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CONTENTS

Editorial

Original Articles

Editorial

Hypoglycemia: A Medical Emergency

Mohsin Masud Jan
Editor

Now, we're all well aware of hyperglycemia, the deadly killer when it comes to Diabetes Mellitus, but its antagonist remains in medical obscurity, even when hypoglycemia itself can be considered to be on par with hyperglycemia, if not ahead of it in terms of sheer lethality.

Type 2 diabetes patients with dangerously low blood sugar levels may be at increased risk for cardiovascular disease, according to a new study. Given their findings, "less stringent glycemic targets may be considered for type 2 diabetic patients at high risk of hypoglycemia (severely low blood sugar)," the researchers said. A dangerously low blood sugar level is often classified as a medical emergency. Previous observational studies have reported a link between severe hypoglycemia and cardiovascular disease risk, but the association remains controversial. In this study, researchers from the United States, Japan and the Netherlands analyzed the findings of six studies that included a total of more than 903,000 type 2 diabetes patients.

The review revealed that 0.6 percent to 5.8 percent of patients developed severe hypoglycemia during one to five years of follow-up. Overall, these patients had a 1.56 percent increased risk of developing cardiovascular disease, according to the study, which was published July 30 in the online journal BMJ.com. The results suggest that severe hypoglycemia is associated with a two-fold increased risk of cardiovascular disease, the researchers said. Because of this, preventing severe hypoglycemia in people with type 2 diabetes may be important to prevent cardiovascular disease, the researchers said in a journal news release. The link between severe hypoglycemia and increased cardiovascular disease risk has previously been explained by patients having one or more other serious illnesses, but this is an unlikely explanation, the researchers said. They said the incidence of serious illnesses would need to be "unrealistically high" among patients who developed severe hypoglycemia, and the link between serious illnesses and cardiovascular disease would have to be "extremely strong."

These remain just a few preliminary researches, but the link, albeit controversial, has been established that hypoglycemia in a Diabetic patient may actually be more harmful towards their cardiovascular system as compared to the Diabetes and hyperglycemia itself.

Not to despair though, A new sensor attached to an insulin pump helps prevent dangerously low blood sugar levels in patients with type 1 diabetes while they sleep, a new study finds. The new pump automatically stops delivering insulin when the sensor finds blood sugar levels have reached a pre-set low level, and it reduced overnight episodes of low blood sugar (hypoglycemia) by a third, the researchers report. According to the researchers, hypoglycemia is the biggest barrier to achieving the blood sugar control they want to get to prevent eye disease, kidney disease, amputations and heart disease. The generalised effects of hypoglycemia can range from dizziness to seizures to coma and death, and it is one aspect of disease that has patients scared to death just wondering whether they will be having a good night's sleep or whether they will be having a major problem in the night.

This may also be another step to creating a so-called "artificial pancreas" for people with type 1 diabetes, who cannot make insulin on their own. Although this device has been used in Europe, the new study is a move toward getting the device approved by the U.S. Food and Drug Administration, and eventually the rest of the world.

Considering the use of such a device proves to be successful in Type I Diabetics, it won't be a far fetched idea to produce something along the same lines for Type II Diabetics who are at a risk of going into severe hypoglycemia. The future might be sweet after all.

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Original Article

Breast Cancer

Positive Sentinel Lymph Node Biopsy in Breast Cancer Related to Tumor Characteristics - An Experience at Tertiary Care Hospital

Muhammad Saleem Shaikh, Muharram Ali and Kheo Ram Dholia

ABSTRACT

Objective: To assess the accuracy of sentinel lymph node biopsy in breast cancer, therefore, reducing the morbidity of axillary clearance in patients having clinically impalpable axillary lymphnodes.

Study Design: A Prospective study

Place and Duration of Study: This study was conducted at the Department of Surgery, Unit II, Chandka Medical College / Hospital, Larkana from January 2014 to December 2016.

Materials and Methods: All cases having histopathologically evidenced breast carcinoma with clinically no palpable axillary lymph nodes were included. In our study patients having clinically palpable lymph nodes, past history of ipsilateral breast operation, stage III& IV disease were excluded.

All patients underwent sentinel lymph node sampling before taking informed and written consent. In operation theatre, under general anesthesia, 2ml of a basic thiazine dye (Methylene Blue) infiltrated around primary breast lesion then applied manual rubbing technique for 2minutes over the area. Surgical procedure of Simple mastectomy and sentinel lymph node biopsy performed after 30 minutes of infiltrating dye.

Results: Sixty patients after fulfilling the inclusion criteria were enrolled with mean age of46 years ±12 years. Two third of patients had right breast involvement and most of the patients presented with Intra ductal carcinoma (71.1%) and had estrogen receptor +/- progesterone receptor positive disease (55%).

Simple mastectomy with sentinel lymph node axillary sampling was performed. Majority of patients were in early T disease (T1 42%, T2 38%), while most of the patients had well and moderately differentiated gradetumors (88%). Sentinel node sampling revealed 35 cases positive, while 25 cases were negative. It has been observed that patients with sentinel node positivity had higher grades of disease and also more advanced T stage.

Conclusion: Infiltrating a dye is technically simple and reliable to detect a sentinel node in majority of cases. It is observed that this technique is more accurate in high grade and higher T stage tumors in breast cancer.

Key Words: Carcinoma breast, axillary sampling, sentinel node biopsy.

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INTRODUCTION

The detection of metastasis in axillary lymph nodes is a very important prognostic factor in breast cancer because of its impact on subsequent management and overall survival. Various methods are used to detect metastasis in axillary lymph nodes preoperatively.[1]

Although some studies have used ultra-sonographic imaging techniques alone, others have used fine-needle aspiration (FNA) cytology with or without ultrasound guidance to improve the detection of metastasis.[2,3]

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Multi-institutional studies have shown the safety of omitting axillary lymph node dissection (ALND) for women whose sentinel node (SN) is free of metastatic disease[4]. However, the American Society of Clinical Oncology recommend ALND for patients whose SN contains macro metastasis or micrometastasis.[5]

Sentinel node biopsy remained the state of art for staging of the patients with axillary node negative disease and axillary clearance was reserved for patients with clinically palpable nodes or for those who have positive disease on sentinel node biopsy.[6]

Introduction of sentinel lymph node biopsy has emerged as practice changing and currently axillary node dissection is not a practical option for patients with clinically negative nodes. Clinically positive nodes and inflammatory breast cancer are absolute contraindications for SLNB. Axillary lymph node dissection (ALND) is recommended for this group of patients to maximize locoregional control.[7]

The incidence of lymphedema, seroma and ipsilateral arm pain in post operative ALND reported 6 to 30%,which can be minimized with SLN biopsy. Several studies have shown that the risk of arm morbidity, particularly, sensory loss and shoulder abduction deficits, is significantly less in SLNB than ALND.[8]

Different methods for isolating the sentinel node are in clinical practice but methylene blue dye is more used as it is convenient and cheaper, with less skin hypersensitivity reaction as compared to isosulfanblue.[9]

It has been found that in 40 to 70% of breast cancer patients , sentinel nodes are only nodes to be involved with tumor without any additional non sentinel lymph node involvement.[10]

Various studies reported that patients having sentinel node positivity could be managed other than aggressive axillary lymph node dissection. SLNB is a reliable technique to assess the axillary nodal status for tumor metastasis.[11]

The advantages of sentinel lymph node biopsy (SLNB) in breast cancer having histopathologically node negative patients, axillary lymph node dissection (ALND) can be discouraged is well established.[10]

The recent trend of management for staging the axilla is sentinel LN biopsy (SLNB), while patients having LNs positivity for metastasis need radiotherapy to the axilla, therefore, avoiding complications after ALND.[12]Non-surgical axillary treatment is beneficial, leading to reduced arm stiffness, pain, paraesthesia, and risk of lymphedema.[13]

The trend of sentinel lymph node biopsy is beneficial and rapidly rising as an innovative standard of care.[14]Some studies suggested that by the use of two techniques in combination of methylene blue dye and radioisotope, very high accuracy rate may be achieved and fewer SLN may be missed as compared to single techniquemapping.[15] Combination of both the techniques increases the yield of SLN identification from 0% to 18% when compared to blue dye alone.[16]

The purpose of our study was to assess the accuracy of sentinel lymph node sampling, therefore, reducing the morbidity of aggressive axillary clearance in patients having negative axillary lymph nodes clinically, and to identify the factors associated with likely positive sentinel node biopsy.

MATERIALS AND METHODS

A prospective study conducted at Department of Surgery, Surgical Unit II, Chandka Medical College Hospital, Larkana, from January 2014 to December 2016.

Only female patients were included in our study. All patients were diagnosed cases of breast cancer with clinically negative lymph nodes in the axillae. Ultrasound axilla was done to evaluate the evidence of lymph nodes. Patients having stage III and IV disease, palpable axillary nodes, bleeding diathesis, were excluded.

After obtaining written and informed consent and approval from institutional Ethical Review Committee, all patients were entered in specified proforma.

Information regarding name, age, sex, tumor grading, T stage/size of tumor according to TNM classification, site of breast involved, nodal involvement with sentinel node sampling noted. Information of patients like histological type, site of breast involved and hormone receptor status were also documented.

In operation theatre, all patients underwent sentinel lymph node mapping. Two ml of a basic thiazine dye (blue dye) was infiltrated around the tumorthan applied the technique of manual rubbing the area for 2 minutes. Surgical procedure of simple mastectomy and sentinel lymph node sampling (dye stained lymph node), was performed after 30 minutes of infiltration of dye,and specimen sent for histopathology marked and labeled accordingly, as there was no facility available for frozen section in our institution.

Data was analyzed by using computer software program SPSS version 19. The correlation between two variables were evaluated by using chi-square, and student t-test. P-value < 0.05 was considered as significant.

RESULTS

Sixty patients with diagnosis of breast cancer were included in our study. All patients were female and mean age of patients was 46 years ±12 years. All patients underwent simple mastectomy and ipsilateral axillary node sampling after injecting blue dye.

Majority of the patients were having Intra ductal carcinoma (IDC) on histopathology (Table 1). 43 patients (71.7%) were having IDC and 13 patients (21.7%) with Intralobuler carcinoma and four patients had both IDC and ILC (6.7%). Most of the cases were in T Stage according to TNM stage, T1 stage 25 patients (41.7%) as compared to T2 stage in 23 patients (38.3%). While in advanced disease, T3 stage was found in 8 patients (13.3%) and T4 in 4 patients (6.7%). In Tumour Grading, in Grade 1, 29 patients (48.3%), in Grade II, 24 patients (40%) and in Grade III, only 7 patients (11.6%) (Table 1). Out of 60 patients, predominant Right breast was involved in 40 patients (66.7%) (Table 2). The hormone receptor positive disease was found in 45 patients, while 15 patients had the triple negative disease. Axillary node sampling detected in 35 cases with tumor involvement, while 25 patients were having no tumor involvement. Nodal disease was more detectable in patients with advanced grade and advanced T stage (Rable 2), however no statistical significant results were found according to type of histopathology. All the sentinel lymph node positive patients after confirmation by histopathology were referred to oncologist for axillary radiotherapy.

Table No.1: Patient characteristics

Total number of patients	60
Mean age	46 years±12 years
Types of breast cancer	Intra Ductal Carcinoma (IDC) 43(71.7%) Intra Lobulor Carcinoma (ILC) and 13(21.7%) IDC + ILC 4 (6.7%)
T stage according to TNM staging	T1 25 (41.7%) T2 23 (38.3%). T3 8 (13.3%) T4 4 (6.7%)
Tumor grading	Grade I—29 (48.3%) Grade II—24 (40%) Grade III—7 (11.6%)

Table No.2: Tumor Characteristics

Site of breast Involved		Right 40 Left 20	
Hormone receptor status		ER+, PR- 4 (6.7%) ER-, PR+ 6 (10%) ER+, PR+ 23 (38.3%) ER+, PR+, HER2Neu + 8(13.3%) Triple negative 15 (25%) ER-, PR-, Her2Neu+ 4(6.7%)	
Sentinel node involvement		Yes 35 No 25	
Sentinel node involved according to Grade		Sentinel node positive	Sentinel node negative
	Grade I	9	20
			05
	Grade II	19	p=<0.00
	Grade III	7	0
Sentinel node involved according to T Stage		Sentinel node positive	Sentinel node negative
	T1	9	16
	T2	14	09
	T3	08	00
	T4	04	P0.003 00
Sentinel node involved according to histopathology		Sentinel node positive	Sentinel node negative
	IDC	27	16
	ILC	6	7
	IDC+ILC	2	P=<0.53 2

DISCUSSION

The incidence of cancer related deaths worldwide is highest among patients having carcinoma breast.[17]The occurrence of carcinoma breast in our country is 24.4%, considered as the most common cancer in developing countries.[18]

Recently the carcinoma of breast is diagnosed earlier because of implementation of screening methods in advanced countries, therefore the involvement of axillary lymphnode metastasis is declining.[19]

In some studies sentinel lymphnode in the axilla is the most specific lymphnode positive for metastasis in 40% to 60% of cases after SLND. In other studies the technique of sentinel lymphnode biopsy without further axillary dissection is positive in clinically node-negative breast cancer patients.[20]

Despite the increasing knowledge that many women will not have additional nodal metastasis at completion ALND, the management of the patient with clinically negative, histologically positive lymph nodes has not changed, and ALND remains the gold standard.

In axillary nodes the tumor involvement in both cases of which no S L N was detected correlates that there were poor selection of patients, and failure of the S L N to take up the blue dye, rather than failure of technique.[21]

Worldwide increased awareness in females, recent screening techniques for early detection of cancer, and introduction of breast conservative surgery technique, has reduced the incidence of breast cancer in developed countries.[22]

In last 20 years, various reports on SLNB technique suggested the benefits of the retrial node biopsy as an accurate method of detecting axillary LN metastasis in patients having breast cancer.[23, 24]

It is considered that an alternative technique to axillary lymph node dissection in early breast cancer. Therefore, this technique is more appropriate and minimal invasive method for staging the tumor, leading to reduce the morbidity by discouraging aggressive axillary lymph node clearance. [25]

However, sentinel node biopsy has emergedas an alternate to axillary surgery in breast cancer. The false negative rates are variablein various studies from 0% to 19%. Some studies reported that sizeof tumor has directly effects on node positive cases despite tumor type and behaviour.[26, 27]

In our study despite clinically negative axillary nodes and smaller tumor size, sentinel lymph nodes reports were positive for metastasis and negative for large tumor size. This shows association of different factors rather than tumor size in our study.

Other studies revealed that the size, site, the grade of tumor, and lymph nodes in the axilla remained as independent variables of nodal metastasis.[28]

However, the number of lymph nodes or tumor factors predicts high false negative results. Therefore, patients having T1 and T2tumors may be appropriate for SLNB. Thorough clinical examination of the axilla should be undertaken to palpate the axillary lymph nodes so that these should not be missed. This technique worldwide accepted for T1 and T2 lesions, and in larger tumors remain controversial.[29]

In our study 4 patients with locally advanced cancer(T4), clinical and ultrasonological examination revealed axillary lymph node negative, while in all these four patients sentinel lymph node removed were found positive for tumor metastasis, later referred to oncologist for radiotherapy to the axilla, therefore axillary dissection/clearance was avoided.

CONCLUSION

Our study revealed that patients with sentinel node positivity had higher grades of disease and also more advanced T stage, while sentinel node positivity does not differ on the basis of histopathological type of breast cancer.

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Data Analysis:	Muharram Ali & Muhammad Saleem Shaikh
Revisiting Critically:	Muharram Ali & Kheo Ram Dholia
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Original Article

Complications of Atrial Fibrillation

Frequency and in Hospital Complications of Atrial Fibrillation in Patients with Acute ST Segment Elevation Myocardial Infarction

Hafiz ur Rehman, Bilal Ahmed, Abdul Hadi and Iftikhar Ahmad

ABSTRACT

Objective: To determine the frequency and in-hospital complications of atrial fibrillation in patients with acute ST segment Elevation myocardial infarction (STEMI).
Study Design: Observational / descriptive study.
Place and Duration of Study: This study was conducted at the Coronary Care Unit (CCU), Saidu Teaching Hospital, Saidu Sharif Swat from October 2015 to September 2016.
Materials and Methods: This was a hospital based study in which 536 male and female patients were included, who were admitted with acute ST segment elevation myocardial infarction. These patients were observed for the development of atrial fibrillation. Those patients in whom AF was documented were further observed for complications in the form of VT, VF, stroke and death during hospital stay.
Results: There were 298 (55.59%) male and 238 (44.40%) female patients. Mean age of the study population was 60.5±9.8 years.
49 (9.14%) patients developed AF. 20 (40.81%) were male, and 29 (59.18%) were female. Out of 49 patients with AF ventricular fibrillation developed in 18.36%, VT was found in 14.28% patients, 12.25% had a stroke, and the mortality rate was 14.28%.
Conclusion: Atrial Fibrillation is quite common complication of acute MI in our population, and carries higher rates of in-hospital complications and death. So these patients need to be identified and treated in time.
Key Words: STEMI, AF, Tachyarrhythmia, Myocardial infarction.

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INTRODUCTION

Atrial fibrillation (AF) is a supraventricular arrhythmia characterized electrocardiographically by low-amplitude baseline oscillations (fibrillatory or f waves) and an irregularly irregular ventricular rhythm, which may lead to pulmonary edema and serious hemodynamic disturbance. AF is associated with approximately a fivefold increase in the risk of stroke and a twofold increase in the risk of all-cause mortality[1].

AF is the most common tachyarrhythmia. In general population the prevalence of AF is 1 to 2 %[1]. We don't have a reliable data regarding the prevalence of AF in Pakistan, however one study conducted in Karachi the reasons for emergency medical admissions were studied, and AF was found as the reason for admission in 6.5% patients[4].

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Myocardial ischemia is a well-known cause for the development of AF. In different studies the incidence of AF in patients with acute myocardial infarction (AMI) is 6 to 21%[5]. In this clinical setting, the occurrence of AF is of particular importance since rapid and irregular ventricular rates during the arrhythmia may cause further impairment of the coronary circulation and left ventricular function.

7 days mortality is higher in patients who develop AF during the acute phase of MI (5.1%) compared to those who remain in sinus rhythm (1.6%) [6]. In patients with acute MI any type of AF (new onset, persistent, or paroxysmal) is associated with increased mortality[7]. New onset AF in patients with AMI is associated with adverse in-hospital outcomes[8]. In patients with acute MI the hospital course is complicated and in-hospital mortality is high (13.8%) in those who develop AF compared to those who do not have AF (5.8%) [10]. These patients also develop Sustained ventricular tachycardia (VT) and ventricular fibrillation (VF) more frequently [10]. AF during MI increases the risk of stroke (9.2%) compared to those without AF (2.6%) [11].

The main purpose of this study was to determine the frequency of AF in patients with AMI in our population and observe them for short term complications during hospital stay. The reason for doing this study was that generally AF is considered as a benign arrhythmia and it is not considered as a critical event in patients with

acute MI, but review of the available literature shows higher short term and long term complications associated with AF in patients with AMI. The other thing is that there is no local data available on this issue. So hopefully this study will make the foundation and basic frame work for further research in this area.

MATERIALS AND METHODS

Ethical issues: Informed signed consent was collected from all volunteers who participated in the study, after the purpose, nature and risks of the participation were fully explained to them verbally and in writing.

Operational definitions: Atrial Fibrillation was defined as disturbance of heart rhythm seen on ECG as rapid, irregular fibrillatory waves associated with irregularly irregular ventricular response.

Acute Myocardial Infarction was diagnosed on the basis of all of the following

1. Characteristic chest pain.
2. ECG showing: ST segment elevation of > 1 mm in two or more than two contagious leads.
3. Elevated serum troponin levels.

In-hospital complications: The following were included.

Stroke: Focal neurological deficit lasting >24 hours and/or an acute clinically relevant brain lesion on CT scan brain {a focal area of decreased attenuation (infarct)}, occurring inside the hospital till 7 days after diagnosis of AF among patients with AMI.

Ventricular arrhythmias (VA): included VT and VF when occurred inside the hospital till 7 days after diagnosis of AF among patients with AMI.

a) **Ventricular Tachycardia (VT):** It is rhythm disturbance seen on ECG as 3 or more consecutive wide QRS complexes occurring at a rate of more than 120 beats/ min and originating from the ventricle recorded either on ECG or on the ECG monitor.
b) **Ventricular Fibrillation (VF):** It is seen on ECG as large undulations of varying amplitudes and shape with no definite P or QRS complexes.

In-Hospital mortality: was defined as death inside the hospital due to cardiac event till 7 days after diagnosis of AF in patients with STEMI.

Subjects: A total of 536 male and female patients of different age group admitted with acute MI were monitored for AF during hospital stay.

Inclusion criteria: adult patients admitted to cardiology unit with STEMI.

Exclusion criteria: Those Patients who were already having serious underlying disease like malignancies, renal impairment, Chronic lung disease, or decompensated liver disease, and patients who were having persistent or long term persistent AF were excluded from the study.

This study was conducted in Coronary care unit (CCU), Saidu Group of Teaching Hospital from 01/10/ 2015 to 30/09/2016. The sampling technique was non probability consecutive sampling.

A total of 536 patients were included in this study.

The study was conducted after approval from hospitals ethical and research committee. Patients who were meeting the inclusion criteria were admitted through OPD and ER and included in the study. STEMI diagnosis was based upon the criteria already mentioned in operational definitions. The purpose and benefits of the study was explained to all patients and written informed consents were obtained.

Detailed history was taken from all the patients, followed by complete routine examination and baseline investigations including ECG (Cardiofax) and echocardiography (eSaote my lab), and Troponin I levels were checked.

ECG's of all these patients were analyzed by single consultant cardiologist for Atrial Fibrillation. All these patients were monitored during hospital stay for any disturbance in heart rhythm, At least 3 times daily ECG's were obtained and analyzed for atrial fibrillation by the same cardiologist.

Any patient who developed AF during hospital stay was observed for complications in the form of stroke, VT, VF, and death during hospital stay. For those patients who developed features of stroke, a CT brain was performed and then it was reported by consultant radiologist of the hospital. All the patients who were included in this study received standard treatment. Their management protocols were decided by senior cardiologist.

All the information including demographic features and hospital admission number were recorded in a pre-designed proforma. Strictly exclusion criteria were followed to control confounders and bias in the study results.

RESULTS

Data was available on 536 patients admitted with STEMI. 298 (55.59%) were male and 238 (44.40%) were female. The age range of the patients was from 34 to 94 years. The mean age was 60.5$\pm$9.8 years. Age distribution among patients who presented with acute myocardial infarction is given in Fig 01. 49 (9.14%) patients developed AF. Male patients were 20 (40.81%) while female were 29 (59.18%).

Among 49 patients who developed AF no patient was 40 years or below Table 01.

Ventricular Fibrillation (VF) was the most common complication which occurred in 9 patients (18.36%), followed by Ventricular Tachycardia (VT) in 7 (14.28%) patients Table 02.

In hospital complications were analyzed and it was found that all those patients who had stroke were having age above 70 years, 2 of them (33.33%) were male and 4 were female (66.77%).

One death occurred in 61 to 70 years age group, while 6 died in above 70 years age group. 4 were male and 3 female,

3 patients in 51 to 60 years age group, 3 in 61 to 70 years age group, and 1 patient in above 70 years age group developed VT. Male were 5 and 2 were female.

Among 9 patients who developed VF, 4 were 61 to 70 years old, and 5 were more than 70 years old.

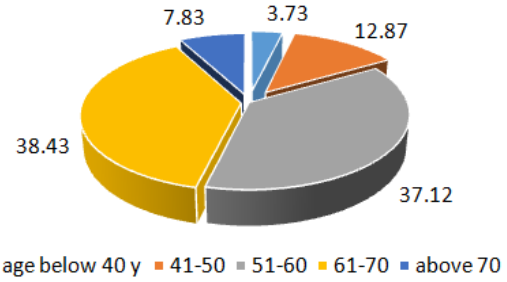

Figure No. 1: Age distribuation of patients presenting with acute MI

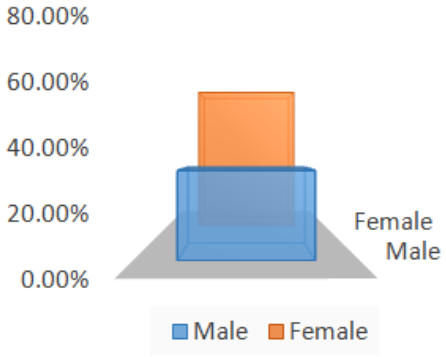

Figure No.2: Gender distribution of AF

Table No.1: Age distribution of patients who had AF

Age group in years	No. of cases with AF
40 or below	0
41-50	2
51-60	2
61-70	9
Above 70	9

Table No.2: Distribution of in hospital complications in different age groups

In hospital complications	< 40 yrs	41-50 yrs	51-60 yrs	61-70 yrs	>70 yrs	Total
Death				1	6	7
Ventricular Tachycardia			3	3	1	7
Stroke					6	6
Ventricular Fibrillation				4	5	9

DISCUSSION

Among different tachy arrhythmia's Atrial Fibrillation is the most common. It can results in hemodynamic disturbances tachycardia induced cardiomyopathy and thrombo embolic complications. Apart from other factors one important cause for the initiation and maintenance of AF is myocardial ischemia. During an acute ischemic event the development of AF and fast ventricular rate will worsen the condition by reducing the coronary flow and myocardial performance.

We studied the frequency of AF in patients with STEMI was 9.14%, and our results are comparable with similar studies done in other countries. In our country no data is available on similar problem. Haq U and colleagues studied the reason for emergency medical admissions to hospitals in Karachi, 47% of these patients were having ischemic heart disease and 6.5% of them also had AF[4].

J Schmit et al analyzed 20 different studies on this topic and found that among patients with acute myocardial infarction 6 to 21% develop AF5. Lopes RD et al found AF in 7.5% patients with Acute MI[6] (both STEMI and NSTEMI), in the subgroup analysis of this study the frequency of AF was found to be 8% in patients with STEMI which is comparable with our results.

We found in our study that AF is more common in elderly patients and in female patients, these findings are comparable with results from GISSI III trial[24] and other trials which were included in a meta-analysis done by Patrica Jabre[9].

Generally AF is considered as a benign arrhythmia even in the sitting of acute MI, however the available data shows controversial prognostic influence of AF in patients with MI, there are studies which shows adverse effect on mortality but there are others studies which do not show this effect[9]. We found a mortality rate of 14.28 % in patients who had AF. RD Lopes and his colleagues found that mortality was 5.1% in patients with AF compared to 1.6% in patients who remained in sinus rhythm during the acute event[6] but if we look at earlier trials the mortality associated with this condition is high. In GUSTO-I[10] trial the mortality is 13.8% and this was the time when streptokinase was the only treatment available for reperfusion therapy. In our patients the incidence of stroke is 12.25% in patients with AF while Aronson D and his colleagues[11] found it in 9.2% patients with AF compared to 2.6% in sinus rhythm.

14.28% of our patients with AF developed VT, and 18.36% were complicated by VF, while in GUSTO I trial[10] VT was found in 14.8% and VF in 14.7% patients with AF, so the incidence of VF is high in our patients.

From the review of available literature it is evident that our results are comparable with the results of earlier studies like GUSTO I and GISSI III when streptokinase was the only therapy available for reperfusion. Recent trials in the era of improved reperfusion therapies shows a reduction in complications and mortality in this group of patients, but when compared to patients who remained in sinus rhythm the morbidity and mortality is

still significantly higher than those who developed AF at some stage during the acute event of MI.

Our study was limited to only short term complications and there was no comparison with patients who were in sinus rhythm, so further research work is needed in this area to see the true effect of atrial fibrillation in the sitting of acute myocardial ischemia, and follow the patients for long term complications.

CONCLUSION

AF is common in the sitting of acute myocardial infarction, and result in complications and increases the mortality. So all patients with MI should be closely observed for AF, and any patient with should be managed in time. In important issues in the management of these patients are Rate control, rhythm control and prevention of thrombo embolic events.

Author's Contribution:

Concept & Design of Study:	Hafiz ur Rehman
Drafting:	Hafiz ur Rehman & Bilal Ahmed
Data Analysis:	Bilal Ahmed & Abdul Hadi
Revisiting Critically:	Iftikhar Ahmad & Abdul Hadi
Final Approval of version:	Hafiz ur Rehman & Bilal Ahmed

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

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Original Article

Diabetic Neuropathy

Frequency of Vitamin B12 in Patients with Diabetic Peripheral Neuropathy

Muhammad Bilal Khattak[1], Anwar Ullah[2], Niaz Ali[1] and Saud Ahmed Dar[3]

ABSTRACT

Objective: To determine the frequency of vitamin B12 deficiency in patients with diabetic peripheral neuropathy
Study Design: Descriptive / cross sectional study
Place and Duration of Study: This study was conducted at the Department of Medicine, HMC Peshawar from Jan to Dec 2016.
Materials and Methods: A total of 135 patients were studied by using (22%) 8 proportion of vitamin B12 deficiency in patients with diabetes, 95% confidence level and 7% margin of error using WHO software for sample size. The SPSS latest version was used to analyze the data. For continuous data while for categorical one frequencies and %ages were calculated and the dated was prepared in tabulated form
Results: In this study 135 diabetics fulfilling the inclusion criteria were enrolled. We found mean age 56 years with SD ± 1.34. Fifty six percent cases were male and rest of 44% patients female. Mean duration of diabetes was 20 years with standard deviation ± 1.26. Twenty six percent patients had S Vit B12 level < 200 pg/ml and 74% patients had S Vitamin B12 level> 200pg/ml. On this basis S Vit B12 Deficiency was found in 26% patients while 74% patients didn't had S Vit B12 Deficiency.
Conclusion: Patients with diabetes have both clinical and biochemical prevalence of vitamin B12 deficiency. Homocysteine and methylmalonic acid levels can estimate B12 deficiency and diabetic and non-diabetic.
Key Words: Vita B_{12} deficiency; Diabetes mellitus; Diabetic peripheral neuropathy

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INTRODUCTION

Diabetes mellitus is an increasing global health problem worldwide. Currently it was guessed that 366 million population is suffering from diabetes and it may reach as high as 552 million in 2030, making diabetes as the major health problem an public health threat around the globe[1, 2].

Complications of diabetes are resulting in increased morbidity, mortality and enormous health costs. Diabetic peripheral neuropathy (DPN) is a serious microvascular complication of diabetes[3]. American Diabetes Association mentions the involvement of nervous system about 60-70 % in diabetics which may be from mild to severe form[4]. Several distinct clinical syndromes of DPN have been delineated, the most common being distal symmetrical sensorimotor polyneuropathy (DSPN).

Symptomatic patients with DSPN typically present with numbness and tingling of the distal extremities, often described as a stocking-glove neuropathy[5].

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Painful neuropathy is also common in the form of burning, dysesthesia, allodynia and severe, short-lasting lancinating pains. All types of pain usually worsen at night. In the later stages of disease there is severe sensory loss, small muscle wasting of the hands and feet, sensory ataxia, loss of tendon reflexes, and neuropathic arthropathy (Charcot joints). In advanced cases, it can lead to foot ulceration, infection and lower limb amputation. More than 60% of non-traumatic lower-limb amputations occur in patients with diabetes[6].

Although longstanding hyperglycemia and its associated metabolic derangements is the most important etiological risk factor for the onset and progression of micro-vascular complications of diabetes including DPN, some patients may still develop these complications even with good glycemic control. Therefore other risk factors and comorbid conditions might be associated with the causation and severity of DPN, and sometimes nondiabetic neuropathies might be present in these patients. Vitamin B12 deficiency is a potential comorbidity that should be considered in patients with DPN [7,8,9].

Vitamin B12 Deficiency may present with signs and symptoms that may be due to peripheral nervous system or spinal cord involvement[10]. Vitamin B12 deficiency – induced neuropathy may be confused with DPN. In 28% of such patients there will be no anemia or macrocytosis. Clinical manifestations like paresthesias or numbness, impaired vibration and position sense, absent ankle reflexes, ataxia, and muscle weakness may

pose a diagnostic challenge, if they are the presenting features of B12 deficiency in patients with diabetes[11].

The objective of this study is to determine the frequency of vitamin B12 deficiency in our local population with diabetes and having peripheral neuropathy. This study will be first of its kind and will give us local statistics about the problem as no local data is available on similar objective so far.

MATERIALS AND METHODS

The study was descriptive cross-sectional and was carried out it Medicine department HMC, Peshawar. The duration was one year from Jan to Dec 2016, after approval from ethical committee HMC. Both male and female patients with age 40 years and above; and with diagnosis of diabetes and having peripheral neuropathy were included in the study. Patients with pernicious anemia, pancreatic insufficiency, inflammatory bowel disease, tuberculous enteritis, mal-absorption syndrome, taking metformin, proton pump inhibitors and oral or parental B12 supplementation were excluded from the study.

The study was carried out after permission of ethical committee HMC. Patients fitting to the inclusion were selected and biodata and relevant information filed on Proforma. We took Comprehensive history and did thorough clinical assessment in all cases. A careful scrutiny of past medical records was carried out for each patient. From all patients after observing strict aseptic technique, 5cc of venous blood was obtained and was immediately sent to hospital laboratory for the measurement of vitamin B12 level. All the laboratory investigations were done under supervision of expert pathologist fellow of CPSP and using same standard laboratory equipment.

All data was filed and assessed in SPSS version 16.0. Mean + SD was measured for continuous variables like age, serum B12 and duration of diabetes. Frequencies and percentages were calculated for categorical variables like gender and vitamin B12 deficiency. Vitamin B12 deficiency was assessed for different age range, gender and duration of diabetes to observe the outcome. Eventually the results were presented in tabulated form.

RESULTS

In this study carried out at HMC medical units a total of 135 patients were assessed to know about the vit B status in diabetic patients with peripheral neuropathy and results assessed.

Age distribution in 135 patients were found as 7(5%) cases in age group 40-45 years, 28(21%) cases 41-50 years, 55(41%) cases 51-55 years, 38(28%) cases 56-60 years and 7(5%) cases in age above 60 years. We found mean age of 56 years with SD ± 1.34 (Table 1).

Table No.1: Age-wise distribution of Diabetic Neuropathy (n=135)

Age in Years	Frequency	Percentage
40-45	7	5
46-50	28	21
51-55	55	41
56-60	38	28
61-65	7	5
Total	135	100

We found 76(56%) cases as male and 59(44%) cases as female out of total 135 cases.

Duration of diabetes among 135 patients was analyzed as 15(11%) patients had diabetes from 1-10 years, 66(49%) patients had diabetes from 11-20 years, 51(38%) patients had diabetes from 21-38 years and 3(2%) patients had diabetes more than 3 years. Mean duration of diabetes was 20 years with standard deviation ± 1.26 (Table 2).

Table No 2: Duration of diabetes (n=135)

Duration of Diabetes	Frequency	Percentage
1-10 years	15	28
1`1-20	66	19
21-30	51	9
>30 years	3	25
Males	113	15

Mean duration of diabetes was 20 years with SD ± 1.26. S Vitamin B12 level among 135 patients was analyzed as 35(26%) patients had S Vitamin B12 level < 200 pg/ml while 100(74%) patients had S Vitamin B12 level> 200pg/ml. Mean S Vitamin B12 level was 250 pg/ml with standard deviation ± 2.41 (Table 3).

Table No. 3: S. Vitamin B12 Level (n=135)

S. Vitamin B_{12} Level	Frequency	Percentage
< 200 pg/ml (Deficient)	35	28
> 200 pg/ml (not deficient	100	19
Total	135	9

Mean S Vitamin B_{12} level was 250 pg/ml with SD ± 2.41.

S Vitamin B12 Deficiency among 135 patients was analyzed as S Vitamin B12 Deficiency was found in 35(26%) patients while 100(74%) patients didn't had S Vitamin B12 Deficiency.

Association of S Vitamin B12 Deficiency with age group was analyzed as in 35 cases of S Vitamin B12 Deficiency, one case was in age group 40-45 years, 4 in group 46-50 years, 11 in 51-55 years, 14 in 56-60 years and 5 cases in age more than 60 years (Table 4).

Table No. 4: Association of S. Vitamin B12 deficiency in age group (n=135)

Age/ S. B12 Def	40-45 years	46-50	51-55	56-60	>60	Tot
Def	1	4	11	14	5	35
Non Def	6	24	44	24	2	100
Total	7	28	55	38	7	135

Association of S Vitamin B12 Deficiency with gender distribution was analyzed as in 35 cases of S Vitamin B12 Deficiency, 21 patients were male while 14 patients were female.

Association of S Vitamin B12 Deficiency with duration of diabetes was analyzed as in 35 cases of S Vitamin B12 Deficiency, 9 patients had diabetes from 11-20 years, 23 patients had diabetes from 21-30 years and 3 patients had diabetes from more than 30 years.

DISCUSSION

This study was carried out at HMC medical units Peshawar and we assess 135 diabetic with peripheral neuropathy for vit B12 deficiency. In our study we found 26% of type 2 DM with deficiency of B12 which is showing difference from other international study and possibly this difference was the result of the generalization of our study as compared to others[12].

Diabetic neuropathy is the frequently occurring complications just like other complications like nephropathy and vasculopathy and even more. Neuropathy in Diabetics ranges from mild to severe. Though multiple risk factors are contributing to Diabetic neuropathy, this study did confirm the significant role of vitamin. This statement has indirectly been confirmed by previous studies where they found that vitamin B12 supplementation can reduce somatic and autonomic neuropathy and therefore treating these patients with additional B12 will reduce significantly the neuropathy and hence result in the better outcome in diabetic with neuropathy[13,14].

We also investigated for the serum level of methylmalonic acid and homocysteine levels to make our diagnosis more accurate. And good thing about these markers is that accuracy of Vitamin B12 deficiency detection increases and even it gives clue about early tissue B12 deficiency. Though this study used MMA acid and HC levels but other studies have been conducted to know about its levels in B12 deficient elder adults rather than a complication of DM and they found B12 deficiency ranging from as low as 5 to as high as 28%, which is showing some resemblance in percentage to our study. There was difference of age related to B12 deficiency. The age difference was mostly aligning with other studies but there was difference in some of the studies where the age was less[15]. Therefore, it shows that there is a definite role of Diabetes on serum level of B12 and MMA HC level is helpful in assessing its level.

There is close association of B12 deficiency and chronic user of antidiabetic metformin. Its long use by patients having DM case have deficit and ultimately low B12 level and megaloblastic anemia[16,17,18]. Some studies have attributed to the higher doses and longer duration of treatment[19]. We had not looked for other associations of B12 deficit due to restricted inclusion criteria.

A group of diabetics who are have poor diabetes control and such patients must be started with early B12 supplementation to avoid earliest neuropath development. The age group of our study population closely simulated to the population of a study conducted at United States of Ameriac[19]. In short majority of our patients were representing day care ones. Being the primary objective of our study was to look for deficiency of B12, therefore this cross sectional study was the most suitable; but we could not study other aspects and to know about other risk factor leading to this problem[20].

CONCLUSION

Patients with diabetes have both clinical and biochemical prevalence of vitamin B12 deficiency. Homocysteine and methylmalonic acid levels can estimate B12 deficiency and diabetic and non-diabetic.

Author's Contribution:

Concept & Design of Study:	Muhammad Bilal Khattak
Drafting:	Anwar Ullah and Muhammad Bilal Khattak
Data Analysis:	Niaz Ali & Saud Ahmed Dar
Revisiting Critically:	Saud Ahmed Dar & Anwar Ullah
Final Approval of version:	Muhammad Bilal Khattak & Niaz Ali

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

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Original Article

Dental Treatment Options

Oral Health Knowledge, Awareness and Practice Among Patients in Dental College / Hospital, Karachi

Muhammad Nadeem[1], Naheed Najmi[2] and Irum Munir Raja[3]

ABSTRACT

Objective: To assess the awareness, attitude and behavior of Pakistani population in relation to oral health status and accept dental treatment among Darul Sehat Hospital patients living in Karachi, Pakistan.
Study Design: Cross sectional study
Place and Duration of Study: This study was conducted at the Out Patient Department (OPD) in Dental Block at Darul Sehat Hospital, Karachi from July 2016 to December 2016
Materials and Methods: A total of 8125 subjects consulted in the Out Patient Department and 7686 (94.5%) fulfilled the inclusion criteria and participated in the study. To access the oral health knowledge, attitude and behaviour we analysed the reasons of attending OPD, work load in different department, patients accepting or refusing the treatment plan or going for the alternative treatment plan.
Results: Results have shown that most of the patients came at dental OPD in pain without swelling (N= 3,620) ($x2 = 225.6$, df= 11, $p<0.001$) but they did not prefer the conservative approach (Root Canal treatment). Most of the patient preferred extractions (N= 1,091) ($x2 = 4334.71$, df=12, $p<0.001$) which indicates the lack of knowledge or may be cost effectiveness.
Conclusion: Summing up, the present record and study have showed that population of Pakistan have lack of awareness and lack of positive attitude towards dental treatment.

Key Words: Oral Health, Awareness, Behavior, Attitude

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INTRODUCTION

Good oral hygiene, including healthy teeth and gums, is an important part of our general health[1,2]. Oral health is now recognized as equally important in relation to general health. The attitude of an individual towards oral health depends upon his own experience, lifestyle, beliefs, cultural values, financial status, time and influence of the surroundings[2-4]. The American Dental Association recommends that, to avoid oral diseases, individual should brush and floss at least once a day and visit a dentist regularly[1,5]. Therefore awareness and knowledge is very crucial in order to avoid many diseases and complications. Oral diseases continue to be prevalent health problem[6]. In particular, oral diseases create a significant and costly burden to the developed and developing countries[2, 6-9].

As for the behavior, it has been noticed that mostly patients arrive with poor to average oral hygiene. This difference can be exhibited as the attitudes of population towards dentistry are class related.

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Middle income people are found to be more dentally conscious than the lower income people. Thus socioeconomic status plays an important role in taking decisions about receiving the type of dental treatment[10]. Lack of awareness and less education comes hand in hand with low socioeconomic status in this part of the world. The main reason cited for the patient's consultation with the dentist is dental pain. The frequent reason behind dental pain is either untreated dental caries or periodontal diseases[2,3,6]. In particular, dental caries and gum disease create a significant and costly burden[3,6]. Poor oral health is directly related to social economic status as it is highly prevalent in low-income populations[11,12].

The population of Pakistan has been estimated to be around 145.5 millions followed by 18,000,000 of Karachi population occupying an area of 3 528 $km^{2.}$ Karachi is the largest city and largest port of Pakistan it is also the world's second most populated city[13].

MATERIALS AND METHODS

The study reviewed and approved by the Research & Ethical Committee of Liaquat College of Medicine & Dentistry and Darul Sehat Hospital. All Subjects were selected equally from the pool of treated and maintained patients in the outpatient Department of Liaquat College of Medicine & Dentistry and Darul Sehet Hospital.

A cross-sectional study was conducted among Darul Sehat Hospital outpatient from July 2016 to December

2016, in which 7686 (94.5 %) patients participated out of which 4172 were females and 3512 were males. This exercise comprised of patients < 18 years old and above arriving in dental OPD as outpatients with the reasons causing them to visit along with the treatment strategies. Research forms were formulated for recording the above findings and were filled by research candidates. They comprised of personal bio data such as name, age, gender, residence, presenting complaint, history of presenting complaint, examination, reference and treatment done. Out of which emphasis was done on age, gender, presenting complaint, reference, and type of treatment. The following data helps figuring out patient's knowledge, awareness and attitude regarding the treatment they went for. The idea behind studying each patient's information was to gain the knowledge about their awareness, approach and attitude towards dental & oral diseases and treatment.

The data was analyzed and the results were compared. The analysis of data was conducted using IBM SPSS statistic 19 program. The analysis was to verify that knowledge and awareness about oral health is important in order to bring about a positive response in oral status.

RESULTS

The total numbers of subjects arrived as outpatient in the dental OPD was 7686 (94.6%), out of which 3,514 (45.7%) were males and 4,172 (54.3%) were females. The results show the distribution of both male and female patient is not significant (Table 1).

Table No.1: Distribution of Gender who attended the Dental OPD

		Frequency	Percent
Valid	Male	3,514	45.7
	Female	4,172	54.3
	Total	7,686	100.0

(Mean = 1.54, Sd = 0.49, SE= 0.006)

Table No.2: Distribution of patient receiving or refusing dental treatment in different department

		Treat-ment	No Treatment	Total
Ref	Oral Surgery	1,784	616	2,400
	Operative Dentistry	1,204	1,315	2,519
	Periodontology	1,892	455	2,347
	Orthodontics	8	121	129
	Prosthodontics	149	142	291
Total		5,037	2,649	7,686

(x2 = 12,851.77, df= 48, p<0.001)

The research shows the different age group patients arrived in dental OPD, mostly were 41 years and above (n= 1974, 54.7 %) and the least number of patients were of age group between 36-41 years old (n=799, 10.4 %). It shows, distribution of subjects regarding their reason for dental visit, the most common reason noted for the dental visit were pain without swelling which comprises of about 47.14% with the higher proportion of females. Least common reason for visits was removable prosthesis which was 1.09%. Furthermore, shows the burden of patients on different dental departments.

The statistic shows that most patients were referred to Operative dentistry which was about 32.79 % where as the least number of patients were referred to orthodontic department being 1.68 %. There was 31.2 % of the total burden of patients belonged to oral surgery, 30.5 % on Periodontology while only 3.78% on Prosthodontics.

Table No.3: Trend among the patients receiving different treatments with the complaint of pain without swelling

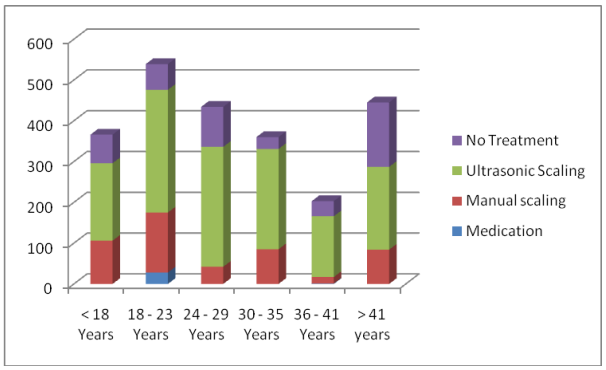
		Treatment							
		Medication	Extraction	RCT	Filling	Manual scaling	Ultrasonic Scaling	No Treatment	Total
Ref	Oral Surgery	35	1,091	0	0	0	0	433	1,559
	Operative Dentistry	57	0	324	246	0	0	782	1,409
	Periodontology	30	0	0	0	142	262	218	652
Total		122	1,091	324	246	142	262	1,433	3,620

(x2 = 4334.71, df=12, p<0.001)

The following table shows the proportion of patients opt for treatment or no treatment in their respective dental OPDs. Out of total number of patients came to the OPD's, 65.5% received treatment and 34.46% left without any treatment. Most number of patients was treated in the Periodontology department (80.2%) the least number of patients was treated in the orthodontics department (6.2%), 47.29% in the operative dentistry, and 74.33% in the oral surgery department (Table 2).

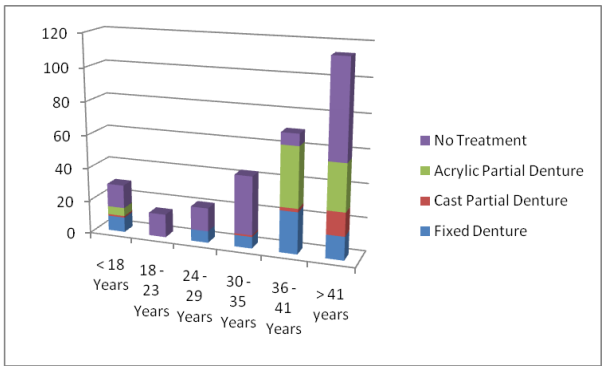
The table below shows the trend among the patients who received different treatments with the complaint of pain without swelling, from which 39.58% left without any treatment, 69.98% of patients came to oral surgery and had extraction done, 22.99% came to operative for

RCT while 17.46 % received restorative treatment (Table 3).



(x2 = 294.99, df=15, p<0.001)

Figure No.1: The table shows the age distribution of attending patient in Periodontology department and their behavior towards the treatment plan



(x2 = 110.72, df= 15, p<0.001)

Figure No.2: The bar chart demonstrate the age distribution of attending patient in Prosthetic Dentistry department and their preference towards the treatment plan

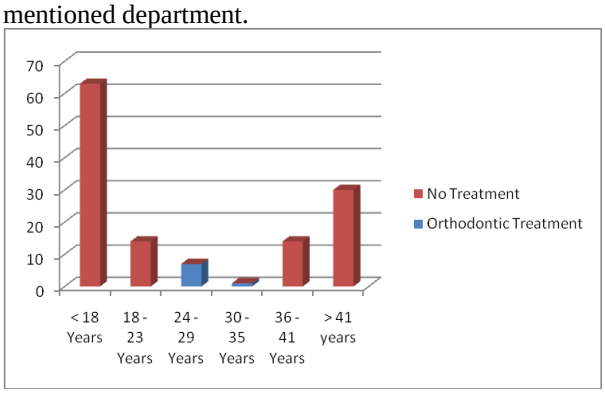
Analyses was made in patient attending different departments, Departments work load and attitude of the patients those received the appropriate treatment or refuse the treatment plan.

In operative dentistry department conservative treatment was suggested such as different type of fillings, and root canal treatment, direct and indirect pulp capping. According to our data 2519 (32.7%) patients attended operative department from July 2016 to December 2016, out of 2519 only 1196 (47.5 %) accept the treatment plan and others more than 50 % refuse the treatment offer and left the department without receiving any treatment.

The patients can receive all type of surgical procedure in local anesthesia such as removal of cyst and different type of extractions such as simple or surgical extractions in oral surgery department. According to their age group < 18 years of age patient did not want to extract their teeth (46.3 %) as compare to > 41 year of age patients (66.8 %).

Periodontology department offers all type of scaling and root planning under local anesthesia (if required). According to the data younger patients comprehend better the dental treatment plan suggested by the dentist as compare to older patients (Figure 1).

Prosthodontics department offers all type of fixed and removable partial dentures (acrylic & cast) and complete dentures for replacement of natural teeth. Figure 2 shows almost 50 % of patient replaced missing teeth and others refused it. The work load of this department is also very low as compare to above mentioned department.



(x2 = 129.00, df=5, p<0.001)

Figure No.3: The distribution of different age group patients opt for treatment or no treatment in Orthodontic department.

Due to lack of knowledge and affordability on the patients's part, the workload in orthodontic department is much less compared to other departments. Patients did not prefer esthetic treatment due to many reasons one of which was financial issue.

According to our data patients of orthodontic department mostly refused the treatment plan (93.79%) and left without any treatment done (Figure 3).

DISCUSSION

Liaquat College of Medicine & Dentistry and Darul Sehat hospital is situated in south Karachi at a central location which covers rural and urban population of gulshan town, the hospital has a well established dental program for more than 10 years with well equipped dental OPD's[14]. This research was conducted to assess and analyze the knowledge and behavior of population with regards to oral health and dental treatment. The most common reason cited for their dental visit was dental pain[5,15,16]. Pain is defined by the International Association for the Study of Pain (IASP) as "a disagreeable sensory and emotional experience of subjective nature"[16]. The etiology of dental pain is more likely to be dental caries[17,18] and periodontal disease[19]. Untreated dental caries is one of the most hazardous situations leading to excruciating dental pain, which is directly related to low socioeconomic status[10,12]. The collected data made it very obvious that awareness and

knowledge about dental and oral health is very limited and given least priority in low economic status areas[11,12]. People tend to visit dentist only when the pain is unbearable and home remedies tend to fail[16]. Routine dental treatment has been the missing element, most obvious reason behind is lack of oral health promotion & affordability[20]. The oral health knowledge of the general population was poor. Usually people with limited income and less education are the ones with the poorest oral health knowledge[11,21]. Electronic & print media will be the appropriate way to disseminate oral health awareness to the Pakistani population via mass media.

Dental caries, periodontal disease and other oral disease, burden people in Pakistan excessively. These are aggravated by poverty, poor living conditions, ignorance concerning health education and lack of government funding[22].

This is a time to realize that oral health is very important in general health. For maintaining healthy lives oral health should be an important thing to be focused by government and local authorities. Pakistan is one of the developing countries, where are social, political, economic, behavioural and environmental barriers to health. Therefore it is a big challenge for oral health professionals to minimize the burden of oral diseases (particularly dental caries and periodontal diseases) in Pakistan.

Dental professionals and government of Pakistan should work in collaboration to improve the status of knowledge & awareness towards oral health and dental treatment to save the nation's smile.

CONCLUSION

Summing up, the present record and study have showed that population of Pakistan have lack of awareness and lack of positive attitude towards dental treatment.

The study reveals an important fact that dental pain without swelling is the most common reason for visiting a dental clinic. Due to lack of knowledge, awareness, education and low socioeconomic status, most of the population preferred extractions rather than saving the tooth.

Author's Contribution:

Concept & Design of Study:	Muhammad Nadeem
Drafting:	Irum Munir Raja
Data Analysis:	Muhammad Nadeem & Irum Munir Raja
Revisiting Critically:	Naheed Najmi
Final Approval of version:	Muhammad Nadeem & Naheed Najmi

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

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Original Article

Hypothyroidism in Obese Diabetics

Subclinical Hypothyroidism is More Common in Hyperglycemic Adult Overweight and Obese Individuals as Compared to Normoglycemics

Pervez Mohammad[1], Mohammad Javed[2] and Aurangzeb[1]

ABSTRACT

Objective: To know the significance of subclinical hypothyroidism in un-controlled diabetic adult overweight and obese individuals in district Peshawar.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the Chemical Section of the Department of Pathology in Khyber Medical College Peshawar from April, 2015 to September, 2015

Materials and Methods: Two hundreds samples were collected by convenient sampling technique from general population of Peshawar district. The selected subjects were obese and overweight(BMI $\geq$ 24.9 kg/m^2) and of the age 18-50 years. Out of 200 subjects, 40 were female and 160 were male. Minimum age of the patient was 18 years and maximum age was 50 years. On the basis of age three groups were made, 18-28 years which included 40 patients 10 were female and 30 were male, age group between 29-40 years included 120 patients out of which 20 were female and 100 were male, age group 41-50 years included total number of 40 patients with 10 females and 30 males. 33 patients out of 200 had uncontrolled diabetes (DM-II). This included 26 male (13%) and 7 (3.5%) were female.

Results: The results are summarized in table 1 and 2. Whether plasma TSH levels were correlated with adiposity, we calculated Spearman Rank correlation of plasma TSH and BMI.In the results an inclination towards the association of plasma TSH level and body mass index was noted (r= 0.125, p= 0.078), while there is a substantial correlation between random blood sugar level and plasma TSH (r= 0.14, p= 0.046).Results showed that TSH level was elevated particularly in hyperglycemic overweight and obese subjects.This observation supports the view that SCH may be the result rather than an etiological factor for obesity and overweight.

Conclusion: The calculations of Spearman Rank correlation of plasma TSH and BMI show an inclination towards the association of plsma TSH level and body mass index (r= 0.125, p= 0.078), while there is a substantial correlation between random blood sugar level and plasma TSH (r= 0.14, p= 0.046).

Key Words: Subclinical hypothyroidism (SCH), Body mass index (BMI), thyroid stimulating hormone (TSH).

Citation of articles: Mohammad P, Javed M, Aurangzeb. Subclinical Hypothyroidism is More Common in Hyperglycemic Adult Overweight and Obese Individuals as Compared to Normoglycemics. Med Forum 2017;28(10):21-24.

INTRODUCTION

Hypothyroidism is frequently associated with weight gain but whether changes occur in weight in SCH has been observed in a limited number of studies that show slightly elevated TSH (within normal range) relating to an increase in BMI. SCH is diagnosed on biochemical levels in otherwise normal patients free of symptoms who show persistent elevation of TSH with normal free thyroxin level. Whether SCH should be treated is still a controversial issue and has to be solved by further evaluation.

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On medical basis owerweight and obesity is the situation of excess fat deposition in the body to the extent that it damages the health and reduce expectancy of life by increasing health related problems[1]. Obesity has got doubled in the past few decades and it is quite alarming. WHO has reported that globally 1.5 million people are either overweight or obese by the age 20[2]. This exagerrated increase in obesity prevalence threats the health of general population by multiplying the chances for the development of non-communicable diseases.

Obesity may follow certain conditions I-e iatrogenic, administration of insulin, medicines like anti-epileptics, anti-psychotics, and anti-depressants and medical conditions like hypothyroidism and hypercortisolism (Cushing syndrome)[3]. High calorie diets, lacking physical activity and decreased rate of metabolism individually or combined can induce obesity particularly in genetically predisposed population[4]. The

most routinely used method for the diagnosis of overweight and obesity is calculating BMI that is the ratio of weight and height. Genetic and epigenetic influences, behavior of the individual, lacking activity, positive energy balance, socioeconomic status, food and cultural taboos all influence the BMI of a person[5]. Association of hypertension, heart disease, type-2 diabetes, cerebrovascular accident, certain cancer types, osteoarthritis and sleep apnea with high BMI is well established[6]. Strong correlation between obesity, diabetes mellitus type-II and glucose tolerance test impairment has been proved by certain studies[7]. The adipose tissue in obese individuals release high amounts of pro-inflammatory cytokines, glycerol and non-esterified fatty acids. All these products are important players in inducing resistance to insulin causing overstimulation of the beta-pancreatic cells to secrete excess insulin along with causing a decrease in insulin receptors[8].

Abnormalities of lipid metabolism are very common in obese and overweight patients. Adiposity is characterized by high triglycerides, decreased level of HDL, elevated total cholesterol and LDL[9]. LDL molecules generated by hepatic lipases are well known for their atherogenic capability[10]. Energy metabolism of the body is strongly controlled by thyroid hormones having a critical role in the modification of weight. Energy metabolism in young type-1 diabetics and children may be affected by SCH, as SCH is associated with an increased chance of symptomatic hypoglycemia. Auto-immune thyroid disorders are more common in young diabetic girls particularly in the teenage and may have association with elevated TSH levels indicating the importance of SCH in such patients. There is a link between nephropathy, cardiovascular disease and SCH especially in type-2 diabetics, however retinopathy is excluded[11]. The available data suggests that increased rate of cardiovascular disease in type-2 diabetics with SCH may be secondary to nephropathy. Diabetic patients must be checked for thyroid function each year to look for a symptomless thyroid dysfunction that is more common in these patients[12].

MATERIALS AND METHODS

This was a cross-sectional type of study performed from April, 2015 to September, 2015 in the chemical section of the department of pathology in Khyber Medical College Peshawar. Two hundred samples were collected by convenient sampling technique from general population of Peshawar district. The selected subjects were obese and overweight (BMI $\geq$ 24.9 kg/m^2) and of the age 18-50 years. Out of 200 subjects, 40 were female and 160 were male. Minimum age of the patient was 18 years and maximum age was 50 years. On the basis of age three groups were made, 18-28 years which included 40 patients 10 were female and 30 were male, age group between 29-40 years included 120 patients out of which 20 were female and 100 were male, age group 41-50 years included total number of 40 patients with 10 females and 30 males. 33 patients out of 200 had uncontrolled diabetes (DM-II). This included 26 male (13%) and 7 (3.5%) were female.

RESULTS

200 patients including 40 (20%) females and 160 (80%) males. Participated in this study Median age of all patients was 34 years (interquartile range; 10 years). There was no significant difference in the median age between male and female patients (p=0.628, Mann-Whitney U test) (table 1). Minimum and maximum age of the patients was 18 years and 50 years. Total number of patients age between 18-28 years were 40 (female; 10, male; 30), between 29-40 years were 120 patients (female; 20, male; 100), and between 41-50 years were 40 patients (female; 10, males; 30).

The results are summarized in Table 1, and Table 2.

Table No.1: Descriptive statistics of study participants

Variable	Female (n=40)		Male (n=160)		p-value*
	Median	IQR	Median	IQR	
Age (years)	34.00	12.50	34.000	9.750	0.628
SBP (mmHg)	150.00	48.75	130.00	45.00	0.004
DBP(mmHg)	97.50	27.50	85.00	20.00	0.008
RBS (mg/dl)	125.50	30.00	121.00	25.75	0.344
Ht. (inches)	64.000	2.000	64.000	1.000	0.058
Wt. (Pounds)	188.00	16.00	180.00	30.00	0.0002
BMI (kg/m^2)	32.800	2.150	31.200	5.600	0.002
TSH (mIU/L)	2.880	4.017	1.695	1.488	0.0004
T4 (pmol/L)	119.30	34.52	115.05	31.99	0.455

*Mann-Whitney U test, SBP; systolic blood pressure, DBP; Diastolic blood pressure, RBS, Random blood sugar, Ht. height, Wt.; Weight, BMI; Body mass index, TSH; Thyroid stimulating hormone, T4;

The Correlation Of Plasma TSH with Adiposity was calculated according to Spearman Rank correlation of plasma TSH and BMI. There was a tendency towards a relationship between the levels of TSH and BMI (r= 0.125, p= 0.078) (figure 6). However there was a significant positive correltaion between TSH and plasma random blood sugar (r= 0.14, p= 0.046) (figure 7). Levels of TSH were not significanlty correlated with age (p=0.236), systolic blood presure (p=0.144), and diastolic blood pressure (p=0.981). Binary logistic regression analysis was used to determine the association of plasma TSH with BMI and other variables (random blood sugar, systolic blood pressure, diastolic blood pressure, age and gender).There was a tendency towards a significant association of plasma TSH with BMI when no other variable was considered in the model (odds ratio; 1.056 CI; 0.992, 1.124, p-value; 0.086). However significant association was

observed between plasma TSH and BMI (Odds ratio; 1.0935, CI; 1.0088, 1.1853, p=0.028) when plasma random blood sugar, systolic and diastolic blood pressure, age and gender were included in the model (table-2). Body mass index, random blood sugar, age, and gender were significantly associated with plasma levels of TSH (table 2).

Table No.2: Binary logistic regression analysis of subclinical hypothyroidism with BMI, RBS, blood pressure, age and gender.

Variable	Odds Ratio	95% CI	P - value
BMI (kg/m^2)	1.0935	(1.0088, 1.1853)	0.028
RBS (mg/dl)	1.0164	(1.0089, 1.0239)	0.000
SBP (mmHg)	1.0077	(0.9874, 1.0284)	0.460
DBP (mmHg)	0.9848	(0.9531, 1.0176)	0.359
Age (Years)	0.9379	(0.9058, 0.9712)	0.000
Sex	0.5019	(0.3140, 0.8021)	0.004

BMI; Body mass index, SBP; systolic blood pressure, DBP; Diastolic blood pressure, RBS, Random blood sugar

DISCUSSION

Subclinical means the presence of a disorder in a person who is otherwise symptoms free.

Compared to the prevalence of SCH in general population (5.4%), in our study 16% of the overweight and obese participants had SCH (raised TSH level in the face of normal T4)[13]. These findings indicate high prevalence of SCH in the persons with BMI > 24.9 when compared to general public. In our study the female to male ratio for BMI is significantly higher. This observation can be partially explained by the cultural setting in Peshawar where females are very minimally facilitated for exercise. High literacy and least interest in media information leading to unawareness results in carelessness about adiposity and its complications.

Females participating in our study showed significantly elevated levels of TSH in comparison to males and SCH was more prevalent in females (30%) versus males (13%). Our study showed a tendency towards the correlation of BMI and plasma TSH levels. In a study from Italy 13.7% of the overweight and obese individuals were recorded to have SCH[14]. In a study from India 46% participants of overt hypothyroidism and 34% of SCH were overweight or obese[15].

In our study type-II diabetes was present in 17% of the participants (total 33), 7 were females and 26 were males.

Diabetes is a chronic metabolic disorder due to insulin lack (type-1) or insulin resistance (type-II). Although the two types have different etiological and pathogenical pathways i.e., inflammation is common to both. In our study high prevalence of Type-2 diabetes mellitus was observed in patients of SCH. There is possibility that the two diseases (SCH and diabetes) may share the immunity related mechanisms at some points during their course. These findings go in favor of the idea that SCH may be a consequence rather than an etiological component for obesity and its related comorbidities.

Dyslipidemias like high cholesterol and triglyceride levels are well known to occur in overt hypothyroidism but their association to SCH needs further evaluation. In Brazil a study was conducted and it was observed that participants with hypercholesterolemia had a three to four times more chance of having SCH[16]. In a study in Switzerland sixty six females with diagnosed SCH having hypercholesterolemia were treated with thyroid hormone and a significant decrease in total cholesterol, LDL-cholesterol and an increase in HDL-cholesterol was observed[17].

Hyper lipidemia is a well-known risk factor for cardiac disease by accelerating atherosclerosis. Thyroxin administration can lower the cholesterol level by 8% and so the risk of ischemic heart disease[18]. In our study evidenced by ultrasonography fatty liver was observed in 48 participants (20 men and 28 women). The high prevalence of fatty liver in female participants in this area can also be partially explained by their sedentary life when compared to male gender. A functional level of thyroid hormones is essential for normally functioning liver hepatocytes. In India in a study elevated levels of transaminases and total protein was observed in patients of SCH[19]. Conducted in Korea in a study a range dependent correlation between SCH and non-alcoholic fatty liver disease was observed[20]. In an another study in Italy it was observed that SCH in obese persons was significantly associated with abnormal carbohydrate and fat metabolism leading to hepatic steatosis[21]. Whether SCH is an etiological factor for hepatic steatosis or an outcome needs more evaluation.

Treatment of subclinical hypothyroidism with thyroid hormone replacement therapy is controversial till date. Treatment of subclinical hypothyroidism is limited only to certain conditions like high risk of overt hypothyroidism, presence of thyroid antibodies, young age and pregnancy

CONCLUSION

The calculations of Spearman Rank correlation of plasma TSH and BMI show an inclination towards the association of plsma TSH level and body mass index (r= 0.125, p= 0.078), while there is a substantial correlation between random blood sugar level and plasma TSH (r= 0.14, p= 0.046).

Author's Contribution:

Concept & Design of Study:	Pervez Mohammad
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Data Analysis:	Mohammad Javed & Aurangzeb
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Original Article

Non Alcoholic Fatty Liver Disease

A Light Micrscopic Study of Steatosis in Non Alcoholic Fatty Liver Disease and its Correlation with Fibrosis

Hamid Ali Khan, Shabnum Aamir, Munila Shabnum Khattak, Sadaf Ambreen and Shazia Iftikhar

ABSTRACT

Objective: To assess the steatosis by microscopic study of liver biopsies in patients labeled as fatty liver on ultrasound and study its association with fibrosis.

Study Design: Case series study.

Place and Duration of Study: This study was conducted at the Gastroenterology unit of Hayatabad Medical Complex and Histology laboratory of Khyber Medical College and Histopathology Lab of CMH, Peshawar from June 2016 to December 2016.

Materials and Methods: Ten cases diagnosed as fatty liver on ultrasound were selected for liver biopsy followed by histological study. They were divided in to two groups. Group 1: between the ages of 45-65 years, obese having diabetes and hyperlipidemia. Group 2: 25-44 years, overweight, diabetic and hyperlipidemic.

Results: Histological examination clearly indicates that 60% of total cases developed grade 1 steatosis, while 30% and 10% of cases revealed grade 2 and 3 respectively. The results revealed highly significant association between the two groups and that of steatosis grade after application of Chi square. Azonal/panacinar steatosis was found in 60% of total cases while 10% and 30% of cases were reported with zone 1 and 3 steatosis. Only single case did not develop fibrosis although, the rest of patients revealed various stages of fibrosis. Stage 4 (cirrhosis) could not be recorded in any of the case.

Conclusion: Mix pattern of steatosis is present, with higher incidence of steatosis in old and obese patients having diabetes and hyperlipidemia. Furthermore, there exists no substantial correlation between steatosis grade and fibrosis stage.

Key Words: Steatosis, Fibrosis, Fatty liver.

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INTRODUCTION

Non-alcoholic fatty liver disease NAFLD is one of the most widespread condition, affecting men, women and children[1,2]. NAFLD is now recognized as a clinic-pathological entity that involves a wide spectrum of pathological conditions extending from accumulation of fat in hepatocytes to various degree of inflammation and fibrosis[3,4,5].The fibrosis ultimately leads to cirrhosis and hepatocellular carcinoma[6,7]. The most common risk factors for development of NAFLD are obesity, diabetes and hyperlipidemia[8,9].

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In Pakistan the incidence of NAFLD is higher in type-2 diabetic patients and is found in both sexes with higher incidences in females[10].

The possible mechanism for the pathogenesis of fatty liver is a net retention of lipid in liver cells, commonly in form of triglycerides. The primary metabolic abnormalities resulting in lipid deposition are not clear, but the reason could be alteration in the various pathways of hepatic lipid metabolism resulting from insulin resistance[11]. The type of steatosis that predominates in adults and in children is macrovesicular steatosis having a single fat droplet occupying the entire cytoplasm resulting in nuclear eccentricity[12]. It may be found as several smaller and well defined droplets in the cell cytoplasm. It is not uncommon for there to be a mixture of large single fat globule and multiple small droplets. Clusters of hepatocytes with delicate intracytoplasmic septation due to microvesicular steatosis may also be present[13].

Among the diagnostic tools commonly applies for diagnosis of fatty liver (steatosis) are ultrasonography and liver biopsy[14,15]. Examination of liver biopsies by skilled pathologist is vital diagnostic complement. Moreover, liver biopsy helps in providing essential

prognostic information. In the view of above mentioned facts, we carried out a study to assess the morphometric and microscopic features of steatosis along with study of other histological features specifically fibrosis, which is useful in determining the risk of progression to more advanced condition.

MATERIALS AND METHODS

The study was conducted on ten patients labeled as fatty liver on ultrasound. Percutaneous liver biopsies were performed on outdoor patient in Gastroenterology unit of Hayatabad Medical Complex Peshawar. Tissues processing, morphometry and histological analysis were performed at Histology laboratory of Khyber Medical College and Histopathology lab of CMH, Peshawar June 2016 to December 2016.

Patients selected for study were between 25 to 65 years, having serum ALT level more than 45u/l and BMI more than 25. They had hemoglobin, TLC, platelet count, clotting factors and serum bilirubin with in normal limit. The patients with history of alcohol intake, advance liver disease and systemic disorders were excluded from the study. The patients were categorized into two groups on the basis of age, BMI, certain hematological and biochemical findings.

Group 1: Comprised of 07 cases between the ages of 45 to 65 years. These patients were obese, diabetic and having high levels of cholesterol& triglycerides.

Group 2: Comprised of 03 cases between the ages of 25 to 44 years. They were overweight, with no history of diabetes, hypercholesterolemia and hypertrigly-ceridemia.

Patients were briefed to avoid aspirin, NSAID to reduce the risk of bleeding after biopsy. Fresh blood investigations were sent to rule out any bleeding disorders. Patients were kept empty stomach for at least 12 hours prior to the procedure. All the patients were informed about the complication of procedure. Every case was given injection diazepam intravenously to keep them relaxed during the procedure. Percutaneous liver biopsy was performed under local anesthesia. The size of specimen was between 1 and 1.5cm in length and 1 mm in diameter. For assessment of various hepatic diseases, the appropriate size of specimen should be 1.5 cm in length[16]. The specimens were fixed in formalin followed by tissue processing. Two tissue slides of every case were prepared in serial order and following staining methods were applied.

- Hematoxylin and Eosin for routine microscopy and demonstration of fat globules.
- Masson's Trichrome for study of fibrosis.

Stained sections were studied under light microscope. The morphometric measurements were taken by means of occulometer. Histological staging and grading was done according to Histological Scoring System for NAFLD[17].

Statistical analysis was done using SPSS version 16. The statistical results were presented as mean and standard deviation. The two-tailed Student's-t test and Chi-Square test were carried out. The 95% confidence interval was taken for the study and p value < 0.05 was considered as statistically significant.

RESULTS

Morphometric Parameters: The morphometry of fat globules was done under 40 × objective. Both macrovesicular and microvesicular steatosis were observed in group 1 and group 2. Detail of results is given in table No: 1.

Table No.1: Comparison of mean morphometric parameters of Group 1 and Group 2.

parameters	Group 1 (n=7)		Group 2(n=3)		P value
	Mean (µm)	SD	Mean (µm)	SD	
Macrosteatotic fat globule size	23.24	4.59	22.33	5.55	<0.793
Microsteatotic fat globule size	8.31	4.60	5.98	0.49	<0.422

Scoring of Steatosis and Fibrosis: Scoring and grading of steatosis and fibrosis was done under 4× and 10× objectives. Details of results are depicted in table 2 and 3.

Table No.2: Showing grade and location of steatosis of group 1 and 2.

Group	Steatosis Grade			Steatosis Location		
	1 5%-33%	2 >33%-66%	3 >66 %	Zone 3	Zone 1	Azonal/ panacinar
1	30%	20%	10%	20 %	10 %	50%
2	30%	10.0%	0.0 %	10 %	0.0 %	10%
Chi-Sq	4.27			1.43		
p-value	0.001			0.481		

There is substantial association (< p 0.05) between two groups in that of steatosis grade, whereas there exists no significant correlation in that of steatosis location.

Table No.3: To show Correlation of steatosis grading and stage of fibrosis.

Case No:	Steatosis Grade	Fibrosis Stage
1	1(5%-33%)	1C (Portal/Periportal)
2	1 (5%-33%)	1C (Portal/Periportal)
3	3 (>66%)	1(Perisinusoidal/periportal)
4	1 (5%-33%)	1C (Portal/Periportal)
5	1 (5%-33%)	1(Perisinusoidal/periportal)
6	2 (33%-66%)	3 (Bridging fibrosis)
7	2 (33%-66%)	0 (None)
8	1 (5%-33%)	1(Perisinusoidal/periportal)
9	2 (33%-66%)	1C (Portal/Periportal)
10	1 (5%-33%)	1C (Portal/Periportal)

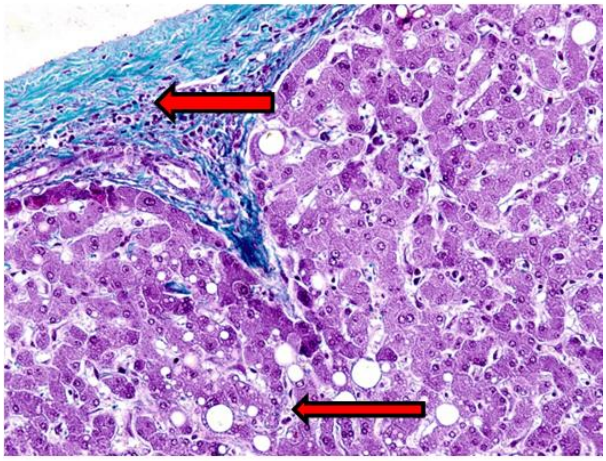

Figure No.1: Photomicrograph of Masson's Trichrome stained 5µ thick section of liver showing fibrosis and steatosis with macrosteatotic, microsteatotic cells (40×).

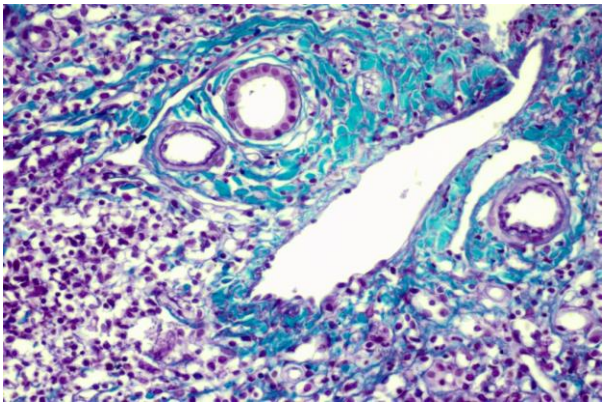

Figure No.2: Photomicrograph of Masson's Trichrome stained 5µ thick section of liver showing portal fibrosis (40×).

DISCUSSION

The incidence of NAFLD is growing rapidly worldwide in association with the overall increase in type 2 diabetes mellitus and obesity[18,19]. The spectrum of NAFLD is extending from simple steatosis to NASH and finally fibrosis[20]. Present study was designed to evaluate the steatosis by microscopic study of liver biopsies in patients labeled as fatty liver on ultrasound and to study its correlation with fibrosis. Furthermore, the relationship of steatosis with age, BMI, diabetes and hyperlipidemia were also considered. Histological grading of steatosis and fibrosis were performed to preclude hazards of steatosis by timely diagnosis.

In the present study, results of the morphometric analysis (size of macrosteatotic and microsteatotic fat droplets) match with findings documented in one study on chronic hepatitis C[21]. Regarding steatosis grade, it was found that majority of cases revealed grade 1 and 2 steatosis as compared to grade 3, which is in accordance with the study of Brunt et al. (1999)[22]. The patients of group 1 were noted with high grades of steatosis whereas low grade was noticed in group 2, indicating higher occurrence of steatosis in old and obese patients with history of diabetes and hyperlipidemia. Panacinar steatosis was one of a prominent finding, which is in line with the observation of Zubair A and Jamal S (2009), who carried out their study on morphometry of fatty changes in patients with hepatitis C infection. Location of steatosis showed no significant relation between group 1 and 2. This indicates that age, BMI, serum lipid profile and blood sugar level has no effect on steatosis location.

Both macrosteatosis and microsteatosis (mixed pattern of steatosis) was appreciated in majority of the cases. It was noted that macrosteatosis was fairly prominent feature of steatosis. These findings were in accordance with the observations of Brunt et al [22] but did not correlate with the study of Zubair A and Jamal S,who reported a high incidence of microsteatosis in chronic hepatitis C infection[21]. This indicates that the pathogenesis of steatosis in hepatitis C infection and NAFLD might be different.

Varying stages of fibrosis was observed in 90% of patients. Stage 1 fibrosis was noted in most of the members, while bridging fibrosis was found only in single case. Furthermore, cirrhosis was not observed in any of the cases. No remarkable association was observed between stage of fibrosis and grades of steatosis. Only one case revealed bridging fibrosis (slightly advanced phase of fibrosis) was having low score of steatosis. These findings were in accordance with the observation of Brunt et al (2007), who conducted their study on pathology of fatty liver disease[23].

CONCLUSION

Our study demonstrates that cases diagnosed as fatty liver on ultrasound do have some degree of steatosis on microscopic examination of biopsy specimen. Mix pattern of steatosis is observed with higher incidences of steatosis in older, obese patients having diabetes and hyperlipidemia. Macrosteatosis is predominant feature in majority of the cases. Furthermore, there exists no significant correlation between the stage of fibrosis and grades of steatosis.

Author's Contribution:

Concept & Design of Study:	Hamid Ali Khan
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Data Analysis:	Sadaf Ambreen & Shazia Iftikhar
Revisiting Critically:	Shabnum Aamir
Final Approval of version:	Shabnum Aamir & Hamir Ali Khan

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

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Original Article

Interdental Brushes, Periodontal Status

Orthodontic Treatment and Periodontal Health Status in Pakistani Orthodontic Patients

Naheed Najmi[1], Muhammad Nadeem[2] and Tahera Ayub[3]

ABSTRACT

Objective: To determine the effect of duration of orthodontic treatment among orthodontic patients. To determine the efficacy of orthodontic brushes among orthodontic patients.
Study Design: Randomized clinical trial study
Place and Duration of Study: This study was conducted at Liaquat College of Medicine and Dentistry, Darul Sehat Hospital, Karachi from December 2013 till April 2014.
Materials and Methods: In this study 148 males and 267 female were recruited on the basis of non-probability convenient sampling to access the efficacy of orthodontic brushes and compare the effect with the duration of orthodontic treatment on periodontal health. We analysed the Community Periodontal Index Treatment Need (CPITN) Index and Plaque Index on participants.
Results: Results have shown that at the end of first year treatment most of the patients have high score of calculus ($x2= 137.9$, df=20, $p<0.001$). Likewise at the end of first year treatment plaque score is high too ($x2= 95.76$, df=12, $p<0.001$). Orthodontic brushes have remarkable effect on periodontal health and both calculus and plaque scores are reduced with the usage of the orthodontic brushes ($x2= 12.16$, df= 5, $p= 0.033$) ($x2= 23.78$, df= 3, $p<0.001$)
Conclusion: The study concludes that Orthodontic brushes are very useful to control plaque and calculus among orthodontic patients. During first year most of the patients neglect their oral health therefore their CPITN and Plaque Index are high.
Key Words: Periodontal Index, Plaque Index, Bleeding on Probing, Plaque

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INTRODUCTION

Anterior cross bites often result in stripping of the oral epithelium of lower incisors, and severe interrupt increased over bite may lead to destruction of the palatal. Orthodontic braces may correct these issues, or at least avoid them from progressing. It seems logical that straighter teeth are easier to maintain, and possibly having all the teeth centered in the alveolar housing and biting properly may support a periodontium. Orthodontic therapy may help periodontal health in these situations, but it also holds some potential to harm the periodontal tissues. Oral health may be more difficult to maintain during treatment, which may cause plaque formation and inflammatory reaction. Orthodontic bands placed subgingivally may encroach on alveolar bone. Soft- or hard-tissue defects may be present in extraction sites. As a result, periodontal results seem possible after orthodontic treatment [1].

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It has been shown that adverse changes in microflora occur shortly after placement of orthodontic appliances, and these are mirrored by increased plaque, bleeding, and probing depth [1-2]. These problems have been related to difficulties in maintaining oral hygiene, caused by the presence of orthodontic appliances, which can cause accumulation of bacterial plaque [3-4]. Some studies have reported that the placement of orthodontic appliances affects the subgingival microbial composition, thereby increasing the prevalence of periodontal pathogens [5-6].
Oral health maintenance during orthodontic treatment will help in good periodontal health status, which replicates in final orthodontic treatment results. But the level of oral health status among orthodontic patients is not sufficient as mostly they should not know about proper methods of orthodontic or regular brushes. Improper oral health is due to may be lack of knowledge or carelessness by patients themselves. Furthermore, Patients are not given proper instructions, which may be one strong reason for patient's non-cooperation [7].
Rationale: Importance of oral hygiene in orthodontic patients is always intensified to prevent any further periodontal disease.
The purpose of the study was to evaluate periodontal status of the patients during orthodontic treatment from the start of the treatment (0 to four month), at the eight months of the treatment (five to eight month

orthodontic treatment), at the end of one year treatment (nine month to one year orthodontic treatment), at the end of sixteen month treatment (thirteen month to sixteen month orthodontic treatment) and at the treatment end (16 months/post-ortho). In this study we authors also check the efficacy of orthodontic brushes in orthodontic patient.

MATERIALS AND METHODS

A randomized clinical trial / study were done from December 2013 to April 2014 at Liaquat College of Medicine and Dentistry (LCMD). The study protocol was approved by Ethical and Research committee of LCMD and written informed consent was collected from all the participants. The sample population includes randomly selected individuals, 415 in number among whom, 148 (35.7%) male and 267 (64.3%) female. All participants were between 20-30yrs of age and orthodontic patients in regular OPD. There was no exclusion criterion for this study.

All the participants undergone the self-administered questionnaire survey followed by a dental checkup to assess the periodontal status.

The study population were divided into groups as different groups according to receiving orthodontic treatment and use of orthodontic brushes to evaluate respective to their duration and use of brushes and then compared to assess difference of periodontal health status among them.

The clinical examination was performed at the orthodontic department in dental block of Liaquat College of Medicine and Dentistry under standardized condition; good equipment and illumination were provided. Before the examination of periodontal health status no dental prophylaxis was performed. All examinations were carried out using CPITN and Plaque index as an assessment tool. The study groups were assessed with CPITN and reported as healthy, bleeding, calculus or pocket as per the signs seen during clinical examination. With plaque index all participants were reported as **NO** (in absence of plaque), **1/3** (involving 1/3 surface of the crown), **>1/3** (involving more than 1/3 surface of crown), **>2/3** (when a more than 2/3 surface of crown was covered in plaque).

As per Statistical analysis, we used SPSS version 19 for statistical Analysis. We calculated mean value, standard deviation, standard error of mean, and χ^2

Ethical Considerations: The study protocol was approved by the Research and Ethical committee of the Liaquat College of Medicine & Dentistry Karachi and written informed consent was done by each participant.

RESULTS

The results were subjected to a clinical based trial analysis and presented in tables in which differences were considered statically significant for $p<0.001$, although chi-square test with (k) degree of freedom for the goodness of fit.

The study reports that total participants were 415, including 148(35.7%) male with cumulative percent of (35.7%) and females with cumulative percent of 267(64.3%). (Table 1)

In table 2 author analysed the duration of orthodontic treatment and periodontal health among orthodontic patients with the help of CPITN indexes which shows that most of the patients havehealthy periodontal health on the other hand calculus score is higher at the end of first year treatment. Statistical analysis were significant with $x2=137.9$, $df=20$, $p<0.001$ (Table 2).

Authors analysed plaque index reports plaque accumulation started from the bigening of treatment and gradually score were going to high in first year of treatment. Statistical analysis were significant with $x2=95.67$, $df=12$, $p<0.001$ (Table 3).

Orthodontic brushes play a significant role in orthodontic patient's periodontal health. Most of the patients who are using orthodontic brushes have healthy gums on the other hand calculus reports high in those who are not using orthodontic brushes. Statistical analysis were significant with $x2=12.16$, $df=5$, $p=0.033$ (Table 4).

Table No.1: Gender in Ortho Treatment

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	148	35.7	35.7	35.7
	female	267	64.3	64.3	100.0
	Total	415	100.0	100.0	

Table No.2: Duration in Ortho treatment and CPITN Depth Duration * CPITN Crosstabulation

Count		CPITN						Total
		healthy	bleeding	calculus	pocket 4 to 5	pocket 6	X:	
Duration	0 to 4 month	25	23	8	5	0	0	61
	5 to 8 month	10	31	65	6	2	0	114
	9 to 12 month	18	12	97	27	2	0	156
	13 to 16 month	4	6	25	17	0	0	52
	above 16 month	2	11	11	6	0	2	32
Total		59	83	206	61	4	2	415

($x2= 137.9$, $df=20$, $p<0.001$).

Table No.3: Duration and plaque index Duration * Plaqueindex Crosstabulation

Count		Plaqueindex				Total
		no	1/3	> 1/3	> 2/3	
Duration	0 to 4 month	8	47	2	4	61
	5 to 8 month	4	69	32	9	114
	9 to 12 month	0	63	60	33	156
	13 to 16 month	2	31	14	5	52
	above 16 month	0	8	8	16	32
Total		14	218	116	67	415

(x2= 95.76, df=12, p<0.001)

Table No.4: Ortho Brush and CPITN Relation OrthoBrush * CPITN Crosstabulation

Count		CPITN						Total
		Healthy	bleeding	calculus	pocket 4 to 5	pocket 6	X:	
OrthoBrush	Yes	49	32	74	18	0	0	173
	No	10	51	132	43	4	2	242
Total		59	83	206	61	4	2	415

(x2= 12.16, df= 5, p= 0.033)

Table No.5 : Ortho Brush and Plaque Index ratio
OrthoBrush * Plaqueindex Crosstabulation

Count		Plaqueindex				Total
		no	1/3	> 1/3	> 2/3	
OrthoBrush	Yes	0	92	27	15	134
	No	14	126	89	52	281
Total		14	218	116	67	415

(x2= 23.78, df= 3, p<0.001)

Authors analysed the uses of orthodontic brushes and plaque score. Reports between ortho brush and plaque index suggested that NO or less plaque seen in orthodontic brush user while most of the patients have plaque score those who are not using orthodontic brushes. Statistical analysis were significant with x2=23.78, df=3 and p<0.001. (Table 5).

DISCUSSION

The theory of study was that there is an effect in the periodontal health of the patients during fixed orthodontic therapy and using orthodontic brushes. The study results propped up the theory and showed a significant change in periodontal health of the patients.

A research was conducted at a private college hospital in Karachi, Pakistan that analyzed the periodontal health concerning the orthodontic male and female patients in order to determine the effectiveness of orthodontic brushes. According to the mathematical calculations the CPITN and Plaque index are high because the patients neglected to maintain their oral health. However, once the patients used the orthodontic brushes the CPITN and Plaque Index reduced significantly.

Though, Orthodontic treatment may improve periodontal health, it may also potentially harm periodontal tissues as oral hygiene is made more difficult to maintain resulting in plaque accumulation and thus gingival inflammation. The orthodontic appliances may affect the subgingival microbial composition and may also result in unfavorable changes in micro-flora which causes increased plaque, bleeding and probing depth.

If oral hygiene is well sustained during orthodontic treatment, a healthy gingiva will be persevered. But unfortunately, due to lack of adequate knowledge and improper use of orthodontic brushes, the orthodontic patients suffer periodontal diseases.

In anterior and posterior teeth quadrants showed different in the CPI score (p<0.05). As a result it was found that not only the brackets but also the bands control the oral health status. Similar observations were reported by different researches [8, 9, 10]. Mostly teenager patients are referred for orthodontic treatment and they often experience from plaque induce periodontal diseases. Obvious signs of periodontal disease in adults are a hindrance to being referred for orthodontic treatment. Almost every fixed orthodontic patient develops gingival disease at some time during treatment[11]. Gingivitis is mostly transient and resolves within weeks of removal of orthodontic braces. Contemporary bonded orthodontic appliances cause less gingival inflammation than banded appliances [12].

Mostly patients do not accurately know how to retain their good oral health which may be helpful to excellent orthodontic treatment results [13]. Regular brushing with

Orthodontic brushing is the best for healthy oral hygiene, while make longer brushing may twist the periodontal health. Abrasion are mostly caused by hard brushing. On awareness of oral hygiene, comparatively very few are having awareness while most of them are not aware of that.

CONCLUSION

The study concludes that Orthodontic brushes are very useful to control plaque and calculus among orthodontic patients. During first year most of the patients neglect their oral health therefore their CPITN and Plaque Index are high.

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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

Congenital Anomalies

Prevalence of Different Congenital Anomalies in KPK: An Ultrasonographic Study

Munila Shabnum Khattak, Shabnum Aamir and Zahid Shah

ABSTRACT

Objective: To study the congenital abnormalities prevailing in our society by ultrasonography in 1000 prenatal cases.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at the pregnant females visiting the antenatal clinic of Khyber Teaching Hospital Peshawar and Khyber clinic (Jamrud) from August 2016 to January, 2017.

Materials and Methods: 1000 cases of pregnant female visiting antenatal clinic were selected under informed consent. Detailed history was taken about the menstrual cycle and duration of pregnancy. History of any disease, drug intake and exposure to X-rays during the pregnancy was taken. With the help of Abdominal Ultrasounds, the embryo and fetus were visualized. Data were collected and entered into the computer followed by statistical analysis of data and expressed as percentages.

Results: In the study population of 1000 cases, a total number of 692 (69.2%) cases were normal. A total of 308 (30.8%) abnormal cases were detected, 230 of the abnormal cases (38.33%) were observed in first trimester, 60 cases (30%) in second and 18 cases (9%) were detected in third trimester. The CNS anomalies were detected in 19(50%) of cases, musculoskeletal in 7(18.42%), genitourinary in 4(10.42%), facial in 2(5.26%), gastrointestinal in 2(5.26%) and congenital anomalies involving multiple systems were found in 4(10.52%) of cases.

Conclusion: It is finally concluded that the congenital anomalies can be detected in prenatal period by ultrasonography and early detection of congenital anomalies is helpful in management of pregnancy.

Key Words: Congenital anomalies, prenatal, ultrasound, trimester.

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INTRODUCTION

Birth defects, congenital anatomic anomalies and congenital malformations are the terms used for developmental anomalies seen at birth[1]. These anomalies are the main causes of infant mortality. They may be hereditary, structural or functional. The study of abnormal development is known as teratology. The period of development (3-8 weeks) during which the primordia of different organs are established, is the period of embryogenesis and the period beyond this till birth is the fetal period, a period of growth and maturation. Most of the congenital defects are initiated in the embryo rather than the fetus[2, 3].

Most common causes of birth defects involved genetic, environmental factors[4,5]. There are various viruses such as measles, mumps, human immunodeficiency virus (HIV), influenza virus, cytomegalovirus that cause high grade fever in mother and are responsible for causing congenital abnormalities in fetus.

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The chorioamnionitis may leads to cerebral palsy by damaging the white matter of cerebrum[6,7].Various dugs and chemical agents are also responsible for congenital anomalies[8].The ionizing radiations may damage the embryonic cells resulting in chromosomal injury and mental and physical retardation. Maternal diseases may have affect on growing fetus like diabetes mellitus which can result in large baby (macrosomia), vertebral anomalies, limb defects and congenital heart disease[9].Cigarette smoking and alcohol intake may cause growth retardation in fetus[10].

No single classification is used internationally, but the most widely used classification of congenital abnormalities is the International Classification of Diseases. There are four types of birth defects, which are clinically significant such as Malformation, Deformation, Dysplasia, Disruption and Deformation.

Ultrasound could potentially be an effective method to increase and facilitate the study of developmental anatomy in a relevant manner. It is the most commonly used imaging technique to evaluate the presence of congenital anomalies in prenatal period[11, 12]. The major advantage of ultrasonographic examination of obstetric population is to gain valuable information about pregnancy progress, prenatal diagnosis of structural birth defects and to provide effective and timely treatment.

MATERIALS AND METHODS

A cross sectional study was carried out on pregnant females visiting the antenatal clinic of Khyber Teaching Hospital Peshawar and Khyber clinic (Jamrud) during the study period (from August 2016 to January, 2017) in order to assess abnormal developmental events in embryonic and fetal period. A total of 1000 patients were included in the study. Inclusion and exclusion criteria were set as pregnant women greater than or equal to 15 years of age, willing for ultrasound were considered for the study. Patients unwilling for ultrasound, poor visualization due to technical factors e.g. obesity, surgical scars and history of non-compliance with prenatal visits in the current or previous pregnancy were excluded from the study.

All the pregnant subjects were recruited under informed consent. Detailed history was taken about the menstrual cycle and duration of pregnancy. History of any disease, drug intake and exposure to X-rays during the pregnancy was taken. With the help of abdominal ultrasound, the embryo and fetus were visualized. Data were collected and entered into the computer followed by statistical analysis of data. Percentages were calculated for all variables.

RESULTS

It was observed that in the study population of 1000 cases, 600 (60%) cases were studied in first trimester of pregnancy.200 (20%) cases were in second trimester and the remaining 200 (20%) cases were in third trimester (table 1).Out of these 692 (69.2%) of the fetuses were normal. A total of 308 (30.8%) abnormal cases were detected. Among abnormal cases, 230 cases (38.33%) were observed in first trimester, 60 cases (30%) were in the second and 18 cases (9%) were detected in third trimester (Table 2).

In the current study, the CNS anomalies were detected in 19(50%) of cases, musculoskeletal in 7(18.42%), genitourinary in 4(10.42%), facial in 2(5.26%), gastrointestinal in 2(5.26%) and congenital anomalies involving multiple system in 4(10.52%) of cases (Table 3). The details of distributions of various anomalies are depicted in table No. 4.

Table No.1: Distribution of pregnant cases according to trimesters

S. No	Trimesters	No. of Cases	% age
1	First Trimester	600	60
2	Second Trimester	200	20
3	Third Trimester	200	20

Table No.2:Distribution of abnormal cases in different trimesters

Types of Pregnancy	No. of cases	%	1st	%	2nd	%	3rd	%
Normal	692	69.2	370	61.66	140	70	182	91
Abnormal	308	30.8	230	38.3	60	30	18	9
Total Cases	1000	100%	600	100%	200	100%	200	100%

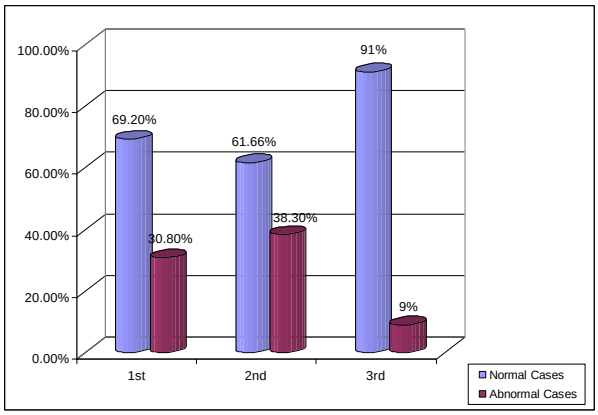

Figure No.1: Distribution of abnormal cases in different trimesters

Table No.3: Distribution of congenital anomalies in different systems.

S. No	System	n	%age
1	Central nervous	19	50
2	Musculoskeletal	7	18.42
3	Genitourinary	4	10.52
4	Gastrointestinal	2	5.26
5	Facial	4	10.52
6	Multiple	2	5.26

Table No.4: Nature and percentage of abnormal cases and anomalies in 1000 pregnancies

Anomalies	n	% age
Missed Abortion	250	25
Hydatidiform Mole	20	2
Anencephaly	12	1.2
Anencephaly with omphalocele	1	0.1
Hydrocephaly	3	0.3
Hydrocephaly with spina bifida	1	0.1
Meningomyelocele	3	0.3
Lumbosaccrallipomeningocele	1	0.1
Cleft lip	2	0.2
Achondrophasia	1	0.1
Cystic hygroma	1	0.1
Gastrochisis	1	0.1
Parapagus	1	0.1
Polydactyly	1	0.1
Talipiesequinovarus	1	0.1
Hyperextended right limb	1	0.1
Left Amelia & absent right foot	1	0.1
Parasitic twin	1	0.1
Apert syndrome	1	0.1
Hydrocele	1	0.1
Bladder extrophy	1	0.1
Cloacalextrophy	1	0.1
Absent penis	1	0.1
Rudimentary Genitalia	1	0.1

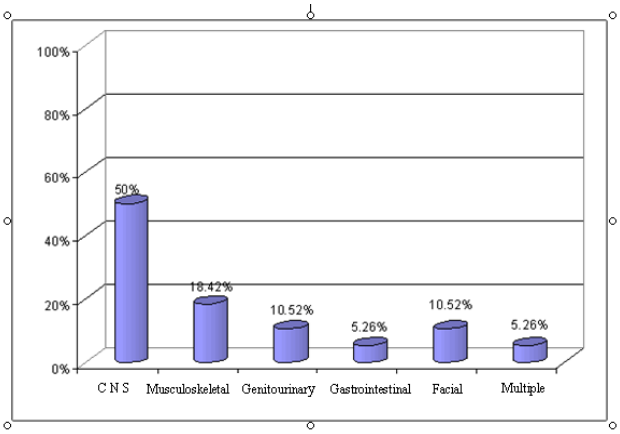

Figure No.2: Distribution of congenital anomalies in different systems

DISCUSSION

This study has been undertaken to assess the prenatal congenital anomalies with trans-abdominal ultrasound. In this context, pregnant ladies from tribal area (Khyber Agency) visiting Khyber Clinic and from Peshawar valley visiting Khyber Teaching Hospital were studied to get the objectives.

The technology of ultrasound is in use since late 1940s and early 1950s and it has progressed greatly over the time. Now it is predicted that ultrasound equipment will be the new stethoscope of future[13,14].It has evolved rapidly as one of the imaging modalities and also comprises almost 25% of imaging worldwide. Hence the main objective of our study was to explore the best way of using ultrasound technique in diagnosis of prenatal structural birth defects and implement effective care service.

The incidence of congenital malformations was 3.8% in the present study, including still births, live births and major malformations. Out of this, CNS malformations were found to be more than that of other systems. CNS malformed babies were born dead. Chances of giving birth to malformed baby increase with the age of mother. Chances of congenital abnormality also increase in consanguineous marriage. The incidence of malformed babies is higher in mothers taking different medicines and in those exposed to radiations during the pregnancy.

The present study is in lined with the study of Hematyar and Khajouie (2005) carried out in Iran on 1000 live births. It is inconsistent with a study from Liaqat National Hospital and Medical College, Karachi Pakistan, which reported that incidence of congenital anomalies, was 15.8/1000 in live births. It was 2.8% in the Munium et al (2006), a study conducted in Aga Khan University Hospital, Karachi and a study from Liyari General Hospital reported it to be 11.4/1000 in total births[15]which is less than 3.8% of the present study. Another study conducted in University Hospital in Sindh has shown the results of 16% of congenital abnormalities in stillbirths[16]. An Iranian study reported the prevalence of all congenital anomalies to be 29.5 /1000 in live births, in children from birth to eight years that impair the function with or without structural defects[17]. These variations in prevalence might be explained by racial and social influences that are commonly seen in genetic disorders.

The pattern of anomalies also showed differences from other neighboring regions. In present study CNS anomalies are the most common; one of the Indian studies reported the same[18] while study from Liaqat National Hospital in Karachi showed the GIT defects as commonest defect while in studies from Iran Musculoskeletal anomalies were reported as commonest[19,20] similar to study conducted in India[21]. This variability from different areas may be due to various risk factors seen to be associated with congenital anomalies such as geographical distribution, consanguinity and socio-cultural factors.

CONCLUSION

It is concluded that the congenital anomalies can be detected in prenatal period by ultrasonography and early detection of congenital anomalies is helpful in management of pregnancy.

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

Diabetic Foot

Descriptive Study on Diabetic Foot in Diabetic Patients at PMCH Nawabshah

Jeando Khan Daidano[1], Akbar Hussain Yousfani[2] and Saeed Khan[1]

ABSTRACT

Objective: Diabetic foot is common and frequent problem in medical ward, in this study we will determine the knowledge and foot care, common cause of diabetic foot in patients with DM and treatment out come.

Study Design: Descriptive / cross sectional study

Place and Duration of Study: This study was conducted at the Department of Medicine, PMCH, Nawabshah from June 2015 to December 2016.

Materials and Methods: 108 patients were selected for this study. Both male and female participated. Informed consent was taken from all the patients. Study was done using questionnaire translated into Sindhi and Urdu languages. Male were 78 and Female 30.

Results: 78 were male and 30 were female mean age was 52.61 $^{+-}$ 4.21. Non healing wound was present on right foot in 90 patients and left foot in 28 patients. Gangrene was present in 30 patients RBS, FBS and HAlc was elevated in all patients. Curettage was done in 53 patients and amputation was done in 13 patients. All patients were on Insulin therapy and broad spectrum antibiotics were given to all patients.

Conclusion: Diabetic foot is common problem in our country. Main reason is uncontrolled blood sugar and awareness of the patients. Most of the patients come with irregular diet on and off treatment. Duration of diabtes was prolonged in all patients. Education of the patient about disease diet and proper treatment of diabetes. Lifestyle of the patient and morbidity and mortality can be reduced.

Key Words: Diabetes mellitus, Diabetic foot, Ischemia, Neuropathy, Gangrene

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INTRODUCTION

Diabetes mellitus is global health problem, over past two decades its incidence is increased[1] Epidimiologically 30 million cases of diabetes were present in 1985. 177 million in 2000. 285 million in 2010 and more than 360 milion people will be affected by DM in 2030.[2] DM occurs in developed countries but recent new cases of type 2 DM are found in developing countres.[3] One of the complication of Diabetec foot ulcers, result due to combination of minor trauma infection foot deformity, peripheral neauropathy.[4] One lower limbs is lost every 30 seconds due to diabetic foot Globally majority of hospital admissions are due to Diabetic Foot.[5] Diabetic foot is associated with hospitalization, morbidity and long time of stay in hospital than other complication of DM.[6] Newly diagnosed type 2 diabetes mellitus have peripheral vascular disease or peripheral neuropathy about 10%.

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Global prevalence of diabetic foot is increasing worldwide[7] In diabetic patients stiffness of ligaments is due to non enzymatic glycation . Loss of protective sensation and loss of coordination of foot and leg muscles are due to neuropathy, Both elevate mechanical stress during walking. Majority of
diabetic patients are not aware of foot care regular foot examination. Regarding complication of diabetes mellitus amputation of lower limb is preventable.[8]

In patients with diabetes mellitus lower limb amputations are due to foot ulcer caused by peripheral vascular disease, poor cleaning of foot, bare foot walking unsuitable foot wear and delay in medical treatment.[8] These risk are modified by education of the patient.[8] Physical examination of the patient having diabetic wound is divided into examination of wound and general condition of limbs, assessment of vascular insufficiency (Ischemia). Sensory examination of foot or assessment of neuropathy and
Staging of diabetic foot wound, including depth of soft tissue and bony involvement,[9] investigations necessary are blood CP ,RBS, FBS HbA1c, creatinine, x-ray ,CT, MRI ,Doppler ultrasound, CT, MRI

Treatment of diabetic wound depends upon managing systemic and local factors[10] give up smoking. glycemic control, control of blood pressure, hyperlipidemia, ischemic heart disease if present obesity, renal insufficiency[11] offload the wound by therapeutic foot

wear.[12] Use of saline similar dressings daily[12]. indeed debridment and appropriate antibiotic to treat osteomylitis and infection Application of recombinant growth factors or grafts[13]. If arterial insufficiency is not present, hyper baric oxygen is beneficial.

MATERIALS AND METHODS

This study was conducted in the department of Medicine PMCH, Nawabshah. 108 diabetic patients were included in this study. Both male and female patients participated. Informed consent was taken from all the patients questionnaire was given to all the patients translated into local languages Sindhi and Urdu. Data collected using questionnaire. Detailed history was taken. Duration of diabetes, type of diabetes, dietary habits, smoking history, treatment history other complication of diabetes, physical Examination, Examination of foot sensory neuropathy was assessed by 10 gm, monofilament, force applied on one or more anatomic sites on the planter surface of foot on each foot area.[14]

Vibration sense was observed by using 128Hz tuning fork. ankle jerk and patellar jerk. Palpation of dorsal is pedis, posterior tibial artries, Doppler ultrasound of the limb. Inspection of the skin hair nails presence of any callus, corn or ulcers. Any foot deformity statical analysis was done using SPSS 15 version.

RESULTS

Table No.1: Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	35.00	1	.9	.9	.9
	39.00	1	.9	.9	1.9
	44.00	1	.9	.9	2.8
	46.00	1	.9	.9	3.7
	47.00	2	1.9	1.9	5.6
	48.00	3	2.8	2.8	8.3
	49.00	11	10.2	10.2	18.5
	50.00	11	10.2	10.2	28.7
	51.00	17	15.7	15.7	44.4
	52.00	9	8.3	8.3	52.8
	53.00	8	7.4	7.4	60.2
	54.00	9	8.3	8.3	68.5
	55.00	11	10.2	10.2	78.7
	56.00	5	4.6	4.6	83.3
	57.00	3	2.8	2.8	86.1
	58.00	5	4.6	4.6	90.7
	59.00	4	3.7	3.7	94.4
	60.00	3	2.8	2.8	97.2
	61.00	2	1.9	1.9	99.1
	62.00	1	.9	.9	100.0
	Total	108	100.0	100.0	

108 patients were selected for this study 78 were female and 30 were females. 56 were farmers, 29 housewife, 15 businessmen and 6 were in Govt. service. 81 patients were uneducated, 8 patients primary, 13 patients middle and 6 patients matriculate. 83 patients were smokers.

Table No.2: Neuropathy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	10	9.3	9.3	9.3
	1.00	98	90.7	90.7	100.0
	Total	108	100.0	100.0	

Table No.3: Ischemic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	21	19.4	19.4	19.4
	2.00	87	80.6	80.6	100.0
	Total	108	100.0	100.0	

Table No.4: HbA1C

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	6.90	2	1.9	1.9	1.9
	7.00	9	8.3	8.3	10.2
	7.50	14	13.0	13.0	23.1
	7.80	2	1.9	1.9	25.0
	8.00	21	19.4	19.4	44.4
	8.30	1	.9	.9	45.4
	8.40	1	.9	.9	46.3
	8.50	16	14.8	14.8	61.1
	9.00	32	29.6	29.6	90.7
	9.50	4	3.7	3.7	94.4
	10.00	6	5.6	5.6	100.0
	Total	108	100.0	100.0	

Table No. 5: Type Diabetes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	14	13.0	13.0	13.0
	2.00	94	87.0	87.0	100.0
	Total	108	100.0	100.0	

Table No.6:: Descriptive Statistics

	N	Min.	Max.	Mean	Std. Deviation
Age	108	35.00	62.00	52.6111	4.21797
Sex	108	1.00	2.00	1.2778	0.44999
Occupation	108	1.00	4.00	1.8056	0.93187
Neuropathy	108	0.00	1.00	0.9074	0.29121
Ischemic	108	0.00	2.00	1.6111	0.79524
FBS	108	145.00	231.00	179.6667	17.91569
RBS	108	240.00	530.00	380.2870	63.87357
HbA1C	108	6.90	10.00	8.3713	0.80513
Hemoglobin	108	7.50	11.00	9.5556	0.91543
L.Count	108	9500	11230	10483.21	472.67972
Diabetes Type	108	1.00	2.00	1.8704	0.33746
Duration Diabetes	108	6.00	33.00	14.3148	5.99478
Education Level	108	1,00	4.00	1.4815	0.91183
Valid N(Listwise)	108				

Table No.7: Anova

	Sum of squares	df	Mean square	F	Sig
Sex					
Between Groups	1.241	1	1.241	6.441	0.013
Within Groups	20.426	106	0.19		
Total	21.667	107			
Occupation					
Between Groups	13.283	1	13.283	17.681	0.000
Within Groups	79.634	106	0.751		
Total	92.917	107			
Neuropathy					
Between Groups	0.138	1	0.138	1.636	0.204
Within Groups	8.936	106	0.084		
Total	0.974	107			
Ischemic					
Between Groups	22.493	1	22.493	52.781	0.000
Within Groups	45.173	106	0.426		
Total	67.667	107			
FBS					
Between Groups	2381.043	1	2381.043	7.896	0.006
Within Groups	31962.957	106			
Total	34344.00	107			
RBS					
Between Groups	48786.255	1	48786.255	13.337	0.000
Within Groups	387755.8	106			
Total	436542.1	107			
HbA1C					
Between Groups	5.382	1	5.382	8.917	0.004
Within Groups	63.979	106	0.604		
Total	69.361	107			
Hemoglobin					
Between Groups	0.123	1	0.123	0.145	0.704
Within Groups	89.544	106	0.845		
Total	89.667	107			
Age					
Between Groups	480.974	1	480.974	35.836	0.000
Within Groups	1422.693	106	13422		
Total	1903.667	107			
L.Count					
Between Groups	51.216	1	51.216	0.000	0.988
Within Groups	23906543	106	225533.423		
Total	23906594	107			
Duration. Diabetes					
Between Groups	2305.035	1	2305.035	158.631	0.000
Within Groups	1540.261	106	14.531		
Total	3845.296	107			
Education Level					
Between Groups	14.428	1	14.428	20.519	0.000
Within Groups	74.535	106	0.703		
Total	88.963	107			

Non healing wound was present in right foot in 90 patients and in left foot in 28 patients. Depth of wound was wegner's class1 in 21 patients, 42 in class2, 32 in class3, 13 in class 4. Gangrene was present in 30 patients, curettage was done in 53 patients and amputation was done in 13 patients. 21 patients were pure neuropathic, 10 patients were pure ischemic and 77 patients were mixed. On examination of foot pure

ischemic were 2pts 82 were mixed neuropathic using the test by monofilament tuning fork and Doppler ultrasound. RBS range – 240 to 53, FBS- 145 to 231, HbA1c- 6.9 to 10, Cholesterol level- increase more than 200 in 92 pts, Retinopathy -30pts, Hypertension-80patients, Blood cp-Hb%- 7.5 to 11, L leukocyte count increase from 9500 to 11230, In statical analysis male sex denoted by 1 and female by 2, education level uneducated by 1, primary by 2, middle by 3 and matric by 4. Occupation farmer by 1, housewife by 2, businessmen by 3 and Govt. service by 4.

DISCUSSION

Globally number of patients with Diabetes mellitus will increase 366 million in 2030[15] out of 108 patients majority of the patients was male, with irregular dietary pattern. Patients were not aware of the severe complications about diabetes mellitus, it was observed that long duration of diabetes increases the incidence of diabetic foot as pathologic process occurs in about 10 years. This problem may occur due to delayed diagnosis

It was observed in previous study in srilanka[16] . Majority of the patients developed diabetic foot in 5th to 6th decades of life. Age about 55-60 years have been found in other studies.[17] Risk of diabetic foot estimated to be 15% in patients with diabetes mellitus. In recent studies it could be 25%[7] Peripheral neauropathy observed to be common cause of diabetic foot.[18] Education of the patients is necessary for loss of sensation in feet even in minor trauma. Education about blood glucose control in patients with prolonged history of diabetes. These patients must have other complications like diabetic risk of injury[19] Presence of Micro vascular and macro vascular complication of diabetes mellitus, regular screening is compulsory Diabetic Nephropathy and retinopathy increased diabetic foot could be due to micro angiopathic changes in studies diabetic foot healing. Process delayed due to renal impairment[20] It was observed hypertension with diabetic foot several studies.[21] Smoking with Diabtic foot higher percentage of smokers was found in patients with amputation of limb.[21] Presence of char coat joint increases the risk of gangrene and amputation[22] Diabetic foot complication are increased by peripheral vascular disease Chronic complication of diabetes coronary artery disease CVD retinopathy associated with diabetic foot gangrene and amputation[23] Mosset al and larvery explained association between long duration of diabetes and foot complications[23] according to researchers diabetic foot and amputation increases with diabetes history more than 10 years[23] obesity was associated with increased risk of diabetic foot. Poor glucose control and HbA1c was contributory factor in diabetic foot and their contribution of peripheral neuropathy and micro vascular complication[24] Nurses as members of the diabetic care team play role in public education, patient care, health care health management and quality of life improve. Nurses help patients to have movement for those patients who have lost their foot. Nurses teach patients to use assists devices[25]

CONCLUSION

In this study main reason of diabetic foot was poor glycemic control for prolonged period. Development of peripheral neuropathy peripheral vascular disease associated with retinopathy, diabetic nephropathy hypertension, irregular dietary habits. And poor knowledge about diabetes treatment and its complications Educations about diabetes and diabetic foot self care is necessary management method. Education of foot care, motivation, support, financial assistance is necessary. Involvement of family member, psychological assistance, management of comorbidities retinopathy vasculopathy are helpful. It is necessary to start education about diabetic foot as the symptoms of neuropathy occurs give up smoking education about diet mobility, patients life style patients quality of life can be improved risk of amputation are decreased.

Author's Contribution:

Concept & Design of Study:	Jeando Khan Daidano
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Data Analysis:	Akbar Hussain Yousfani & Saeed Khan
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Original Article

Obesity Indices as a Risk Factor of Skin Diseases in Mirpur AJK

Obesity as Risk Factor of Skin Diseases

Asma Qayyum[1], Muhammad Sadiq[2], Iftikhar Ahmad Chaudary[4] and Asnad[3]

ABSTRACT

Objective: The aim of the study was to determine the most prevalent skin diseases among the studied over-weight and obese patients and to examine if overweight and obesity are risk factors for skin diseases

Study Design: Case control study

Place and Duration of Study: This study was conducted at the City Hospital of Mirpur AJK from March 2016 to February 2017

Materials and Methods: A case-control was carried out on 100 overweight and obese patients compared with another 100 normal weight patients as controls. The participants were selected from the outpatient dermatology clinic of City hospital Mirpur AJK

Results: The most common disease were found included striae (69.2%) ,planter hyperkeratosis (62.4%), skin tags (63.3%), acanthosis nigricans, intertrigo (54.4%,), tinea pedis (40.9%) and acne (12.2%). The risk factors of some skin diseases are found overweight and obesity.

Conclusion: Dermatologists must work with primary health care physicians and nutritional specialists to reduce incidence of obesity or reduce the effects of obesity on the skin.

Key Words: Obesity, risk factors, Skin diseases, Case-control study, Mirpur AJK

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INTRODUCTION

Obesity is dangerous for health. It is defined by World Health Organization (WHO) the excessive lipid accumulation or abnormality of fat deposition which effect Body mass index (BMI).[1]

If Body mass index (BMI) is equal to or more than 25, it is in the range of overweight and if Body mass index (BMI) is equal to or more than 30 it is in the range of obesity by World Health Organization (WHO).[1]

Over weight are more than 1.4 billion including (adults, 18 years and older) as per World Health Organization (WHO) global 2008 results. It is also explains the results of obesity and also prevalence of obese that is more than half billion. It is also observed that prevalence of obesity is doubled globally in year of (1980-2008). In low income and middle income countries also prevalent of obesity.[1] Result showed that in high income countries and middle income countries have high probability of overweight and obese people.[2]

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This overweight and obese people ratio will be increased year by year and it said it would be 2.16 billion in 2030 (overweight) and 1.12 billion (obese) people.[3] Obesity is now an alarming all over the world. WHO put a risk in many countries for long term as term non-communicable diseases (NCD). The results are showed its probability is increased in adults and children both.[4]

Women are 44.5% compared to 21.4% for male (obesity). It is showed in In Egypt 2010 by WHO.[5] The study are also showed that obesity also cause some dermatological changes (acanthosis nigricans and skin tags) and (changes in the foot anatomy due to excess load).[6]

The aim of the present to determine overweight and obesity are risk factors for skin diseases among people of Mirur AJK.

MATERIALS AND METHODS

A case-control study was conducted during the period from March 2016 to February 2017. This study was carried out on 100 overweight or obese patients as a cases group and another 100 normal weight patients were included as a control group. This study was conduct in department of biochemistry and pathological department of Mohtarma Benazir Butto Shaheed Medical College Mirpur AJK and patents were selected from new city hospital Mirpur AJK. A simple random sampling technique was applied for control and case .

All chemical tests were performed by chemical analyzer. Lipid profile test was conducted for obese

people and also sugar level checked. Data analyze was done by community medicine department.
SPSS 21 was used for analyze the data.

RESULTS

All patients were examined for medical history, obesity, BMI and skin diseases Table no.1. Biochemical profile is present in Table .2 The most common diseases were found included striae (69.2%) ,planter hyperkeratosis (62.4%), skin tags (63.3%), acanthosis nigricans (52.9%), intertrigo (54.4%,) , tinea pedis (40.9%) and acne (12.2%). Table no 3. The risk factors of some skin diseases are found overweight and obesity.

Table No.1: Baseline characteristics of obese and normal person

	Obese or overweight (n=100)	**Normal cases (n=20)**
Age (years)	51.2 ± 9.3	51.5 ± 9.2
Male / Female (%)	44.1 / 56.6	42.0 / 52.0
Body weight (Kg)	80.9 ± 13.5	71.2 ± 12.2
BMI (kg/m2)	30.5 ± 3.8	21.8 ± 3.4

Table No.2: Biochemical profile of obese people

Biochemical test	**Results**
Fasting Blood Glucose(mg/dl	97.4 ± 11.5
Total Cholesterol (mg/dl)	197.2 ± 43.2
LDL - Cholesterol (mg\dl	114.4 ± 34.1
HDL - Cholesterol (mg\dl)	52.9 ± 13.1
Triglycerides (mg\dl)	137.2 ± 88.5

Table No.3: Prevalence of skin disease in Mirpur AJk

S. No	**Skin diseases**	**Prevalence (%)**
1	Striae	69.2%
2	planter hyperkeratosis	62.4%
3	skin tags	63.3%
4	acanthosis nigricans	52.9%
5	intertrigo	54.4%
6	tinea pedis	40.9%
7	acne	12.2%

DISCUSSION

The present study found that the most prevalent skin diseases among cases group included striae (69.2%) ,planter hyperkeratosis (62.4%), skin tags (63.3%), acanthosis nigricans (52.9among controls), intertrigo (54.4%,), tinea pedis (40.9%) and acne (12.2%)
The striae (69.2%), is most causing skin diseases which was due to tension and it is high prvelent.[7]
89% observed in Mexico obese adults[8]. It is observed in low rate in other countries which mean it have some difference it found in Taiwan (40%)[9] . but in other side in some country it is also occurred in low rate in Kuwait (23.3%).[10] .The prevalence of planter hyperkeratosis found in Mexico (75.2%)[8] in obese adult person in our study we found (62.4%) in obese adult people. The result showed that the prevalence rate of planter hyperkeratosis is low as compare to Mexico study. The prevalence of planter hyperkeratosis found in Kuwait (45.1%)[10] in obese adult person in our study we found (62.4%) in obese adult people. The result showed that the prevalence rate of planter hyperkeratosis is higher as compare to Kuwait stud .The prevalence of planter hyperkeratosis found in Brazil (46.7%)[11] in obese adult person in our study we found (62.4%) in obese adult people. The result showed that the prevalence rate of planter hyperkeratosis is higher as compare to Brazil study.
The prevalence of Skin tags found in Kuwait (30%)[10] in obese adult person in our study we found (63.3%) in obese adult people. The result showed that the prevalence rate of Skin tags is higher as compare to Kuwait study. The prevalence of Skin tags found in Brazil (47.94%)[11] in obese adult person in our study we found (63.3%) in obese adult people. The result showed that the prevalence rate of Skin tags is higher as compare to Brazil study.
The prevalence of Skin tags found in USA (74%)[12] in obese adult person. In our study we found (63.3%) in obese adult people. The result showed that the prevalence rate of Skin tags is lower as compare to USA study. The prevalence of striae found in Mexico (89 %)[8] in obese adult person. In our study we found (69.2%) in obese adult people. The result showed that the prevalence rate of Skin tags is lower as compare to Mexico study. The prevalence of striae found in Taiwan (40 %)[9] in obese adult person. In our study we found (69.2%) in obese adult people. The result showed that the prevalence rate of Skin tags is higher as compare to Taiwan study. The prevalence of striae found in Kuwait (40 %)[10] in obese adult person. In our study we found (69.2%) in obese adult people. The result showed that the prevalence rate of Skin tags is higher as compare to Kuwait study. The prevalence of acne found in Kuwait (89 %)[10] in obese adult person. In our study we found (12.2 %),) in obese adult people. The result showed that the prevalence rate of acne is lower as compare to Kuwait study. The prevalence of acne found in Mexico (25.1 %)[6] in obese adult person. In our study we found (12.2 %),) in obese adult people. The result showed that the prevalence rate of acne is lower as compare to Mexico study.
The prevalence of acne found in Saudi (19.4 %)[13] in obese adult person. In our study we found (12.2 %),) in obese adult people. The result showed that the prevalence rate of acne is lower as compare to Saudi study.
There is also ported that BMI is related with some extend the PASI (Psoriasis Area and Severity Index).[14,15] In one study which was done in French that positive correlation was found between obesity and lymphedema.[16]

CONCLUSION

Most common skin diseases found in present sturdy are included striae (69.2%), planter hyperkeratosis (62.4%), skin tags (63.3%), acanthosis nigricans, intertrigo (54.4%,), tinea pedis (40.9%) and acne (12.2%). The risk factors of some skin diseases are found overweight and obesity.

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Original Article

Hemorrhagic Stroke

Frequency of Hemorrhagic Stroke Among Hypertensive Patients

Momin Khan, Abdullah Jabbar, Bacha Amin Khan, Abdul Ahad and Ziaullah

ABSTRACT

Objective: To determine the frequency of hemorrhagic stroke among hypertensive patients.
Study Design: Descriptive / cross-sectional study.
Place and Duration of Study: This study was conducted at the Department of Medicine, Saidu Teaching Hospital Swat from 01-06-2016 to 25-06-2016.
Materials and Methods: 150 patients were observed. All patients were carefully scrutinized with detailed history and clinical examination. All the patients were subjected to Computed Tomography immediately after admission to detect cerebral hemorrhage. All the CT scans was reported by an expert radiologist having minimum of 5 years of experience. All the above mentioned information including name, age, gender and other information was recorded in a pre designed proforma. Exclusion criteria had strictly followed to control confounders and bias in the study results. For quantitative variables like age & duration of HTN, mean and standard deviation was calculated and for qualitative variables like gender and hemorrhagic stroke, frequencies and percentages was calculated.
Results: Our study shows that mean age was 55 years with SD ± 5.71. Fifty six percent patients were male while 44% patients were female. Mean duration of hypertension was 13 years with SD ± 4.63. The incidence of hemorrhagic stroke in hypertensive patients was found to be 54% in our setup.
Conclusion: Our study concludes that the incidence of hemorrhagic stroke among hypertensive patients was found to be 54% in our setup.
Key Words: Hemorrhagic stroke, hypertensive patients.

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INTRODUCTION

High blood pressure is the leading cause of cardiovascular disease and death worldwide. The disease is associated with at least 7.6 million deaths a year worldwide (13.5% of all deaths), making it a major risk factor for cardiovascular disease[1]. Most cardiovascular diseases occur in low-, middle-, middle- and high-income countries [1,2]. The importance of blood pressure as an adjustable risk factor for cardiovascular disease is well recognized and there are many effective and economical treatments to reduce blood pressure. Therefore, hypertension control and prevention of subsequent morbidity and mortality clearly should be achievable[3].

WHO has documented the prevalence of hypertension and some have recorded treatment rates[3]. The largest systematic analysis of health surveys was conducted in 199 countries for individuals aged 25 years and older in 2008 and reported prevalence and rate of hypertension[4]. The prevalence of primary hypertension is an alarming increase in the Pakistani population despite demographics to decrease body mass index and nutrition[5]. The prevalence of hypertension is about 10% in the general population of Pakistan, increasing to 20% of the population over 15 years, and increasing every three people over 45 years[6]. It is a serious problem called silent, which affects similarly the heart, brain, kidneys and peripheral vessels of the individual with hypertension[7].

Primary intracerebral hemorrhage (ICH), the most devastating form of stroke, accounts for between 10% and 15% of stroke victims. ICH has a more severe neurological deficit and a higher mortality than ischemic stroke[8]. Hypertension is the most common (65%) cause of spontaneous ICH, with other major causes being: amyloid angiopathy, brain tumors, aneurysms, arteriovenous malformations, cerebral cavernous malformations and arteriovenous fistula[9]. In addition to the suspicion, there are microblides without symptoms. Studies of "healthy" adults indicate that these cases occur in approximately 5% of the population and that rates of 11.1% to 23.5% have been reported in the elderly[10].

Hypertensive ICH is the deadliest, most disabling and least treatable form of acute cerebral accidents. A large number of patients die in a short time after the hemorrhage. However, the risk factors of early death in this pattern are still in debate[11]. In one study, 52.3% of patients with history of chronic hypertension and presenting with neurological deficit were having

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intracerebral hemorrhage[12]. South Asian patients had higher rates of hypertension compared to the other ethnic groups. South Asian and Chinese patients had a lower risk of death and developing cardiovascular outcomes compared to whites[13].

As mentioned above, HTN can be a strong risk factor of future development of ICH which if left undiagnosed and untreated, can lead to long term disability and even death. A thorough review of the literature suggested prevalence of HTN has changing trends and also varies with different age and ethnic groups. This study will be first of its kind in our local population presenting with a neurological deficit and having history of HTN. The results of this study will be shared with local health professionals and future recommendations regarding further research work will be given.

MATERIALS AND METHODS

This study was conducted at Department of Medicine, Saidu Teaching Hospital Swat. Duration of the study was one year (from 01-06-2016 to 25-06-2016). Study design was descriptive cross-sectional study in which a total of 150 patients were observed. All patients with Hypertension, Neurologic deficit, age ranging 18 to 60 years, both male and female genders were included while patients with history of anticoagulant therapy, patients with AV fistula, patients with cerebral aneurysms, patients having bleeding disorders, patients presenting with hemorrhagic stroke but having no history of hypertention were excluded. All patients were carefully scrutinized with detailed history and clinical examination. All the patients were subjected to Computed Tomography immediately after admission to detect cerebral hemorrhage.

RESULTS

This study age distribution among 150 patients was analyzed as 12(8%) patients were in age range 31-40 years, 36(24%) patients were in age range 41-50 years, 50(33%) patients were in age range 51-60 years and 52(35%) patients were more than 60 years of age. Mean age was 55 years with SD ± 5.71 (Table No 1). Gender distribution among 150 patients was analyzed as 84(56%) patients were male while 66(44%) patients were female. (Table no 1). Duration of hypertension among 150 patients was analyzed as 54(36%) patients had hypertension ranged from 1-10 years, 96(64%) patients had hypertension ranged from 11-20 years. Mean duration of hypertension was 13 years with SD ± 4.63. (Table no 3). Hemorrhagic stroke among 174 patients was analyzed as 81(54%) patients had hemorrhagic stroke while 69(46%) patients didn't had hemorrhagic stroke. (Table no 1). Stratification of hemorrhagic stroke with respect to age, gender and duration of hypertension is given in table no 2,3.

Table No. 1: Demographic Variable (n=150):

Variable	Number of patients	Percentage
Age Distribution		
• 31-40 years	12	8%
• 41-50 years	36	24%
• 51-60 years	50	33%
• >60 years	52	35%
Gender Distribution		
• Male	84	56%
• Female	66	44%
Duration of Hypertension		
• 1-10 years	54	36%
• 11- 20 years	96	64%
Hemorrhagic Stoke		
• Yes	81	54%
• No	69	46%

Table No. 2: Stratification of Hemorrhagic Stoke with reference to age Distribution (n=150)

Hemorrhagic Stoke	31-40 years	41-50 years	51-60 years	>-60 years	Total
Yes	4	20	28	29	81
No	8	16	22	23	69
Total	**12**	**36**	**50**	**52**	**150**

Chi square test was applied in which P value was 0.5232

Table No. 3: Stratification of Hemorrhagic Stoke w.r.t Duration of Hypertension (n=150)

Hemorrhagic Stoke	1-10 years	11- 20 years	Total
Yes	26	55	81
No	28	41	69
Total	**54**	**96**	**150**

Chi square test was applied in which P value was 0.2808

DISCUSSION

World Health Organization (WHO) has documented prevalence of hypertension (HTN) and some have recorded treatment rates[3]. The largest systematic analysis of health surveys from 199 countries for individuals aged 25 years and older was conducted in 2008 and reported the prevalence and mean of hypertension[4]. The prevalence of essential hypertension is alarmingly increasing in Pakistani population inspite of the demographics being of lower BMI and nutrition[5]. The prevalence of hypertension is about 10% in the general population of Pakistan and it is increased to 20% of population over the age of 15 years and it is increased to every third person over the age of 45 years[6]. It is a serious problem and called silent killer, which equally effect the heart, brain, kidneys, and peripheral vessels of the individual with hypertension[7].

Our study shows that among 150 patients 8% patients were in age range 31-40 years, 24% patients were in age range 41-50 years, 33% patients were in age range

51-60 years and 35% patients were more than 60 years of age. Mean age was 55 years with SD ± 5.71. Fifty six percent patients were male while 44% patients were female. Thirty six percent patients had hypertension ranged from 1-10 years, 64% patients had hypertension ranged from 11-20 years. Mean duration of hypertension was 13 years with SD ± 4.63. More over the incidence of hemorrhagic stroke in hypertensive patients was found to be 54% in our setup.

In one study, 52.3% of patients with history of chronic hypertension and presenting with neurological deficit were having intracerebral hemorrhage[12]. South Asian patients had higher rates of hypertension compared to the other ethnic groups. South Asian and Chinese patients had a lower risk of death and developing cardiovascular outcomes compared to whites[13].

Similar results were found in another study conducted by Din Abro A et al[14] in which 50 patients out of total were found to have intracerebral hemorrhage, 46 patients had cerebral infarction and 04 patients had subarachnoid hemorrhage. The patients were divided into five categories according to level of blood pressure and highest number of patients (36) related to severe hypertensive group i.e. ≥ 180/110 mm of Hg. Out of 54 hypertensive hemorrhagic stroke patients, 24 (44.4%) were associated with severe hypertensive level of blood pressure. Similarly in infarctive hypertensive stroke patients (46), maximum number (12) belongs also to severe hypertension.

Similar results were found in another study conducted by Calandre et al[15] in which 20 reported percentage of hypertensive hemorrhagic patients in a range of 45-70%, while 54% of our stroke patients exhibit hemorrhage. Many studies suggest higher percentage of infarction (52-68%) in stroke patients[16,17] which is in contrast to our observation i.e. (46%).

CONCLUSION

Our study concludes that the incidence of hemorrhagic stroke among hypertensive patients was found to be 54% in our setup which shows that hypertension is an important risk factor for hemorrhagic stroke so an effort should be placed to control blood pressure and other modifiable risk factors to reduce incidence of hemorrhagic stroke and improve patient outcomes.

Author's Contribution:

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Data Analysis:	Abdul Ahad & Ziaullah
Revisiting Critically:	Abdul Jabbar & Momin Khan
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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

Intracerebral Hemorrhage

Predictive Value of Glasgow Coma Scale (GCS) Scores in Patients Presenting with Spontaneous Intracerebral Hemorrhage

Muhammad Mushtaq[1], Zar Khan[2], Nazar Muhammad Afridi[3] and Arshad Wahab Shah[4]

ABSTRACT

Objective: To determine the Glasgow coma scale scores in patients presenting with spontaneous intracranial hemorrhage.

Study Design: Descriptive study,

Place and Duration of Study: This study was conducted at the Department of Neurosurgery, Ayub Medical College, Abbottabad from July 2014 to June 2015.

Materials and Methods: All those patients who were between the ages of 40-70 years, who had a GCS of ≥ 5 and who had an intracranial hemorrhage for less than 72 hours duration were included in this study. All those patients with a GCS score of < 5, or who presented after 72 hours of onset of intracranial hemorrhage, or who were on anticoagulant therapy were excluded from the study. Detailed history was taken especially about hypertension, Diabetes mellitus, hyperlipidemia, lifestyle, smoking etc. and clinical examination was performed. Level of consciousness of all patients was assessed by calculating their GCS scores. All patients underwent CT scan brain (unenhanced) to confirm the intracranial hemorrhage. Data was managed and analyzed using SPSS version 21.

Results: There were 140 patients in this study. As per the gender, there were 77 males, 55%, and 63 females, 45%, representing that males were affected more than females. Mean age of study participants was 54.89±7.42 years, (range: 43 – 68 years). Age-wise stratification of patients showed that most of the patients, 52.14%, belonged to 40 – 55 years of age showing higher predilection for this age group. Mean GCS scores of the patients was 7.02±1.45. As per the blood pressure of patients, mean systolic blood pressure was 178.79±11.49 mmHg and mean diastolic blood pressure was 102.69±5.32 mmHg. Most of our patients presented with complaints of headache and vomiting followed by loss of consciousness or focal neurological deficits.

Conclusion: GCS provides valuable information regarding the level of consciousness of patients with intracerebral hemorrhage. Hypertension remains to be a common cause of stroke in our country. Large multi-centric studies should be conducted to check validity of GCS scores as well as it should be compared with new and more objective scoring systems. Masses should be educated about the risk factors leading to hypertension as well as ways to modify these risk factors so as to reduce the incidence of hypertension and improve blood pressure control in these patients.

Key Words: Glasgow coma scale, intracerebral, hemorrhage

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INTRODUCTION

Non-traumatic intracerebral hemorrhage (ICH) is a major health problem which is associated with higher morbidity and mortality.[1] The incidence of intracerebral hemorrhages is estimated to be 10-30 per 100,000 population per year and rises with age.[2]

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It is an emerging health issue as there is an 18% increase in the number of hospital admissions in the last decade which are attributed to intracerebral hemorrhage.[3] This rise in hospital admissions could be due to the rising population of elderly people especially in developed countries as well as increased incidence of hypertension.[4]

ICH is characterized by hemorrhage into the brain parenchyma due to rupture of blood vessels. This bleeding can extend into the surrounding brain structures e.g. ventricles and rarely into subarachnoid space.[5] The two most common causes of primary intracerebral hemorrhages are hypertension and cerebral amyloid disease while secondary intracerebral hemorrhages are associated with anticoagulant therapy and abnormal vasculature.[5] In case of hypertension, bleeding occurs at the sites of bifurcation of smaller penetrating arteries while cerebral amyloidosis affects small to medium blood vessels of the cerebral cortex.[6, 7]

The Glasgow comma scale, (GCS), has been employed in 1974 and since then, its widely used as a tool to assess severity of head injury and level of consciousness of comatosed individuals.[8] GCS incorporates different functions of central nervous system and comprises of eye-opening, verbal and motor responses.[9] Currently, it is the most commonly used method of assessing the severity of head injury in medical research. It provides an added advantage of comparing the severity among different patients. Despite the fact there are many new and more reliable scoring systems available for this purpose, but many clinicians still prefer GCS.

We have conducted this study to evaluate the severity of spontaneous ICH in our patients using GCS as a scoring system.

MATERIALS AND METHODS

This descriptive study was done at Department of Neurosurgery, Ayub Medical College, Abbottabad from July 2014 to June 2015. It was a consecutive non-probability sampling. All those patients who were between the ages of 40-70 years, who had a GCS of ≥ 5, who had an intracranial hemorrhage for less than 72 hours duration were included in the study. Those patients with a GCS score of < 5, or who presented after 72 hours of onset of intracranial hemorrhage, or who were on anticoagulant therapy were excluded from the study. Detailed history was taken especially about hypertension, Diabetes mellitus, hyperlipidemia, lifestyle, smoking etc. and clinical examination was performed. Level of consciousness of all patients was assessed by calculating their GCS scores. All patients underwent CT scan brain (unenhanced) to confirm the intracranial hemorrhage. Data was entered, managed and analyzed using SPSS version 21. For numerical values, mean±SD were computed while for categorical variables, frequencies and percentages were calculated.

RESULTS

Total of 140 patients were included in this study as per inclusion and exclusion criteria. Socio-demographic and clinical characteristics of study participants are given in Table 1. As per the gender, there were 77 males, 55%, and 63 females, 45%, representing that males were affected more than females. Mean age of study participants was 54.89±7.42 years, (range: 41 – 70 years). Age-wise stratification of patients showed that most of the patients, 52.14%, belonged to 40 – 55 years of age showing higher predilection for this age group. Mean GCS scores of the patients was 7.02±1.45, (range: 5 - 9). As per the blood pressure of patients, mean systolic blood pressure was 178.79±11.49 mmHg, (range: 160-195 mm Hg) and mean diastolic blood pressure was 102.69±5.32 mmHg, (range: 93-110 mm Hg).

Figure 1 delineates the chief presenting complaints of the patients. Most of our patients presented with complaints of headache and vomiting associated with or followed by loss of consciousness or focal neurological deficits.

Table No. 1. Socio-demographic and clinical profile of patients, (n=140)

Variable	Number	Percentage
Gender		
Male	77	55%
Female	63	45%
Total	140	100%
Age groups (years)		
40 – 55	73	52.14%
56 – 70	67	47.86%
Total	140	100%
Blood pressure	**Mean±SD**	**Range**
Systolic blood pressure	178.79±11.49	160-195 mm Hg
Diastolic blood pressure	102.69±5.32	93-110 mm Hg
GCS	7.02±1.45	5-9

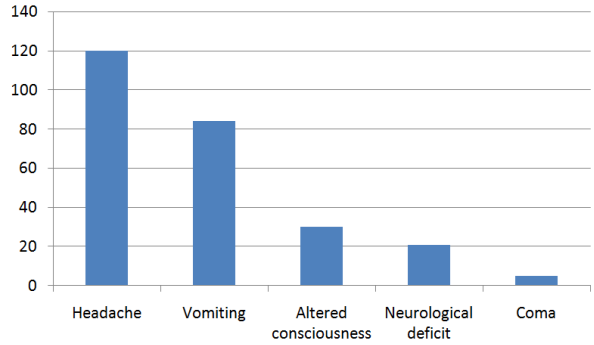

Figure No.1: Presenting complaints of patients, (n=140)

DISCUSSION

Intracerebral hemorrhage constitute significant health and economic burden as the number of patients admitted to hospital because of intracerebral hemorrhage are increasing while there is no change in mortality rate despite advances in diagnostic techniques and treatment modalities.[1, 3] Early diagnosis and treatment of ICH is of pivotal importance as it reduces mortality and functional loss in these patients.[5]

GCS is commonly employed in clinical practice to assess the severity and extent of brain injury. GCS is very helpful prognostically as well as it helps to monitor the state and condition of patient which can be assessed from serial GCS scores, whether the scores are improving or deteriorating.[9] But, it has its own limitations. The most important criticism levied against GCS was its inability to include brainstem reflexes and pupillary reactions.[8, 10] Furthermore, in cases of acute stroke, any focal neurological deficit causing dysphasia also affects GCS.[11]

In this study, most of the patients were males, 55%, and the mean age was 54.89±7.42 years. Majority of patients were between the ages of 40–55 years. Mean GCS scores of the patients was 7.02±1.45. Regarding

their blood pressure measurements, mean systolic and diastolic blood pressures were 178.79±11.49 mmHg and 102.69±5.32 mmHg respectively which were significantly higher than normal. This is in accordance with what Qureshi et al have reported. According to them, hypertension was the main cause of spontaneous intracerebral hemorrhage and patients who were 55 years of age or younger were at an increased risk of intracerebral hemorrhage.[5] Likewise, Sang Joon et al have also reported that the intracerebral hemorrhage was more common among male gender and with increasing age.[12]

Chief presenting complaint of our patients was headache followed by vomiting, altered consciousness and neurological deficit. Larger hematomas are mostly associated with headache and this is because of pressure on meninges, bleeding into cerebrospinal fluid or raised intra-cranial pressure. Headache is scarcely present in cases of smaller bleeds. Vomiting is mostly seen in patients with hemorrhage in cerebellar area and it is caused by raised intracranial pressure. Larger ICH leads to raised intracranial pressure as well as compression of thalamic and brainstem areas which in turn causes altered consciousness. Larger ICH involving brainstem reticular activating system leads to coma.[12, 13] Therefore, altered consciousness especially if associated with headache and vomiting is a harbinger of severe ICH and any such patient should be managed promptly.

GCS is an important diagnostic and prognostic tool in patients with spontaneous ICH. It helps to ascertain the level of consciousness of the patient at the time of presentation as well as helps to monitor the state or condition of patient. Changes in serial GCS scores overtime will help clinician to realize whether condition of patient is improving or not.

CONCLUSION

GCS provides valuable information regarding the level of consciousness of patients with intracerebral hemorrhage. Hypertension remains to be a common cause of stroke in our country. Large multi-centric studies should be conducted to check validity of GCS scores as well as it should be compared with new and more objective scoring systems. Masses should be educated about the risk factors leading to hypertension as well as ways to modify these risk factors so as to reduce the incidence of hypertension and improve blood pressure control in these 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

Tuberculosis among Medical Students

Knowledge about Tuberculosis among Medical Students of a Private Medical College, Karachi

Muhammad Athar Khan, Sania Tabassum and Manzar Alam Shah

ABSTRACT

Objective: to assess the knowledge of TB among fourth year MBBS students at Liaquat College of Medicine & Dentistry (LCMD).

Study Design: Descriptive / cross sectional study.

Place and Duration of Study: This study was conducted at the Department of Community Medicine, Liaquat College of Medicine and Dentistry, Karachi from January 2014 to May 2017.

Materials and Methods: A cross-sectional survey was conducted among 399 fourth year MBBS students. Respondents were recruited using non-probability convenience sampling technique and informed consent sought from them. The survey was conducted through a self-administered questionnaire, and some changes were made in the previous questionnaire. Questionnaire includes 34 multiple choice questions divided by sections: knowledge of epidemiology and prevention (13 questions), diagnosis (9 questions) and treatment (12 questions). The collected information was analyzed using the SPSS 21 version. The continuous variables were summarized as mean and standard deviation (SD) and categorical variables were expressed as a percentage.

Results: The average percentage of correct answers was 44.2% in the 34 multiple choice questions that assessed the knowledge of tuberculosis amongst students. For all 34 questions about tuberculosis knowledge, "the most common pathogen of TB in immunosuppressive patients" the correct response was 4.2% and 90.2% for the "transmission of tuberculosis".

Conclusion: In general, our data show that tuberculosis knowledge is inadequate in medical students as <50% of students correctly answered the questions asked. Therefore, when these members of health care system lack knowledge of tuberculosis, the outcome of the TB treatment and prevention program may have a risk of failure.

Key Words: Tuberculosis, knowledge, medical students, undergraduate

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INTRODUCTION

Tuberculosis in Pakistan is a major public health challenge in rural as well as urban areas[1], even though it was declared a national emergency in 2001.[2] In 2015 the estimated incidence rate of Tuberculosis was 270/100,000 and 14,000 MDR/ RR Tuberculosis cases were estimated.[3]

Tuberculosis is a significant occupational risk factor for healthcare workers (HCW) in low and middle income countries.[4] In Pakistan a 23% incidence of Tuberculosis was reported in HCW in 2016 and the incidence rate was higher among HCW as compared to general population.[5]

Medical undergraduates are at a risk of being exposed to tuberculosis during their clinical rotations,[6] and it was previously discovered that among undergraduate medical students prevalence of latent and nosocomial tuberculosis infection was high.[7]

Therefore it is essential for medical students to acquire knowledge about tuberculosis control and management and the misconceptions related to Tuberculosis.[6]

It is important for medical undergraduates and future doctors to have information regarding tuberculosis because in addition to inadequate resources, poor implementation of National Tuberculosis Program and lack of government commitment, doctors are responsible, on occasion, for poor diagnosis and treatment of the disease.[8] Furthermore physicians' error and mismanagement has led to a rise in drug resistant Tuberculosis. [9] Therefore it is imperative for medical undergraduates to gain adequate knowledge regarding Tuberculosis as they are the physicians in the making in the struggle against rising Tuberculosis incidence.[6]

For effective Tuberculosis control, there is a need to properly educate undergraduates and highlight the national strategies to be adhered to, as a Pakistani survey conducted in 2005 revealed that only 22% of interns from five teaching hospitals correctly identified new cases of Tuberculosis and 82% were incapable of identifying a single component of DOTS strategy being followed in the country. Interns also have meager knowledge and don't comply with the WHO and

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National Tuberculosis Program guidelines. [10] The objective of this study was to assess the knowledge of TB among fourth year MBBS students.

MATERIALS AND METHODS

A descriptive cross-sectional survey was conducted to assess the knowledge of among four batches of fourth year MBBS students regarding tuberculosis. The study was conducted at the private medical school in Karachi, Pakistan, from January 2014 to May 2017. Respondents were recruited using non-probability convenience sampling technique. The sample size was determined using a single population proportion formula, using response distribution 60%, [11] 95% confidence level and 5% margin of error with10% no response rate, the final sample size is 399. Research variables were dependent variables (knowledge) and independent variables: social demographics (age, gender). The survey was conducted through a self-administered questionnaire, and some changes were made in the previous questionnaire.[6,11,12] Questionnaire includes 34 multiple choice questions divided by sections: knowledge of epidemiology and prevention (13 questions), diagnosis (9 questions) and treatment (12 questions). There were five possible answers to every question about knowledge, of which only one was correct. The Cronbach's of the overall questionnaire had an alpha value of 0.837. The collected information was analyzed using the SPSS 21 version. The continuous variables were summarized as mean and standard deviation (SD) and categorical variables were expressed as a percentage. After obtaining the verbal consent of the students, they were asked to fill in an anonymous questionnaire.

RESULTS

A total of 400 fourth-year medical students were enrolled between 2014 and 2017, of which 377 (94.3%) completed the questionnaire. The average age was 23.7 years $\pm$ 1.3, about 219 males (58.1%) and 158 females (41.9%). More than half of the students 197 (52.3%) attended the course to discuss tuberculosis.

Only 20 (5.3%) of the students reported that they had received a TB test. Approximately 46 patients (12.2%) had at least one TB checkup. One-third of the students (36.6%) observed at least one case of TB during medical education, and 68 (18%) observed at least one X-ray of TB. Most students 321 (85.1%) were aware of the risk of tuberculosis infection.

Table No.1: Percentage of correct answers in Epidemiology and Prevention of TB (n=377)

Questions	Correct Answer	N (%)
Tuberculosis is currently the highest in the world in the following areas:	Pakistan, India and China	155(41.1)
The incidence of TB in Pakistan is currently(2016):	250-300/100,000 (270/100,000 -WHO)	109(28.9)
Which of these microorganisms has a strong relationship with Mycobacterium tuberculosis?	HIV	238(63.1)
Is it necessary to separate active tuberculosis patients?	No	22(5.8)
The risk of active tuberculosis in life is	More than 20% of patients with latent tuberculosis and HIV infection	97(25.7)
Which groups are considered to be at risk of tuberculosis?	1. Health care workers 2. People migrate from high TB prevalence areas 3. Elderly, children, immunosuppressed patients	185(49.1)
The most common pathogen for TB in patients with immunosuppression is:	Mycobacterium Avium Complex	16(4.2)
TB pathogens are transmitted by:	Airborne	340(90.2)
Which action strategy is useful for controlling the spread of tuberculosis?	TB vaccination	97(25.7)
The current TB vaccine consists of:	Live and attenuated bacteria	237(62.9)
What is the name of the TB vaccine?	BCG	286(75.8)
The incidence and delayed diagnosis of tuberculosis in vulnerable groups may be related to the following factors:	1. Inequalities 2. Socio-economic issues 3. Low resources of native country	160(42.4)
What personal protective equipment (personal protective equipment) is required in the room where the open tuberculosis patients stays:	Masks	208(55.2)
Mean Percentage Score of correct answers for epidemiology and prevention = **43.9%**		

Table No.2: Percentage of correct answers in Diagnosis of TB (n=377)

Questions	Correct Answer	N (%)
The immune response to TB is:	Cell mediated	287(76.1)
Which organ may be affected by Mycobacterium tuberculosis?	Lung, brain and kidney	304(80.6)
Mantoux test is:	An intradermal injection	289(76.7)
The Mantoux test is positive from the induration diameter:	5 mm	92(24.4)
Which of the following diagnostics tests recommended by WHO to diagnose active tuberculosis?	Sputum smear microscopy	222(58.9)
Sputum positive TB is:	1 out of 2 sputum sample +ve	69(18.3)
The identification of B Koch bacillus is always carried out by:	Ziehl–Neelsen stain	112(29.7)
Xpert MTB/RIF test is used to detect:	Diagnosis of TB and rifampicin resistance	25(6.6)
Is it recommended to test patients and health care workers who are in contact with TB patients?	Yes, it is	185(49.1)
Mean Percentage Score of correct answers for diagnosis = **46.7%**		

Table No.3: Percentage of correct answers in Treatment of TB (n=377)

Questions	Correct Answer	N (%)
Which of these antibiotics are not useful for TB treatment?	Penicillin G	138(36.6)
DOTS is	Directly Observed Treatment-Short course strategy	188(47.8)
DOTS Plus is for:	MDR-TB	116(30.8)
If a patient taken full course of TB treatment in past and declared cured or treatment completed, now he/she is smear positive	A case of relapse	206(54.6)
Decide the Treatment Category: New and smear positive	CAT I	171(45.4)
Decide the Treatment Category: - Relapse - Rx.after failure - Rx.after default	CAT II	142(37.7)
The duration of intensive and continuation phase in CAT I of TB patients.	2 and 4 months	254(67.8)
The duration of intensive and continuation phase in CAT II of TB patients.	3 and 5 months	99(26.3)
The drugs used for intensive and continuation phase in CAT I of TB patients.	HRZE and RH	175(46.4)
Sputum smear examination is done after starting treatment at	2 months	247(65.5)
Most anti-tuberculosis drugs are safe to use during pregnancy except streptomycin	Yes	101(26.8)
Most appropriate test to check drug resistance TB is	X-pert MTB/Rif	63(16.7)
Mean Percentage Score of correct answers for diagnosis = **42%**		

The average percentage of correct answers was 44.2% in the 34 multiple choice questions that assessed the knowledge of tuberculosis students, and there was no association between gender and the average percentage of correct answers. The average percentage of correct answers was 43.9% for epidemiology and prevention, the average percentage of diagnoses was 46.7%, and the average percentage of treatments was 46.4%.

In the section of "epidemiology and prevention" (Table 1), the highest and lowest average scores were reported for correct answers: 90.2% answers for tuberculosis pathogens; and 4.2% of the most common pathogens of TB in patients with immuno-suppression. In the "Diagnostic" section (Table 2), the highest and lowest average scores for correct answers were: "organ affected by Mycobacterium tuberculosis" (80.6%); and "Xpert MTB / RIF test for testing" (6.6%). In the "treatment" section (Table 3), the questions with the highest and lowest average scores for correct answers were: "duration of intensive and continuation phase of CAT I in TB patients" (67.8%); and "most appropriate test for drug-resistant tuberculosis" (16.7%).

For all 34 questions about tuberculosis knowledge, "the most common pathogen of TB in immunosuppressive patients" correct response was 4.2% and 90.2% for the "transmission of tuberculosis". In general, there is no gender difference on the whole.

DISCUSSION

Currently TB is major global threat to health; furthermore 95% of TB cases are living in the developing countries.[12] In spite of the fact that Pakistan has a high burden of TB[13], the knowledge of healthcare professionals is poor[10], and the lack of knowledge creates a barrier against TB control and prevention. Thus the discernment of the knowledge and level of awareness of Pakistani medical students is empirical. Unlike survey of medical students in India, Uganda, Canada [14] and Italy [12] where students had adequate knowledge, this study demonstrated that the overall knowledge of TB amongst medical students was inadequate and less than 50% students were well informed about the epidemiology, prevention, diagnosis and treatment of the disease. On the other hand we established that 90% of the students were aware that TB is transmitted through airborne droplet exposure from an infected person, this finding was higher than the findings of a survey conducted in China, which revealed 1/3rd of their respondents could not correctly respond to the same question,[6] also 87% of Pakistani GPs[16]and 96% Pakistani interns [10]agreed TB is a droplet infection.80% of our participants responded that TB most likely affects the lungs, brain and the kidneys which is similar to the knowledge of medical students in Oman, 91%of whom agreed that TB is not just confined to the respiratory tract.[17]

Responding to the question "which microorganism is strongly related with TB bacillus" 63% students in our study correctly answered HIV, which was found to be similar to 58% correct response finding in a Bulgarian study[18] and investigation of Ethiopian high school students also reported that nearly 70% had the same view.[11] Irani students though had better knowledge and 86% answered the same question correctly.[19]

Primary prevention of TB comprises of immuno-prophylaxis with BCG vaccine and a study conducted in Iran reported that less than half of the students believed BCG vaccination has a role in TB prevention, interestingly; this study discovered that 76% students were aware of this measure for prevention of disease.[19] This study revealed that even though majority (85%) of the students were aware of their risk of acquiring TB infection, less than 10% were screened for the disease or offered vaccination, as compared to screening of nearly 70% Italian healthcare students[20] and vaccination of 79% Bulgarian medical students.[19]55% participants in our study agreed that masks are the personal protective equipment needed in a room with an open TB patient, as opposed to 89% medics in Oman who during a study agreed that while taking care of TB patients, wearing masks and washing hands is helpful[17]

Present study revealed that 59% medical students consider sputum smear microscopy to be the recommended test by WHO for diagnosis of TB, as compared to only 38% Pakistani interns [10] and 66 % Pakistani private practitioners [13] who consider sputum microscopy to be the best diagnostic tool for pulmonary TB. A study conducted in Bangalore amongst interns of medical colleges revealed that 71% considered sputum AFB the best diagnostic test.[21]

A study conducted in Iran reported that 95% of final year students were familiar with the standard six months treatment of TB, in contrast, this study evaluated that nearly 68% students know the duration of intensive and continuation phase in CAT I of TB patients is 2 and 4 months.[19] The participants of present study had better knowledge than the knowledge of Saudi students, 59% of whom did not know the duration of TB treatment.[22] 46.4% participants in this study correctly identified the drugs used for intensive and continuation phase in CAT I of TB patients i.e. HRZE and RH respectively, and 56.5% Pakistani interns are reported to prescribe HRZE in the initiation phase and 52% prescribe RH in the continuation phase.[10]

Pakistan ranks 4th amongst the high MDR-TB burden countries in the world and in Pakistan the multidrug resistance reported in routine is 3.0- 4.1% in new cases and 30 -35.7% in previously treated cases.[23] WHO recommends using of the Xpert MTB/RIF assay for surveillance of MDR-TB[24], alarmingly in the current study it was observed that only 16.% students are aware most appropriate test to check for drug resistance TB is X-pert MTB/Rif and only 6.6% knew that Xpert MTB/RIF test is used to detect both TB and resistance to Rifampicin. DOTs plus strategy is used for management of MDR-TB[25] and it was observed in our study that nearly 31% of the students have this knowledge. This finding is in accordance to a study conducted in Iran that the knowledge of their medical students is also not up to the mark.[26].

CONCLUSION

In general, our data show that tuberculosis knowledge is inadequate in medical students as <50% of students correctly answered the questions asked. Therefore, when these members of health care system lack knowledge of tuberculosis, the outcome of the TB treatment and prevention program may consequently have a risk of failure. Thus, it is essential to develop and implement strategies and policies to improve medical students' awareness of tuberculosis, including the ability to integrate knowledge and good practices.

Author's Contribution:

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Original Article

Efficacy of Oral Tranexamic Acid in the Treatment of Melsama

Treatment of Melsama

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ABSTRACT

Objective: To determine the efficacy of oral tranexamic acid (TXA) in the treatment of melasma.
Study Design: Descriptive study.
Place and Duration of Study: This study was conducted at the Outpatient Department (OPD) of Medicine and Dermatology, Nishtar Hospital Multan from March 2016 to March 2017.
Materials and Methods: One hundred and ninety patients were selected. Patient's basic data and demography was noted. Patients with acquired hyper-pigmentation on the face tan to brown macules or patches located symmetrically with initial MASI score > 10 were included in this cross-sectional study. Melasma assessment severity index (MASI) score was calculated for each patient at the start of treatment. Patients were treated with oral Tranexamic acid 250 mg given twice daily for a period of six weeks. After 6 weeks of treatment with oral TXA, MASI score was again calculated for each patient. Difference between two MASI scores (i.e MASI score reduction) and percentage of reduction in MASI score of each patient was calculated. Data analysis was computer based with the use of SPSS version 16.
Results: A total of 190 women were included in this study, all patients had MASI score more than 10 before start of treatment. Mean age of our study cases was 34.43 ± 9.23 years with minimum age was 26 years and maximum age was 60 years. Menopausal status was positive in only 18 (9.5%) of our study cases. Mean pretreatment MASI score 39.60 ± 8.04, with minimum MASI score was 25 and maximum was 47. Mean post treatment MASI score was 5.35 ± 2.56 with minimum MASI score was 2 while maximum was 9. Our study results have indicated that there was significant reduction of MASI score in terms of pretreatment MASI score and post treatment MASI score (p=0.000). Excellent response was seen in 68(35.8%) of our study cases while 122 (64.2%) had good response with oral tranexamic acid.
Conclusion: Oral use of Tranexamic acid is efficacious, safe and effective treatment for the melasma patients without any serious side effect. Oral administration of Tranexamic acid provides rapid and sustained clinical improvement in the treatment of melasma. The results of our study support use of Oral Tranexamic acid among targeted population which had significant impact on the improvement of quality of life of these patients and relieved them from psychological stress of this disease. Further studies on this subject are needed.
Key Words: Melasma, Tranexamic acid, efficacy.

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INTRODUCTION

Melasma is referred as acquired hypermelanosis of body parts that are exposed to the sun[1-3]. Characteristic presentation of melasma involves symmetrically arranged hyperpigmented macules that may be punctate and/or confluent[4]. Forehead, chin, cheeks and upper lip are commonly affected locations and it may occur occasionally on other sun-exposed body areas [5].

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However pathophysiology of melasma still remains unclear. In most of the cases, hormonal activity in females appears to have direct relationship with melasma as it is commonly observed during pregnancy and use of oral contraceptive drugs[6]. Other underlying factors involved in etio-pathogenesis of the disease include; medication with photosensitizing agents, thyroid dysfunction, Ovarian dysfunction and different kinds of cosmetics[7]. Sunlight exposure has been reported to be important factor in developing melasma and all wavelengths of the sunlight can induce melasma. All potential treatments seem to fail without strict avoidance of exposure to sunlight, making it difficult to treat. Pigmentation as well as resolution of melasma is gradual. Recurrence and resistant cases are often reported if avoidance of sunlight is not heeded. Till date none of its existing treatment modalities have yielded desired outcomes in terms of quick and sustained recovery. Topical hydroquinone is recognized

as gold standard for topical treatment of melasma[8]. Existing plethora of remedies include prevention of UV radiation exposure, chemical peeling, topical bleaching agents and light based treatment therapies. Laser based treatment modalities include such as; Q – switched Alexandrite laser, fraxel laser, Er-YAG laser, pulsed carbon dioxide laser and intense pulsed light (IPL) laser treatment [9].Addition of Tranexamic Acid (TXA)is a novel concept in treating patients of melasma which was earlier employed as an-antifibrinolytic agent. Tranexamic Acid is currentlyused for inhibition of plasminogen-keratinocyte interactions which decreases tyrosinaseenzyme activity. This leads to decrease in melanin synthesis from the melanocytes. Various drug trials have reported the efficacy of TXA showing total improvement rates to be 95.9% [10] in the treatment of melasma.

Proper management of melasma helps improve productivity of the patients as it hits main working force of the society, hence plays important role in the national productivity and health economy. So we conducted this study to document efficacy of tranexamic acid in treatment of female patients having melasma.

MATERIALS AND METHODS

One hundred and ninety patients from Nishtar Hospital Multan outpatient department (OPD) of Medicine and Dermatology were selected. Patient's basic data and demography were noted. Patients with acquired hyper-pigmentation on the face, tan to brown macules or patches located symmetrically with initial MASI score > 10 were included in this cross-sectional study. Patients having thrombosis, blood coagulation disorder, psychological disorders or showing expectation for the treatment, already taking treatments for melasma within 6 months and lactating mothers/pregnant ladies were excluded from our study. All patients were subjected to the following diagnostic work-up: physical examination and all baseline investigationsi.e blood complete picture, liver function tests, renal function tests and clotting profile. MASI score was calculated for each patient at the start of treatment. Patients were treated with oral Tranexamic acid 250 mg given twice daily for a period of six weeks. After 6 weeks of treatment with oral TXA, MASI score was again calculated for each patient. Difference between two MASI scores (i.e MASI score reduction) and percentage of reduction in MASI score of each patient was calculated. Efficacy was measured in terms of excellent improvement at 6 weeks of therapy with oral tranexamic acid 250 mg given twice daily, on the basis of Melasma Assessment Severity Index (MASI). The criteria for improvement was: Excellent: includes patients in whom percentage of reduction in MASI score was greater than 90%, Good: if reduction was 60-90%, fair: if reduction was 30-59% and poor if reduction was less than 30%. Data analysis was computer based with the use of SPSS version 16.

RESULTS

Mean age of our study cases was 34.43 ± 9.23 years (range; 26 – 60 years) and 152 (80%) were in the range of 20-40 years of age. Menopausal status was positive in only 18 (9.5%) of our study cases. Mean pretreatment MASI score 39.60 ± 8.04, minimum MASI score was 25 and maximum was 47. Our study results have indicated that majority of our study cases i.e. 138 (72.6%) had pre-treatment MASI score in the range of 31-48. Mean post treatment MASI score was 5.35 ± 2.56, minimum MASI score was 2 while maximum was 9. All patients had MASI score more than 10 before start of treatment. Our study results have indicated that there was significant reduction of MASI score in terms of pretreatment MASI score and post treatment MASI score (p=0.000).

Table No. 1: Stratification of efficacy with regards to age. (n=190)

Age groups (In Years)	**Efficacy**		**P-value**
	Yes (n=68)	**No** (n=122)	
20 – 40 **(n=152)**	56	96	**0.792**
41 – 60 **(n=38)**	12	26	
Total	**190**		

Table No.2: Stratification of efficacy with regards to menopause status. (n=190)

Menopause status	**Efficacy**		**P-value**
	Yes (n=68)	**No** (n=122)	
Yes **(n=18)**	12	06	**0.065**
No **(n=172)**	56	116	
Total	**190**		

Table No. 3: Stratification of efficacy with regards to Pretreatment MASI score. (n=190)

MASI Score	Efficacy		P-value
	Yes (n=68)	**No** (n=122)	
11 – 30 **(n=52)**	12	40	**0.151**
31 – 48 **(n=138)**	56	82	
Total	**190**		

Table No. 4: Distribution of pretreatment MASI score with efficacy. (n=190)

Efficacy	Pretreatment MASI score		P-value
	Mean	**Standard deviation**	
Yes **(n=68)**	38.39	7.92	**0.05**
No **(n=122)**	41.76	7.92	

Table No. 5: Distribution of post treatment MASI score with efficacy. (n=190)

Efficacy	Post treatment MASI score		P-value
	Mean	**Standard deviation**	
Yes **(n=68)**	3.12	1.00	
No **(n=122)**	6.59	2.31	**0.000**

Excellent response was seen in 68 (35.8%) of our study cases while 122 (64.2%) had post treatment MASI score less than 90% reduction with oral tranexamic acid. Of these 122 study cases, 103 (55.8 %) had good response with oral tranexamic acid while 8.4 % had fair post treatment response.

DISCUSSION

Melasma is associated with high impact on aesthetic appearance, causes psychosocial and emotional distress. Its implications have significant impact on the quality of life& personality of patients in reducing their productivity and physical activity[11,12]. Additionally there are extra medical expenses of treatment which usually do not yield expectations of patients. As melasma affects mainly face which is easily visible distresses patients in their daily life routine, motivating patients to consult healthcare professionals[13-14]. Proper management of melasma helps improve productivity of the patients as it hits main working force of the society, hence plays important role in the national productivity and health economy.

So this study was conducted to document the efficacy of oral Tranexamic acid in the treatment of melasma in females. A total of 190 women meeting inclusion and exclusion criteria of this study were included in this study. All patients had MASI score more than 10 before start of treatment. Mean age of our study cases was 34.43 ± 9.23 years (range; 26 – 60 years) and 152 (80%) were in the range of 20-40 years of age. Ali et al [15] from Lahore reported similar mean of patients in which majority of them were young with melasma i.e. 29.90 ± 7.18 years. Their findings are close to our study findings. Similar results have been reported by Halder et al[16].

Studies have shown considerable reduction in prevalence of melasmaafter 50 years of age[17]. Menopausal status was positive in only 18 (9.5%) of our study cases. Hexsel et al[18] from Brazil reported 14.2% women were menopausal having melasma. These findings are close to that of our study results. Mean pretreatment MASI score 39.60 ± 8.04, with minimum MASI score was 25 and maximum was 47. Our study results have indicated that majority of our study cases i.e. 138 (72.6%) had pre-treatment MASI score in the range of 31-48. Mean post treatment MASI score was 5.35 ± 2.56 with minimum MASI score was 2 while maximum was 9. Our study results have indicated that there was significant reduction of MASI score in terms of pretreatment MASI score and post treatment MASI score (p=0.000). Karn et al[9] also reported statistically significant reduction of score with oral tranexamic acid in patients with melasma. Cho et al[19] also reported significant reduction of MASI score with oral tranexamic acid treatment.

In our study, Excellent response was seen in 68 (35.8%) of our study cases while 106 (55.8 %) had good response with oral tranexamic acid while 8.4 % had fair post treatment response. Different studies [4, 5, 17-20] have documented efficacy of oral tranexamic acid in the treatment of melasma in different parts of the world. It was found to be effective, safe, cost effective with minimal side effects for the treatment of melasma. A study conducted by Wu et al [10] reported 54 % good response with oral tranxeamic acid which is close to our study results.

CONCLUSION

Oral use of Tranexamic acid is efficacious, safe and effective treatment for the melasma patients without any serious side effect. Oral administration of Tranexamic acid provides rapid and sustained clinical improvement in the treatment of melasma. The results of this study support use of Oral Tranexamic acid among targeted population which had significant impact on the improvement of quality of life of these patients and relieved them from psychological stress of this disease.

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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

Caesarean Sections

Caesarean Sections at Mardan Medical Complex: a One Year Review

Samia Tabassum, Sadia Ali and Rukhsana Karim

ABSTRACT

Objective: To review the caesarean sections performed at Gynae A unit at Mardan Medical Complex, KPK, Pakistan, over a period of one year.

Study Design: Retrospective study.

Place and Duration of Study: This study was conducted at the Mardan Medical Complex (MMC) during the study period from 1st January 2014 to 31st December 2014.

Materials and Methods: The records of 630 patients who underwent caesarean section were analysed.

Results: During the study period, there were 5409 deliveries and 630 caesarean section sections, thus giving a caesarean section rate (CSR) of 11.6%. 84.5% were emergency caesarean sections, and 15.4% were elective caesarean sections. The rate of primary caesarean sections was 79.5% and repeat caesarean sections was 20.4%. The most common indication was fetal distress and repeat caesarean section.

Conclusion: A trial of vaginal birth after caesarean section in appropriate cases and use of cardiotocography for continuous fetal heart monitoring in labour, with confirmation of suspected fetal distress through fetal blood acid-base studies are recommended. A prospective study may reveal some of the other reasons for the increase CSR.

Key Words: primary caesarean section, repeat caesarean section, fetal distress

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INTRODUCTION

The caesarean section is now the most commonly performed major operation around the world and the first surgical procedure performed independently by residents/trainees in obstetrics-gynaecology.[1] It is one of the oldest obstetric operations in the world with over a third of women in many developed countries undergoing caesarean section when they give birth.[2] Its rates have been rising worldwide over the past few decades. The World Health Organization has identified an ideal caesarean section rate (CSR) for a nation of around 10-15%. [3,4] This is based on studies that show improving maternal and neonatal morbidity and mortality as rates rise up to this level, but minimal improvements or even negative health outcomes as the rate increases past 10%. [5,6]

The purpose of this study was to know the overall CSR to analyze the different indications for primary and repeat caesarean sections.

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MATERIALS AND METHODS

A retrospective study was conducted at the Department of Obstetrics and Gynaecology Unit A Mardan Medical Complex, KPK, from January 1st 2014 – December 31st 2014. It is a tertiary care hospital where the majority of cases used to be referred from the periphery. All the patients admitted through emergency and out-patient department who had undergone caesarean section were included in the study. Patients' demographic status, socioeconomic status, age, parity, indication and type of caesarean section and neonatal outcomes were noted down. The study was approved by the hospital ethical committee, and a statistical analysis of the results was carried out on the latest version of SPSS.

RESULTS

Table No. 1: Distribution of deliveries during one year. (n=5409)

Type of Delivery	No. of patients	Percentage
Vaginal delivery	4409	81.51%
Vacuum extraction	241	4.45%
Forceps delivery	79	1.45%
Emergency C/S	533	9.85%
Elective C/S	97	1.79%

During the study period, the total deliveries within the hospital's Gynae A Unit were 5409, out of which 630 were through caesarean section thus, giving a CSR of

11.6% of total deliveries, shown in **Table 1**. There were 645 babies delivered during the period of the study, among which 95% (613/645) were singletons and 3% (19/645) were multiple gestation deliveries. The sex distribution of the neonates shows a preponderance of male 53% (342/645) over female 47% (303/645). Emergency caesarean section was performed on 84.5% (533/630) and elective caesarean section on 15.4% (117/630) of patients. The rate of primary caesarean section was 79.5% (501/630) and repeat caesarean section was 20.4% (129/630), details of which are shown in **Table 2**. The age range of the patients was between 16 and 45 years. Socioeconomic status showed 68% of the patients being poor and 32% in the lower middle class.

Table No. 2: Mode of caesarean section

Mode	No. of patients	Percentage
Emergency C/S	533	84.60%
Elective C/S	97	15.39%
Primary C/S	501	79.50%
Repeat C/S	129	20.49%

Table No. 3: Gravidity Status in patients.

Gravidity Status	No. of patients	Percentage
Primigravida	246	39%
Primipara	111	17.6%
Multipara	273	43.1%

Table No. 4: Indications for primary caesarean sections

Indication	No. of patients	Percentage
Fetal Distress	97	19.3%
Obstetric Labour	67	13.3%
APH	58	11.5%
Pre-eclampsia/ Eclampsia	31	6.18%
CPD	31	6.18%
Negative(?) Lie	31	6.18%
Postdate	7	1.39%
PROM	31	6.18%
Failed Induction	16	3.1%
Oligohydramnios	15	2.99%
Breech Presentation	49	9.7%
Triplet	3	0.59%
BOH	10	1.99%
Non-progress of labour	17	3.39%

Among 630 patients, 39% (246) were primigravida, 17.6% (111) were primipara, and 43.1% (273) were multigravida, shown in **Table 3**. The most common indication in primary caesarean section was fetal distress at 19.3%, followed by obstructed labour at 13.3% and breech presentation at 9.8% (see **Table 4**).

The most common indication in repeat caesarean section group was previous 1 caesarean section at 60.4% followed by previous 2 caesarean section at 34.1% and then previous 3 caesarean section at 5.42% (see **Table 5**).

The birth weight of the neonates ranged between 500 grams to 4800 grams. 90% (547) had an APGAR score of more than 6/10 at 5 min, while 10% (65) of the neonates had an APGAR score of less than 6/10 at 5 min. There were 5.1% (33) stillbirths. During the study period there were 93 perinatal deaths, thus giving a perinatal mortality rate of 144/1000. A majority (78%) were peripartum and early neonatal deaths. This was a result of obstructed labour and birth asphyxia in the patients referred too late from the periphery.

Table No. 5: Indications for repeat caesarean sections

Indication	No. of patients	Percentage
Previous 1 C/S	78	60.4%
Previous 2 C/S	44	34.1%
Previous 3 C/S	7	5.42%

There were 4.1% (26) cases of postpartum haemorrhage (PPH). There were 4 maternal deaths. One each as a result of eclampsia, APH, PPH, and lastly DIC, giving a case fatality rate of 0.63% or, in other words, approximately one maternal death for every 157 caesarean sections performed at the hospital during the study period.

DISCUSSION

The incidence of caesarean deliveries and surgically completed pregnancies has been on the rise for the past 20 years. In North America and some countries in Western Europe during the last couple of years, the CSR was about 21%.[7] In our study at the Department of Obstetrics and Gynaecology at Mardan Medical Complex, the caesarean section rate was 11.6% (630/5409). This result was within the 15% limit recommended by the World Health Organisation for developing countries.[8] When we compare our results with the other studies done in Pakistan, only one study by Sultana A[(9)] showed a similar CSR (11.8%), which is in accordance with ours. Other studies from Pakistan showed much higher figures of 21.1% by Khawaja NP[10], 44.8% by Ehtisham S[11] and 45.1% by Shamshad[12]. This difference may be due to the fact that doctors in our hospitals maybe conscious of the WHO proposal that there is no justification for any region to have a CSR higher than 10-15%.[13,5,14] Other reasons may be judicious use of instrumental delivery in our hospitals, our trainees are trained to do instrumental deliveries. Looking at results outside Pakistan, ours is comparable with the study conducted by Geidam AD et al[8] in which the CSR was also 11.6%. Taking into account population dynamics in high-income countries, increasing maternal age, increased maternal demand,

fear of litigation and a shift in maternal health; these factors may result in increased CSR.

The rate of primary caesarean section was 79.5% which is comparable to the studies conducted by Mathew M[15], and Ehtisham S[11], and the top three indications were fetal distress (19.3%), obstructed labour (13.3%) and APH (11.5%). The results are comparable with the study conducted by Ehtisham S (11)(R). Previous one Caesarian section, previous two Caesarian sections, followed by previous three Caesarian section, were the most common indications for repeat cesarean section and the results are comparable to studies conducted by Mathew M[15] and Ehtisham S[11]. In our study, the 79% rate of primary caesarean section was the major contributor to a high rate of emergency Caesarian sections, so the aim should be to reduce the rate of primary cesarean sections. Each case should be thoroughly evaluated to determine the possibility of vaginal delivery.

Fetal distress was the main indication for primary cesarean sections. In the majority of patients with presumed fetal distress, babies delivered with good APGAR scores but with meconium-stained liquor. The understanding of CTG findings are subjective and also one of the reasons for increased Caesarian sections done for fetal distress. There should be facilities for continuous fetal heart rate monitoring and samples from the fetal scalp blood should be taken for acid-base studies to confirm true fetal distress. Involvement of consultant obstetrician in the decision-making is very important.

Previous scars were the main indication for repeat Caesarian section in our study. A trial of vaginal delivery should be considered in the hospital with appropriate facilities, services, and staff for a prompt emergency Caesarian section birth. Reluctance to give a trial of vaginal delivery after cesarean section may be due to the fear of litigation related to the risk of uterine rupture and associated increased maternal and fetal morbidity and mortality. The studies show that the women delivered by cesarean section were less likely to have a subsequent pregnancy (66.9%) compared with those having spontaneous vaginal delivery (73.9%) and instrumental vaginal delivery (71.6%), and they were more likely to have problems like APH, preterm and prolong labour, morbidly adherent placenta and risk of malpresentaition.[16,17]

Average blood loss in our study was from 0.7 to 1.0 litre. 4.7% patients went into postpartum haemorrhage and they were successfully managed with uterotonics and replacement of blood products, except for two, one of whom underwent a caesarean hysterectomy and survived and the other died due to the PPH, because of uncontrollable haemorrhage.

All fetal complications occurred in the emergency Caesarian section group. 10% of the fetuses were born with an APGAR score of less than 6 out of 10 at 5 mins, and there were 5.1% stillbirths. The major cause of low fetal APGAR scores was birth asphyxia. Other studies have reported similar facts.[18,19] Perinatal mortality of Caesarian sections was 144 per 1000 caesarean births, and was only observed in the emergency Caesarian section group. Our figure is quite higher than the figure given by an earlier study conducted by Daniel CN[20]. The reason was absence of NICU facility, and last-moment referrals from the periphery with complications. There should be in-time referrals of patients who may need a Caesarian section.

CONCLUSION

On the basis of the analysed data, we conclude that in the Department of Obstetrics and Gynaecology, Mardan Medical Complex, the mainstay is vaginal birth. The CSR is much lower than that of the other centres in Pakistan, but we cannot ignore the fact that the CSR has been following a rising trend over the past few years and it is worrisome. Especially the fact that perinatal outcome is not consistently improving. If unchecked, the rate might reach epidemic proportions.

As previous Caesarian section was a major indication, it is recommended that a trial of vaginal birth after a Caesarian section should be encouraged in the appropriate cases. The use of CTG for continuous fetal heart rate monitoring during labour and confirmation of suspected fetal distress by fetal scalp blood acid-base studies is also recommended. Proper training of skilled birth attendants, and general practitioners is needed to minimise last-moment referrals from the periphery.

It was a retrospective study and there is a need for a prospective study, to know the rising trends and maternal and fetal outcomes in the country.

Author's Contribution:

Concept & Design of Study:	Samia Tabassum
Drafting:	Sadia Ali & Samia Tabassum
Data Analysis:	Rukhsana Karim & Samia Tabassum
Revisiting Critically:	Sadia Ali & Rukhsana Karim
Final Approval of version:	Samia Tabassum

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

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Original Article

Bleeding Control Techniques in Thyroidectomy

Comparison between Conventional and Harmonic Techniques in Bleeding Control During Thyroidectomy

Nida Shahid, Sana Shahid and Rameez Iqbal

ABSTRACT

Objective: The basic aim of this study is to find out comparison between conventional and harmonic techniques in bleeding control during Thyroidectomy.

Study Design: Randomized control trial.

Place and Duration of Study: This study was conducted at the Department of Surgery, Nishtar Teaching Hospital Multan from August 2016 to January 2017.

Materials and Methods: All the patients under trial were asked for informed consent. A total number of 100% (n=62) were taken in this trial and online source Openepi.com was used for calculating sample size. Patients were selected by lottery method. Computer software SPSS version 23.2 was used for complete data entry and analysis. All the descriptive variables like onset of action and age were presented as SD and mean. Statistical test ANOVA was applied to find the significance among all groups. Chi square test was applied for analysis of continuous stats among groups. P value 0.05 was to be considered as significant.

Results: A total number of 100% (n=62) patients were included, divided into two equal groups, 31 in each i.e. harmonic scalpel and conventional knot groups. The mean age of the patients, in harmonic scalpel group, was 45.29±4.56 years. There were 64.5% (n=20) males and 35.5% (n=11) females. The mean age of the patients, in conventional knot, was 44.96±2.97 years. There were 74.2% (n=23) males and 25.8% (n=8) females. No significant difference was found for age (t=0.329, p=0.743) and gender (χ^2=0.683, p=0.409) in groups. The main outcome variables of this study were the time of procedure (minutes) and blood loss volume (ml). The mean time of procedure was 98.80±16.52minutes and 119.81±9.95 minutes for the harmonic scalpel and conventional knot groups respectively. Significant difference was found for the time of procedure in groups (t=-6.060, p-value = 0.000).

Conclusion: The whole study can be ended with this conclusion that the harmonic scalpel is more effective than the conventional method of ligation or knotting in thyroidectomy. Its use offer many clinical benefits including reduction in time of surgery and blood volume as well.

Key Words: Thyroidectomy, Harmonic, Conventional and Bleeding control.

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INTRODUCTION

The description about the thyroid gland is very prehistoric' for the first time it was name as "shield shape gland" by the Romans[1]. In the literature during 12th or 13th century not only the thyroid masses were mentioned but in 1170 Robert Frugard explained the complication of goiter. Thyroid surgery was begun in 12th century by using hot iron, Setons and caustics powers (most results were fatal). At that time, the major advancement was, antisepsis, artery forceps and anesthesia to be practice [2]. The pioneers of thyroid surgery, Theodor Koches and Theodor Billroth, formulated many acceptable techniques of thyroid surgery between the year 1873 and 1883[3]. In conventional method knot tying and ligation were important process. The very important thing of this operation is that the thyroid gland is one of the highly vascularized among all the organs having rich blood vessels and plexuses present in the parenchyma. This needs to be controlled by ligatures[4]. The ligation and division of these vessels is time consuming. On other hand modern techniques involve harmonic scalpel (in this case a device of high frequency range 55.5 hz is used for cut and coagulate tissue at same time) and thyroidectomy The only change that has brought in this mechanism is only the choice of certain type of operation i.e. lobectomy, total thyroidectomy, subtotal thyroidectomy for a given diagnosis. Some other methods related to this are nerve stimulation, and hypnosis for anesthesia. However all these are not widely accepted [5].

Thyroidectomy is, in essence, devascularization of thyroid by double ligation and dividing the branches of thyroid vessels followed by excision of the gland, and done when a patient is suffering from thyroid cancer,

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goiter or hyperthyroidism, the endocrine surgeons often perform the procedure of thyroidectomy. Since time spent in the operative room is expensive, this will reduce both time and cost of operation[6]. From the experience, we can conclude that during thyroid surgery, the use of harmonic scalpel reduce the time duration much more, and also report initial case controlled study results by comparing the use of conventional suture tying to the harmonic scalpel in patient undergone by total thyroidectomy or lobectomy[7].

The procedures included in thyroidectomy have many complications like massive bleeding, injury and infection to the surrounding organs and structures[8]. Similarly, all of the complications are directly related to mortality and morbidity rates of 40% app [9] .

That's why thyroid surgery is considered as barbaric and called as "horrid butchery".

The previous studies shows that blood volume and surgery time by using harmonic scalpel method is less as compared to conventional knots method , but we want to compare blood volume and time of surgery by using both harmonic and conventional methods on local level [10].

MATERIALS AND METHODS

After taking the ethical approval from the ethics committee of the institution, this randomized control trial was conducted in Surgery Department, Nishtar teaching Hospital Multan. This study was completed in 5 months (August 2016 to January 2017) and all the patients under trial were asked for informed consent. Patients were also completely briefed about their participation in study, its procedure and its purpose also. A total number of 100% (n=62) were taken in this trial and online source Openepi.com was used for calculating sample size. Those patients, who had to undergo total thyroidectomy for multinodular disease, were in inclusion criteria and those patients who were suffering from toxic disease, intrathoracic goiter, malignant disease and wanted central or lateral lymphadenectomy were excluded from the study. Patients were selected by using lottery method.

For this process, a total number of 100% (n=62) patients were used and these patients were divided into two groups and each group consists of 50% (n=31) patients, in 62 member there were 65% male and 35% females. All patients were given routine preoperative measures for their disease and same type of anesthesia and hospital care was applied but surgical instruments used were different .All the patients for operation were admitted in morning and they were kept there for 23 hours. During the procedure anesthesia used was endotracheal general anesthesia. During operation conventional methods was used to position and cover or drapes the body of patient. Usually depends upon the size of thyroid of patient a cut of 4 to 6cm was made with help of scalpel which is also called incision, exactly over the level of thyroid isthmus. The strap muscles that surround the thyroid gland laterally and on midline were separated .Either by using conventional knot tying or harmonic knot tying the superior, inferior and middle thyroid vessels were categorized separately. During process different vessels are displaced, suppose first thyroid lobe is medially rotated and then the vessel of ligament of berry, after that the nerves that are visible or present near the lobe is clamped and tie together. The same mechanism is repeated on lobe of counter side. Finally when the ligation gets completed the wound is closed by using the interrupted 3-o polyglactin suture to give accurate position to strap muscles which were displaced before the operation. Then Michel clips are used to close the skin which was removed before operation on day 1.

Computer software SPSS version 23.2 was used for complete data entry and analysis. All the descriptive variables like onset of action and age were presented as SD and mean. Statistical test ANOVA was applied to find the significance among all groups. Chi square test was applied for analysis of continuous stats among groups. P value 0.05 was to be considered as significant.

RESULTS

In this study, a total number of 100% (n=62) patients were included, divided into two equal groups, 31 in each i.e. harmonic scalpel and conventional knot groups. The mean age of the patients, in harmonic scalpel group, was 45.29±4.56 years. There were 64.5% (n=20) males and 35.5% (n=11) females. The mean age of the patients, in conventional knot, was 44.96±2.97 years. There were 74.2% (n=23) males and 25.8% (n=8) females. No significant difference was found for age (t=0.329, p=0.743) and gender (χ^2=0.683, p=0.409) in groups. (Table 1).

Table No. 1: Demographic Variables

Variable	Harmonic Scalpel (n=31)	Conventional Knot (n=31)	Test of sig.
Age	45.29±4.56 years	44.96±2.97 years	t=0.329, p=0.743
Gender	M=64.5%, F=35.5%	M=74.2%, F=25.8%	χ^2=0.683, p=0.409

Table No. 2:Analysis of Variance

Variable	Harmonic Scalpel (n=31)	Conventional Knot (n=31)	Test of sig.
Time of Procedure	98.80± 16.52 minutes	119.81± 9.95 minutes	t=-6.060, p=0.000
Blood loss Volume	454.52± 22.73 ml	850.68± 23.79 ml	t=-67.025, p=0.000

The main outcome variables of this study were the time of procedure (minutes) and blood loss volume (ml). The

mean time of procedure was 98.80±16.52minutes and 119.81±9.95 minutes for the harmonic scalpel and conventional knot groups respectively. Significant difference was found for the time of procedure in groups (t=-6.060, p-value = 0.000). (table. 2).

The mean blood loss volume was 454.52±22.73 ml and 850.68±23.79 ml for the harmonic scalpel and conventional knot groups respectively. Significant difference was found for the blood loss volume in groups (t=-67.025, p-value = 0.000). (table. 2)

DISCUSSION

As we know that bleeding control during thyroidectomy plays very important role during the whole surgical procedure. Uncontrolled blood loss during the process can cause disturbance in homeostatic stability and even could lead to death of patient. To find out which method either use of conventional knot tying or harmonic scalpel is useful for bleeding control in thyroidectomy [3]. But the results of current studies show that harmonic scalpel is much better than the conventional knot [11].

Many studies has conducted in the past, but almost no one study shows that conventional knot method is better comparative to harmonic but recent studies done with highly advanced technology shows that harmonic scalpel is much better than ligation [12].

It was thought that technique of harmonic scalpel is beneficial as compare to conventional procedure .By using harmonic scalpel two major changes occur, first of all the time duration is reduced and second the risk of hypocalcaemia and recurrent laryngeal nerve paresis is reduced. From the beginning of this century a large number of persons did research on advantageous use of harmonic scalpel.[13] Some important studies are given below in this regard.

A study done in 2015 by Cheng et al, total number of 100% (n=86) patients were used to observe the reduction in time, or indirectly observe the significantly faster operative time (-23.1 min, p<0.001), and less transient hypocalcaemia (RR0.69, p=0.01). The result of this study support our results.

Even after few years later another group of scientists did 11 studies , Zhang found significantly even more faster time (-22.4 min ,p= 0.001), time period is very necessary during thyroid gland surgery because the thyroid gland is highly vascularized gland that's why effective and meticulous homeostasis is required to decrease over bleeding. Finally the most recent study is done few year earlier by Blanchard et al, they use 25 patients during this study 11 male and 14 female were included , female and male were of equal age [14]. They found the operative time as (-18.7 min, p<0.001) [15].

Other major advantage of using harmonic scalpel is that it reduces the blood volume and post-operative pain. Many persons do study on this issue some of these are given below.

Duan et al use total number of 100% (n=28) patients for this case and do 13 experiments to find the clear results. The results of these experiments on 28 patients show the blood volume loss during operation by harmonic scalpel is (-14.4 ml p< 0.001) this is intra operative blood loss. Similarly drainage (-7.5ml, p<0.001), and lower hospitalization charges (-118USD, p<0.001) [16].

In very recent days, two Newton meta-analyses have been done. These studies show, harmonic scalpel was compared with conventional knot ligation and bipolar technology. Each of these Newton meta-analyses, contains 21 studies and finds very fast operative time (-22.3 min, p<0.001) less post-operative bleeding, short hospital stay (-0.28days,p=0.001) and) less intraoperative blood loss (-28.5ml,p<o.oo1) [17].

All the above studies were done on high level and no single study is done on local scale[18]. We study the process of thyroidectomy on local level and derived that bleeding control is very good by the use of harmonic techniques. On the other hand, the time period of surgery is also reduced. The results of our study done on local level almost resemble and these results are supported with above or recent studies that are done on larger scale and higher level [19].

CONCLUSION

The whole study can be ended with this conclusion that the harmonic scalpel is more effective than the conventional method of ligation or knotting in thyroidectomy. Its use offer many clinical benefits including reduction in time of surgery and blood volume as well.

Author's Contribution:

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Drafting:	Nida Shahid & Sana Shahid
Data Analysis:	Sana Shahid & Rameez Iqbal
Revisiting Critically:	Rameez Iqbal
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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 Risk Factors Leading to Osteoporosis in Chronic Obstructive Pulmonary Disease (COPD)

Osteoporosis in COPD

Anam Khawar, Ayesha Mukhtar and Rao Muhammad Akram Khan

ABSTRACT

Objective: The main aim of study was to investigate the prevalence of risk factors and osteoporosis in chronic obstructive pulmonary disease patients.

Study Design: Prospective / cross sectional study.

Place and Duration of Study: This study was conducted at the Medicine Department, Mayo Hospital, Lahore from July 2016 to January 2017.

Materials and Methods: Total 369 patients of chronic obstructive pulmonary disease, diagnosed according to Global Initiative for Chronic Obstructive Lung Diseases (GOLD) criteria were enrolled by non-probability consecutive sampling. Ethical approval was taken from committee of the hospital. Written permission was signed by each patient included in study. Quantitative variables like age, body mass index, FEV1, pack years smoking and vitamin D were statistically measured in mean and standard deviation. Qualitative variables like gender and area of living were statistically analyzed in percentage and frequency. ANNOVA was applied to test the significance. P value <0.05 was taken as significant.

Results: Overall, 100% (n=369) patients were included, in this study; divided into two groups i.e. non-osteoporosis 60% (n=220) and osteoporosis 40% (n=149). The mean age, BMI and smoking pack-years of the non-osteoporosis patients was 67.99±4.61 years, 23.92±1.95 kg/m^2 and 41.62±10.20 respectively. There were 94.1% (n=207) males and 5.9% (n=13) females. While, the mean age, BMI and smoking pack-years of the osteoporosis patients was 71.44±3.90 years, 21.91±3.26 kg/m^2 and 49.05±3.00 respectively. There were 97.3% (n=145) males and 2.7% (n=4) females. Education status of the non-osteoporosis patients observed as 36.4% (n=80) illiterate and 63.6% (n=140) elementary or above, while there were 38.3% (n=57) osteoporosis patients illiterate and 61.7% (n=92) were elementary or above. Significant differences were found between age (p=0.000), BMI (p=0.000), smoking pack years (p=0.000), BMD T-score (p=0.000), Systolic BP (p=0.000), Diastolic BP (p=0.000), FVC, liters (p=0.000), FVC, predicted%, (p=0.000), FEV1, liters (p=0.000), FEV1, predicted% (p=0.000) and FEV1/FVC (p=0.000), in groups. Association was found between HTN (p=0.000) and GOLD (p=0.001) in groups.

Conclusion: Study concluded that osteoporosis is hidden and common comorbidity in COPD patients. Its prevalence was high among the patients. Significant number of COPD patients had osteoporosis. Consultants should consider and properly investigate osteoporosis in COPD patients.

Key Words: Chronic obstructive pulmonary disease, osteoporosis, bone mineral density

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INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is very common respiratory problem. It is a chronic inflammatory disease of lung[1]. Systemic chronic inflammation is caused by TNF-alpha, IL-6, CRP and IL-8[2]. It greatly affects the quality of life[3]. Chronic obstructive pulmonary disease is characterized by persistent and irreversible air flow limitation[4].

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Chronic obstructive pulmonary disease is treatable and progressive disease. Chronic obstructive disease occurs in adults and older age patients. Patients of chronic obstructive disease clinically present with symptoms of cough, chest pain, dyspnea and sputum mostly. It is cause of great burden on health care system. Chronic obstructive disease is one of the leading cause of mortality. It is expected to be the third most common cause of mortality in 2020[5]. Many complications occur in chronic obstructive pulmonary disease patients like anemia, muscle wasting, cachexia and weight loss. Most cases of chronic obstructive pulmonary disease occur due to smoking[6]. Other factors such as bio mass fuel exposure[7], environmental pollution, toxic agents on work place can cause chronic obstructive pulmonary disease. Inflammation to these hazardous agents in airways result in bronchospasm and mucous glands hyperplasia. Chronic obstructive pulmonary disease

patients usually have many comorbidities like diabetes, hypertension and cardiovascular disease. Erectile dysfunction is also common problem in chronic obstructive pulmonary disease patients[8]. Acute exacerbation of chronic obstructive pulmonary disease is crucial event in the course of disease. It is main reason of hospitalization in chronic obstructive pulmonary disease patients. It is estimated that 50-70% cost associated with chronic obstructive pulmonary disease is due to its exacerbation.

Osteoporosis is bone disorder which is caused by change in micro architectural of the skeleton due to low bone mineral density (BMD)[9]. Bone strength and quality mainly depends on the three dimensional micro architectural of bone and also properties of material constituents. Type 1 collagen and hydroxyapatite crystals are the main constituents of bone[10]. Osteoporosis increase the chances of fracture by compromising the bone strength. There is no clinical tool to evaluate the quality of bone. However, bone mineral density is measured by dual-energy X-ray absorptiometry (DXA). According to WHO criteria osteoporosis is diagnosed when bone mineral density is 2.5 standard deviation or more to young adult mean. Bone mineral density reflects nearly 70% strength of bone.

It has been investigated that there is a strong association of osteoporosis in COPD patients. The development of osteoporosis in chronic obstructive pulmonary disease patients is caused by many risk factors. Age, smoking, low body mass index, use of steroid, low levels of vitamin D, decrease physical activity and chronic inflammation are the common factors that result in osteoporosis in chronic obstructive pulmonary disease patients. Osteoporosis has its complications in chronic obstructive pulmonary disease patients. It increases the chances of osteoporotic fractures and affects the quality of life[11].

Rationale of the study was that osteoporosis is common and hidden comorbidity in chronic obstructive pulmonary disease patients. It is extremely under investigated and undertreated condition in chronic obstructive pulmonary disease. Currently, very limited research had been conducted on prevalence and risk factors of osteoporosis in chronic obstructive pulmonary disease in Pakistan. So this study will help to establish the facts and also provide base for further investigation. Study done by Chun-Wei lin et al. in Taiwan was taken as reference study[12].

MATERIALS AND METHODS

This prospective cross sectional study was done in Medicine Department, Mayo Hospital, Lahore. Total 369 patients of chronic obstructive pulmonary disease, diagnosed according to Global Initiative for Chronic Obstructive Lung Diseases (GOLD) criteria were enrolled by non-probability consecutive sampling. The study was conducted from July 2016 to January 2017. Ethical approval was taken from committee of the hospital. Written permission was signed by each patient included in study. All patients having clinically stable chronic obstructive pulmonary disease and can perform mild physical activity were included in study. Exclusion criteria of study were: 1) patients who were using systemic corticosteroids, 2) patients having history of any malignancy, 3) any history of acute exacerbation of chronic obstructive pulmonary disease in last one year, 4) patients having history of other systemic diseases like endocrine, renal, gastrointestinal, cardiovascular and rheumatology which can effect bone mineralization and patients having other than chronic obstructive pulmonary disease respiratory disorder were excluded from the study. Sample size was collected from a reference study done by Chun Wei Lin et al. for which confidence interval was taken as 95%, study strength 80, 40% of chronic obstructive pulmonary disease patients having osteoporosis {12}.

All patients were recruited from outpatient department. A detailed history of disease, smoking habits, history of pain and physical activity were taken. Complete physical examination was done in every patient to assess the severity of disease, its complications and any clue of other systemic disorder. Personal information of each patient like age, gender, body mass index, area of living and smoking status was recorded by filling the Performa. On the investigation day pulmonary function tests, bone mineral density and fasting blood glucose were recorded.

Spirometry was done to check the pulmonary functions. It was done by same technician in each patient and in sitting position. Three technically correct values of FEV1, FVC and FEC1/FVC were recorded and highest of three value was taken in study.

Bone mineral density was checked by using dual energy X ray absorptiometry (DEXA). Left hip joint, anterior posterior lumbar spine (L1 to L4) and total bone mineral density were measured individually in absolute values in grams of minerals per unit area scanned (g/cm) and relative T-scores. According to WHO criteria osteoporosis is diagnosed when bone mineral density is 2.5 standard deviation or more to young adult mean

In all patient's venous sample was drawn between 6 a.m. to 9 a.m. Complete blood analysis and fasting blood sugar levels were measured

Quantitative variables like age, body mass index, FEV1, pack years smoking and vitamin D were statistically measured in mean and standard deviation. Qualitative variables like gender and area of living were statistically analyzed in percentage and frequency. ANNOVA was applied to check the significance. P value <0.05 was taken as significant.

RESULTS

Overall, 100% (n=369) patients were included, in this study; divided into two groups i.e. non-osteoporosis

60% (n=220) and osteoporosis 40% (n=149). The mean age, BMI and smoking pack-years of the non-osteoporosis patients was 67.99±4.61 years, 23.92±1.95 kg/m^2 and 41.62±10.20 respectively. There were 94.1% (n=207) males and 5.9% (n=13) females. While, the mean age, BMI and smoking pack-years of the osteoporosis patients were 71.44±3.90 years, 21.91±3.26 kg/m^2 and 49.05±3.00 respectively. There were 97.3% (n=145) males and 2.7% (n=4) females. Education status of the non-osteoporosis patients observed as 36.4% (n=80) illiterate and 63.6% (n=140) elementary or above, while there were 38.3% (n=57) osteoporosis patients illiterate and 61.7% (n=92) were elementary or above (Table. 1).

The mean BMD T-score, Systolic BP, Diastolic BP, FVC liters, FVC predicted %, FEV_1 liters, FEV_1 predicted % and FEV_1/FVC of the non-osteoporosis patients was -1.54±0.49, 140.41±12.38 mm/Hg, 84.85±5.28 mm/Hg, 2.46±0.57 liters, 64.87±10.82 %, 1.68±0.22 liters, 60.13±2.68 % and 62.95±5.74 respectively. While, the mean BMD T-score, Systolic BP, Diastolic BP, FVC liters, FVC predicted %, FEV_1 liters, FEV_1 predicted % and FEV_1/FVC of the osteoporosis patients was -2.79±0.86, 135.99±8.19 mm/Hg, 78.08±6.57 mm/Hg, 1.81±0.54 liters, 56.08±2.34 %, 1.11±0.28 liters, 49.21±2.94% and 54.28±5.19 respectively. DM was noted as 13.2% (n=29) and 9.4% (n=14) for non-osteoporosis and osteoporosis groups respectively. HTN was noted as 62.3% (n=137) and 43% (n=64) for non-osteoporosis and osteoporosis groups respectively (Table. 2). The classification of Global initiative for chronic obstructive lung disease GOLD groups (A-D) was shown in table 3.

Table No. 1: Demographic Variables

Variable	Non-osteoporosis n=(220)	Osteoporosis n=(149)	Test of Sig.
Age	67.99±4.61 years	71.44±3.90 years	t=-7.48 p=0.000
BMI*	23.92±1.95 kg/m^2	21.91±3.26 kg/m^2	t=7.36 p=0.000
Smoking Pack years	41.62±10.20	49.05±3.00	t=-8.63 p=0.000
Gender	M=94.1%, F=5.9%	M=97.3%, F=2.7%	χ^2=2.102 p=0.147
Education Status	Illiterate=36.4%, literate=63.6%	Illiterate=38.3%, literate=61.7%	χ^2=0.136 p=0.712

***BMI; Body Mass Index.**

Significant differences were found between age (p=0.000), BMI (p=0.000), smoking pack years (p=0.000), BMD T-score (p=0.000), Systolic BP (p=0.000), Diastolic BP (p=0.000), FVC, liters (p=0.000), FVC, predicted%, (p=0.000), FEV1, liters (p=0.000), FEV1, predicted% (p=0.000) and FEV1/FVC (p=0.000), in groups. Association was found between HTN (p=0.000) and GOLD (p=0.001) in groups. So, HTN and GOLD were the effect modifiers for osteoporosis (Table. 1-2).

Table No. 2: Clinical characteristics of COPD patients with and without osteoporosis

Variable	Non-osteo-porosis n=(220)	Osteo-porosis n=(149)	Test of Sig.
BMD T-score	-1.54±0.49	-2.79±0.86	t=17.69 p=0.000
Systolic BP	140.41± 12.38	135.99±8.19	t=3.82 p=0.000
Diastolic BP	84.85±5.28	78.08±6.57	t=10.92 p=0.000
FVC, liters	2.46±0.57	1.81±0.54	t=10.93 p=0.000
FVC, predicted%	64.87± 10.82	56.08±2.34	t=9.76 p=0.000
FEV_1, liters	1.68±0.22	1.11±0.28	t=21.47 p=0.000
FEV_1, predicted%	60.13±2.68	49.21±2.94	t=36.82 p=0.000
FEV_1/ FVC	62.95±5.74	54.28±5.19	t=14.78 p=0.000
DM*	Yes=13.2%	Yes=9.4%	χ^2=1.23 p=0.266
HTN*	Yes=62.3%	Yes=43%	χ^2=13.37 p=0.000

*** BP, blood pressure; FVC, forced vital capacity; FEV_1, forced expiratory volume in 1 second; DM, diabetes mellitus; HTN, hypertension**

Table No. 3: GOLD stages in COPD patients with and without osteoporosis

GOLD*	Groups		Test of Sig.
	Non-osteoporosis	Osteoporosis	
Group A	(n=26), 11.8%	(n=11), 7.4%	χ^2=15.85 p=0.001
Group B	(n=120), 54.5%	(n=57), 38.3%	
Group C	(n=60), 27.3%	(n=64), 43.0%	
Group D	(n=14), 6.4%	(n=17), 11.4%	
Total	(n=100), 100%	(n=100), 100%	

***GOLD, Global Initiative for Chronic Obstructive Lung Disease**

DISCUSSION

Results of this study showed two things. One that osteoporosis is common among chronic obstructive pulmonary disease patients. Second risk factors which

were significantly associated with development of osteoporosis in COPD. Study showed that 40% patients of COPD had osteoporosis. Study also concluded that FEV1, body mass index, percentage of diabetes and hypertension were lower in COPD patients who had osteoporosis than patients who had no osteoporosis. Average smoking pack years were higher in osteoporotic group than non-osteoporotic group. Vary similar results were demonstrated by a study done by Chun Wei Lin et al[12]. In this study forty percent COPD patients had osteoporosis. Body mass index and FEV1 were significantly associated with development of osteoporosis.

COPD is systemic chronic inflammatory disease. This inflammation in COPD, as demonstrated by oxidative stress, raised red cell distribution width, elevated levels of CRP and pro inflammatory mediators, results in protein catabolism[13]. Study done by Reiko Watanabe et al. in Japan showed that there is significant prevalence of osteoporosis in male COPD patients[14]. Study done by Jørgensen et al. showed that 68% COPD patients had osteoporosis and osteopenia[15]. A three years follow up study done by Lidwien Graat-Verboom et al. reported an increase in prevalence of osteoporosis from 47% to 61%[16].

Smoking also risk factor for developing osteoporosis[17]. Smoking pack years were higher in osteoporotic group of COPD patients. Smoking cause absorption of bone by lowering pH of bone salts[18]. Smoking also induces systemic inflammatory response in the body. Initial point of this inflammation starts from lung which results in production of systemic inflammatory mediators which results in absorption of bone. Study done by K A Hollenbach et al. concluded that smoking is significantly associated with decrease bone mineral density of hip bone and increase chances of fractures in hip bone[19]. Result of study done by Chun Hay Ko et al. showed that even passive smoking can cause osteopenia. It effects bone cell differentiation and bone remodeling process[20]. Study done by Ill PO et al. showed that smoking is modest risk factor for development of osteoporosis[21].

Body mass index was lower in osteoporotic group of COPD patients. Result of the study done by Biplob Chowdhury et al showed that low body mass index predicts osteoporosis[22]. Study done by Kofi Asomaning et al. showed that women with lower body mass index are at increased risk of developing osteoporosis[23]. One study done by Terence Ong et al. showed that higher body mass index as in obesity is not protective against fractures[24].

Result of this study showed that value of FEV1 was lower in COPD patients who develop osteoporosis. A study conducted in Japan in male COPD patients reported that low FEV1 is independent risk factor of developing osteoporosis[14]. Another study conducted by Shahid Sheikh et al in cystic fibrosis patients showed that osteoporosis is common in patients having low FEV1[25].

Higher percentage of diabetic patients were found in osteoporotic group. Study done by Dana Hyassat et al. reported that women with type 2 diabetes mellitus had lower risk of developing osteoporosis[26].

So results of this study had shown that osteoporosis is hidden, under considered and very common comorbidity in COPD patients. Many risk factors are involved in developing osteoporosis in COPD patients.

Limitation of the study was that sample size was relatively small and it covered a short geographical area. Study design was also its limitation.

CONCLUSION

Study concluded that osteoporosis is hidden and common comorbidity in COPD patients. Its prevalence was high among the patients. Significant number of COPD patients had osteoporosis. Consultants should consider and properly investigate osteoporosis in COPD patients.

Author's Contribution:

Concept & Design of Study:	Anam Khawar
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Original Article

Early Cervical Cancer Screening

Visual Inspection of Cervix with Acetic Acid: A Good Alternative to Pap Smear for Cervical Cancer Screening in Resource Limited Setting

Sharmeen Aslam, Ayesha Nazir and Maryam Ali Shaheen

ABSTRACT

Objective: Determine the diagnostic accuracy of visual inspection of cervix (VIA) by using 3% acetic acid as a screening test for early and timely detection of cervical cancer when histopathology taken as the gold standard of diagnosis.

Study Design: Cross Sectional study.

Place and Duration of Study: This study was conducted at the Department of Gynaecology and Obstetrics, Allied Hospital, Faisalabad from February 2016 to February 2017.

Materials and Methods: All statistical data was entered and analyzed by using SPSS version 23. Frequencies and percentages were calculated and presented for qualitative variables like marital status. Parity, ethnic group and religion. Mean ± Standard Deviation (SD) was calculated for numerical variables like duration of marriage and age. The diagnostic accuracy, sensitivity specificity and positive predictive value (PPV) and negative predictive value (NPV) was calculated using two into two contingency table and histopathology was taken as the gold standard.

Results: Overall, 100% (n=320) female patients were included, in this study. There were 87.2% (n=279) patients had poor socio-economic status, while 12.8% (n=41) had good socio-economic status. The sensitivity, specificity, positive predictive value, negative predictive value and accuracy of VIA and abnormal looking cervix were 81.7%, 80.7%, 51.5%, 48.5% and 81.3% respectively.

Conclusion: Screening schedules are not planned and followed in Pakistan ever, so VIA is effective and always a useful diagnostic test for cervical cancer, pre-cancerous lesions can be detected at their early stage through VIA and mortality and morbidity can be reduced.

Key Words: Cervical Cancer, Visual inspection, Pap smear, Diagnosis.

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INTRODUCTION

In developing countries incidence of cervical cancer is more common among women[1, 2]. Every year more than 490,000 cases of cervical cancer appear all over the world in developing countries[3]. There are many diagnostic tests to diagnose the disease at early stage to start early treatment to decrease the mortality rate[3]. Disease control rate is increased through screening process; out of many diagnostic tests PAP smear test is one of the effective screening method to diagnose Cervical Cancer[4].

One of the limitation of this test is, it is not easily available in under developed countries like Pakistan due to lack of Economical Resources[5].

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Many other low cost diagnostic techniques are likely been used to investigate such problems in low income countries like Visual Inspection of Cervix after applying Acetic Acid (VIA), Visual inspection after lugol's iodine (VILI)[6]. Visual Inspection of Cervix after applying Acetic Acid is an effective method of differentiating healthy Cervix from non-healthy of diseased Cervix[7].

According to WHO Visual inspection after applying Acetic Acid Test technique can be used as a substitute of PAP smear cytology for identifying the cervical cancer patients[6]. Visual Inspection of Cervix after applying Acetic Acid (VIA) test is a non-invasive test which gives immediate reporting. Due to this specificity this test can be easily perform to diagnose Cervical Cancer in developing Countries like Pakistan[5].

Diagnostic Results through PAP smear and VIA has almost same diagnostic results but still it is under process that which screening test should be use as primary screening method to diagnose Cervical Cancer[9]. Other than cervical cancer dysplasia is also an abnormal appearance of cervix but it is not cancer, it can also be diagnosed with Pap smear test. Dysplasia may be precancerous presentation of cervix. Another common pre-cancerous presentation is cervical

intraepithelial neoplasia and can be diagnosed by biopsy test of cervix. Treatment of these two presentations (SIL and CIN) is usual and can stop the development of cancer. Aim of this study is to find out the cost effective diagnostic test which can be use as primary screening test to diagnose Cervical Cancer.

MATERIALS AND METHODS

This study was conducted at Allied Hospital, Faislabad, and the study design choose for conducting this study was Cross Sectional study method. Study was completed in one year duration from February 2016 to February 2017. Females of reproductive age 18-60 years were studied after taking informed consent from study population. Medical history was taken in detailed way and then Physical examination session was also arranged to assess the Cervix by trained staff. Separate room was arranged for maintaining privacy standards of the study personnel's. Procedure was explained to the personnel's to reduce their anxiety level. Sample size was calculated openepi.com by using CI 95%, power of study 80% and diagnostic accuracy 95.6%.

Patients were positioned in Lithotomy position for Physical Examination of Cervix. Proper light stand was arranged in the examination room to make the inspection area visible. Acetic Acid swab was applied to the Cervix and then cervix area was observed for Acetowhite changes. Changes were noticed in duration of 1 minute. In Diagnostic labeling Acetowhite changes were considered as Positive Test and dull or no changes were considered as negative test for diagnosing Cervical Cancer.

Tissue Biopsy was taken from the positive diagnostic results personnel's and the samples were sent to histopathology lab for further investigation. To analyze the frequencies and percentages all the data was analyzed in SPSS-17. Categorical variables were formed on the basis of Age, Marital Status, religion and ethnic group. Sensitivity and the specificity of the diagnostic test were calculated according to positive predictive value and negative predictive value.

All statistical data was entered and analyzed by using SPSS version 23. Frequencies and percentages were calculated and presented for qualitative variables like marital status. Parity, ethnic group and religion. Mean ± Standard Deviation (SD) was calculated for numerical variables like duration of marriage and age. The diagnostic accuracy, sensitivity specificity and positive predictive value (PPV) and negative predictive value (NPV) was calculated using two into two contingency table and histopathology was taken as the gold standard.

RESULTS

Overall, 100% (n=320) female patients were included, in this study. There were 87.2% (n=279) patients had poor socio-economic status, while 12.8% (n=41) had good socio-economic status. Nulliparous women were 8.8% (n=28), 47.1% (n=151) were single or multiparous, while 44.1% (n=141) were grand multipara. The mean age of the patients was 33.14±7.15 years. There were 36.9% (n=118) patients between 18-30 years, while majority of the patients i.e. 63.1% (n=202) between 31-50 years of age. (Table. 1).

The mean duration of sexual activity, menarche, age at first coitus, age at first pregnancy and parity of the patients was 12.04±5.81 years, 11.1±0.65 years, 17.16±2.44 years, 18.90±1.66 years and 5.03±1.15 respectively. Vaginal discharge was observed in 54.7% (n=175) patients. While lower abdominal pain was noted in 40.6% (n=130) patients. (Table. 2).

Table No. 1: Demographic Variables

Characteristics	Frequency	Percentage (%)
Socio-economic Status		
Poor	279	87.2
Good	41	12.8
Total	320	100.0
Woman type		
Nulliparous	28	8.8
Single or multiparous	151	47.1
Grand multipara	141	44.1
Total	320	100.0
Stratified Age		
18-30 Years	118	36.9
31-50 Years	202	63.1
Total	320	100.0
Descriptive Statistics (Mean±S.D)		
Age	33.14±7.15 years	

Table No. 2: Frequencies of Study Variables

Characteristics	Frequency	Percentage (%)
Vaginal Discharge		
Yes	175	54.7
No	145	45.3
Total	320	100.0
Lower Abdominal Pain		
Yes	130	40.6
No	190	59.4
Total	320	100.0
Descriptive Statistics (Mean±S.D)		
Duration of Sexual Activity	12.04±5.81 years	
Menarche	11.1±0.65 years	
Age at first coitus	17.16±2.44 years	
Age at first pregnancy	18.90±1.66 years	
Parity	5.03±1.15	

Among VIA positive patients in which cervixes looking abnormal 134 (51.5%) have positive histopathologic finding and 126 (48.5%) have negative histopathology, similarly among VIA negative and abnormal looking

patients 30 (50%) patients have positive and 30 (50%) have negative histopathology (Table-3).

The sensitivity, specificity, positive predictive value, negative predictive value and accuracy of VIA and abnormal looking cervix were 81.7%, 80.7%, 51.5%, 48.5% and 81.3% respectively (Table. 4).

Table No. 3: Validity of screening test for early diagnosis of cervical cancer

VIA*	Histopathology findings		
	Positive	Negative	Total
VIA Positive and Abnormal looking cervix	134 (51.5%)	126 (48.5%)	260
VIA Negative but abnormal looking cervix	30 (50%)	30 (50%)	60
Total	164	156	320

*VIA: Visual inspection of the cervix after acetic acid application

Table No. 4: Diagnostic Accuracy of VIA

Diagnostic Measures	Value
Sensitivity	81.7%
Specificity	80.7%
Positive Predictive Value (PPV)	51.5%
Negative Predictive Value (PPV)	48.5%
Accuracy	81.3%

DISCUSSION

Cervical Cancer is considered as one of the emerging health problem among females of reproductive age[10]. Every year thousands of cases appear. Its incidence is higher in the developing countries like Pakistan[10]. In Pakistan its incidence is about 3.6% in every year. The most dangerous thing is, people have less awareness about cervical cancer, due to lack of awareness about disease sign and symptoms patients come late to the hospitals specially they approach hospitals at last stages[11].

Different diagnostic tests are performed to diagnose Cervical Cancers. The Diagnostic Test PAP Smear is the most common test in developed countries and can be use as primary diagnostic test for Cervical Cancer Screening in developed Countries, but in under developed countries due to lack of resources this test cannot be use commonly, so this test is not approachable in rural areas and under developed places[12]. While Visual Inspection of Cervix after applying Acetic Acid (VIA) Test is use as a substitute of PAP smear in developing countries[13,14].

In our study VIA was positive in 81.2% patients and among VIA positive patients in which cervixes looking abnormal 134 (51.5%) have positive histopathologic finding and 126 (48.5%) have negative histopathology, similarly among VIA negative and abnormal looking patients 30 (50%) patients have positive and 30 (50%) have negative histopathology. In some previous studies VIA positive was reported in 1.7 to 29% patients[15,16,17].

VIA is a non-invasive test which provide quick results or it is less costly test. So it is a very useful test in developing countries to diagnose Cervical Cancer. This test can easily be performed in rural areas where hospitals do not have so many diagnostic resources. Due to its non-invasive approach this test can be perform easily without creating anxiety to patient. Reporting of this test is quick and based on visual assessment; this property encourages quick diagnosis of Cervical Cancer.

According to one study 3.1 % females were diagnosed positive for Cervical Cancer through VIA testing on Acetowhite appearance of Cervix[18]. Another study was conducted, which showed that 28% females diagnosed as positive for Cervical Cancer over Acetowhite grading through VIA[19].

In our study sensitivity, specificity, positive predictive value, negative predictive value and accuracy of VIA and abnormal looking cervix were 81.7%, 80.7%, 51.5%, 48.5% and 81.3% respectively. In some previous studies sensitivity of VIA noted from 60% to 100% and specificity ranged from 36.4% to 99.1%[20,21].

CONCLUSION

Screening schedules are not planned and followed in Pakistan ever, so VIA is effective and always a useful diagnostic test for cervical cancer, pre-cancerous lesions can be detected at their early stage through VIA and mortality and morbidity can be reduced.

Author's Contribution:

Concept & Design of Study:	Sharmeen Aslam
Drafting:	Ayesha Nazir & Maryam Ali Shaheen
Data Analysis:	Ayesha Nazir & Maryam Ali Shaheen
Revisiting Critically:	Sharmeen Aslam & Ayesha Nazir
Final Approval of version:	Sharmeen Aslam

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Original Article

Repair of Unilateral Cleft Lip

Comparison of outcome of Modified Millard's Incision and Delaire's Functional Method in Primary Repair of Unilateral Cleft Lip

Asma Tahir[1], Rehmat Ullah[2], Muhammad Mubasher Muavia[2] and Muhammad Kashif[1]

ABSTRACT

Objective: To compare the outcomes of two different designs of skin incision used for surgical correction of unilateral cleft lip.

Study Design: Randomized Control Trial study

Place and Duration of Study: This study was conducted at the Dental Section of Nishtar Hospital Multan from October 2016 to May 2017.

Materials and Methods: was conducted after ethical approval from institute ethical board. Data was collected than arranged over Microsoft Excel 2007. Variables then formed or for further statistical results data was entered in SPSS version 15.0. Variables were assessed by using. Mean and SD was calculated and presented for quantitative data like age and weight. Frequency (percentages) were calculated and presented for qualitative data such as gender and outcome variables. Post stratification statistical chi square test was used to see effect modification. P value ≤ 0.05 was considered as significant.

Results: Out of 100% (n=66) unilateral cleft lip patients, 50% (n=33) patients each were operated with Modified Millard's incision and Delaire's functional method respectively. Various parameters were analyzed—white roll match, cupid bow, lip length and alar dome demonstrated favorable measurements in Millard's group and the vermilion match, scar appearance, nostril symmetry and alar base was better in Delaire's methods. All the differences in these parameters were not statistically significant, except lip length (p=0.023).

Conclusion: Overall clinical outcomes like vermilion match, white roll, and cupid bow appearance was similarly effective in both techniques. Lip length outcome was better in modified Millard's incision technique. Similarly nasal symmetry was better in Delaire's functional method. So it was found that one technique was essentially as good as the other.

Key Words: Modified Millard's, Delaire's Functional Method, Primary Repair, Unilateral Cleft Lip.

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INTRODUCTION

In our society people has more focus over facial beauty. Any damage or change in facial beauty leads to stress for individuals, their families and also on their relationships. Any facial defacement leads to severe stress for sufferers. Cleft lip and Cleft Palate both are also considered as facial anomalies which occur by birth or it involves deformities of facial bones.[1] Now these birth defects arising as health problems in public. Incidence of Cleft lip and palate do not affect mortality or morbidity in a greater rate but incidence of Cleft lip and Cleft palate is 1 in 800 live births.[2]

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Incidence of these anomalies varies in different races. In Asians its incidence is 1 out of 500 live births, while in Caucasians its incidence is 1 out of 750 live births. In Africans Americans its incidence is 1 out of 2000 live births[3,4]. This shows that incidence of these birth defects is common in Asians and least common in Africans and Americans. [(3,4)]. Gender vise cleft lip or palate mainly occur in the males while isolated cleft palate rate is higher in females.

Incidence of cleft lip and cleft palate together is about 45 % while of single cleft palate is 35% and of single cleft lip is 20%. Incidence of one sided cleft lip is 9 times greater than the cleft lip of two sides[3,5]. These anomalies are surgically been treated by Surgeons from 2000 years. First cleft lip surgery was performed in China by a Chinese physician[6,7]. To gain more effective results, different procedures were used to perform. Different amendments were done by different physician in those procedures to get best quality results of cleft lip repair.

Individuals who took interest in cleft lip repair are Le Mesurier in 1949, Tennison in 1952, Randall in 1959, Pfeifer in 1970 or Millard in 1976.[6-8] Mirault was the first person who introduced the increasing lip length

technique by using small flap. But this technique was not able to rebuilt the Cupid's bow. After this, Le Mesurier further explained many techniques to form artificial Cupid's bow with rectangular flap. This Technique is considered as an effective way to correct clefts, cupid bow, philtral dimple as well as nasal tip correction. Length of the lip was highly appreciated through this technique.[9,10] After these advancements all attentions were diverted towards the correction of anatomical changes of cleft lip. Through repairing of orbicularis oris muscle the shape of the upper lip was improved which got more precision with the passage of age.[11]

The functional repair of cleft lip was explained by Delaire. Through Delaire technique, entire functional matrix was lifted by dissecting sub periosteal up to the nasal septum level. Firstly the skin got short due to inactivity of underlying muscle. On correct apposition of muscle the activity of muscle regained which results in lengthening of skin.[12,13] It also has disadvantage of longer lip. Still there is no technique which give ideal functional result.[6]

MATERIALS AND METHODS

Prospective study was conducted from October 2016 to May, 2017 after ethical approval from institute ethical board. Informed consent was obtained from patients guardians after complete elaboration of study. Purpose of this study was to judge the results after surgery of upper lip and nose in unilateral cleft lip patients by using both Millard's and Delaire's Technique. Study was performed in Dental section of Nishtar hospital Multan. Patients of age 10 to 18 years and having unilateral cleft lip were selected for the study. Any patients with bilateral cleft lip and operated other than Millard's and Delaire's method were excluded from the study. Non probability consecutive sampling technique was used.

All patients of age 10 weeks to 20 years were selected for study. Patients with unilateral cleft lip were studied. Surgical procedure was performed by qualified or skilled surgeons under general Anesthesia. Half patients were operated with Modified Millard's incision technique[9,10], while other half were operated by Delaire's functional method[12,13.] Following things were noticed in both operated individual results which includes, White roll match, Vermillion match, Scar appearance, Cupid bow, lip length, nostril symmetry, alar dome and alar base with respect of Steffensen's Criteria.[6,14,15] These surgeries were performed by same surgeon.

Data was collected than arranged over Microsoft Excel 2007. Variables then formed or for further statistical results data was entered in SPSS version 15.0. Variables were assessed by using. . Mean and SD was calculated and presented for quantitative data like age and weight. Frequency (percentages) were calculated and presented for qualitative data such as gender and outcome variables. Post stratification statistical chi square test was used to see effect modification. P value ≤ 0.05 was considered as significant

RESULTS

Out of 100% (n=66) unilateral cleft lip patients, 50% (n=33) patients each were operated with Modified Millard's incision and Delaire's functional method respectively. The mean age and weight of the patients, in Millard's group, was 13.85±1.88 months and 6.69±1.23 kg respectively. There were 54.5% (n=18) males and 45.5% (n=15) females. The mean age and weight of the patients, in Delaire's group, was 13.96±1.44 months and 6.81±1.33 kg respectively. There were 66.7% (n=22) males and 33.3% (n=11) females. No significant difference was found between demographic variables in groups. (Table. 2).

Table No. 1: Grading criteria

Parameters	Good	Average	Poor
White roll match	Perfect	Diparity of<1 mm	Disparity of>1 mm
Vermilion match	Perfect	Diparity of <1 mm	Disparity of>1 mm
Scar appearance	No hypertrophy	Hypertrophy with no disturbance of cupid bow or columella	Hypertrophy with disturbance of cupid bow or columella
Cupid bow	Perfect	Distortion on cleft side is<2 mm	Distortion on cleft side is>2 mm
Lip length	Equal length on cleft and non-cleft side	Shorter of cleft side>1 mm<2 mm	Shorter of cleft side>2 mm
Nostril symmetry	Equal height and width to normal side	>1 mm<2 mm in either height or width to normal side	>2 mm in either height or width to normal side
Alar dome	Equal curvature to normal side	--	Any depression compared to normal side
Alar base	At the same level of normal side	Difference of<1 mm compared to normal side	Difference of>1 mm compared to normal side

Table No. 2: Demographic Variables

Variable	Millard's (n=33)	Delaire's (n=33)	Test of Sig.
Age	13.85±1.88 months	13.96±1.44 months	χ^2=0.992, p=0.319
Weight	6.69±1.23 kg	6.81±1.33 kg	t=-0.386, p=0.703
Gender	M=54.5%, F=45.5%	66.7%, 33.3%	χ^2=1.01, p=0.314

Various parameters were analyzed—white roll match, cupid bow, lip length and alar dome demonstrated favorable measurements in Millard's group and the vermilion match, scar appearance, nostril symmetry and alar base was better in Delaire's methods. All the differences in these parameters were not statistically significant, except lip length (p=0.023). (Table. 3).

Table No. 3: Qualitative analysis according to Steffensen's criteria

Characteristics	Group	Good n,%	Average n,%	Poor n,%	P-value
White roll match	Millard's	16,48.5	12, 36.3	5, 15.2	0.964
	Delaire's	17, 51.5	11, 33.3	5, 15.2	
Vermilion match	Millard's	17,51.5	15, 45.5	1, 3.0	0.969
	Delaire's	18,54.6	14, 42.4	1,3.0	
Scar appearance	Millard's	12,36.3	16,48.5	5,15.2	0.445
	Delaire's	15,45.5	16,48.5	2,6.0	
Cupid bow	Millard's	14,42.4	16,48.5	3,9.1	0.188
	Delaire's	9,27.3	23,69.7	1,3.0	
Lip length	Millard's	21, 63.7	11,33.3	1,3.0	0.023
	Delaire's	10,30.3	22,66.7	1,3.0	
Nostril symmetry	Millard's	5,15.2	15,45.5	13,39.3	0.759
	Delaire's	4,12.1	18,54.6	11,33.3	
Alar dome	Millard's	4,12.1	2,6.1	27,81.8	0.824
	Delaire's	5,15.2	3,9.1	25,75.7	
Alar base	Millard's	16,48.5	16,48.5	1,3.0	0.449
	Delaire's	21,63.7	11,33.3	1,3.0	

DISCUSSION

Cleft lip is considered as one of the more occurring birth defects out of all congenital anomalies. This problem has low incidence among all live births so it is considered as less fatal health problem. But this problem affects cosmetic beauty of individuals. These type of anomalies disturb different normal functioning of patients like sucking, speaking and breathing. Treatment of cleft lip is very difficult.

In our study mean age of patients and weight of the patients,in Millard's group,was 13.85±1.88 months and 6.69±1.23 kg respectively. In a study conducted by Atri S et al mean age was 14.67 ± 45.33 months. Results of this study are comparable with our findings [16]. There were more male than female in our study.

In our study various parameters were analyzed—white roll match, cupid bow, lip length and alar dome demonstrated favorable measurements in Millard's group. In a study conducted by Holtmann and Wray et al and reported excellent results in twelve surgeries and poor results were not found in any case in triangular technique (Rendall tension) group. They reported that triangular technique is beeter than Millard's technique. Results of this were against our findings [17].

In a previous study Williams et al compared Millard and LeMesurier's technique, it was reported that Millard technique have many advancement and better outcomes than LeMesurier's technique. Conclusion of his study was similar to our findings. He compared many nose and lip measurements and assess their scoring system by 10 points scoring criteria [18].

In a study Amaratunga et al compared LeMesurier's and Millard technique and found that some outcome are better in Millard technique like nostril height and some measurements are better in LeMesurier's technique like vermillion symmetry. These findings are similar to our findings, we also concluded same results as some outcomes are better in Millard technique and some in LeMesurier's method [18].

In a study conducted in 1990 by Chowdri et al Millard and triangular technique was compared and reported that Millard technique patients have short lips and triangular technique have long lips after surgery. Overall findings of this study shows no significant difference in both groups when outcomes were compared. This study is also comparable with our findings[19].

A similar study was conducted by Reddy et al and compared Millard and Pfeifer wavy line incision and reported that both techniques are equally effective as some outcomes are better in Millard's group and some in Pfiefer technique. We also concluded same results from our study [20].

CONCLUSION

Overall clinical outcomes like vermilion match, white roll, and cupid bow appearance was similarly effective in both techniques. Lip length outcome was better in modified Millard's incision technique. Similarly nasal symmetry was better in Delaire's functional method. So it was found that one technique was essentially as good as the other.

Author's Contribution:

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Original Article

Management of Cholecystitis

Comparison of the Frequency of Billiary Leakage with Clipless Versus Clipped Laparoscopic Cholecystectomy for Management of Cholecystitis

Sana Shahid, Nida Shahid, Rameez Iqbal and Noor Saeed

ABSTRACT

Objective: Compare the frequency of billiary leakage with clipless versus clipped laparoscopic cholecystectomy for management of cholecystitis.

Study Design: Randomized control trail study.

Place and Duration of Study: This study was conducted at the Department of Surgery, Nishtar Hospital, Multan, from June 2016 to November 2016.

Materials and Methods: Sample size of 130 with 65 patients in two each group was calculated with power of study taken as 80%, significance level 5% and taking expected percentage of billiary leakage of 30% with clipped laparoscopic and 10% with clipless laparoscopic cholecystectomy (6). Non probability consecutive type of sampling technique was used to calculate the sample size. A predesigned Performa was used to collect all the data regarding procedure and outcomes. The data was subjected to statistical analysis using computer software SPSS version 23. Age and duration of cholecystitis were the quantitative variables of which mean and standard deviation was calculated. Frequency and percentage was calculated for qualitative variables like gender and billiary leakage. Chi square test was applied to compare the billiary leakage in both groups with P value less than 0.05 taken as significant.

Results: 100% (n=168) patients were included, in this study; divided into two equal groups, 50% (n=84) in each, clipless and clipped respectively.The main outcome variable of this study was billiary leakage. The billiary leakage was noted in 23.8% (n=20) and 44% (n=37) patients for clipless and clipped groups respectively. Significant difference was found between billiary leakage in groups (χ^2=7.67, p=0.006). No significant difference was found between billiary leakage and gender (p=0.995), stratified age (p=0.325), duration of Cholelithiasis (p=0.861).

Conclusion: It has been proved in our study that the biliary leakage was statistically significantly higher in the clipped LC for management of Cholecystitis.

Key Words: Billiary Leakage, Clipless Laparoscopy, Clipped Laparoscopy, Cholecystectomy, Cholecystitis

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INTRODUCTION

Diseases caused by gallstones are among the commonest clinical anomalies which is present all over the world[1]. Cholelithiasis manifests in variety of forms, which range from mild billiary colic to fatal gallstone cholangitis and pancreatitis[2]. Multiple diseases caused by gallstones can be listed as, billiary colic, choledocholithiasis, cholecystitis and pancreatitis which usually overlap in their diagnosis[3].

Normally titanium clips are used to secure cystic duct and artery in laparoscopic cholecystectomy. Extra corporeal knotting is considered inferior to intra corporeal ligation in normal situations. Separate and multiple ligations of cystic artery and duct have been reported in many studies, but are considered time consuming and technically demanding. As such, harmonic scalpel and LigaSure are extremely to be afforded by the people of countries with limited resources[4]. Harmonic or ultrasonically activated scalpel in both laparoscopic and open surgical procedures for dissection and hemostasis is proved to be safe, efficient and effective instrument.

Most severe adverse affect after cholecystectomy are billiary leakages. Range of clinically relevant billiary leakage after conventional cholecystectomy is 0.1 to 0.5%. Incidence of billiary leakage has increased up to 3% since the development of laparoscopic cholecystectomy during learning curve[5]. Treatment of choice for post cholecystectomy billiary leakage is magnetic resonance retrograde cholangiopancreatiography by placing a billiary stent or nasobilliray drain[6].

In a study it was reported that billiary leakage incidence was statistically significant and significantly higher

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among the patient undergoing clipped laparoscopy as compared to the patients undergoing clipless laparoscopy i.e. 30% and 10% respectively with P=0.002[7]. But according to various other studies rate of billiary leakage was comparable in use of clipless harmonic scalpel and clip placement with 1.75% and 0.66% respectively. Recommendations were made stating that at the discretion of the surgeon both clipless harmonic scalpel and clip placement are comparable and safe for cystic duct ligation. In order to assess the cost effectiveness of these procedures and to enhance their use in laparoscopic procedures for chole-cystectomy, further studies are required especially larger homogenous studies[8].

This study is aimed to compare the frequency of billiary leakage in clipped with clipless laparoscopic cholecystectomy for treatment of cholecystitis. Literature shows that clipless procedure by using harmonic scalpel is much safer and better approach in managing cholecystitis as compared to conventional clipped procedure. But no final decisions have been made because of different controversies regarding these techniques. So this study is conducted to find if clipless is really a better method to precede with, otherwise more appropriate technique must be used in future to prevent patients from postoperative complications. This will help us to improve our practice and in future we will be able to implement the results of this study for management of cholecystitis with minimal post-operative complications.

MATERIALS AND METHODS

Randomized control trail study was performed in Department of Surgery, Nishtar Hospital, Multan, from June 2016 to November 2016. Sample size of 130 with 65 patients in two each group was calculated with power of study taken as 80%, significance level 5% and taking expected percentage of billiary leakage of 30% with clipped laparoscopic and 10% with clipless laparoscopic cholecystectomy (7). Non probability consecutive type of sampling technique was used to calculate the sample size. Inclusion criteria was set as, patients with age ranging from 25 to 60 years, either gender, suffering from cholecystitis and undergoing laparoscopic cholecystectomy under general anesthesia. Exclusion was based upon the flowing criteria; patients suffering from diabetes mellitus, hypertension and patients with clotting disorder. Demographic info consisting of names, age, sex and duration of cholecystitis was obtained from the patients. Laparoscopic cholecystectomy under spinal anesthesia was performed in all the patients involved in the study. All procedures were performed by a single surgical team. Patients were randomly divided into two equal groups by using lottery method, A as Clipless and B as Clipped.

Clipless harmonic scalpel was used in patients of group A. Ultrasonic shear through 10mm epigastric port was used for dissection of cystic duct and artery and then gallbladder from liver bed with the help of grasper through midclavicular 5mm port in order to reach hemo-billiary stasis, and at the end gallbladder was retrieved from epigastric 10mm trocars site.

Conventional instruments with application of clips were used in patients of group B. in all cases a small catheter was placed for drainage which was removed after keeping it for 24 hours. Follow up was arranged in OPD after one week. Magnetic resonance retrograde cholangiopancreatiography was performed to determine the billiary leakage. A predesigned Performa was used to collect all the data regarding procedure and outcomes. The data was subjected to statistical analysis using computer software SPSS version 23. Age and duration of cholecystitis were the quantitative variables of which mean and standard deviation was calculated. Frequency and percentage was calculated for qualitative variables like gender and billiary leakage. Chi square test was applied to compare the billiary leakage in both groups with P value less than 0.05 taken as significant.

RESULTS

Overall, 100% (n=168) patients were included, in this study; divided into two equal groups, 50% (n=84) in each, clipless and clipped respectively. The mean age and duration of Cholelithiasis of the clipless patients was 42.14±2.90 years and 13.61±2.02 respectively. There were 64.3% (n=54) males and 35.7% (n=30) females. While, the mean age and duration of Cholelithiasis of the clipped patients was 45.54±2.56 yearsand 12.08±1.92 respectively. There were 65.5% (n=55) males and 34.5% (n=29) females. (Table1).

The main outcome variable of this study was biliary leakage. The biliary leakage was noted in 23.8% (n=20) and 44% (n=37) patients for clipless and clipped groups respectively. Significant difference was found between biliary leakage in groups (χ^2=7.67, p=0.006). (Table. 2). No significant difference was found between biliary leakage and gender (p=0.995), stratified age (p=0.325), duration of Cholelithiasis (p=0.861). (Table. 2).

Table No. 1: Demographic Variables

Variable	Clipless n=(84)	Clipped n=(84)
Age	42.14±2.90 years	45.54±2.56 years
Duration of Cholelithiasis	13.61±2.02	12.08±1.92
Gender	M=64.3%, F=35.7%	M=65.5%, F=34.5%

Table No. 2: Association of biliary leakage with gender, stratified age, duration of Cholelithiasis and groups

Variable		Biliary leakage		Total	P-value
		Yes	No		
Gender	Male	37	72	109	0.995
	Female	20	39	50	
Total		57	111	168	
Stratified Age	≤45 years	11	29	40	0.325
	>45 years	46	82	128	
Total		57	111	168	
Duration of Cholelithiasis	≤45 Min.	27	51	78	0.861
	>45 Min.	30	60	90	
Total		57	111	168	
Groups	Clipless	20	64	84	0.006
	Clipped	37	47	84	
Total		57	111	168	

DISCUSSION

Reports have shown that laparoscopic cholecystectomy is a safe, economical and simple procedure (9). Securing of cystic duct and artery during laparoscopic cholecystectomy can be achieved by multiple techniques, like intra or extra corporeal ligation, clips, harmonic scalpel and LigaSure[10]. Use of harmonic scalpel and LigaSure during laparoscopic cholecystectomy is a recent advent[11,12]. Our results show that biliary leakage was present in 57 patients of which 20 patients belonged to clipless group while 37 belonged to clipped group. In our study clipless group showed statistically less biliary leakage as compared to clipped group (P=0.006), but it is not significant. PK Saha et al[4] performed a study in Bangladesh and found that clipless laparoscopic cholecystectomy was safe and effective technique. There was no bile leak related to ligature neither was any other postoperative complication. In a study it was reported that biliary leakage incidence was statistically significant and significantly higher among the patient undergoing clipped laparoscopy as compared to the patients undergoing clipless laparoscopy i.e. 30% and 10% respectively with P=0.002[7].

A study conducted in the city of Rawalpindi, Pakistan which concluded that despite the difference of the procedure performed i.e. clipless and clipped laparoscopic cholecystectomy, there was no difference in the frequency of bile leak among the two groups (bile leak was present in two patients of each group) with P=0.972[13]. TharwatKandil et al[11] performed a study which concluded that harmonic scalpel provided a more complete hemo-biliary stasis and can be recommended as a safe alternative to traditional clip of cystic duct and artery.It provides a shorter operative duration, less incidence of gallbladder perforation, less postoperative pain, and less rate of conversion to open cholecystectomy. In one study, bile leaks were reported in 9 of 331 patients (2.7%) when a harmonic scalpel was used alone[12]. A study of 100 LCs performed using a harmonic scalpel recommended that additional cystic duct ligatures be used for a cystic diameter exceeding 5 mm[12,14]. One more study has also showed that bile leak was encountered in 1.7% with clipless method and 3.3% with clipped method (p = 0.45)[9].

In our study the mean value of duration of Cholelithiasis in clipless group was 13.61±2.02 minutes and its mean value in clipped group was 12.08±1.92 minutes.The incidence of gallbladder perforation was statistically comparable in the C&C group, compared to the HS group.Besides being equally safe, advantages to clipless cholecystectomy by means of harmonic shears versus conventional LC is a shorter operative time, less incidence of gallbladder perforation, less postoperative pain and less rate of conversion to open cholecystectomy[11]. A study by Roberta Gelmini et al[15] presented that the mean operative time was significantly shorter in patients treated with the Harmonic scalpel. The Harmonic scalpel is not only a safe and effective instrument but also a reliable substitute for clips because it provides complete hemobiliary stasis which is in accordance to our study results. In recent studies harmonic scalpel was compared with conventional clipped laparoscopy and results show that harmonic scalpel use was much more effective in terms of providing hemobiliary status and duration of surgery[16,17,18,19].

CONCLUSION

It has been proved in our study that the billiary leakage was statistically comparable in the clipped and clipless LC for management of Cholecystitis

Author's Contribution:

Concept & Design of Study:	Sana Shahid
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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 in Pregnant Women

To Compare Frequency of Pre-Eclampsia in Pregnant Women with or Without Persistent Early Diastolic Notch on Uterine Artery Doppler at 24 Weeks of Gestation

Shumaila Kiran, Zoya Khan, Muzimmal Zulfquar Bhatti and Saima Ashraf

ABSTRACT

Objective: To compare frequency of pre-eclampsia in pregnant women with or without persistent early diastolic notch on uterine artery Doppler at 24 weeks of gestation.

Study Design: Comparative study.

Place and Duration of Study: This study was conducted at the Outpatient Department of Obstetrics & Gynecology Nishtar Hospital Multan from May 2015 to May 2016.

Materials and Methods: A total of 148 pregnant women fulfilling inclusion and exclusion criteria were enrolled for the study. Informed consent was obtained from all the patients by explaining the procedure and its outcome and ensured of their confidentiality. Study was conducted after approval from ethical committee of the institution. A detailed history including demography of the patients like name, age and address was recorded. In all women, Doppler flow rate wave forms at the portion of the uterine artery on the side of uterus were recorded. Resistance index and pulsatility index values of right and left uterine arteries were evaluated separately. After having wave form obtained at 24 weeks gestation, according to presence of EDN, cases were divided into two groups. Group A consisted of 74 women without early diastolic notch (unexposed group) and Group B of 74 women with early diastolic notch (exposed group). Then these pregnancies were followed until birth.

Results: In our study, out of 148 cases (74 in each group) 58.11%(n=43) in Group-A and 63.51%(n=47) in Group-B were between 21-30 years while 41.89%(n=31) in Group-A and 36.49%(n=27) in Group-B were between 31-35 years of age, mean$\pm$sd was calculated as 28.22$\pm$4.91 and 27.69$\pm$4.83 respectively. Comparison of pre-eclamsia in both groups was done which shows that 4.05%(n=3) in Group-A and 18.92%(n=14) in Group-B had pre-eclampsia while remaining 95.95%(n=71) in Group-A and 81.08%(n=60) in Group-B had no findings of the morbidity, p value was calculated as 0.004 which shows a significant difference between the two group, Relative Risk= 0.2143.

Conclusion: We concluded that the frequency of pre-eclampsia in pregnant women is significantly higher in patients with persistent early diastolic notch on uterine artery Doppler at 24 weeks of gestation as compare to those having no diastolic notch.

Key Words: Persistent early diastolic notch, diagnosis, pre-eclampsia.

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INTRODUCTION

Pre-eclampsia as well as intrauterine growth restriction (IUGR) are one of the major causes of maternal morbidity which can lead to increased perinatal morbidity and mortality rates [1-2]. Coagulopathy, renal failure and liver failure are one of the major maternal complications of pre-eclampsia.

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Furthermore it is also associated with significant proportion of stroke in these patients.[3]

Abnormal placental formation is often characterized with pre-eclampsia and IUGR that leads to inadequate blood flow across uteroplacenta. Due to this phenomenon, usage of color Doppler ultrasonography has gained much attention for the assessment of the velocity of uterine artery blood flow in patients in routine practice of ultrasonographic screening these days.

Low end-diastolic velocities as well as early diastolic notch (EDN) may specifically characterize uterine artery blood flow waveforms among ladies which are not expecting or who are being screened in their first trimester of pregnancy. Assessment of a diastolic notch over 26 weeks of gestation and abnormal uterine artery blood flow velocity ratio may be related with inadequate trophoblast invasion.[3]

Precise assemment of pre-eclampsia and intrauterine growth restriction (IUGR) plays a key role in allowing accurate disbursement of resources for the purpose of monitoring and preventive options for the improvement of perinatal and maternal outcomes.[4] Furthermore, various studies evaluating the diagnostic accuracy of uterine artery colour Doppler indices demonstrated that artery Doppler ultrasonography could be employed as a predictive test.[5]

In one study,[6] perinatal outcomes were evaluated with and without early diastolic notch, pre-eclampsia was found in 2.8% without early diastolic notch and 16.3% among pregnant ladies having early diastolic notch.

Uterine artery Doppler ultra-sonographic assessment in 2nd trimester is very useful screening modality for accurate characterization of high risk pregnancies which may be kept under sophisticated surveillance to improve maternal and neonatal outcomes [7-10] in these patients. Uterine artery Doppler can also identify poor trophoblastic invasions of spiral arteries which may severely hinder trophoplacental blood flow and lead to the early onset of this disease[11-13].

The results of this study may help to guide us to pick/predict abnormal testing in all those women who could potentially lead to increase surveillance (fetal and maternal) and intervention that can improve clinical outcome. Also this study results will be helpful to find out frequency of women who do develop preeclampsia with normal second trimester uterine artery Doppler study.

MATERIALS AND METHODS

A total of 148 pregnant women fulfilling inclusion and exclusion criteria coming to Outpatient Department of Obstetrics & Gynecology Nishtar Hospital Multan were enrolled for the study. Following inclusion criteria was adopted; Age between 21–35 years; Singleton pregnancy (assessed on USG); Women with diastolic notch (exposed) and without diastolic notch (non exposed) [confirmed on Doppler ultrasonography]; Pregnant women visiting Outpatient Department of Gynecology between 20–24 weeks of gestation determined on dating scan. Patients with previous history of; Preeclampsia; preterm delivery; intrauterine death; chronic hypertension; diabetes mellitus; connective tissue disorder; previous family history of hypertensive disorders and those having BMI $\geq$ 35 kg/m^2 were excluded from our study. Informed consent was obtained from all the patients by explaining the procedure and its outcome and ensured of their confidentiality. Study was conducted after approval from ethical committee of the institution. A detailed history including demography of the patients like name, age and address was recorded. In all women, Doppler flow rate wave forms at the portion of the uterine artery on the side of uterus were recorded. Resistance index and pulsatility index values of right and left uterine arteries were evaluated separately. After having wave form obtained at 24 weeks gestation, according to presence of EDN, cases were divided into two groups.

Group A consisted of 74 women without early diastolic notch (unexposed group) and Group B of 74 women with early diastolic notch (exposed group). Then these pregnancies were followed until birth. And pre-eclampsia was defined as All those cases, who were having systolic pressure above 140 mmHg and/or diastolic pressure >90mmHg measured at least two times with 6 hours interval and proteinuria $\geq$300mg/day with and without persistent early diastolic notch, was accepted as preeclampsia, after 20 weeks of gestation till delivery. Data was entered and analyzed by using computer software SPSS 10. Descriptive statistics were used to analyze the data. Mean ±SD was calculated for age and gestational age of women. Frequencies and percentages were calculated for parity and preeclampsia (Yes, No). Chi-square test was applied for comparison of preeclampsia in two groups with and without early diastolic notch.

RESULTS

A total of 148 cases fulfilling the inclusion/exclusion criteria were enrolled to compare frequency of pre-eclampsia in pregnant women with or without persistent early diastolic notch on uterine artery Doppler at 24 weeks of gestation. Mean age of our patients was 27.84 $\pm$ 4.53 years while mean age of patients in group A was 28.22$\pm$4.91 and in group B was 27.69$\pm$4.83 respectively (ranging from 21 to 35 years). Mean gestational age was 21.73 ± 1.41 weeks with mean age was 21.64$\pm$1.39 weeks in Group-A and 21.85$\pm$1.51 weeks in Group-B while 68.92%(n=51) patients in Group-A and 59.46% (n=44) belonging to Group-B were between 20-22 weeks of gestation while 31.08%(n=23) in Group-A and 40.54%(n=30) in Group-B were between 23-24 weeks of gestation. Parity distribution of the patients shows 71.62%(n=53) in Group-A and 77.03%(n=57) in Group-B were between 1-3 paras while 28.38%(n=21) in Group-A and 22.97%(n=17) in Group-B had >3 paras. Comparison of pre-eclamsia in both groups was done which shows that 4.05%(n=3) in Group-A and 18.92%(n=14) in Group-B had pre-eclampsia while remaining 95.95%(n=71) in Group-A and 81.08%(n=60) in Group-B had no findings of the morbidity, p value was calculated as 0.004 which shows a significant difference between the two group, Relative Risk= 0.2143.

Stratification for pre-eclampsia with regards to age shows that out of 3 cases in Group-A 2 were between 21-30 years and 1 was between 31-35 years while out of 14 cases in Group-B 8 were between 21-30 years and 6 were between 31-35 years, p value was 0.000. Stratification for pre-eclampsia with regards to gestational age shows that out of 3 cases in Group-A 3 were between 20-22 weeks and no case between 23-24

weeks while out of 14 cases in Group-B 10 were between 20-22 weeks and 4 were between 23-24 weeks, p value was 0.000.

Table No. 1: Comparison of Pre-Eclampsia (n=148)

Pre-eclampsia	Group-A (n=74)		Group-B (n=74)	
	Frequency	%	Frequency	%
Yes	3	4.05	14	18.92
No	71	95.95	60	81.08
Total	74	100	74	100

P value= 0.004
Relative Risk= 0.2143

Table No. 2: Stratification for Pre-Eclampsia with regards to age (n=17)

Age(in years)	Pre-eclampsia		P value
	Group-A (n=3)	Group-B (n=14)	
21-30	2	8	0.000
31-35	1	6	

Table No. 3: Stratification for pre-eclampsia with regards to gestational age (n=17)

Gestational Age (in weeks)	Pre-eclampsia		P value
	Group-A (n=3)	Group-B (n=14)	
20-22	3	10	0.000
23-24	0	4	

DISCUSSION

Uterine artery Doppler ultra-sonographic assessment in 2nd trimester is very useful screening modality for accurate characterization of high risk pregnancies which may be kept under sophisticated surveillance to improve maternal and neonatal outcomes in these patients. Uterine artery Doppler can also identify poor trophoblastic invasions of spiral arteries which may severely hinder trophoplacental blood flow and lead to the early onset of this disease [13]. We planned this study to pick/predict abnormal testing in all those women who could potentially lead to increase surveillance (fetal and maternal) and intervention that can improve clinical outcome. Also this study is helpful to find out frequency of women who do develop preeclampsia with normal second trimester uterine artery Doppler study. Mean age of our patients was 27.84 $\pm$ 4.53 years while mean age of patients in group A was 28.22$\pm$4.91 and in group B was 27.69$\pm$4.83 respectively (ranging from 21 to 35 years). Comparison of pre-eclamsia in both groups was done which shows that 4.05%(n=3) in Group-A and 18.92%(n=14) in Group-B had pre-eclampsia while remaining 95.95%(n=71) in Group-A and 81.08%(n=60) in Group-B had no findings of the morbidity, p value was calculated as 0.004 which shows a significant difference between the two group, Relative Risk= 0.2143. The findings of our study are in-line with a study by Espinoza J and others,[6] where perinatal outcomes were evaluated with and without early diastolic notch, pre-eclampsia was found in 2.8% without early diastolic notch and 16.3% in patients having early diastolic notch. Our results are conformed by Faik Gürkan Yaz [14] and colleagues who also found that patients with EDN are grater risk of preeclamsia. Jeltsje S, Rachel K, Joris AM, Aeilko H [15] also reported that abnormal uterine artery waveforms to be good predictor for early assessment of pre-eclampsia. A pulsatility index may be employed as the major predictive Doppler Index as single or in combination with notching and such indices must be employed in routine clinical practice.

While including the persistence of an early diastolic notch in the defining the abnormal uterine artery flow velocity waveforms for example high RI, may lead to early prediction of pre-eclampsia in such cases [16-20]. A study conducted by Bower et al [21] has documented the persistence of such kind of notch, characterized as isolated finding, to be a good early predictor in cases of pregnancy induced hypertension such as proteinuric, than that of cutoff values of the 95th centile of RI. Hence, persistence of such a notch in mid-gestation stages manifests the risks of later maternal complications involving such as pre-eclampsia. Although the A/c ratios may reflect the positive or negative notch, neither the RI nor the A/C ratio may indicate that if the notch was either present. The NDI represents the depth of the notch; thus it may be a better predictor than either the RI or the A/C ratio. However, the hypothesis of the study that *"Pregnancy with early diastolic notch is associated with higher risk of pre-eclampsia"* is justified. In summary, the results of the current and international studies mentioned above, relationship of early diastolic notch on uterine artery Doppler measurements with perinatal outcome is confirmed and further it may consider as a good predictor of pre-eclampsia. Uterine Doppler Measurements especially in Pakistan may be very useful because this test is cost effective and affordable and having good predictive results as well.

CONCLUSION

We concluded that the frequency of pre-eclampsia in pregnant women is significantly higher in patients with persistent early diastolic notch on uterine artery Doppler at 24 weeks of gestation as compare to those having no diastolic notch.

Author's Contribution:

Concept & Design of Study:	Shumaila Kiran
Drafting:	Zoya Khan & Muzimmal Zulfquar 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

Obesity as a Predictor of Preeclampsia in Pregnant Women at a Tertiary Care Hospital

Hina Mukhtar, Marjan Batool and Sehrish Javed

ABSTRACT

Objective: To determine maternaloutcomes of pregnancy among women having increased body mass index.
Study Design: Descriptive / cross sectional study
Place and Duration of Study: This study was conducted at the Department of Gynecology and Obstetrics, Nishtar Hospital, Multan from March 2016 to March 2017.
Materials and Methods: A total of 150 women fulfilling inclusion and exclusion criteria of the study were enrolled in this research study. Informed consent for the participation was taken from each patient. All the relevant information and data were noted on pre-designed proforma. Data were entered and analyzed using SPSS-17.
Results: A total of 150 pregnant ladies were enrolled in this study. Mean ages of these study cases were 30.47 ± 4.18 years. Mean parity of these study cases was 3.31 ± 1.15. Mean. BMI values of these study cases were 30.17 ± 2.91 Kg/m^2. Maximum no. of study cases were from age groups 25-35 years i.e. 115 (76.66%). Frequency of preterm births was 50 (33.33 %). Majority of our study cases i.e. 95 (63.3%) had BMI in the range of 27.5-30 Kg/m^2.Very high frequencies 65 (43.3%) of pre-eclampsia were observed.
Conclusion: Our study results have indicated that obesity in pregnant women is linked to an increased risk of gestational diabetes, PPH, higher rates of c. section deliveries and pre-eclampsia. Obesity is significantly related with complications related to the mother and fetus. Well directed interventions regarding weight loss and avoidance to excessive weight gains during pregnancy prior to pre-conception period.

Key Words: BMI, Pre-eclampsia, Gestational diabetes, Parity.

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INTRODUCTION

Obesity is a medical condition in which excess body fats accumulates to the extent that it may have an adverse effect on the body. Obesity is a growing global health problem and has become worldwide epidemic. WHO defines obesity as Body mass index (BMI) of more than 30[1]. Worldwide obesity exists at a prevalence of 15-20% and accounts for 2-7% of total healthcare cost.[2] A study in PIMS Pakistan showed that more women are obese than men and are more susceptible to complications. The increasing prevalence of maternal obesity worldwide provides a major challenge to obstetric practice.[3] Maternal weight status both before and during pregnancy is an important determinant of birth outcome. Pre-pregnancy weight has been shown to be a significant determinant of birth weight in both industrialized and developing countries.

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Similarly, the independent effect of the gestational weight gain has been well correlated. Maternal obesity has been reported as a risk factor for various antenatal, intrapartum, postpartum and neonatal complications such as postdates, induction of labour, macrosomia, shoulder dystocia, prolonged duration of labour, increased blood loss, caesarean section rates and neonatal admissions. Obesity in pregnancy has a particular set of complications. Maternal obesity increases the risk of congenital malformations[4-5]
Athukorala*et al*. reported in their study that frequency of pre-eclampsia was 11.4% and cesarean section was 36.4%.[6]Obese women are at greater risk of developing gestational diabetes mellitus and in one study it has been reported as 21.1%, cesarean section as 60.6%.[7] and hence the risk of large for gestational age infants is increased up to 1.4 to 1.8 folds than in lean mothers.[8, 9] Delivery in obese women leads to high cesarean section rate and increased risk of anesthetic and post-operative complications.[10]A study published from UK reported 18% cesarean section surgeries among obese women.[11]A study conducted in Australia to assess the prevalence and impact of obesity showed that hypertensive disorders of pregnancy and gestational diabetes as well as increased neonatal morbidity is more common in obese women.[12]A study conducted in Liaqaut National Hospital Karachi concluded that

obesity is associated with higher cesarean section rate i.e. 39.8%.[13] Another case control study conducted in Sultan welfare Hospital Karachi reported that post partum hemorrhage occurred in 45% of obese women[14]. Obesity is becoming a serious challenge to health services mostly because of life style modifications, less exercise, sedentary life, and high cholesterol diet. It has a more serious impact on pregnancy outcomes but no such study has been conducted in our population which could document pregnancy outcomes among obese women of this region. The purpose of this study was to understand the consequences of obesity on maternal morbidity and mortality so that a multi-disciplinary approach could be acquired and a management plan could be established starting from pre-pregnancy up to puerperium.

MATERIALS AND METHODS

A specialized proforma was developed to record findings of this study. Females visiting gynecology outpatient department Nishtar hospital Multan fulfilling inclusion and exclusion criteria with BMI >27.5kg/m^2 were enrolled in the study while known hypertensive patients, known cases of diabetes mellitus, placenta preavia, those having history of recurrent miscarriages and previous uterine scars were excluded from our study. Patients were included in this study after taking informed consent, the demographic information like name, age and address were obtained. Patient's BMI was measured by obtaining height and weight in the outpatient department. Patients were followed till delivery. The outcome variable (i.e. pre-eclampsia defined as; Blood pressure more than 140/90mmHg with proteinuria >300mg/dl after 20 weeks of gestation)was noted in the Performa by the researcher. Data was entered and analyzed by using SPSS version 17. Descriptive statistics was used to calculate mean and standard deviation for age and gestational age of the patients. Frequencies and percentages were calculated for outcome variables i.e. pre-eclampsia, gestational diabetes mellitus and post-partum haemorrhage and impact of confounders was ascertained by applying chi – square test at level of significance of 0.05.

RESULTS

A total of 150 pregnant ladies meeting inclusion criteria were enrolled in this study. Mean ages of these study cases were 30.47 ± 4.18 years (minimum 22 years while maximum 39 years of age). Mean gestational ages of these study cases were 35.63 ± 3.91 weeks (minimum 27 while maximum 39 weeks of gestation). Mean parity of these study cases was 3.31 ± 1.15 (minimum parity was 1 to maximum parity was 7). Mean BMI values of these study cases were 30.17 ± 2.91 Kg/m^2 (minimum BMI was 27.5 while maximum was 35.2 Kg/m^2).The study results have indicated that maximum no. of study cases were from age groups 25-35 years i.e. 115 (76.66%). Frequency of preterm births was high in our study cases as 50 (33.33 %) of these ladies completed gestation before 36 weeks of gestation. Majority of the study cases i.e. 98 (65.33%) had parity between 1-3 while only 8 (5.3%) had parity more than 6. Majority of our study cases i.e. 95 (63.3%) had BMI in the range of 27.5-30 Kg/m^2 while none of our study cases presented with BMI more than 35.2 Kg/m^2. Very high frequencies 65 (43.3%) of pre-eclampsia were observed in our study cases while gestational diabetes mellitus was seen in 32 (21.3 %) of the study cases and post partum haemorrhage was noted in 70 (46.7%). Pre-eclampsia was stratified with regards to age, gestational age and parity and it was observed that p-valueswere 0.001, 0.796 and 0.905.

Table No. 1: Stratification of pre-eclampsia in different age groups

Age groups (In years)	**Pre-eclampsia**		**P-value**
	Yes (n=65)	**No** (n=85)	
21-25 (n=20)	5	15	
26-30 (n=50)	30	20	
31-35 (n=65)	20	45	
36-39 (n=15)	10	5	0.001

Table No. 2: Stratification of pre-eclampsia with respect to gestational age. (n=150)

Gestational ages (In weeks)	**Pre-eclampsia**		**P-value**
	Yes (n=65)	**No** (n=85)	
25-30 (n=26)	11	15	
31-36 (n=24)	9	15	
37 and above (n=100)	45	55	0.796

Table No. 3: Stratification of pre-eclampsia with respect to parity. (n=150)

Parity	**Pre-eclampsia**		**P-value**
	Yes (n=65)	**No** (n=85)	
1-3 (n=98)	42	56	
4-6 (n=44)	20	24	
More than 6 (n=8)	3	5	0.905

Table No. 4: Stratification of pre-eclampsia with respect to BMI. (n=150)

BMI (kg/m^2)	**Pre-eclampsia**		**P-value**
	Yes (n=65)	**No** (n=85)	
Less than 30 (n=95)	50	45	0.003
31-35 (n=55)	15	40	

DISCUSSION

Obesity remains major contributor towards increased morbidity and mortality from different conditions such as those of heart diseases, diabetes mellitus and cancer.

During pregnancy obesity is stronglyco-related with higher risks of pre-eclampsia, preterm births, gestational diabetes and cesarean delivery[15-20]. A total of 150 obese pregnant ladies meeting inclusion criteria were enrolled in this study. Mean ages of these study cases were 30.47 ± 4.18 years (ranging; 22 years to 39 years). The study results have indicated that maximum no. of study cases were from age groups 25-35 years i.e. 115 (76.66%). Parveen et al[21] reported 26.64 ± 4.52 years mean age of the obese pregnant women, close to our results. Endeshaw et al[22] from Ethiopia reported 28.14 ± 6.3 years mean age of the obese women being followed for development of preeclampsia, close to our findings. Mean gestational ages of these study cases were 35.63 ± 3.91 weeks (minimum 27 while maximum 39 weeks of gestation). Parveen et al [21] reported 33.09 ± 3.72 weeks gestational age, close to our results. Mean parity of these study cases was 3.31 ± 1.15 (minimum parity was 1 to maximum parity was 7).Majority of the study cases i.e. 98 (65.33%) had parity between 1-3 while only 8 (5.3%) had parity more than 6. Parveen et al [21] reported similar results.

Mean BMI values of these study cases were 30.17 ± 2.91 Kg/m^2 (minimum BMI was 27.5 while maximum was 35.2 Kg/m^2). Majority of our study cases i.e. 95 (63.3%) had BMI in the range of 27.5-30 Kg/m^2 while none of our study cases presented with BMI more than 35.2 Kg/m^2. A study conducted by Parveen et al[21] reproted 31.74 ± 1.01kg/m^2 mean BMI of the obese pregnant women which is similar to our results. Endeshaw et al[22] from Ethiopia also reported similar results.

Pre-eclampsia was observed in 65 (43.3%) of our study cases, a study conducted in Karachi by Jaleel et al reported 30.3% preeclampsia[17]. Another study conducted by Ali et al at Karachi reported 23.3 % pre-eclampsia among obese pregnant women. Ahmed et al from Egypt reported 32.4% preeclampsia among obese pregnant ladies [18]. Frequency of pre-eclampsia in both studies conducted at Karachi was lower than that of our study results[19]. A study conducted in Saudi Arabia reported by 15.3% frequency of pre-eclampsia among obese pregnant women[20] while Athukorala et al reported 11.4% preeclampsia among obese women[6]. Parveen et al [21] also reported lower values of 23.8% preeclampsia in obese pregnant women. Endeshaw et al.[22] from Ethiopia also reported 34 % preeclampsia, close to our results. A study conducted in Australia reported 34% rate of pre-eclampsia among obese women[23]. Preeclampsia has been reported to be 30% associated with obesity related pregnancies in USA[24.]

CONCLUSION

Our study results have indicated that obesity in pregnant women is linked to an increased risk of gestational diabetes, PPH, higher rates of c. section deliveries and pre-eclampsia. Obesity is significantly related with complications related to the mother and fetus. Well directed interventions regarding weight loss and avoidance to excessive weight gains during pregnancy prior to pre-conception period. The gynecologists and other healthcare providers must inform their obese patients regarding complications and risks posed by obesity and should counsel the merits of weight loss. Not only in pregnancy, obesity can lead to the certain health issues for the mother (heart diseases and hypertension) and baby (heart diseases and obesity) in later times of their life. Such complications are also linked to the higher investments both by family and health authorities which is an additional burden in our societies like ours. With the management of obesity before conception, we can significantly decrease our economic investments as well.

Author's Contribution:

Concept & Design of Study:	Hina Mukhtar
Drafting:	Marjan Batool
Data Analysis:	Marjan Batool & Sehrish Javed
Revisiting Critically:	Marjan Batool & Hina Mukhtar
Final Approval of version:	Hina Mukhtar & Marjan Batool

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

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Original Article

Appendicectomy

Postoperative Mean Pain Score of Closure Versus Non Closure of Peritoneum in Children after Open Appendicectomy

Muhammad Muddasar, Zaid Ashraf and Umair Safdar

ABSTRACT

Objective: To compare postoperative mean pain score of closure versus non closure of peritoneum in children after open appendicectomy.

Study Design: Randomized controlled trial study

Place and Duration of Study: This study was conducted at the Department of Surgery, District Headquarters Teaching Hospital, Sahiwal from December 2015 to March 2017.

Materials and Methods: Patients were divided into two groups by lottery method. Group A: Non closure of peritoneum. Group B: Closure of peritoneum. During surgery, all the steps in both groups were same except non closure of peritoneum in Group A. Postoperatively patients were assessed for pain score using visual Analogue scale score at day 0, day 1 and day 2 X 4 hourly.

Results: Of these 100 study cases, 55 (55%) were boys while 45 (45%) were girls. Mean age of our study cases was noted to be 9.38 ± 1.91 years (with minimum age was 6 years while maximum age was 12 years). Mean weight of our study cases was noted to be 21.94 ± 3.32 kg (with minimum weight of our study cases was 17 kg while maximum weight was 28 kg). Obesity was present in 12 (12%) of our study cases. Pain control was noted in 85 (85%) of our study cases. Pain control was 78 % in group A while it was seen in 92 % in group B (p=0.028). Mean visual analogue score (VAS) in our study was 27.11 ± 8.50 mm, in group A mean VAS was 34.36 ± 4.61 mm and 19.86 ± 4.18 mm in group B.

Conclusion: Our study results support use of non-closure of peritoneum as it provides good pain relief in children with acute appendicitis after open appendicectomy. Visual analogue score was significantly less in patients with non-closure of peritoneum compared with closure of peritoneum. Non – closure of peritoneum was associated with less use of analgesic drugs and shorter hospital stays compared with closure of peritoneum.

Key Words: Acute appendicitis, visual analogue score, closure of peritoneum.

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INTRODUCTION

Appendicitis is one of the most common acute surgical condition of the abdomen. The clinical signs and symptoms of acute appendicitis were first reported by Fitz in 1886. Approximately 7% of the population suffer from acute appendicitis during their life time. Appendicitis alone constitutes 10% of all emergency abdominal surgery.[1,2] It is regarded as uncommon event during early of life of children with high magnitude of the disease being reported in second decade of life and involves varying range of clinical presentations[3-5]. Diagnosis of appendicitis in children may also be overshadowed by various other underlying medical illnesses.

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The most common misdiagnosis is gastroenteritis as 33-41% patients of appendicitis present with history of diarrhea thus complicating its management. In children less than 5 years of age; pain is the most commonly reported symptom along with fever, vomiting, anorexia and diarrhea[6,7]. Focal tenderness is reported in 61% children, guarding in 55% children, diffuse tenderness in 39%, rebound in 33% and mass in 6%. It is very rate in neonates but associated with very high mortality rates and abdominal distension is the major clinical presentation. Early Diagnosis decreases chances of morbidity followed by appropriate management technique[8-11].

Appendicectomyis one of the most commonly performed procedure in children. It is usually the first procedure a surgeon performs. Routinely during appendicectomy, the abdomen is opened and then closed in a reverse order layer by layer including peritoneum, abdominal wall muscles and skin. There is a controversy regarding closure of peritoneum after abdominal surgery. Many studies have been conducted in gynaecology and obstetrics[(12-14)] that show benefits of non closure of peritoneum over its closure[(3-9)].However convincing data regarding closure of peritoneum after

appendicectomy is lacking. A study conducted by Suresh et al [10] reported mean visual analogue scale (VAS) score was 35.54 ± 4.92 mm in closure group while it was 28.21 ± 5.04 mm in non-closure group. Another study by farooq et al[(11)] has also shown that number of pain complaints decrease in those who are in non closure group with p value of <0.05.

These studies gives a conclusive evidence regarding benefits of closure versus non closure of peritoneum after appendicectomy in adults but there is no such study has been conducted in children.

This study was done to compare the effects of closure versus non closure of peritoneum on post-operative outcomes in terms of pain: the parameters being pain score and analgesic requirement. This study was first of its kind in Pakistan.

MATERIALS AND METHODS

This was a randomized controlled trial. Study which was conducted in Department of Surgery, District Headquarters Teaching Hospital, Sahiwal from December 2015 to March 2017. All the children of age range between 6 to 12 years (both boys and girls) undergoing appendectomy for acute appendicitis with Alvorado score of >7 were taken in our study. Patients with perforated appendix, patients with appendicular mass and appendicular abscess and patients with other abdominal pathology e.g. Meckel,s diverticulum, ovarian cyst were excluded from our study. Patients were divided into two groups by lottery method. Sample size is 100 patients (50 in each group), Sample size has been calculated by Epi-info Software of the CDC, USA while taking mean postoperative VAS score in closure group 32.54 ± 4.92 mm and 28.21 ± 5.04 mm in non closure group[10]. Group A: Non closure of peritoneum. Group B: Closure of peritoneum. During surgery, all the steps in both groups were same except non closure of peritoneum in Group A. Postoperatively patients were assessed for pain score using visual Analogue scale score at day 0, day 1 and day 2 X 4hourly. The intensity of pain depends upon magnitudes recorded for all patients using Analogue pain scale after surgery by on duty doctor. Post operatively patient was given Intravenous Toradol 0.5mg/kg 8 hourly. If the pain score was more than 40mm, patient was given additional dose of analgesia. In order to eliminate bias and allow for comparability the study was randomized and single blind.

The collected data was entered and analyzed using SPSS version 21 through its statistical program. The variables were analyzed using simple descriptive statistics, calculating mean and standard deviation for numerical values e.g. age and pain score. Frequencies and percentages were calculated for qualitative variables gender, age groups and pain score was compared by applying t test.

RESULTS

Our study included a total of 100 study cases who met inclusion criteria of our study. Of these 100 study cases, 55 (55%) were boys while 45 (45%) were girls. Mean age of our study cases was noted to be 9.38 ± 1.91 years. Mean age of boys was noted to be 9.36 ± 1.63 years while that of girls was noted to be 9.40 ± 2.22 years (p = 0.925). Our study results have indicated that majority of our study cases i.e. 51 (51%) were aged 10 – 12 years of age. Mean weight of our study cases was noted to be 21.94 ± 3.32 kg (with minimum weight of our study cases was 17 kg while maximum weight was 28 kg). Most of our study cases i.e. 58 (58%) had weight more than 20 kg. Obesity was present in 12 (12%) of our study cases. Pain control was noted in 85 (85%) of our study cases. Pain control was 78 % of our study cases in group A while it was seen in 92 % in group B (p=0.028). Mean visual analogue score (VAS) in our study was noted to be 27.11 ± 8.50 mm (with minimum VAS was 12 mm while maximum VAS was 42 mm).

Table No.1: Distribution of visual analogue score among study cases. (n = 100)

Visual analogue score (In mm)	Group A		Group B	
	Mean	**SD**	**Mean**	**SD**
	34.36	4.61	19.86	4.18
Total	**27.11 ± 8.50 mm**			

***p=0.000**

Table No. 2: Stratification of pain control with regards to gender. (n = 100)

Gender	Pain control		P – value
	Yes (n=85)	**No** (n=15)	
Male (n=55)	40	15	**0.000**
Female(n=45)	45	00	
Total	**100**		

Table No. 3: Stratification of pain control with regards to age. (n = 100)

Age	Pain control		P – value
	Yes (n=85)	**No** (n=15)	
6 – 9 Years (n=49)	45	04	**0.092**
More than 9 Years (n=51)	40	11	
Total	**100**		

Table No. 4: Stratification of pain control with regards to obesity. (n = 100)

Obesity	Pain control		P – value
	Yes (n=85)	**No** (n=15)	
Yes (n=12)	03	09	**0.000**
No (n=88)	82	06	
Total	**100**		

Table No. 5: Stratification of mean visual analogue score with regards to gender in both groups. (n = 100)

Gender	Groups	VAS		P value
		Mean	SD	
Male (n=55)	Group A(n=29)	34.24	5.33	**0.000**
	Group B(n=26)	11.96	4.30	
Female (n=45)	Group A(n=21)	34.52	3.50	**0.000**
	Group B(n=24)	19.75	4.15	

Table No.6: Stratification of mean visual analogue score with regards to age in both groups. (n = 100)

Age	Groups	VAS		P value
		Mean	SD	
6 – 9 Years (n=49)	Group A (n=24)	31.08	3.68	**0.000**
	Group B (n=25)	21.16	4.24	
More than 9 years (n=51)	Group A (n=26)	37.38	3.07	**0.000**
	Group B (n=25)	18.56	3.77	

Table No. 7: Stratification of mean visual analogue score with regards to gender in both groups.

Weight	Groups	VAS		P value
		Mean	SD	
Up to 20 Kg (n=42)	Group A(n=21)	31.81	3.68	**0.000**
	Group B(n=21)	20.05	3.68	
More than 20 kg (n=58)	Group A(n=29)	36.21	4.37	**0.000**
	Group B (n=29)	19.72	4.58	

Table No. 8: Stratification of mean visual analogue score with regards to obesity in both groups. (n = 100)

Obesity	Groups	VAS		P value
		Mean	SD	
Yes (n= 12)	Group A (n=07)	40.86	1.06	**0.000**
	Group B (n=05)	20.40	2.19	
No (n= 88)	Group A (n= 43)	33.30	4.06	**0.000**
	Group B (n=45)	19.80	4.36	

DISCUSSION

Acute appendicitis is the one of the commonly performed urgent surgical procedure in childhood which may have a lifetime incidence of 7%. Typical presentations of acute appendicitis may include periumbilical pain, nausea, and right lower quadrant pain which is followed by vomiting and fever[12-15]. These characteristics are seen in only half of adults, however, and even less commonly in children. This study was conducted to compare mean visual analogue score in closure of peritnoneum after appendicectomy versus non-closure of peritoneum in children with acute appendicitis.

Our study included a total of 100 study cases who met inclusion criteria of our study. Of these 100 study cases, 55 (55%) were boys while 45 (45%) were girls. This male gender predominance has already been reported in different studies. A study from Multan by Hussain et al [16] also reported 63.33 % boys presenting with acute appendicitis. These results are in compliance with our study results. Another study from Peshawar by Rehman et al [17] also reported 75 % male gender preponderance which is consistent to our study results. Mughal et al [18] also reported 76 % male gender predominance which is similar to that of our study results.

Mean age of our study cases was noted to be 9.38 ± 1.91 years (with minimum age was 6 years while maximum age was 12 years). Mean age of boys was noted to be 9.36 ± 1.63 years while that of girls was noted to be 9.40 ± 2.22 years (p = 0.925). Our study results have indicated that majority of our study cases i.e. 51 (51%) were aged 10 – 12 years of age. Hussain et al [16] from Multan also reported that majority of patients with acute appendicitis in age group ranging from 5 – 10 years of age which is similar to that of our study results. Another study by Latif et al[19] also reported 10.5 years mean age of children presenting with acute appendicitis which is close to our study findings. A study from Peshawar by Rehman et al[17] also reported similar results. Mughal et al [18] also reported same age range (6 – 14 years) for the presentation of acute appendicitis.

Mean weight of our study cases was noted to be 21.94 ± 3.32 kg (with minimum weight of our study cases was 17 kg while maximum weight was 28 kg). Most of our study cases i.e. 58 (58%) had weight more than 20 kg. Obesity was present in 12 (12%) of our study cases.

Closure of peritoneum at lower abdominal surgery that may be an appendectomy have not any additional advantage, rather is associated with more complications. Moreover, non - closure of peritoneum at lower abdominal surgery and appendectomy is associated with reduced use of analgesics and shorter hospital stay. Pain control was noted in 85 (85%) of our study cases. Pain control was 78 % of our study cases in group A while it was seen in 92 % in group B (p=0.028). Mean visual analogue score (VAS) in our study was noted to be 27.11 ± 8.50 mm (with minimum VAS was 12 mm while maximum VAS was 42 mm). A study conducted by Suresh et al [10] reported mean visual analogue scale (VAS) score was 35.54 ± 4.92

mm in closure group while it was 28.21 ± 5.04 mm in non-closure group. These results are similar to that of being reported in our study. Another study by farooq et al[11] has also shown that number of pain complaints decrease in those who are in non closure group with p value of <0.05. These findings are also in compliance with our study results.

CONCLUSION

Our study results support use of non-closure of peritoneum as it provides good pain relief in children with acute appendicitis after open appendicectomy. Visual analogue score was significantly less in patients with non-closure of peritoneum compared with closure of peritoneum. Non – closure of peritoneum was associated with less use of analgesic drugs and shorter hospital stays compared with closure of peritoneum.
and Umair Safdar

Author's Contribution:

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Data Analysis:	Zaid Ashraf & Umair Safdar
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Original Article

Serum Potassium Derangements in Acute Coronary Syndrome

Serum Potassium Level Derangements in Patients with Acute Coronary Syndrome

Amna Sadiq, Farrukh Masood, Ghoza Chaudhery and Shahzad Alam Khan

ABSTRACT

Objective: To determine frequency of derangement of serum potassium levels in Acute coronary syndrome at a tertiary care hospital.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at the Department of Medicine, Nishtar Hospital, Multan from January 2016 to May 2017.

Materials and Methods: A total of 135 patients with ACS were recruited in this descriptive cross – sectional study. History regarding diabetes, hypertension and obesity was noted and serum potassium levels were checked and the data was analyzed by using SPSS version 20.

Results: Of these 135 study cases, 57 % were male patients while 43 % were female patients. Mean age of our study cases was noted to be 54.66 ± 8.76 years. Diabetes was present in 47 (34.8%) patients, hypertension in 62 (45.9%), obesity in 43 (31.9%), smoking in 36 (26.7%) and family history of ACS was positive in 36 (26.7%) of our study cases. Mean disease duration was noted to be 8.21 ± 3.14 hours.

Conclusion: Hypokalemia is a common clinical presentation in patients with acute coronary syndrome as higher frequency of hypokalemia has been noted in our study. Hypokalemia was significantly associated with diabetes, obesity and smoking. All clinicians treating such patients much check their serum potassium levels on regular basis to correct its deficiency timely to avoid adverse clinical outcomes such as ventricular arrhythmias

Key Words: Hypertension, acute coronary syndrome, diabetes.

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INTRODUCTION

Acute coronary syndrome (ACS) is one of the most commonly encountered, catastrophic cardiac emergency. Acute coronary syndrome has been reported to be the major cause of morbidities and mortality in developing countries. Among hospitalized patients having ST segment elevation myocardial infarction (STEMI), it leads to 13.5% mortality during their hospitalization[1]. Acute coronary syndrome patients are at increased risks of adverse clinical outcomes and it is reported to be the leading cause of death in United Kingdome. The underlying factors which lead to poor prognosis in patients with ACS may include such as; increasing age, higher values of troponin T level, left ventricular dysfunction, severity of ECG changes, anemia, diabetes, heart failure, heart rate, deranged serum electrolytes, renal impairment and arrhythmias [2].

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Among patients having ACS, derangements in serum potassium (K) levelshave been reported in different studies with special emphasize on its decreasing levels,[3-6]. This decrease in potassium levels has been reported to be one of the major factors for increasing the risks for adverse cardiac events which may include potentially life threatening ventricular arrhythmias.[7-9] Furthermore decrease in potassium levels usually leads to vasoconstriction[10] that may further causeischemia of myocardium and hence giving rise to destructive vicious cycle[11,12]. Underlying mechanism of Hypokalemia may be the systemic sympathetic nerve system activation in ACS that can be activated by ischemic stress, and elevated catecholamines stimulate Na^+/K^+ATPase primarily via β2-adrenergic receptor.[13] Sekiyama H et al[14] suggests that the degree of Hypokalemia indicates the severity of acute ischemic stress, thus indicating significance of monitoring K level in parallel with glucose level in patients with ACS, especially in severe cases.Pain relief, rest and correction of hypokalemia may prevent cardiac associated with acute coronary syndrome.[11]Potassium replacement may have beneficial effects on ischemia-induced alterations and myocardial metabolism thus reducing the rate of complications and mortality.[15]

No such published study could be found from Pakistan on this topic and ourresults highlight magnitude of the

problem in our population. This may lead to the timely diagnosis and treatment of these patients to prevent them from cardiac morbidities once hypokalemia is corrected timely to decrease disease morbidity of our patients.

MATERIALS AND METHODS

Consecutive 135 patients diagnosed with Acute coronary syndrome (ACS) according to operational definition and fulfilling inclusion in Accident and Emergency Department, Department of Medicine, Nishtar Hospital Multanwere included in the study. ACS was defined as the presence of any two of the following three criteria; "History of central chest pain radiating to left arm of at least 30 minutes as described by patient, Typical ECG changes (i.e. ≥ 0.1 mV ST elevation in at least one standard lead or two precordial leads, ≥ 0.1 mV ST depression in at least two leads, abnormal Q waves, or T-wave inversions in at least two leads.), Positive Cardiac Enzymes, Labeled positive when any of following two is present, Trop-T kit test positive and CK-MB > 2 times of upper limit of normal value" while patients with Patients with renal failure, liver cirrhosis and bleeding disorders, pregnant ladies confirmed on urine pregnancy test, patients having malignancies were excluded from our study.

Complete history regarding chest pain was acquired by researcher himself. Once included in our study, 3 ml of venous blood sample was taken and sent to the Central laboratory of the Nishtar Hospital Multan for serum Potassium level estimation. The test was performed by the Senior Pathologist having 5 years of experience after post-graduation to determine serum potassium levels derangements in these patients. Hypokalemia and Typical ECG changes were labeled keeping in view the operational definitions. History regarding diabetes, hypertension and smoking was taken. Data were entered and analyzed using computer program SPSS-16, mean and standard deviation for age of the patient, duration of ACS, and serum potassium level were calculated. For categorical variables like gender, obesity, age groups, diabetes, hypertension, smoking, family history of ACS, Hypokalemia and Positive Cardiac Enzymes frequency and percentages were calculated. Confounders like age, obesity, diabetes, hypertension and gender were controlled by stratification with help of chi-square test as 0.05 level of significance.

RESULTS

Our study comprised of a total of 135 study cases with ACS who met inclusion criteria of our study. Of these 135 study cases, 57 % were male patients while 43 % were female patients. Mean age of our study cases was noted to be 54.66 ± 8.76 years Diabetes was present in 47 (34.8%) patients, hypertension in 62 (45.9%), obesity in 43 (31.9%), smoking in 36 (26.7%) and family history of ACS was positive in 36 (26.7%) of our study cases. Cardiac enzymes were positive in 83 (61.5 %) of our study cases. Mean disease duration was noted to be 8.21 ± 3.14 hours. Mean serum potassium level was noted to be 3.24 ± 0.78 mEq/L and hypokalemia was present in 53 (39.3%) patients.

Table No. 1: Stratification of hypokalemia with regards to gender. (n = 135)

Gender	Hypokalemia		P - value
	Yes (n = 53)	No (n = 82)	
Male (n = 77)	30	47	1.00
Female (n = 58)	23	35	
Total	135		

Table No. 2: Stratification of hypokalemia with regards to age. (n = 135)

Age groups	Hypokalemia		P - value
	Yes (n = 53)	No (n = 82)	
35 – 55 yrs (n = 82)	35	47	0.368
56 – 70 yrs (n = 53)	18	35	
Total	135		

Table No. 3: Stratification of hypokalemia with regards to diabetes. (n = 135)

Diabetes	Hypokalemia		P - value
	Yes (n = 53)	No (n = 82)	
Yes (n = 47)	30	17	0.000
No (n = 88)	23	65	
Total	135		

Table No. 4: Stratification of hypokalemia with regards to hypertension. (n = 135)

Hypertension	Hypokalemia		P – value
	Yes (n = 53)	No (n = 82)	
Yes (n = 62)	27	35	0.380
No (n = 73)	26	47	
Total	135		

Table No. 5: Stratification of hypokalemia with regards to obesity. (n = 135)

Obesity	Hypokalemia		P - value
	Yes (n = 53)	No (n = 82)	
Yes (n=43)	31	12	0.000
No (n = 92)	22	70	
Total	135		

DISCUSSION

Acute coronary syndrome (ACS) is related to wide range of conditions describing myocardial ischemia which may include ST elevated or non-ST elevated myocardial infarction (MI) and unstable angina[15-17]. ACS is associated with significant increase in substantial morbidity and mortality among sufferers and can pose an extra financial burden on the suffering families as well as health care system of the country, especially in developing countries. This study was done to ascertain derangement of serum potassium levels in patients with acute coronary syndrome as there is no such study done in our local population. Our study comprised of a total of 135 study cases with ACS who met inclusion criteria of our study. Of these 135 study cases, 57 % were male patients while 43 % were female patients. Many different studies done have reported male gender predominance which are similar to our findings. A study conducted by Ahmed et al [18] from Abbottabad also reported 64 % male gender preponderance. Ashraf et al [19] from Peshawar also reported male gender predominance with 58 % male patients. Mujtaba et al [20] from Karachi has reported male gender predominance with 53 %. A study conducted at Shifa International Hospital of Islamabad also documented male to female ratio was 3:1 showing high male gender predominance[21].

Mean age of our study cases was noted to be 54.66 ± 8.76 years. Mean age of the male patients was noted to be 53.92 ± 9.61 years while that of female patients was noted to be 55.64 ± 6.82 years (p = 0.262). A study conducted by Ahmed et al [18] from Abbottabad also reported mean age of these patients was 57.75 years. Zaidi et al [22] from Rawalpindi also reported similar results. Ashraf et al [19] from Peshawar also reported male patients were younger than female patients which is similar to that of our study results. Mujtaba et al [20] from Karachi has reported 55.36 years mean age of the patients with ACS which is close to our study results. Bhalli et al [23] from Rawalpindi also reported male patients with mean age 54.26 ± 11 years.

Diabetes was present in 47 (34.8%) our patients with ACS. A study conducted by Ahmed et al [18] from Abbottabad also reported 31.6 % patients with ACS had diabetes. Zaidi et al [22] from Rawalpindi also reported diabetes in 37 % patients with ACS. Ashraf et al [19] from Peshawar also reported that diabetes was major risk factor for ACS. Bhalli et al [23] from Rawalpindi also reported 43 % diabetes which is close to our study results.

Hypertension was present in 62 (45.9%) our patients. Zaidi et al [22] from Rawalpindi also reported 45%. Ashraf et al [19] from Peshawar also reported similar results. Another study from CMH Abbottabad[24] also reported hypertension in 37 %.

Obesity was present in 43 (31.9%), smoking in 36 (26.7%) and family history of ACS was positive in 36 (26.7%) of our study cases. In our study all smokers were male patients and none of female patients gave history for smoking. A study from CMH Abbottabad [24] also reported similar results. Same study from CMH Abbottabad [24] also reported BMI more than 25 kg/m^2 in 37.8 % patients. Butt et al [25] from Lahore also reported 34 % smoking and all smokers were male patients which is in compliance with our study results.

Cardiac enzymes were positive in 83 (61.5 %) of our study cases. Mean disease duration was noted to be 8.21 ± 3.14 hours. Mean serum potassium level was noted to be 3.24 ± 0.78 mEq/L and hypokalemia was present in 53 (39.3%) patients. A study conducted in Poland by Maciejewski et al[12] also reported 34 % hypokalemia in patients with acute coronary syndrome. Some other studies in patients with MI have also reported hypokalemia being common as well.

CONCLUSION

Hypokalemia is a common clinical presentation in patients with acute coronary syndrome as higher frequency of hypokalemia has been noted in our study. Hypokalemia was significantly associated with diabetes, obesity and smoking. All clinicians treating such patients much check their serum potassium levels on regular basis to correct its deficiency timely to avoid adverse clinical outcomes such as ventricular arrhythmias.

Author's Contribution:

Concept & Design of Study:	Amna Sadiq
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Data Analysis:	Shahzad Alam Khan & Farrukh Masood
Revisiting Critically:	Amna Sadiq
Final Approval of version:	Amna Sadiq & Farrukh Masood

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Original Article

Breast Cancer

Risk Factors of Breast Cancer Among Patients with Breast Cancer at a Tertiary Care Hospital

Zaid Ashraf, Muhammad Muddasar and Umair Safdar

ABSTRACT

Objective: To determine frequency of risk factors of breast cancer among patients with breast cancer at a tertiary care hospital.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the department of Surgery, District Headquarters Teaching Hospital, Sahiwal from June 2016 to June 2017.

Materials and Methods: We recruited consecutive 220 patients with breast cancer in this cross – sectional study. The total duration of the study was 1 year from June 2016 to June 2017. Histopathologically confirmed cases of breast cancer were taken and interviewed for their risk factors such as family history, use of oral contraceptive medication and obesity.

Results: Mean age of our study cases was noted to be 50.41 ± 6.62 years. Mean BMI in our study was noted to be 24.85 ± 2.37 kg/m^2. Mean disease duration of our study cases was 10.95 ± 4.61 months (ranging from 7 months to 24 months). Mean age at menarche was 13.87 ± 0.756 years (range 12 to 15 years). Mean age at menopause was 43.53 ± 1.07 years. Family history of breast cancer was seen in 44 (20%), use of oral contraceptives was noted in 103 (46.8%) and obesity was present in 17 (7.7%) of our study cases.

Conclusion: Use of oral contraceptive drugs, no history of breastfeeding and family history of breast cancer were the major factors leading to carcinoma breast in our study. Family history of breast cancer was significantly associated with increasing age, socioeconomic status, residential status, breastfeeding and level of education while use of oral contraceptive drugs was significantly associated with age, parity, socioeconomic status and breastfeeding.

Key Words: Breast cancer, breastfeeding, family history, oral contraceptive.

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INTRODUCTION

Breast cancer has been associated with significant impact on the health and productivity of the female patients and leads to exponential increase in psychological stress. It is one of the commonly diagnosed cancer females [1, 2].Almost 1.4 million new patients of breast cancer were diagnosed in 2008 while approximately half million deaths were recorded in developing as well as developed countries due to breast cancer [3]. However it ranks top of list among common malignancies in developed nations while in developing countries it is on the 2nd position after cervical cancer [2]. Statistics from USA show that 32 % patients of all new cases represent breast cancer in US women and it is associated with 15 % cancer related deaths.

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In fact it is second leading cause of death in these women after lung cancer. World Health Organization (WHO) estimates have reported that total number of cancer patients will increase 2 folds by the year 2020 in developing countries [4]. Breast cancer is not much common in young females and around 2 % confirmed cases of breast cancer are below the age of 35 years. However breast cancer in young patients have been reported to have more aggressive behavior which exhibits poor prognosis and un-desired clinical outcomes than those of older patients. In breast cancer, patients aged equal or less than 40 years are referred to be young patients. In young females, disease incidence is low, estimated to be around 17 patients per 100000 young female population and/or less than 6 % among patients with breast cancer of any age group [5 – 10]. Different risk factors have been reported in different studies with varying rates of factors leading to the development of breast cancer, an Iranian study, however, has documented positive, family history, low parity, use of oral contraceptive medication and short breastfeeding periods to be most important risk factors in the development of breast cancer. Veisy et al[1]

reported use of oral contraceptive was present in 70.2 % women with breast cancer. Ghiasvand et al [6] reported family history of breast cancer in 17.3 % women with breast cancer and obesity in 39.4 % women.

This study was done to ascertain different factors responsible for the development of breast cancer in our population.

MATERIALS AND METHODS

We recruited consecutive 220 patients aged less than 60 years of age, having breast cancer stages 2 – 4 irrespective of disease duration of breast cancer presenting at department of Surgery, District Headquarters Teaching Hospital, Sahiwal. Patients having any other malignancy and recurrent cases of breast cancer were excluded from our study. The total duration of the study was 1 year from June 2016 to June 2017 in this cross-sectional study. Histopathologically confirmed cases of breast cancer (diagnosed on the basis of Fine needle aspiration cytology (FNAC) was taken when cytological examination reveals aggregates of atypical ductal epithelial cells) were taken and interviewed for their risk factors such as family history (It was deemed as positive if breast cancer was diagnosed in first degree relatives (mother, sisters and daughters), use of oral contraceptive medication (it was taken as positive if the patients used contraceptive pill for more than one year) and obesity (BMI more than 27.5 kg/m^2). All the data was entered and analyzed using SPSS-18. Mean and standard deviation for the age, Height, age at menarche, age at menopause, disease duration, weight and duration of disease was calculated. Frequencies and percentage were calculated for the categorical variables like age groups, socioeconomic status, educational level, history of breast feeding, residential status, family history, use of oral contraceptive pills (Present/Absent) and Obesity (Obese/Normal/overweight).

RESULTS

Our study comprised of a total of 220 women presenting with breast cancer meeting inclusion criteria of our study. Mean age of our study cases was noted to be 50.41 ± 6.62 years (ranging from 40 to 60 years). Majority of our patients i.e. 170 (77.3%) were from age group of 46 – 60 years of age. Mean height of our study cases was 159.21 ± 9.43 centimeters while mean weight was 65.10 ± 10.89 kilograms. Mean BMI in our study was noted to be 24.85 ± 2.37 kg/m^2. Mean disease duration of our study cases was 10.95 ± 4.61 months (ranging from 7 months to 24 months), furthermore majority of our patients i.e. 168 (76.4%) presented between 6 – 12 months duration of illness. Mean age at menarche was 13.87 ± 0.756 years (range 12 to 15 years). Mean age at menarche in patients with positive family history of breast cancer was 14.18 ± 0.390 years compared with 13.79 ± 0.80 years in those without positive family history (p = 0.002). Mean age at menarche in patients with positive history of oral contraceptive use was 13.64 ± 0.752 years compared with 14.07 ± 0.704 years in those without positive family history (p = 0.000).Mean age at menopause was 43.53 ± 1.07 years. Mean age at menopause in women with positive family history of breast cancer was 43.67 ± 0.98 years while that of without family history was 43.45 ± 0.88 years (p = o.337). Mean age at menopause in women with history of oral contraceptive was 43.62 ± 0.91 years while that of without family history was 43.51 ± 0.56 years (p = o.275). Family history of breast cancer was seen in 44 (20%), use of oral contraceptives was noted in 103 (46.8%) and obesity was present in 17 (7.7%) of our study cases.

Table No. 1: Stratification of mean disease duration with regards to family history and oral use of contraceptives.

Risk factors		Disease duration (In Months)		P - value
		Mean	SD	
Family History	Yes (n=44)	16.23	6.23	**0.001**
	No (n=176)	10.89	4.14	
Oral contraceptives	Yes (n=103)	10.93	5.26	**0.968**
	No (n=117)	10.96	3.97	

DISCUSSION

Breast cancer is common presentation in surgical departments with its proportions increasing day by day and it is one of the commonly diagnosed cancer females[11-15]. Our study comprised of a total of 220 women presenting with breast cancer meeting inclusion criteria of our study. Mean age of our study cases was noted to be 50.41 ± 6.62 years (ranging from 40 to 60 years). Majority of our patients i.e. 170 (77.3%) were from age group of 46 – 60 years of age. In a study conducted at Karachi by Memon et al [16] has documented 47.8 ± 12.4 years mean age of women with breast cancer. In another study [17] also done at Karachi reported 47.5 ± 12.1 years mean age of patients presenting with breast cancer. Nazir et al [18] reported 46.25 years mean age of the patients having breast cancer. Nisar et al[19] reported 48 years mean age of the patients with breast cancer.

Majority of the patients i.e. 62.3 % were illiterate and 30.5% had their education up to matriculation. Memon et al[16] from Karachi also reported 50.4% were illiterate, 38 % primary and 11 % having secondary education. These findings are similar to that of our study results. Another study from Karachi [17] reported 50 % patients

were illiterate which is in compliance with that of our study results.

History of breastfeeding was positive in 42.7 % of our study cases. A study conducted by Memon et al [16] from Karachi reported 61 % history of breast feeding which is slightly higher than that of our study results. Faheem et al[8] reported 41.7 % patients had history of breastfeeding which are in compliance with that of our study results. de Bruin MA et al [20] reported 42 % history of breastfeeding in Asian women. Nazir et al [18] also reported very high frequency of breastfeeding in patients of breast cancer which is different from our study results while Nisar et al[19] has documented 33.33 % history of breastfeeding.

Parity more than 3 was noted in 118 (53.6%) of our study cases. Similar results have been reported by Memon et al[16] from Karachi. Nazir et al[17] also reported 67 % patients with breast cancer had parity more than 3.

Mean disease duration of our study cases was 10.95 ± 4.61 months (ranging from 7 months to 24 months), furthermore majority of our patients i.e. 168 (76.4%) presented between 6 – 12 months duration of illness. Ahmed et al [21] reported mean disease duration to be 7.67 ± 02.91 months. Mean age at menarche was 13.87 ± 0.756 years (range 12 to 15 years). A study done by Memon et al [16] from Karachi documented 12.96±1.60 years mean age at menarche. Nazir et al[18] reported similar results. Mean age at menopause was 43.53 ± 1.07 years. A study done by Memon et al[16] reported from Karachi 46.35 ± 6.65 years mean age at menopause of the ladies with breast cancer.

Family history of breast cancer was seen in 44 (20%) while a study conducted by Memon et al[16] from Karachi reported 13.3 % positive family history which is in compliance with that of our study results. Another study from Karachi[17] reported 20 % patients of breast cancer had positive family history which is same as that of our study results. de Bruin MA et al[20] reported as high as 50 % family history of breast cancer in Asian women which is quite higher than that of our study results. Nazir et al[18] reported 14.5 % family history in patients presenting with breast cancer which is close to our study results. Nisar et al[19] reported 34 % family history was positive in patients with breast cancer which is slightly higher than that of our study results. Ghiasvand et al[6] reported family history of breast cancer in 17.3 % which is close to our study results. Faheem et al[8] also reported 20 % family history which is same as that of our study results.

Use of oral contraceptives was noted in 103 (46.8%) these findings are different from that of Memon et al[16] who reported 15.2 % use of oral contraceptive which is quite less than that of our study results. Nazir et al[17] 7% use of oral contraceptives which is quite lower than that of our study results. Nisar et al[19] reported 25.33% use of oral contraceptive. Veisy et al[1] reported use of oral contraceptive was present in 70.2 % women with breast cancer.

Mean BMI in our study was noted to be 24.85 ± 2.37 kg/m^2. obesity was present in 17 (7.7%) of our study cases. de Bruin MAet al[20] reported similar results. Giasvand et al[6] reported women with breast cancer had obesity in 39.4 %.

CONCLUSION

Use of oral contraceptive drugs, no history of breastfeeding and family history of breast cancer were the major factors leading to carcinoma breast in our study. Family history of breast cancer was significantly associated with increasing age, socioeconomic status, residential status, breastfeeding and level of education while use of oral contraceptive drugs was significantly associated with age, parity, socioeconomic status and breastfeeding.

Author's Contribution:

Concept & Design of Study:	Zaid Ashraf
Drafting:	Muhammad Muddasar
Data Analysis:	Umair Safdar & Muhammad Muddasar
Revisiting Critically:	Muhammad Muddasar & Zaid Ashraf
Final Approval of version:	Zaid Ashraf & Muhammad Muddasar

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

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Original Article

Assessment of Knowledge and Attitude of Females Regarding Menopause

Zertash Gill[1], Muhammad Shahbaz Khaliq[2] and Muhammad Sarwar[3]

ABSTRACT

Objective: To determine the knowledge and attitude of females regarding menopause.
Study Design: Cross sectional study
Place and Duration of Study: This study was conducted at the Department of Obstetrics and Gynaecology, Bahawal Victoria Hospital Bahawalpur from March 2016 to August 2016.
Materials and Methods: Total 177 menopausal women of age 45-55 years were selected. Women with gynecological malignancy, psychological illness and thyroid disorders were excluded. Demographic profile (Name, Age, Parity, Address and Contact) was also noted. A predesigned proforma was given to all women to determine the status of knowledge and attitude of females regarding menopause.
Results: Mean age was 50.84±3.03 years. Majority of the patients 96 (54.24%) were between 51 to 55 years of age. Mean duration of disease was 4.78±2.36 years. Mean BMI was 27.65±3.70 kg/m^2. Mean knowledge score was 14.89±7.65 and mean attitude score was 4.57±2.39. The results of our study have shown 20 (11.30%) of the subjects with poor knowledge, 83 (46.89%) with moderate knowledge and 74 (41.81%) with good knowledge. This study has also shown 141 (79.66%) of the women with a positive attitude and remaining 36 (20.34%) with negative attitude towards menopause.
Conclusion: Findings of this study showed that there is no association of status of knowledge (poor, average, good) and attitude (positive, negative) with age, duration of menopause, BMI and parity.

Key Words: Menopause, Knowledge, Attitude, Positive

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INTRODUCTION

Menopause is the natural process of women's life which includes inability to conceive and stoppage of menstruation". Age of 51 years is the average of menopause.[1] The symptoms preceding menopause are irregular menstruation and after menopause are hot flushes, dry skin and vaginal dryness. Some women also experience emotional and physical symptoms. The attitude and knowledge about menopause may differ from one female to another and these differences are because of female age, parity, education and hormonal status as well as their cultural, economical and geographical status.[2]

It is very important that every woman should understand the menopausal transition and transform it into Functional knowledge.

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According to a study done in Botswana, it is responsibility of gynecologists and midwives to provide knowledge of menopausal transition to every women.[3] There are significant differences in menopausal attitude because of educational background, suggesting that illiterate women displayed better positive attitude than educated ones. Similarly, there are significant differences in menopausal symptoms and attitude across menopausal status. Pre-menopausal women experienced the highest menopausal symptoms than the pre and postmenopausal ones and postmenopausal women displayed positive attitude than pre and peri-menopaused ones.[4]

One Turkish study indicates 90.7% of the women surveyed see menopause as the "end of youth" 85.8% see it as the "beginning of getting older" & 97.6% as the "end of the fecundity".[5] Another study shows 68.51% women experience hot flushes and excessive sweating, 37.7% experience dryness of vagina & 30.7% sexual problems. Regarding knowledge attitude and practices towards menopause 57.5% recognize that menopause was concerned with stop of menstruation 47.9% denying the physical and psychological effects of menopause.[6]

The rationale of this study was to assess the knowledge and attitude of females regarding menopause. Controversial magnitudes had been observed in literature even in local studies. Then based on the results of this study, public awareness programmes could be arranged on regional and national levels for

educating women about menopause-related changes through educational training and guidance to maintain active, healthy lives which would help to increase their knowledge as well as improving their attitude towards menopause.

MATERIALS AND METHODS

This cross sectional study was conducted at Department of Obstetrics and Gynaecology, Bahawal Victoria Hospital Bahawalpur from March 2016 to August 2016. Total 177 women presenting to gynecology outdoor with symptoms of post-menopause i.e. hot flushes (feeling of intense heat with sweating and rapid heartbeat, and may typically last from two to thirty minutes for each occurrence), insomnia (loss of sleep), increase in weight, mastodynia (breast pain) and headache, menopause >1 years, age of 45-55 years, parity 1-5 were selected. Patients with history of Gynecological Malignancy (medical record), patients with history of any Psychological illness (on clinical evaluation), history of Thyroid disorder (TSH>5mIU/L) were excluded from the study. Demographic profile (Name, Age, Parity, Address and Contact) was also noted. A predesigned proforma was given to all women to determine the status of knowledge and attitude of females regarding menopause. All this information was recorded in pre-designed Performa.

Data was entered and analyzed by SPSS version 17. Quantitative variables like age, duration of menopause, parity, BMI, knowledge score and attitude score were calculated as mean and standard deviation. Qualitative variables like body mass index (<27kg/m^2/>27kg/m^2), parity and status of knowledge (poor/average/good) and attitude (positive/negative) about menopause were calculated as frequency and percentage. Effect modifiers like age, duration of menopause, parity andbody mass index(<27kg/m^2/>27kg/m^2) were controlled through stratification and post-stratification chi square test was applied to see their effect on status of knowledge and attitude. P-value ≤0.05 was taken as significant.

RESULTS

Age range in this study was from 45 to 55 years with mean age of 50.84±3.03 years, mean duration of disease was 4.78±2.36 years, mean BMI was 27.65±3.70 kg/m^2, mean knowledge score was 14.89 ± 7.65, mean attitude score was 4.57±2.39 and mean parity of 3.20±1.34. The results of our study have shown 20 (11.30%) of the subjects found with poor knowledge, 83 (46.89%) with average knowledge and 74 (41.81%) with good knowledge (Table 1). This study has also shown 141 (79.66%) of the women with a positive attitude and remaining 36 (20.34%) with negative attitude towards menopause (Table 2).

Stratification of status of knowledge with respect to age groups, duration of menopause, BMI and parity was done. Two age groups were made i.e. age group 45-50 years and age group 51-55 years. In age group 456-50 years, there were 81 (45.76%) subjects and status of knowledge was found poor, average and good in 11 (13.58%), 34 (41.98%) and 36 (44.44%) subjects respectively. In age group 51-55 years, there were 96 (54.24%) subjects and status of knowledge was found poor, average and good in 09 (9.38%), 49 (51.04%) and 38 (39.58%) subjects respectively. But statistically insignificant association between status of knowledge and age groups was noted with p value 0.426). Total 102 (57.63%) found with ≤5 years of menopause and 13 (12.75%) subjects found with poor knowledge regarding menopause followed by 46 (45.10%) subjects with average knowledge and 43 (42.16%) subjects with good knowledge. Out of 75 (42.37%) subjects having duration of menopause >5 years, 07 (9.33%), 37 (49.33%) and 31 (41.33%) subjects found with poor, average and good knowledge. But statistically insignificant association between status of knowledge and duration of menopause was seen with p value0.734. Total 99 (55.93%) subjects found with ≤27 kg/m^2 BMI and status of knowledge was poor, average and good in 12 (12.12%), 41 (41.41%) and 46 (46.46%) subjects respectively. Out of 78 (44.07%) subjects having BMI >27 kg/m^2, total 08 (10.26%) subjects found with poor knowledge, 42 (53.85%) subjects found with average knowledge and 28 (35.89%) subjects were found with good knowledge. There were insignificant association of BMI with status of knowledge was observed with p value 0.254. There were 25 (14.12%) subjects were para 1 followed by 31 (17.51%) subjects were para 2, 41 (23.16%) subjects were para 3, 43 (24.29) subjects were para 4 and 37 (20.93) subjects were para-5. Status of knowledge was poor, average and good in 3 (12.0%), 9 (36.0%) and 13 (52.0%) para 1 subjects, in 2 (6.45%), 14 (45.16%) and 15 (38.39%) para 2 subjects, in 7 (17.03%), 17 (41.46%) and 17 (41.46%) para 3 subjects, in 3 (6.98%), 18 (41.86%) and 22 (51.16%) para 4 subjects and in 5 (13.51%), 25 (67.57%) and 7 (18.92%) para 5 subjects. Statistically insignificant (P = 0.089) association between parity and status of knowledge was notices (Table 3).

In age group 45-50 years, out of 81 (45.76%) subjects, total 61 (75.31%) subjects found with positive attitude and 20 (14.69%) subjects found with negative attitude. In age group 51-55 years, out of 96 (54.24%) subjects, 80 (83.33%) subjects found with positive attitude and 16 (16.67%) were found with negative attitude. Insignificant association between age groups and attitude was noted with p value 0.186. among the 102 (57.63%) subjects with ≤5 years of duration of menopause, 79 (77.45%) subjects found with positive attitude and 23 (22.55%) subjects found with negative attitude. In 75 (42.37%) subjects having >5 years of duration of menopause, 62 (82.67%) subjects with

Table No.1: Frequencies for knowledge

Knowledge	No.	%
Poor	20	11.30
Average	83	46.8
Good	74	41.81

Table No.2: **Frequencies for attitude**

Attitude	No.	%
Negative	36	20.34
Positive	141	79.66

Table No.3: Stratification of status of knowledge with respect to age groups, duration of menopause, BMI and parity

Variable	Status of knowledge			Total	P value
	Poor	Average	Good		
Age (years)					
45-50	11 (13.58%)	34 (41.98%)	36 (44.44%)	81 (45.76%)	0.426
51-55	9 (9.38%)	49 (51.04%)	38 (39.58%)	96 (54.24%)	
Duration of menopause (years)					
≤ 5	13 (12.75%)	46 (45.10%)	43 (42.16%)	102 (57.63%)	0.734
>5	7 (9.33%)	37 (49.33%)	31 (41.33%)	75 (42.37%)	
Body mass index (mg/m^2)					
≤ 27	12 (12.12%)	41 (41.41%)	46 (46.46%)	99 (55.93%)	0.254
> 27	8 (10.26%)	42 (53.85%)	28 (35.89%)	78 (44.07%)	
Parity					
1	3 (12.0%)	9 (36.0%)	13 (52.0%)	25 (14.12%)	0.089
2	2 (6.45%)	14 (45.16%)	15 (38.39%)	31 (17.51%)	
3	7 (17.03%)	17 (41.46%)	17 (41.46%)	41 (23.16%)	
4	3 (6.98%)	18 (41.86%)	22 (51.16%)	43 (24.29%)	
5	5 (13.51%)	25 (67.57%)	7 (18.92%)	37 (20.93%)	

Table No.4: Stratification of status of Attitude with respect to age groups, duration of menopause, BMI and parity

Variable	Attitude		Total	P value
	Positive	Negative		
Age (years)				
45-50	61 (75.31%)	20 (14.69%)	81 (45.76%)	0.186
51-55	80 (83.33%)	16 (16.67%)	96 (54.24%)	
Duration of menopause (years)				
≤5	79 (77.45%)	23 (22.55%)	102 (57.63%)	0.394
>5	62 (82.67%)	13 (17.33%)	75 (42.37%)	
Body mass index (kg/m^2)				
≤27	77 (77.78%)	22 (22.22%)	99 (55.93%)	0.483
>27	64 (82.05%)	14 (17.95%)	78 (44.07%)	
Parity				
1	19 (76.0%)	6 (24.0%)	25 (14.12%)	0.662
2	22 (70.97%)	9 (29.03%)	31 (17.51%)	
3	34 (82.93%)	7 (17.07%)	41 (23.16%)	
4	36 (82.72%)	7 (16.28%)	43 (24.29%)	
5	30 (81.08%)	7 (18.92%)	37 (20.93%)	

positive attitude and 13 (17.33%) subjects found with negative attitude. There was insignificant (P = 0.394) association of duration of menopause with attitude was observed. Total 99 (55.93%) subjects have BMI ≤27 kg/m^2 and positive and negative attitude was noted in 77 (77.78%) subjects and 22 (22.22%) subjects respectively. Among the 78 (44.07%) subjects with BMI >27 kg/m^2, attitude was found positive and negative in 64 (82.05%) subjects and 14 (17.95%) subjects respectively. Insignificant (P = 0.483) association of BMI with attitude was noticed. Positive attitude was noted in 19 (76.0%), 22 (70.97%), 34 (82.93%), 36 (82.72%) and 30 (81.08%) subjects in para 1, para 2, para 3, para 4 and para 5. Statistically insignificant (P = 0.662) association of parity with attitude was noted (Table 4).

DISCUSSION

Age range in this study was from 45 to 55 years with mean age of 50.84±3.03 years. Majority of the patients 96 (54.24%) were between 51 to 55 years of age. There is variability in determining the exact age of natural menopause, the average onset of menopause was 46.5 years.[7] Other studies also show variations in reported age at menopause: 50.9 years among Norwegian women, 44.3 years among Mayan women and 48 years among the African women of Nigeria.[8]

The results of our study have shown 20 (11.30%) of the subjects with poor knowledge, 83 (46.89%) with moderate knowledge and 74 (41.81%) with good knowledge. This study has also shown 141 (79.66%) of the women with a positive attitude and remaining 36 (20.34%) with negative attitude towards menopause. Malik HS showed in a study that 97% of women had heard about menopause and 29.4% were aware of the symptoms. Majority of respondents had positive (47%) attitude towards menopause.[9] While Nusrat et al[10] 15.8% women knew about effects and symptom of menopause, 78.79% women considered menopause as a natural process, while 21.2% perceived it as a disease, 83.42% women were happy about cessation of menses and they did not want to have menses again, while 16.57% women wanted to have menses again. Noroozi E et al[11] in his study had shown 8% of the subjects with poor knowledge, 68% with moderate knowledge and 38.5% with good knowledge. Meanwhile, he had also shown 81.5% of the women with a positive attitude and remaining 18.5% with negative attitude towards menopause.

Other researcher from Bahrain[12] found out that, divorced and widowed women had the most positive attitude towards menopause. The widowed and divorced women do have positive attitude since no longer have worry about the spouse view of menopause[12], it is also indicated that wives express positive attitude towards menopause than their husbands.[13]

In a study, mean age of menopause was 47.44 years with median age was 48 years. The only factors that significantly associated with age at menopause were education and pattern of menstrual cessation and 93.4% of menopaused womenwere heard about menopause, 56.6% had prior knowledge of menopausal symptoms, cessation of menstruation was positive in 47.0% and 85.8% of women perceive menopause as natural condition.[14] In another study, 51% women had poor knowledge of menopause, while the balance reported their knowl- edge of menopause was good (29%), very good (17%) or excellent (2%).[15]

Hence, it is easily understood that direct experience with menopause is playing a role in attitude, i.e. those who have not yet experienced menopause are more afraid of what to expect during menopause on the contrary postmenopausal women had already gone through this period of time and thus became less susceptible to false stereotypes. This indicates that once women have gone through menopause they find it to be less troubling than they were anticipating earlier in life.

CONCLUSION

Findings of this study showed that there is no association of status of knowledge (poor, average, good) and attitude (positive, negative) with age, duration of menopause, BMI and parity.

Author's Contribution:

Concept & Design of Study:	Zertash Gill
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Data Analysis:	Muhammad Sarwar
Revisiting Critically:	Zertash Gill & Muhammad Shahbaz Khaliq
Final Approval of version:	Zertash Gill & Muhammad Sarwar

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

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Original Article

Diabetic Retinopathy

Frequency of Diabetic Retinopathy in Newly Diagnosed Diabetic Patients

Khawaja Muhammad Mujtaba, Syed Saqlain Abbas, Umar Farooq and Ambar Fawad Khan

ABSTRACT

Objective: To determine frequency of retinopathy in newly diagnosed diabetic patients in Nishtar Hospital Multan.
Study Design: Cross sectional Study
Place and Duration of Study: This study was conducted at the Outpatient Department of Nishtar Hospital Multan from May 2016 to March 2017.
Materials and Methods: A total of 171 newly diagnosed patients with type II were included in study. Diagnosis of diabetes was done on the basis of history, physical examination and laboratory tests including blood sugar levels, HbA1c, lipid profile, serum creatinine and albumin and urine complete examination. Waist hip ratio and body mass index were calculated. Detailed eye examination was carried out. Visual acuity measurement and slit lamp examination were performed to diagnose diabetic retinopathy.
Results: Of these 171 study cases, 91 (53.2 %) were male and 80 (46.8 %) were female patients. Mean age of our study cases was 50.52 ± 5.90 years. Mean blood sugar level was 241.35 ± 32.95 mg/dl and mean HBA_1C level was 8.17 ± 0.23. Of these 171 study cases, 58 (33.9%) were hypertensive patients while family History of diabetes was present in 93 (54.4%) of our study cases. Only 4 (2.3 %) of our study cases reported that they had undergone eye examination since diagnosis of Diabetes mellitus. Retinopathy was seen in 31 (18.1 %) of our study cases.
Conclusion: High frequency of retinopathy is observed among newly diagnosed diabetic patients. Very low rate of eye examination was noted among these patients. Newly diagnosed diabetic patients should be emphasized the importance of regular eye examination to avoid this complication. Furthermore this retinopathy was significantly more common in male diabetic patients, increasing age and duration of diabetes. A detailed Fundoscopic examination among these patients is of paramount importance.
Key Words: Retinopathy, Diabetes mellitus, Newly diagnosed

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INTRODUCTION

Diabetes mellitus is a metabolic disorder which results from defects of insulin secretion or due to impaired insulin actions resulting in elevated glucose levels with disturbance of glucose, fats and protein metabolism [1]. Diabetes has now become major public health issue which is close to reach epidemic proportions globally. Retinopathy, among the different diabetic complications, is the second cause of blindness not only in industrialized countries but also in Pakistan. Different studies conducted in Pakistan have documented varying rates of diabetic retinopathy. This study was planned to be conducted among newly diagnosed diabetic patients.

Due to rapid economic growth leading to change in life style, type 2 diabetes has become common disease these days which is defined by asymptomatic phenomenon associated with actual start of diabetic hyperglycemia and clinical diagnosis. This phenomenon is known to occur for approximately 4–7 years and 30–50% patients of the illness remain unnoticed or undiagnosed and may lead to the development of the certain related complications such as diabetic retinopathy, nephropathy and neuropathies[2-]. These complications of the diabetes are associated with lack functional activity, poor productivity, disabilities and low life expectancy among these patients [5-7].

The prevalence of diabetes has considerably increased due to changes in life style modifications, increasing proportion of obesity in different subsets of society and longevity. According to current estimates the prevalence of diabetes will double till 2025.[8, 9]

Compared to developed countries, where it occurs late, diabetes is diagnosed quite earlier part of the life among South Asian population. Pakistan with its population over 200 million people harbors around 10 % diabetic patients which is expected to double in next 20 years[10,11]. Diabetes patients have 25 times more possibility of becoming blind compared with their healthier counterparts and data from developed countries shows that diabetic retinopathy remains major

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cause of visual impairments and blindness in adults. In type II diabetic patients diabetic retinopathy has been documented to occur in more than 60 % patients within 20 years of diagnosis while in approximately 20% at the time of the diagnosis[12, 13].

One of the studies conducted in Pakistan showed that the frequency of retinopathy in newly diagnosed patients of type II diabetes mellitus is 12.75%[14] and another showed frequency of 17%[15]. The purpose of this study was to determine frequency of diabetic retinopathy in newly diagnosed patients so as to prevent this complication as much as possible.

MATERIALS AND METHODS

A total of 171 newly diagnosed patients with type II diabetes (Any patient having fasting blood sugar level above 126mg/dl and random blood sugar level above 200mg/dl was considered as diabetic patient, diagnosed within last 3 months) were included in study. Sample size was calculated by using openepi.com sample size calculator with p = 20%[12, 13](taking expected proportion of DR) at 95 % confidence level with d=6 % margin of error. An informed consent was taken. Study was conducted in Outpatient department of Nishtar Hospital, Multan, from May 2016 to March 2017. Diagnosis of diabetes was done on the basis of history, physical examination and laboratory tests including blood sugar levels, HbA1c, lipid profile, serum creatinine and albumin and urine complete examination. Waist hip ratio and body mass index were calculated. Detailed eye examination was carried out. Visual acuity measurement and slit lamp examination were performed to diagnose diabetic retinopathy. Data obtained was entered and analyzed using SPSS version 22 and descriptive statistics was used to calculate mean and standard deviation for age and blood glucose level. Frequencies and percentages were calculated for gender and diabetic retinopathy.

RESULTS

A total of171 newly diagnosed cases with type 2 diabetes mellitus meeting inclusion and exclusion criteria of this study were included. Of these 171 study cases, 91 (53.2 %) were male and 80 (46.8%) were female patients. Mean age of our study cases was 50.52 ± 5.90 years. Mean blood sugar level was 241.35 ± 32.95 mg/dl (ranging from 190 mg/dl to 302 mg/dl) and mean HBA_1C level was 8.17 ± 0.23. Of these 171 study cases, 87 (50.9%) were in age group of 41 to 50 years of age while 84 (49.1%) belonged to age group of 51 to 60 years. Of these 171 study cases, 58 (33.9%) were hypertensive patients while 113 (66.1%) did not had hypertension. Family History of diabetes was present in 93 (54.4%) of our study cases while 78 (45.6%) did not had family history of Diabetes mellitus. Only 4 (2.3 %) of our study cases reported that they had undergone eye examination since diagnosis of Diabetes mellitus and remaining 167 (97.7%) did not had any eye examination in this time period.

Table No.1: Stratification of Retinopathy with regards to gender

Gender	Retinopathy		P-value
	Yes (n=31)	**No** (n=140)	
Male (n = 91)	24	67	0.003
Female (n = 80)	07	73	
Total	**171**		

Table No.2: Stratification of Retinopathy with regards to age.

Age groups (In Years)	Retinopathy		P-value
	Yes (n = 31)	**No** (n = 140)	
41 – 50 (n = 87)	11	76	0.074
51 – 60 (n = 84)	20	64	
Total	**171**		

Table No.3: Stratification of Retinopathy with regards to Hypertension.

Hypertension	Retinopathy		P-value
	Yes (n = 31)	**No** (n = 140)	
Yes (n = 58)	12	46	0.536
No (n = 113)	19	94	
Total	**171**		

Table No. 4: Stratification of Retinopathy with regards to family history of Diabetes among study cases.

Family History	Retinopathy		P-value
	Yes (n = 31)	**No** (n = 140)	
Yes (n = 93)	15	78	0.551
No (n = 78)	16	62	
Total	**171**		

Table No.5: Stratification of Retinopathy with regards to previous history of eye examination.

Eye Examination	Retinopathy		P-value
	Yes (n = 31)	**No** (n = 140)	
Yes (n = 04)	01	03	0.554
No (n = 167)	30	137	
Total	**171**		

Table No.6: Mean blood glucose level with regards to Retinopathy.

Retinopathy	Blood glucose level		P-value
	Mean	**Standard Deviation**	
Yes (n = 31)	272.68	28.89	0.000
No (n = 140)	234.41	29.67	

Majority of our study cases i.e. 108 (63.2%) had their diabetes diagnosed for more than 45 days while 64 (36.8%) had their diabetes diagnosed for less than 45 days. Retinopathy was seen in 31 (18.1 %) of our study cases.

DISCUSSION

Retinopathy, among the different diabetic complications, is the second cause (being cataract the first) of legal blindness in the industrialized countries[16]. The range of results obtained from prevalence studies, mainly conducted in Anglo-saxon countries, varies from 5% to 70% in connection with the following risk factors: patient's age at the diagnosis date, duration of disease, metabolic control, arterial hypertension and lipidoproteinosis. Diabetes has now become major public health issue which is close to reach epidemic proportions globally. Retinopathy, among the different diabetic complications, is the second cause of blindness not only in industrialized countries but also in Pakistan. Different studies conducted in Pakistan have documented varying rates of diabetic retinopathy [17, 18].Of these 171 study cases, 91 (53.2 %) were male and 80 (46.8 %) were female patients. Similar findings have been reported by Khurram et al[19].

Most of the Authors[14,15,19-21] have reported the retinopathy being more prevalent with increasing age, our study results are in consistency with these findings. Mean age of our study cases was 50.52 ± 5.90 years (minimum age was 41 years while maximum was 60 years). Wahab et al[20] reported 43.2 % ± 10.2 years mean age of their study participants which were newly diagnosed for Diabetes for the presence of retinopathy. Hayat et al[15] reported 45.1± 3.2 years mean age for the newly diagnosed diabetic patients which were screened for the retinopathy. Jamil et al [14] reported 50.95 ± 10.12 years mean age for the newly diagnosed diabetic patients screened for retinopathy, these findings are also in compliance with that of ours. Of these 171 study cases, 87 (50.9%) were in age group of 41 to 50 years of age while 84 (49.1%) belonged to age group of 51 to 60 years. Similar age group was predominant as reported by Jamil et al[14]. Family History of diabetes was present in 93 (54.4%) of our study cases while 78 (45.6%) did not had family history of Diabetes mellitus. A population based study conducted in Faisalabad reported only 3 % family history among diabetic patients[21].

In our society, eye examination is often neglected among diabetic patients. Only 4 (2.3 %) of our study cases reported that they had undergone eye examination since diagnosis of Diabetes mellitus while a study conducted by Hussain et al[21] reported 6% eye examination among diabetic patients in population. Retinopathy was seen in 31 (18.1 %) of our study cases. Wahab et al [20] reported 15 % frequency of retinopathy in type 2 diabetic patients who were diagnosed 2 months ago. These findings are very close to that of our study results as duration of diabetes was also similar in our case. Hayat et al[15]reported 17 % frequency of retinopathy among type 2 diabetic patients diagnosed within 1 month. These findings are also close to that of our findings. Jamil et al [14] reported 12.75% frequency of retinopathy among newly diagnosed cases of type 2 diabetes mellitus. Male gender is significantly related with diabetic retinopathy as reported in previous studies[14, 15,19-21],our study findings have also observed that retinopathy was being more prevalent among male diabetic patients (p=0.003). Similarly, diabetic retinopathy is significantly more seen in patients with longer duration of diabetes mellitus[14, 15, 19-21]. Our study results have also observed retinopathy being significantly related with duration of diabetes (p=0.008).

CONCLUSION

High frequency of retinopathy is observed among newly diagnosed diabetic patients. Very low rate of eye examination was noted among these patients. Newly diagnosed diabetic patients should be emphasized the importance of regular eye examination to avoid this complication. Furthermore this retinopathy was significantly more common in male diabetic patients, increasing age and duration of diabetes. A detailed Fundoscopic examination among these patients is of paramount importance.

Author's Contribution:

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Revisiting Critically:	Khawaja Muhammad Mujtaba & Ambar Fawad Khan
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ACKNOWLEDGMENTS

List of all contributors who do not meet the criteria for Authorship, such as a person who provided purely technical help, writing assistance or department chair who provided only general support. Financial & Material support should be acknowledged.

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