Survey 4 (NFHS-4, 2015 -2016) report, in Pakistan, 7.4% of malnourished children are severely wasted (weight for height < -3 SD)and in Sindh, 6.2% of under five children are severelywasted.[6] Since wasting denotes acute malnutrition, these children are said to have severe acute malnutrition. Better clinical characterization, triage and appropriate treatment of complications on admission along with nutritional therapy and targeted supportive treatment as outlined in the WHO protocol is associated with improved outcome.[7]Clinical profile of severe acute malnutrition is different from place to place or region to region. As the underlying clinical factors, co morbidities and health system infrastructure differ in places and countries, understanding of the child health profile in different places will help to enable proper targeting and prioritizing of intervention and resource allocation.[8]There is wide a variation of spectrum of nutritional disorders in this southern Assam, India, a geographically landlocked region with population of diverse ethnicity, multilingualism, religion and cultural practices with the rest of the country.

Inspite of significant economic improvement of Pakistan, prevalence of malnutrition specifically severe acute malnutrition is significantly high. According to NFHS-4(2015 -2016) report, 7.4% of malnourished children are severely wasted in is 6.2%.Clinical profile of acute severe malnutrition (SAM) is different from place to place. Understanding of child health profile in different geographical area will help to prioritize intervention and resource allocation.

MATERIALS AND METHODS

This hospital based prospective study was carried out in the department of Pediatrics, Liaquat University of Medical and Health Sciences, Jamshoro, Pakistan from July 2019 to June 2020. A total of 50 children of age 6 months to59 months admitted in the department for severe acute malnutrition related complaints were included for study. The geographical locations of the study population were Barak Valley, Assam and neighboring states. The children were enrolled for the study after satisfying the following inclusion and exclusion criteria. Inclusion Criteria: (i) Wt for ht/length< - 3 SD or Z score of median WHO growth reference. (ii) MUAC < 11.5 cm (iii) Nutritional edema of feet. Exclusion Criteria: (i) Children with non nutritional causes of SAM. (ii) Children with congenital anomalies, mental retardation, cerebral palsy, chronic renal diseases, congenital chronic hemolytic anemia. Informed consent of parents was taken before inclusion to the study. Details clinical and laboratory parameters were recorded in a pre designed proforma. Anthropometry was done with electronic weighing machine with sensitivity of ±10 gm, infant meter and stadiometer, narrow flexible no stretchable measuring tape. Z score was calculated using WHO MGRS standard deviation chart.9 Laboratory tests like blood sugar(R), hemoglobin level, serum electrolytes, TC, DLC, X-Ray chest, mantoux test, stool and urine for routine and culture were routinely done. Other specific tests were done whenever necessary. Therapeutic management of all the cases was done according to the protocol of WHO.[1,10]

Discharge criteria. SAM cases were discharged when they met the following criteria.

1. Satisfactory weight gain i.e. >15% of admission weight.
2. Edema resolved.
3. Return of good appetite.
4. Medical complications treated.

Statistical Analysis: Statistical analysis of data was done using Statistical Package for Social Sciences (SPSS 16.0 version).

RESULTS

Prevalence of SAM. The overall prevalence of severe acute malnutrition in our study population is2.7%.Socio demographic profile, baseline characteristics, Clinical profile and outcome are shown in Table 1, 2, 3.

Table No.1: Distribution of patients according to baseline characteristics (n = 50)

1. Gender Male Female	***n* (%)** 34(68) 16(32)
2. Age in months (mean) 6 -12(9.2) 13 -24 (16.3) 25 -36 (33.8) 37 -48 (45.7) 49 -59	 18 (36) 16 (32) 8 (16) 8 (16)
3. Religion Hindu Islam Christian	 21(42) 28(56) 1 (2)
4.Socio economic Status Lower Upper lower Middle Upper	***n* (%)** 10(20) 38(76) 2 (4) 0 (0)
5.Parental literacy **Illiterate/upto Primary.** Mother Father **Upto high school** Mother Father	 39(78) 20(40) 11(22) 30(60)

Table No.2: Distribution of patients according to Clinical profile (n = 50)

1.Risk factors *n*(%)	**2.Type*n* (%)**	**3.Clinical Presentation *n*(%)**	**4.Co-morbity *n*(%)**
Low SES 48(96) No EBF 42(84) Low maternal education 39(78) Delayed & thin complementary feed 35(70) Incomplete immunization 35(70)	Non edematous 31(62) Edematous 19(38)	Diarrhoea 35(70) Fever 34(68) Anorexia 33(66) ARI 28(56) Vomiting 19(38) Eye problem 19(38) Hypoglycemia 7(14)	Anemia 43(86) Pneumonia 21(42) Worm infestation 20(40) UTI 19(38) TB 8(16)

Table No.3: Outcome

Recovery (Wt gain >15% of admission wt) *n*(%)	Non respondent (Wt gain <10gm/kg/day *n*(%)	Average Wt gain gm/kg/day	Defaulters *n*(%)	Duration of hospital stay. *days* (mean)	Death *n*(%)
27(54)	15(30)	7.5	6(12)	10.28 ±5.84	2(4)

DISCUSSION

The prevalence of SAM in our study is 2.7% which is lower than the national prevalence (7.9%, NFHS-3). Similar prevalence was reported by A S Bhadoria11 from northern India and H D Shewade[12] from Puducherry as2.2% and 3.6% respectively. Prevalence of SAM varies widely across the Indian states.

We observed that male children with SAM were almost twice as that of female (68% vs 32%).Similar findings were observed by few workers.[13,14] However, studies by M B Sing[15] and S Rao[16]found higher prevalence of SAM among girls. Higher prevalence in males in our study may be due to more importance given to male child for medical care because of societal attitude.

Though our study population is from the Hindu majority area, more number of SAM (56%) is seen amongst Muslim children. We could not correlate any association of prevalence of SAM with religion. This may because of small sample size and needs further socio- demographic studies.

The mean age of the study population is 21.86 ±14.85 months. Two third (68%) of the total cases belong to the age group of 6 -24 months. Similar results also reported by Aguaya et al in studies in Jharkhand where77.7% of SAM patients were below 2 years of age.[17]

More number of cases in our study is seen between6-12 months. This may be due to late introduction of complementary feeds, inadequate (thin) food, less birth spacing.

Almost all the SAM cases in our study (96%) belong to lower socio-economic class (Kuppuswamy scale IV and V). No cases belong to upper S E class. This indicates the unavailability of food, poor purchasing power, lack of nutrition knowledge in a deprived community. Similar observation was made in other study also.[18]

78% of mothers and 40% fathers of SAM children were either illiterate or had only primary school education.

Only 28% mothers were high school educated. Parental education specially women literacy is the most important determinants of malnutrition. Educated mother will have a greater awareness of nutrition, balanced diet and health of their children. Several studies from Bangladesh and India[19,20] observed such correlation between low parental education and malnutrition in children.

84% of the SAM children did not receive exclusive breast feeding up to 6 months of age. Similarly 35(70%) children had delayed start of complementary feeding with thin or watery food. These two-non EBF and improper complementary feeding caused SAM in majority of cases below 2 years of age. Similar observations were made by K Mishra et al in their study.[21]Other risk factors observed like low maternal education, incomplete immunization were 78 and 70% respectively. Out of 50SAM cases, non edematous SAM was more (62%) than edematous SAM in our study.

Diarrhoea (70%) and fever (68%) were the most common clinical presentation followed by anorexia (66%), ARI (56%), vomiting (38%), eye problems(38%) and hypoglycemia 14% of SAM cases. Similar findings were reported by R Kumar et al[22] in their study.

Among the co-morbid conditions, 43 children(86%) had anemia of varying grades. Prevalence of otherco-morbid conditions were pneumonia (42%), worm infestations (40%), UTI (38%) & tuberculosis (16%).

These findings are consistent with previous reports.[23]

On analysis of outcome of SAM cases in this study, it is found that 54% recovered (wt gain >15% of admission wt) and 30% did not respond (wt gain < 10gm/kg/day) to treatment. Average weight gain and mean duration of hospital stay were 7.5 gm/kg/day and 10.28± 5.84 days. Six children (12%) defaulted & 2(4%) died during hospital stay. In a similar study by K Sing, N Badgaiyan and K P Kushwaha in Uttar Pradesh in2010, they reported average weight gain as 7.3 gm/kg/day, average hospital stay of 13.2 days, recovery rate of46.8% and discharge without recovery as 53.2% in theirstudy.[24]

CONCLUSION

Severe acute malnutrition is the most severe and life threatening form of malnutrition which require surgent attention. Timely identification and intervention of various risk factors, clinical and co-morbid conditions is likely to break the viscious cycle of under nutrition, infection and SAM and thereby improve outcome.

Author's Contribution:

Concept & Design of Study:	Abdul Hameed Radhan
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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Original Article

Study on Association Between Severity of Childhood Asthma and Serum Vitamin D Levels in Children 1 to 12 Years of Age

Childhood Asthma and Serum Vitamin D Levels in Children

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ABSTRACT

Objective: To assess serum Vitamin D levels in 100 Asthmatic children 1-12 years of age and to study the relation between Vitamin D levels and the severity of asthma.

Study Design: Cross-sectional study.

Place and Duration of Study: This study was conducted at the Department of Pediatrics, Liaquat University of Medical and Health Sciences Jamshoro for one year 1st December 2019 to 30th November 2020.

Materials and Methods: This study was done in 100 asthmatic children diagnosed and Vitamin D levels were assessed. Vitamin D levels <20ng/dl were taken as deficient levels, 21-29 as insufficient levels, and more than 30 as sufficient levels.

Result: Fifty-four (54%)of asthmatic children had vitamin D deficiencies and 17% had inadequate levels. Deficient Vitamin D levels were found in 41% of children with intermittent asthma, 58% of children with mild persistent asthma, and 56 % of children with moderate persistent asthma whereas insufficient levels of Vitamin D were found in 18% of the children with intermittent asthma, 16% with mild persistentasthma and 19% with moderate persistent asthma. It was also found that nasal eosinophilia was associated with increased severity of asthma and children with nasal eosinophilia had a higher risk for persistent asthma.

Conclusions: A high prevalence of Vitamin D deficiency and insufficiency was found in asthmatic children studied. No association between the deficit in vitamin D and the severity of asthma was discovered.

Key Words: Asthma; Vitamin D; Children, Severity

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INTRODUCTION

As with many other chronic conditions, pediatric asthma has a likely effect on the social and emotional components in children's and their families' living conditions. Asthma is the most frequent chronic disease in children. The asthma prevalence reported in Pakistan varies widely from 4.3% to 31.58% in various fields.[1]In our country, the frequency of bronchial asthma in children is over 5% and the burden is increasing regularly.[2] Bronchial asthma not only affects breathability, but also physical, social and emotional life components.

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There have been more studies on children with asthma which have identified higher adaptation problems due to unfavourable developmental effects, psycho-social stress on the family and numerous meetings with medical staff.[2]

Inhaled corticosteroids are preventive drugs that reduce asthma and frequent hospitalization. Inhaled corticosteroids. Inhaled steroids minimize the requirement for bronchodilator rescue and inpatient therapy, increase pneumonia, diminish bronchial hyper responsiveness, and decrease collagen and tenascine deposition in the airways of the mucosa.[3]The actual cause of asthma is uncertain and probably originated from complicated interactions between several genetic and environmental elements. There is evolving evidence that there is an increased severity of the disease and poorer response to medication in Vitamin D deficient asthmatics.[4]The anticipated link between increased asthma prevalence and low vitamin D levels has resulted from common risk factors for asthma and vitamin D deficiency, such as urbanization, Westernized lifestyles, race and obesity, and increasing evidence of immunomodulsive impact of vitamin D.[5]

Vitamin D insufficiency is related to various disorders that are immune-mediated, infectious and cancer-sensitive.[6] First direct evidence for asthma and the

development of allergies involving vitamin D was derived from investigations on human genetic associations. Increased data implies that Vitamin D has a complex role in immune response modulation. Vitamin D receptor, including activated T cells, B cells, macrophages, and dendritic cells, expresses multiple types of immune cells. More recent reports have shown that vitamin D inhibits the generation of interleukin -17 involving asthma. Vitamin D inhibits T-helper 2 cells which limit synthesis by B cells, mast cells and eosinophils of cytokines like IL-4, IL-5 IL-13, and Immunoglobulin E.[7] Several studies have demonstrated that the disease has increased and that there are a deficient asthmatic drug response, and hypothesized linkages have evolved between rising asthma prevalence and low levels of vitamin D are increasingly apparent in vitamin D immunity to the TH2 (T helper 2) phenotype. As there are no studies available in our population linking Vitamin D levels and asthma, this study is being conducted to find out the association between Vitamin D levels and the severity of asthma.

MATERIALS AND METHODS

This cross-sectional study was undertaken in children with asthma attending the Out-patient and In-patient Department of Pediatrics of LUMHS for one year from 1st December 2019 to 30th November 2020. Children with asthma aged 1 year to 12 years diagnosed according to the National Asthma Education and Prevention Program were included in this study while those children with other comorbidities like heart disease, tuberculosis, epilepsy, liver disease, chronic lung disease, and renal disease were not included.

This study included 100 children having asthma diagnosed based on the National Heart, Lung, and Blood Institute, Guidelines for the Diagnosis and Management of Asthma, between the ages of 1 and 12 years, admitted to the wards or attending the outpatient of Department of Pediatrics at LUMHS. Consent was taken from the Parents, detailed history taken using a structured questionnaire, clinical examination done and the parents were advised to maintain an asthma diary that was evaluated during regular follow-ups. Following investigations were done: complete blood count (CBC), and nasal smear cytology, chest x-ray, Peak Expiratory Flow Rate, and spirometry were done wherever possible.

Statistical Analysis: Statistical analysis was done using the SPSS version 22.0 and Pearson's Chi-square test was applied wherever necessary. Frequencies and percentages were calculated for categorical variables. P-value < 0.05 was considered as significant levels.

RESULTS

In the study done, out of 100 asthmatics, 29 % were in the age group of 1-5 years, 71% were in the age group of 6-12 years. The mean age group of the study population is 7.57 with a standard deviation of 3.5. Out of 100 asthmatic children, 62% were males and 38% were females, 44% of the children had a positive family history of asthma, whereas in 56% of the children there was no family history of asthma or atopy.

In the study, it was found that 22% of children had intermittent asthma, 62% had mild persistent asthma and 16% had moderate persistent asthma and none in the study group had severe persistent asthma.

In the study, among the children in the 1-5 years' group, 21% had intermittent asthma, 76% had mild persistent asthma and 3% had moderate persistent asthma.

22% of children in age group 6-12 years had intermittent asthma, 56%ihadimild persistent asthma and 21% had moderate persistent asthma. There was a statistically significant correlation between the severity of asthma and increasing age.

Out of 100 children in the study group, nasal smear cytology was done in 62 patients. 28 (45%) had nasal smear-positive for eosinophilia as compared to 34 (55%) whose smears were normal.

In our study, 75% of children with nasal smear eosinophilia belonged to mild persistent asthma and 25% to moderate persistent with none in the intermittent group. There was a strong positive correlation between the severity of asthma and nasal eosinophilia. It was also found that nasal eosinophilia was associated with an increased risk of persistent asthma as compared to intermittent asthma.

Table No.1: Baseline characteristics of the children (n = 100)

	Number	Percentage
Age Groups:		
1 to 5 years	29	29%
6 to 12 years	71	71%
Gender		
Male	62	62%
Female	38	38%
Family History		
Yes	44	44%
No	56	56%
Severity of Asthma		
Intermittent	22	22%
Mild Persistent	62	62%
Moderate Persistent	16	16%
Severe Persistent	0	0
Nasal Eosinophilia:		
Smear Positive	28	28%
Smear Negative	34	34%
Vitamin D Levels		
Deficiency	54	54%
Insufficiency	17	17%
Sufficient	29	29%

Among 100 study subjects, it was found that 54% had deficient, 17% had insufficient and 29% had sufficient levels of Vitamin D. The mean of Vitamin D levels of

the study population was 25.26 with a standard deviation of 24.8.

Table No.2: Severity of asthma in relation to Age, Nasal Eosinophilia and Vitamin D Levels (n = 100)

	Intermittent n = 22	Mild Persistent n = 62	Moderate Persistent n = 16	Total	P – value
Age Groups:					
1 to 5 years	6 (21%)	22 (76%)	1 (3%)	29	0.03
6 to 12 years	16 (23%)	40 (56%)	15 (21%)	71	
Nasal Eosinophilia		21 (75%)			0.021
Yes	0	21 (62%)	7 (25%)	28	
No	9 (26%)		4 (12%)	37	
Vitamin D Levels		36 (58%)	9 (56%)		
Deficiency	9 (41%)	10 (16%)	3 (19%)	54	0.760
Insufficiency	4 (18%)	16 (26%)	4 (25%)	17	
Sufficient	9 (41%)			29	

Table No.3: Vitamin D Status in Relation to Age, Gender and Nasal Eosinophilia (n = 100)

	Deficient n = 54	Insufficient n = 17	Sufficient n = 29	Total	P – value
Age Groups:					
1 to 5 years	15 (52%)	4 (14%)	10 (34%)	29	0.832
6 to 12 years	39 (55%)	13 (18%)	19 (27%)	71	
Gender					
Male	32 (52%)	11 (18%)	19 (30%)	62	0.282
Female	22 (58%)	6 (16%)	10 (26%)	38	
Nasal Eosinophilia					
Yes	0	21 (75%)	7 (25%)	28	0.021
No	9 (26%)	21 (62%)	4 (12%)	37	

In the 1-5-year age group, 52% of youngsters had deficient Vitamin D, 13% had insufficient Vitamin D and 34% had appropriate Vitamin D levels. Of the 6-12-year age group 55% had poor Vitamin D levels, 18% had low Vitamin D levels. There is no statistical relation between Vitamin D deficiency and age.52% males and 58% females had Vitamin D deficiency, 18% males and 16% females had insufficient levels. There was no statistically significant difference between gender and Vitamin D deficiency. In the study, it was found that children with Vitamin D deficiency and insufficiency had a longer duration of illness as compared to those with sufficient levels. There was a significant negative correlation between Vitamin D levels and duration of illness in asthmatics. 41% of children with intermittent asthma, 58% with mild persistent asthma, and 56% of children with moderate persistent asthma had Vitamin D deficient levels. 18% of children with intermittent asthma, 16% with mild persistent asthma, and 19% of children with moderate persistent asthma had Vitamin D insufficient levels. Pearson‘s Chi-square Test has shown no significant correlation between the severity of Asthma and Vitamin D levels.

DISCUSSION

In this study, the majority (71%) were in the age group of6-12 years. The mean age in our study was 7.8 which was similar to the study done by Brehm et al[8] and CAMP study.[9]

In our study, it was found that the majority 62% had mild persistent asthma, 22% of children had intermittent asthma, 16% had moderate persistent asthma and none had severe persistent asthma.

There was a strong positive correlation between the age of the patients and the severity of asthma, as the age increased the severity increased. It was also found that as age increased the incidence of persistent asthma increased, which can be explained by the natural course of asthma itself.

The severity of asthma was also strongly associated with the number of exacerbations, which might be probably because severe asthma might have multiple triggers along with genetic factors that cause an increase in the severity and thereby making it difficult to control. There was no significant correlation between gender and severity of asthma in our study.

The various triggers in the asthmatics were dust (90% of children), upper respiratory tract infections (URI) (80% of children), winter/rainy season (54% of children), ice creams, and bakery products (43% of children), smoke (32% of children), oily food (27% of children), exercise (22% of children). In the study conducted by Kalyan G et al, URI accounted for 37%, dust for 7%, winter/rainy season for 8%, ice creams 11%,and other food items 9% of triggers.[10]

Nasal eosinophilia was found to be positive in 28 out of 62 (45%) of children and nasal eosinophilia had a strong positive correlation with the severity of asthma. It was also found in the study that nasal eosinophilia was associated with an increased risk to have persistent asthma as compared to intermittent asthma. This was by the study done by Price et al[11] who showed that incidence of severe asthma was more in patients with allergicirhinitis, and allergic rhinitis was associated with increased incidence of exacerbations.

Fifty-four (54%) of the asthmatics had Vitamin D deficiency and 17% had insufficient levels of Vitamin D. Among the children in the age group of 1-5 years, 52% had deficient Vitamin D levels and 13% had insufficient levels. Among the children aged 6-12 years,

55% had deficient Vitamin D levels and 18% had insufficient levels. The mean Vitamin D level of the study population was 25.26. The distribution of Vitamin D levels in our study was comparable to the study done by Bener et al[12]though other studies done by Brehm et al[8], Krobtrakulchai et al[13], and CAMP study[14] had a lower number of children in the deficient group but the higher number in the insufficient group.

There was no significant correlation between the age or gender of the study population with Vitamin D levels.

No significant association between serum vitamin D levels and asthma severity was found in our study. It was similar to the findings of the study done by Krobtrakulchai et al.[13]that was done in Thailand which is also located in a similar tropical zone as that ours. The Costa Rican study[9] did not find a temporal link between asthma severity and vitamin D. But it showed that low Vitamin D levels were associated with increased frequency of hospitalization/ exacerbations. Our study also found out a significant positive correlation between increased risks of exacerbations and Vitamin D deficiency.

The induction of AMPs in the airway epithelium has been demonstrated. Vitamin D may also regulate the inflammatory response of viral infections in addition to the generation of AMPs.[9]

In the study, it was found that Vitamin D deficiency had a significant correlation with the duration of illness in asthmatics. There were no comparable similar studies, but a study done by Sutherlands et al.[15] showed that lower Vitamin D levels were associated with decreased response to inhaled corticosteroids thereby increasing the disease severity and control.

In the study, a significant positive correlation was found between Vitamin D levels and absolute eosinophil counts. It was by the Costa Rican study that had shown that Vitamin D deficiency was associated with markers of allergy and asthma-like high AEC and serum IgE levels.[15] This was in contrast to the CAMP study which did not prove any relation between the same.[9]

There was no significant correlation between allergic rhinitis and low Vitamin D levels in our study. It was in contrast to the findings of Jung J[16] who found a strong positive correlation between Vitamin D deficiency and allergic rhinitis.

CONCLUSION

Our study has shown a high prevalence of vitamin D deficiency and insufficiency in asthmatics. There was no significant correlation between the severity of asthma and Vitamin D levels but low Vitamin D levels are found to be associated with prolonged duration of the illness and more number exacerbations suggesting the role of Vitamin D in asthma exacerbations.

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Original Article

St-Segment Elevation Myocardial Infarction

Implementation of Guidelines in Patients with St-Segment Elevation Myocardial Infarction Admitted at National Institute of Cardiovascular Diseases Karachi

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ABSTRACT

Objective: To determine implementation of guidelines recommended pharmacological (disease modifying) and reperfusion therapy in patients with ST- Segment Elevation Myocardial Infarction (STEMI).

Study Design: Cross-sectional study.

Place and Duration of Study: This study was conducted at the at National Institute of Cardiovascular Diseases Karachi from January 2019 to September 2020.

Materials and Methods: All 200 patients with diagnosis of acute STEMI were evaluated. Information collected included baseline ECG and cardiac markers, reperfusion therapy i.e. fibrinolytic or primary percutaneous coronary intervention, medications prescribed in the first 24 hours of admission and at the time of discharge.

Results: Among 200 patients' aspirin was administered to 200 (100%) at admission and discharge. 176 (88.6%), 198(99.0%) received oral beta-blockers at admission and discharge. (ACEI) or ARBS were administered in 172(86.0%), 196(98.0%) at admission and discharge. Lipid-lowering therapy was prescribed in 199(99.5%) patients. No patients received fibrinolytic (streptokinase). 200 (100%) patient underwent primary percutaneous intervention.

Conclusion: We concluded that almost 99% of Patients with STEMI received recommended disease modifying pharmacological therapy i.e. Aspirin, Beta blocker statins, ACE inhibitors and 100% trend towards primary percutaneous coronary intervention. However, as majority of our patients are unprivileged & unaware of their disease.

Key Words: Acute coronary syndrome, ST-segment Elevation Myocardial Infarction

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INTRODUCTION

In industrial countries and developing countries, acute myocardial infarction is a major public health hazard.[1] Diagnosis and management of the ST-segment of acute cardiac upliftments (STEMI) over the past 20 years has made significant progress.[1] Despite these developments, the application in clinical practice of the recommended treatment modalities was varied.[1] Early and suitable reperfusion therapy has significant repercussions on early and late morbidity and death in patients with acute myocardial infarction (MI).[1]

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Early uses have demonstrated to minimize mortality and recurrent MI and death in patients surviving initial STEMs in ST-Segment Elevation Myocardial Infarction (ST EMIT).[1] Despite convincing proof of the acknowledged advantages the awareness of general practitioners and Community hospitals about the usage of Aspirin is quite inadequate.[2] It is suggested that aspirin begin early and forever in all STEMI patients (without known contraindications).[1] STEMI beta-blocker benefits are clearly established for secondary prevention.[3] Reduces recurrent ventricular arythmia, ischemia, infarction size and refarctus. Reduces short-term and long-term mortality if given early enough.[1] Oral treatment without contraindication is suggested in all STEMI patients.[4] The advantages of lipid lowering treatment have been demonstrated by multiple clinical trials for individuals with an immediate coronary effect; patient adherence should be enhanced in hospital beginning for lipid lowering therapy.[1] Two inhibitors of the enzyme conversion of angiotensin (ACEI) have been demonstrated to lower death and morbidity in STEMI patients. The benefits of earlier MI and more linked ventricular impairment (LVEF <.40) were higher.[1] In patients with STEMI who may tolerate this

medicine, early oral treatment is advisable, and should be continued over the long term.[4]

Majority of the above mentioned drugs in addition to their primary pharmacological effect have additional important, yet overlooked effect on the endothelium "plaque stabilization.[5] The American Heart Association in their guidelines have recommended long term use of Aspirin, Beta-blockers, ACEI and Statins in all patients with STEMI for secondary prevention.[1I] Prompt and complete restoration of blood flow in the infarctiartery can be achieved by pharmacological means (fibrinolysis) and percutaneous coronary intervention (PCI) in the patients with STEMI. There is evidence that the quick recovery of blocked infarct artery flow when symptoms occur in patients with STEMI is a critical driver of long-term and short-term outcomes whether fibrinolysis or percutaneous intervention leads to reperfusion (PCI).[5]

Thus it is recommended that the health care personnel should facilitate rapid recognition and treatment of patients with STEMI for reperfusion therapy which reduces morbidity and mortality[1] The objective is to achieve the door-to-needle (or medical contact-to-needle) time for initiation of fibrinolytic therapy within 30 minutes or door-to-balloon (or medical contact-to-balloon) time for percutaneous coronary intervention (PCI) under 90 minutes.[1]

To improve care and outcome, recently updated American College of cardiology/American Heart Association (ACC/AHA) guidelines on STEMI recommend hospital-specific protocols to rapidly assess and treat patients with STEMI.[1] These guidelines, based on evidence-based medicines, promise to improve outcome and reduce variability in the delivery of clinical care.

The aim of this study is to determine implementation of use of pharmacological and reperfusion therapy which modifies disease process in patients with STEMI admitted at tertiary care hospital.

MATERIALS AND METHODS

This cross sectional study was carried out at National Institute of Cardiovascular Diseases Karachi on 200 patients with Diagnosed cases of ST-Segment Elevation Myocardial Infarction on the basis of history, clinical examination, electrocardiogram from January 2019 to September, 2020. Patients less than 18 years of age were not included in this study.

Patients who met and received coronary care and intervention step-down admission in emergency rooms of the National Institute of Cardiovascular Diseases were identified and informed consent to treatments for STEMI was given.

Information of pharmacological and reperfusion therapy which modifies the disease process like Aspirin, Beta-blockers, lipid-lowering drugs, ACEI or ARBs, fibrinolysis and percutaneous coronary intervention (primary) was collected through a proforma made by principal investigator at the time of admission and discharge, treated as case of STEMI on the basis of history, clinical examination, ECG and cardiac biochemical markers.

Data Analysis: The data was analyses on statistical package for social sciences (SPSS). Relevant descriptive statistics, frequency and percentage was computed for qualitative and quantitative variables including pharmacological and reperfusion therapy like Aspirin, Beta-blockers, lipid-lowering drugs, ACEI or ARBs, fibrinolysis and percutaneous coronary intervention (primary). Mean standard deviation was computed for quantitative variables like age. Logistic analyses were performed to assess the effect of these variables and chi-square test was applied to check the proportion of prescribed variables at p .05 level of significance.

RESULTS

Among 200 patients 153 (76.5%) were male and 47 (23.5%) were female. The mean age of the patients was 53.25+-10.29 (range from 28 to 71 years.

Among all patients 112 (56.0%) patients had acute anterior wall myocardial infarction, 84(42%) patients had acute inferior wall myocardial infarction and 4 (2.0%) patient myocardial infarction was aborted.

At the time of admission aspirin was administered to 200 (100%) of patients.

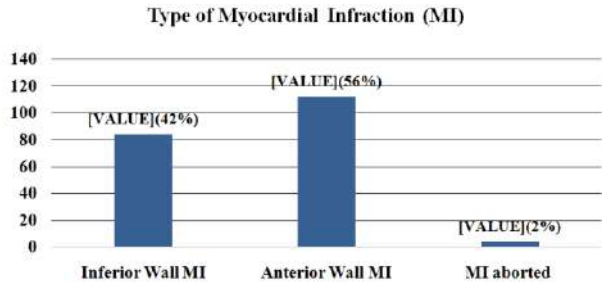
Total of 176(88.6%) patients received oral beta-blockers in the first 24 hours. Of the 24(12.0%) patients who did not receive beta-blockers, all had had contraindications. Angiotensin-converting enzyme inhibitors or ARBS were started 172(86.0%), while 28(14.0%) patients were not prescribed due to low blood pressure. Lipid-lowering therapy were prescribed in 200(100%).

Table No.1: Distribution of patients according to age and gender (n = 200)

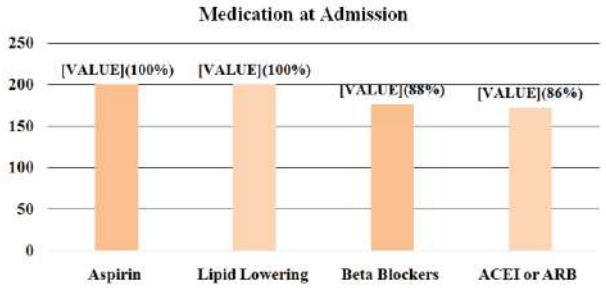
Gender	Number	Percentage
Male	153	76.5%
Female	47	23.5%
Mean age ± SD(Range)	53.25±10.29(28 to 71 years)	

At discharge, majority of the patients was prescribed aspirin 200 (100%) (P-value0.47, not significant) of patients. There is significant increase in use of betablockers 198(99.5%) (chi-square 19.91,P-value 0.000008) who were prescribed oral beta-blockers at discharge. Of the two patients who did not receive beta-blockers, all had had contraindications. ACEI or ARBS were prescribed in 196(98.) (chi-square 19.5, P-value 0.000010), which is significant increase. Lipid-lowering therapy were prescribed in 200(100%) (P-value not significant).

Of the total group of acute STEMI, 200(100%) patients underwent primary PCI (chi-square 217.91, P-value 0.000000). No patient received thrombolytic therapy (0%) (P-value not significant).



Graph No.1: Frequency of patients according to type of Myocardial Infraction (MI)



Graph No.2: Frequency of patients according to Medication at admission

DISCUSSION

Our study shows a significant improvement in care as shown by increase in thrombolysis rates. Among 200 patients of STEMI, 151 (75.50%)patients received repurfusion therapy in the form of streptokinase (SK). A local study in 2002 showed that 29% of the patients of STEMI were given SK.[6] while in a European study conducted in 2005 63% of the patients with STEMI were given thrombolytic therapy.[7]Significant increase in prescribing beta-blockers, ACE inhibitors, and statins. Previous recommendations for the use of ACE inhibitors in patients with left ventricular failure and the use of cholesterol lowering medicines in patients with low-density lipoprotein concentrations were limited. However, several recent clinical trails[8], regardless of the amount to which left ventricular failure or serum cholesterol is involved, have established the benefit of the use of ACE inhibitors and lipid lowering medicines in MI patients. The US Cardiology College and the American Heart Association[9]advocate the use of all four medicines for AMI hospital survivors in patients with STEMI. In the light of the increasingly complicated treatment guidelines for AMI patients, monitoring compliance with these criteria in more common samples of AMI patients is more relevant.

In recent years, there is insufficient data on the use of discharged medicine in the entire range of MI,[10] patients and their association with features and patterns of care of patients. There is limited data available for patients hospitalized with AMI from a more general perspective about the current prescription of effective cardiac medicines. In this population sample of AMI hospitalized patients in central Massachusetts, the Worcester Heart Attack Study[8], saw the increase in usage of ACE inhibitors, aspirin, beta-blockers and fat-reducing medication. Increased usage of combination therapy in hospital survivors of AMI over time was also described in this study.[8] In Olmsted, Minnesota,[11]studies were performed on the usage of ACE inhibitors, aspirin and beta blocker drugs in hospital survivors of AMI from 1989 to 1998. A Myocardial Infarction,[12]national registry data shows a considerable increase in the usage of aspirin (about 10%), beta-blockers (aroundi37%) and ACE (about 40%) inhibitors from 1994 to 1997. Airecent overview,[13] has showed that medicinal products with established efficacy are used in poor nations in the treatment of AMI patients. Six(3.0%) improvement observed in implementing primary percutaneous intervention, probably due to logistic problems and financial constrains which shows that evidence based medicine is underutilized, however much improvement has been seen in year 2012 towards primary PCI procedures, around twenty-five to thirty patients per month undergoing Primary PCI. Utilization of aspirin in AMI in our study was 99.5% which is better than a local study[6] which showed 78% utilization of aspirin at the time of discharge to AMI patients. Utilization of beta-blockers in current study was 99.0% which has considerable improvement as compared to previous local study[6] in 2002, which showed 61% use of beta-blockers in patients of AMI. Use of beta-blockers in our study is comparable to international study[7] which showed 83% & 61% utilization of beta-blockers in patients with STEMI. Another study[14] showed increase in utilization of beta-blockers from 83% to 91% during the study period (2000 – 2005). ACE inhibitors or ARBs were given to 98.0% of patients in current study while in a previous local study[6] these drugs were prescribed to 48% while in a Western study[7] these drugs were given to 67% of patients with AMI. A study[14]showed an increase in use of ACE from 63% to 77% during the study period (2000 – 2005).The utilization of statins in our study was 99.0% which is superior to local[6] and international studies[7] which showed only 28s% and 62% utilization of these agents. Another Western study[14]showed a marked increase in the use of statin therapy (from 45% to 85%) during the study period from 2002 –2005.A local study conducted in the last decade[14]showed that only 17.34% patients received thrombolytic therapy. Aspirin was used in 99.48% patients, beta blockers to 31.12% and ACE inhibitors to 13.28% of patients with acute myocardial infarction. Another local study conducted in this

decade[6] showed that 78% patients were given aspirin, 62% oral nitrates, 61% oral beta blockers and 48% ACE inhibitors. In the light of above data there is marked improvement in the utilization of cardiac medication of proven benefit, particularly in the use of streptokinase, beta blockers and ACE inhibitors, where the improvement is two to three times in comparison to the previous decade.

Pre-medication initiation has shown improve secondary prevention therapy, showing significantly higher utilization rates of aspirin, beta-blockers, ACE inhibitors, and lipid lowering drugs. Implementation of ACC/AHA/ESC guidelines is another potential source of change in practice in order to improve care of the patients. Our statistical analysis shows that there is improvement in implementing pharmacological guidelines and much improvement in implementing early re-vascularization with primary coronary interventions. Trend analysis shows that publication of new trials may have been the driving force for implementing above treatment modalities.

CONCLUSION

Implementation of STEMI guidelines has positive impact on patient's outcome. We have shown is still for short from the guideline recommendation, however increase trends towards primary PCI has been seen in recent years.

Our findings suggest that National Institute of Cardiovascular Diseases is an ideal place for implementation of evidence-based medicine. A predominant facilitating feature is awareness of attending intervention cardiac physicians, intervention cardiology fellows, about the guideline recommended management. Thus at discharge almost 100% of Patients with STEMI received recommended disease modifying pharmacological therapy i.e. Aspirin, B. blocker statin & ACE inhibitor and primary PCI. This is an unbeatable achievement.

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