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Determination of Red Blood Cell Distribution Width in Patients with Primary Cutaneous Vasculitis Compared to Systemic Vasculitis

Farhana Wahab¹, Mohammad Jamal Uddin^{*2}, ATM Asaduzzaman³,
Mohammad Abu Hena Chowdhury⁴, Hasan Mahmud⁵, Rehnuma Nasim⁶

Abstract

Introduction: Red blood cell distribution width (RDW) has been considered as an inflammatory marker in various disorders. Evaluation of RDW value can also be used as a novel and additional marker for differentiating systemic vasculitis from primary cutaneous vasculitis. **Objective:** To compare RDW value between patients with cutaneous vasculitis with systemic vasculitis, thereafter to find out its role as an effective indicator to distinguish both forms of vasculitis. **Materials and Methods:** This cross sectional observational study was conducted between July 2016 to December 2017. Total of 48 patients were divided into primary cutaneous vasculitis and systemic vasculitis. Blood was collected in EDTA tube to measure RDW value. Patient's disease activity also scored and plotted according to Birmingham vasculitis activity score. Statistical analysis was performed by using SPSS. **Results:** Significantly high mean RDW were found in patients with systemic vasculitis compared to primary cutaneous vasculitis (15.09 ± 0.92 vs. 13.48 ± 1.1 , $p = 0.000$). BVAS was significantly greater (13.93 ± 5.10 vs. 4.87 ± 2.69 , $p < 0.001$) in systemic vasculitis as well as in patients with high RDW group (11.73 ± 5.71 vs. 5.37 ± 3.96 , $p < 0.001$). Optimal RDW cut off point for differentiating systemic vasculitis from cutaneous vasculitis was 14.2 with 81.3% sensitivity and 81.2% specificity. **Conclusion:** Present study revealed importance of RDW monitoring along with disease activity in patients with any form of vasculitis. Systemic vasculitis had higher level of RDW. So RDW can be considered as a marker to discriminate systemic vasculitis from primary cutaneous vasculitis.

Key words: Red blood cell distribution width, Vasculitis, BSMMU.

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Introduction:

Vasculitis refers to a group of disorders in which there is inflammation and damage in blood vessel walls, leading to tissue necrosis¹. When vasculitis affects small or medium sized blood vessels in the skin, it is known as primary cutaneous vasculitis. The primary systemic vasculitis are heterogeneous, multi-system disorders characterized by inflammation and necrosis of medium or large blood vessels mainly. About half of all patients presenting with cutaneous vasculitis have self limited disease confined to the skin^{2,3}. Sometimes cutaneous vasculitis occurs as an initial manifestation of primary systemic vasculitis or it can also later progress to systemic vasculitis infrequently. Though the percentage of patients reported to have cutaneous involvement varies according to the type of vasculitis in previous reports, it is regarded to occur around 50% of primary systemic vasculitis⁴.

Vasculitis is relatively uncommon disorder, with a reported annual incidence of 40 to 54 cases per 1 million persons⁵. The pathogenesis of vasculitis is poorly understood. Three possible mechanisms of vascular damage are immune complex deposition, ANCA (humoral response) and T-lymphocyte (cell mediated) response with granuloma formation^{6,7}.

Red blood cell distribution width (RDW) is a numerical measure of the variability in size of circulating erythrocyte⁸ and is routinely reported by analyzer as part of routine CBC. Thus elevated RDW means that there is an increased heterogeneity in size of red cells in the peripheral blood⁹. In fact, various inflammatory cytokines are

known to induce changes in iron homeostasis, the proliferation of erythroid progenitor cells, the production of erythropoietin and the life span of RBC¹⁰. Increased inflammatory cytokines in systemic vasculitis may contribute to RDW elevation by releasing immature RBCs into peripheral circulation¹¹. As a matter of fact, there is a study which showed increased serum cytokines in systemic vasculitis¹². Therefore, increased inflammatory cytokines may be attributed to elevation of RDW in systemic vasculitis; it will need further investigation to establish precise relationship between inflammation and RDW elevation in systemic vasculitis.

The vasculitides remain a challenge in terms of diagnosis and treatment. The recognition of disease remains unsatisfactory in the absence of any gold standard tests. The clinical presentation and correct use of appropriate laboratory tests, imaging and pathology are essential to assist in making an early diagnosis. Finding a marker which can indicate systemic vasculitis in patients with cutaneous presentation is very important. Despite many researchers have focused on this issue, there are no single definite standard method to predict systemic vasculitis.

As a possible integrative measure of multiple pathologic factors (nutritional deficiencies, inflammatory stress, and renal dysfunction), RDW has been hypothesised to be associated with several disease processes including occult colon cancer, neoplastic metastases to marrow, liver disease, and heart failure^{13,14,15,16}. Recently one report has pointed to a possible role of RDW in inflammatory bowel disease as an additional inflammatory marker¹⁷. Two other studies have shown that RDW can be potentially used as a marker for differentiating crohn's disease from ulcerative colitis^{18,19}. The results were promising because RDW can be routinely obtained from blood count, which is a simple, inexpensive, and readily available tool that provides potential for high rates of patient acceptance and compliance.

Raised RDW is associated with inflammatory cytokines released in systemic vasculitis, it may be analyzed in patients who has cutaneous vasculitis, or cutaneous vasculitis with systemic involvement. We designed the present study to observe whether RDW could be used for the assessment of disease activity severity in our patients with systemic vasculitis and tried to find out whether RDW could serve to differentiate cutaneous vasculitis from systemic vasculitis.

Materials and Methods:

This cross sectional study was conducted in the Department of Dermatology & Venereology and Rheumatology Vasculitis Clinic, Bangabandhu Sheikh Mujib Medical University, Dhaka from July, 2016 to December, 2017.

Total of 48 patients with primary cutaneous vasculitis (32 patients) and systemic vasculitis (16 patients) were enrolled following inclusion and exclusion criteria. Inclusion Criteria were i) Patients with cutaneous vasculitis (clinical, histopathology with DIF) ii) Patients with systemic vasculitis (clinical, histology, urinalysis,

eosinophil count, ANCA and radiology) iii) Patients of any age and both sexes. iv) Patients with medical conditions where RDW is well known to be increased v) Patients with history of taking drugs that may cause vasculitis.

Cutaneous and systemic vasculitis were compared on the basis of following variables, i) Age, ii) Gender, iii) Disease Duration, iv) RDW (Red blood cell distribution width), v) WBC (White blood cell vi) RBC (Red blood cell) vii) Hb (Hemoglobin) viii) MCV (Mean corpuscular volume) ix) Platelet x) ESR (Erythrocyte sedimentation rate), xi) CRP (C-reactive protein) xii) Serum creatinine, xiii) ALT (Alanine aminotransferase), xiv) BVAS (Birmingham vasculitis activity score).

Before enrolment in this study informed written consent were taken from the patients after full explanation of the purpose of the study. The age, sex, disease duration, clinical feature and the investigations along with RDW level were recorded in a standard and pre-tested semi-structured questionnaire. Each patient's disease activity was also scored and plotted according to Birmingham vasculitis activity score (BVAS).

3 ml of venous blood was collected from each patient, drawn into EDTA tube. Within 4 hours of collection sample was run through an automated hematology analyzer (Sysmax-XT 2000 i) at Department of Hematology, BSMMU to assay RDW value as a part of a standard complete blood count and it is used along with other RBC indices, especially mean corpuscular volume (MCV).

The XT-2000i hematology analyzer uses unique fluorescence flow cytometry (FFC) technology. FFC looks at RNA/DNA content, cell size and inner cell complexity rather than cell size alone.

Calculated red cell indices are mean cell hemoglobin (MHC), mean cell hemoglobin concentration (MCHC) and the red cell distribution width (RDW). Red cell distribution width (RDW) is reported on the Sysmax XT as both standard deviation from the mean red cell size (RDW-SD) and as coefficient of variation from the mean (RDW-CV). The RDW-CV is a calculation based on both the width of the distribution curve and the mean cell size. It is calculated by dividing the standard deviation of the mean cell size by the MCV of the red cells and multiplying by 100 to convert to a percentage.

In our laboratory, normal range for the RDW-CV is approximately 11.6% - 14%.

Statistical analyses was performed by using the Statistical Package for the Social Science (SPSS) software version 22.0 for windows (SPSS Inc, Chicago, Illinois, USA). Quantitative variables (age, duration, RDW %, WBC, RBC, Hb%, MCV, Platelet, ESR, CRP, Creatinine, ALT, BVAS) were expressed as mean $\pm$ SD & comparison between cutaneous and systemic vasculitis were done by student's t test. Qualitative data (gender) was expressed as frequency & percentage and comparison between the two groups was carried out by Chi-square (X^2) test. Fisher's Exact test was done to compare the severity of disease

activity between both types of vasculitis. A cut off value was drawn between the two groups by ROC curve analysis. According to baseline RDW value, patients were categorized into a high RDW group ($>14\%$) and a normal RDW group as well as systemic and cutaneous vasculitis group were compared. For all statistical tests, p-value less than 0.05 was considered as statistically significant.

Results:

The mean age of systemic vasculitis group and cutaneous vasculitis group were 36.75 ± 13.67 and 25.16 ± 9.47 months respectively which set significant difference by unpaired t test ($p < 0.001$). Males were mostly (68.8%) affected by systemic vasculitis and females (59.4%) were mostly affected by cutaneous vasculitis but not statistically significant. Most of the patients belong to urban area in both vasculitis. A greater portion of patients with systemic vasculitis were service holder but most of the participants from cutaneous vasculitis group were either student or housewife. Majority of patients from both groups were graduate (Table I).

Table-I: Demographic characteristics of study patients (n=48).

Age (years)	Systemic vasculitis (n=16) n (%)	Cutaneous vasculitis (n=32) n (%)	P value
Age (years)	36.75 ± 13.67	25.16 ± 9.47	$<0.001^a$
Gender			
Male	11 (68.8)	13 (40.6)	0.066 ^b
Female	5 (31.2)	19 (59.4)	
Residence			
Urban	10 (62.5)	25 (78.1)	0.251 ^b
Rural	6 (37.5)	7 (21.9)	
Occupation			
Housewife	1 (6.3)	12 (37.5)	0.007 ^b
Service	7 (43.8)	6 (18.8)	
Business	5 (31.3)	2 (6.3)	
Student	3 (18.8)	12 (37.5)	
Education			
Illiterate	1 (6.3)	1 (3.1)	0.733 ^b
Primary	2 (12.5)	8 (25.0)	
SSC	3 (18.8)	6 (18.8)	
HSC	3 (18.8)	8 (25.0)	
Graduate	7 (43.8)	9 (28.1)	

a = Unpaired t test was done to measure the level of significance

b = Chi-square test was done to measure the level of significance

LCV was the commonest presentation of cutaneous vasculitis (62.5%) and PAN was the commonest presentation of systemic vasculitis (43.8%). (LV=Livedoid vasculopathy, CSS=Churg strauss syndrome, UV=Urticarial vasculitis, WG=Wegener's granulomatosis, HSP=Henoch schönlein purpura, PAN= Polyarteritis nodosa, LCV=Leukocytoclastic vasculitis) (Table II).

Table-II: Distribution of study subjects by type of vasculitis (n=48).

Diagnosis	Systemic vasculitis (n=16) n (%)	Cutaneous vasculitis (n=32) n (%)	Total (n=48) n (%)
LCV	0 (0.0)	20 (62.5)	20 (41.7)
HSP	0 (0.0)	6 (18.8)	6 (12.5)
CSS	3 (18.8)	0 (0.0)	3 (6.3)
PAN	7 (43.8)	0 (0.0)	7 (14.6)
LV	0 (0.0)	4 (12.5)	4 (8.3)
WG	6 (37.5)	0 (0.0)	6 (12.5)
UV	0 (0.0)	2 (6.3)	2 (4.2)

Most of the patient (81.2%) in systemic vasculitis group had high RDW ($>14\%$) and most of the patients (81.2%) in cutaneous vasculitis had normal RDW (11.6-14)% .

In systemic vasculitis group, 18.8% patients had normal RDW and in cutaneous vasculitis group 18.8% patients had elevated RDW.

Mean RDW value of systemic vasculitis patients was significantly greater than patients with primary cutaneous vasculitis (15.09 ± 0.92 vs. 13.48 ± 1.1 , $p = 0.000$).

Unpaired t test was done to measure the level of significance. The vasculitis activity score (BVAS) along with mean RDW is significantly higher in systemic vasculitis compared to cutaneous vasculitis. Disease duration, WBC, RBC, CRP, Hb% also show significant difference between the two groups.

Most of the patients (87.5%) in systemic vasculitis group had higher disease activity score (more severe) and only small number of patients (6.3%) in cutaneous vasculitis group depicted such score (Table : III) .

Table-III: Comparison of disease activity severity between cutaneous and systemic vasculitis (n=48) :

BVAS	Systemic vasculitis (n=16) n (%)	Cutaneous vasculitis (n=32) n (%)	P value
0 - 8	2 (12.5)	30 (93.8)	<0.001
>8	14 (87.5)	2 (6.3)	
Total	16 (100.0)	32 (100.0)	

Fisher's Exact test was done to measure the level of significance

Baseline characteristics of patients according to RDW value. A total of 19 patients (39.58)% had high RDW and 29 patients had normal RDW (11.6-14)%. Patients with RDW above the reference range had significantly higher ESR (28.37 ± 23.93 vs. 50.05 ± 34.07 , $p = 0.013$), higher CRP (4.83 ± 2.86 vs. 15.68 ± 21.56 , $p = .010$) and very significantly high BVAS (5.37 ± 3.96 vs. 11.73 ± 5.71 , $p = < 0.001$) in comparison to patients with normal RDW. There were no significant difference regarding age, sex, disease duration and other laboratory parameters between the two groups (Table IV).

Table-IV: Comparison of clinical and laboratory parameters according to baseline red blood cell distribution width.

Parameter	RDW ≤ 14 (n=29) Mean $\pm$ SD	RDW >14 (n=19) Mean $\pm$ SD	p value
Age (years)	27.76 ± 11.52	30.95 ± 13.30	0.382
Sex (M/F)	15/14	9/10	0.768
Duration (months)	12.75 ± 25.04	18.68 ± 23.31	0.414
WBC count ($10^9/L$)	11.14 ± 3.91	12.82 ± 4.21	0.165
RBC count ($10^{12}/L$)	4.56 ± 0.63	4.20 ± 0.71	0.072
Hb (%)	12.88 ± 2.04	11.30 ± 2.04	0.052
MCV (fl)	85.74 ± 5.57	82.66 ± 5.77	0.072
Platelet count ($10^9/L$)	301.31 ± 94.88	315.68 ± 125.98	0.655
ESR (mm)	28.37 ± 23.93	50.05 ± 34.07	0.013
CRP (mg/dl)	4.83 ± 2.86	15.68 ± 21.56	0.010
S. creatinine (mg/dl)	0.83 ± 0.20	0.81 ± 0.28	0.870
ALT (U/L)	26.68 ± 16.47	32.26 ± 21.08	0.310
BVAS	5.37 ± 3.96	11.73 ± 5.71	<0.001

Unpaired t test was done to measure the level of significance

Discussion:

The present study aimed to compare the mean RDW value between 16 patients of systemic vasculitis and 32 patients of cutaneous vasculitis with a view to observe it's effective

role to predict systemic vasculitis.

The mean age of cutaneous vasculitis group is 25.16 ± 9.47 (mean $\pm$ SD) months and most (34.4%) of the patients belongs to age group 19-28 with female predominance (59.4%). The findings of this study regarding age and sex is quite resembles with the findings of Hyderabad study¹⁹.

In our study among 32 cutaneous vasculitis patients leukocytoclastic vasculitis (LCV) was commonest (22 patients 62.5%), 6 patients of Henoch-Schönlein purpura (HSP) (18.8%), 4 patients of livedoid vasculopathy (LV) (12.5%) and 2 patients of urticarial vasculitis (UV) (6.3%). This finding is quite similar to the finding of Asaduzzaman et al²⁰. Primary systemic vasculitis is more common in males (23.5/ million, 95% CI 17.3-31.3) than females (16.4 million, 95% CI 11.4-22.8). The age and sex specific incidence showed a clear increase with age, with an overall peak in the 65-74 year group²¹. The present study shows that mean age of systemic vasculitis group is more (36.75 ± 13.67 vs 25.16 ± 9.47) than cutaneous vasculitis group along with male predominance (68.8%). All the participants of this study were younger in comparison to other study²¹ and this dissimilarity may be due to population based different methodological study.

In our study, PAN was the commonest (43.8%) presentation of systemic vasculitis, then WG (37.5%) followed by CSS (18.8%) respectively. Though MPA was the second most prevalent systemic vasculitis according to Mahr et al study²², no patient of microscopic polyangitis was found in our study. This could be due to racial difference.

It has been showed that 81.2% patients with systemic vasculitis and only 18.8% patients with cutaneous vasculitis has high RDW value. The mean RDW of patients with cutaneous vasculitis is within normal limit. RDW didn't significantly higher in patients with cutaneous vasculitis than in healthy control²³. This observation is in agreement with our study.

In the current study, mean RDW value of patients with systemic vasculitis is significantly greater than in patients with primary cutaneous vasculitis (15.09 ± 0.92 vs. 13.48 ± 1.1 , $p = 0.000$). The RDW cut-off point for differentiation of systemic vasculitis from cutaneous vasculitis has observed at 14.2 with 81.3% sensitivity and 81.2% specificity and area under curve was 0.877 (CI 0.779-0.975). This inference is also supported by the other study²⁴.

RDW elevation strongly correlate with the inflammatory markers including ESR, CRP, Platelet, and MPV²⁵. Lippi et al demonstrated graded association of RDW with high sensitive CRP and ESR independent of numerous confounding factors like age, sex, Hb%, MCV, ferritin²⁶. This cross sectional study has also delineated that ESR and CRP level change along with rising RDW. Patients with high RDW (>14.2%) has raised ESR and raised CRP compared to patients with RDW within the normal range (11.6-14%). There is no significant difference in age, sex, disease duration, MCV and other laboratory parameters between the two groups.

In this study, vasculitis activity score also is significantly higher in patients with systemic vasculitis (13.95 ± 5.10 vs. 4.87 ± 2.69 , $p = 0.000$) compared to cutaneous vasculitis. Most of the patients (87.5%) in systemic vasculitis group has higher disease activity score (BVAS>8) and only small number of patients (6.3%) in cutaneous vasculitis group has depicted such score. BVAS score is also significantly greater in high RDW group (11.37 ± 5.71 vs 5.37 ± 3.96) compared to normal RDW group. In 2014, Kim et al stated RDW as an independent predictor of systemic vasculitis in patients with primary cutaneous vasculitis by performing multivariate logistic regression analysis with different laboratory parameters showing significant difference between cutaneous and systemic vasculitis²⁴. Though clinical parameter like disease activity was not included. But the current study has observed significant difference between the two groups on the basis of patient's age, disease duration, WBC, RBC, Hb%, CRP, ESR and BVAS. Here, an attempt has been made to show RDW as a tool to predict vasculitis activity and poor prognosis.

Meanwhile, RDW has been considered to be associated with disease activity or prognosis of various inflammatory diseases. Cytokines act as a diagnostic marker and biomarker of vasculitis disease activity²⁷. Therefore, in our study, increased inflammatory cytokines may be the attributed factors for elevation of RDW in systemic vasculitis. Hence, in this study, we have not only compared the mean RDW values but also tried to set up a cut off value between the two groups and observed it as a predictor of systemic vasculitis based on BVAS.

Conclusion:

In this study, increased level of RDW was observed in most of the patients of systemic vasculitis in comparison to primary cutaneous vasculitis. Statistically significant difference of RDW value was found between both forms of vasculitis. As diagnostic dilemma occurs between primary cutaneous vasculitis and initial cutaneous presentation of systemic vasculitis, very high RDW value may be used to differentiate them considering other laboratory and clinical parameter including BVAS.

Conflict of Interest: None.

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Space Closure Rate in Mandibular Canine Retraction by Ni-Ti Closed Coil Spring: A Clinical Trial

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Abstract

Introduction: In Majority of patients seeking orthodontic treatment, teeth must be extracted in order to obtain proper esthetics, occlusion, and stability as well as extraction of teeth is often a need to close residual space, after the initial decrowding and aligning. Pre adjusted fixed orthodontic appliances commonly utilize sliding mechanics for space closure with different types of force delivery systems. A variety of materials have been used as force delivery systems to close spaces between teeth as in the case of canine retraction after the extraction of premolars. Among all sliding or frictionless methods of canine retraction, super-elastic nickel titanium coil spring has a particular property in producing light continuous force at a long range of action, compared with previously available materials. Nickel-titanium closed coil spring, with a continuous action, might have some advantages in fixed appliance space closure mechanics. **Materials and Methods:** Over the period of one year from May 2015 to April 2016, this clinical trial was carried out and A total number of 20 patients (40 quadrants), who required canine retraction into first premolar extraction sites as part of their orthodontic treatment in the Department of Orthodontics of BSMMU selected as study population. The quadrants were affixed by nickel titanium closed coil springs (medium force, Ni-Ti extension spring, Ormco) with 200gm force measured by Correx Tension Gauge. Space closure was measured by means of direct measurement from the mesial surface of mesial wing of the 2nd premolar bracket and the distal surface of distal wing of the canine bracket with digital Vernier Calipers. **Results:** Mean space closer rate in mandibular canine retraction was 1.07 ± 0.12 mm/month by nickel-titanium (Ni-Ti) closed coil spring method with p value < 0.001 . **Conclusion:** This study revealed that space closer rate in mandibular canine retraction by nickel-titanium (Ni-Ti) closed coil spring is 1.07 ± 0.12 mm/month.

Key words: Ni- Ti closed coil spring, Canine retraction.

Number of Figures: 04; **Number of Table:** 01; **Number of References:** 20; **Number of Correspondence:** 03.

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Introduction:

Tweed's work revolutionized the field in the 1940's and 1950's as it now became acceptable to extract teeth for orthodontic correction. In 1989, a survey of 238 orthodontists in Michigan was conducted to evaluate the prevalence of orthodontic extractions and found the mean rate of extraction treatment to be 39%. The rate of extraction varied greatly between orthodontists¹. On a daily basis, orthodontic patients present with malocclusions and or facial imbalance. Often times, teeth must be extracted in order to obtain proper esthetics, occlusion, and stability. Extraction of teeth can improve the facial esthetics of a patient with procumbent or protrusive lips. This can be accomplished by retracting the anterior teeth into the extraction spaces, thus retracting the lips to a more balanced position^{2,3,4}. In severe crowding and extraction cases, the canines have been distalized to relieve the crowding as space to correctly align the incisors will not be available. Canine retraction is a very important step in treatment of patients with crowding needed first premolar extraction. Orthodontic treatment involving extraction of teeth is often a need to close residual space, after the initial decrowding and aligning^{5,6,7}. The closure of space can be achieved by two techniques, friction (sliding) mechanics or frictionless (loop) mechanics. Sliding (Frictional) mechanics involves either moving the brackets along the arch wire or sliding the arch wire through bracket & tube. Loop (Frictionless) mechanics involves movement of teeth without the brackets sliding along the arch wire but with the help of loops^{8,9,10}.

Pre adjusted fixed orthodontic appliances commonly utilize sliding mechanics for space closure with different types of force delivery systems^{11,12}. A variety of materials have been used as force delivery systems to close spaces between teeth as in the case of canine retraction after the extraction of premolars. These include latex elastics, coil spring, elastic module, elastomeric power chain, headgear and magnet^{13,14}. Nickel-titanium (Ni-Ti) closed coil spring delivered constant force till the terminal end of deactivation stage is reached. The advantages of these springs are that they can be easily placed and removed without arch wire removal and do not need reactivation at each appointment; therefore, patient cooperation is not needed. The most time consuming stage of premolar extraction based orthodontic treatment is canine retraction. Any procedure which reduces the time required to retract canine will also serve to shorten overall treatment time. Reducing the duration of orthodontic treatment is of great interest to orthodontists^{15,16,17}. In context of Bangladesh, there is no study regarding space closure rate in canine retraction by any force system.

Materials and Methods:

Over the period of one year from May 2015 to April 2016, this clinical trial was carried out in the Department of Orthodontics at Bangabandhu Sheikh Mujib Medical University (BSMMU). A total number of 20 patients (40 quadrants), who required canine retraction into first premolar extraction sites as part of their orthodontic treatment selected as study population. Patients were selected on these criteria, Age between 15 to 30 years who needs to 1st premolar extraction for treatment, who gave consent for inclusion in the study and free from any systemic disease^{18,19}. All the patients were treated with pre adjusted edge-wise fixed appliance using stainless steel 0.018x0.025-inch slot Roth brackets. After all, first premolars were extracted, initial leveling and alignment was carried out. All teeth were ligated with 0.010" stainless steel ligature wire. Standardized anchorage control using tip back and toe in bend was used in all patients and 2nd premolars were included in anchorage unite. Then canine retraction carried out by individual sliding of canine using round 0.016-inch stainless steel arch wire with elastomeric Power Chain. The quadrants were affixed by nickel titanium closed coil springs (medium force, Ni-Ti extension spring, Ormco) with 200gm force measured by Correx Tension Gauge. In clinical practice, a four to six-week appointment interval is common²⁰.

Space closure was measured by means of direct measurement from the mesial surface of mesial wing of the 2nd premolar bracket and the distal surface of distal wing of the canine bracket with digital Vernier Calipers every four weeks' interval.



Figure-1: Ni-Ti Closed Coil Spring.



Figure-2: Digital Vernier Calipers.

Results:

During this study period distribution of patients according to gender, Female were predominant. Male female ratio was 1:4. Amongst the patients, Maximum 11 (55.0%) were in age group 16-20 years followed by 7 (35.0%) and 2 (10.0%) were in age group 21-25 years and >25 years age group respectively. Mean of age was 20.60 ± 3.54 years within the range of 16-27 years.

Figure 3 shows distribution of patients according to gender. Female were predominant. Male female ratio was 1:4.

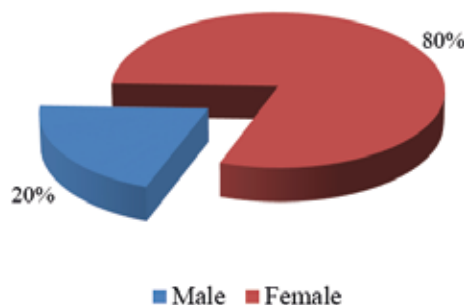


Figure-3: Pie chart of patients according to gender.

Table I shows distribution of patients according to age. Maximum 11 (55.0%) were in age group 16-20 years followed by 7 (35.0%) and 2 (10.0%) were in age group 21-25 years and >25 years age group respectively. Mean of age was 20.60 ± 3.54 years within the range of 16-27 years.

Table-I: Distribution of patients according to age.

Age	Frequency	Percentage
16 – 20	11	55.0
21 – 25	7	35.0
>25	2	10.0
Total	20	100.0
Mean $\pm$ SD	20.60 $\pm$ 3.54	
Range (Min – Max)	16 – 27	

Figure 4 shows distribution of patients according to type of occlusion. Maximum 16 (80.0%) cases were Bi-maxillary proclination and 4 (20.0%) cases were Class 2 div 1.

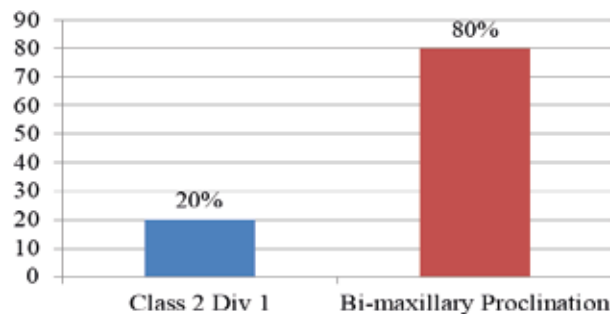


Figure-4: Bar diagram Distribution of patients according to type of occlusion.

Discussion:

A total of twenty patients were selected for canine retraction in the Department of Orthodontics at BSMMU. Among all patients female were predominant with male and female ratio 1:4. According to age distribution, mean age was measured 20.60 ± 3.54 years within the range of 16-27 years. Maximum patients were in age group 16-20 years which accounted 55.0% that followed by 35.0% and 10.0% were in age group 21-25 years and >25 years' age group respectively. Young populations especially female are more inclined to get a better aesthetic configuration of own self. This may be one of the causes of such type of age and sex distribution in our study. Among 17 patients in a study done by Samuels, Rudge, and Mair, there were 12 girls and 5 boys with a mean age of 14.7 years (range = 11.1 to 17.1 years)¹⁴.

In this study, a majority of 80.0% cases were Bi-maxillary proclination and the rest of 20.0% cases were Class 2 div 1. Mean space closer rate was 1.06 ± 0.19 mm/month in male and 1.07 ± 0.10 mm/month in female in Ni-Ti closed coil spring method in mandible. There was no statistical significant difference between these two groups. Unpaired t test was done to measure the level of significance.

In consideration of total time required for closing the space in canine retraction (months) was 6.25 ± 0.91 months in Ni-Ti closed coil spring method in mandible.

A clinical trial done in England on twenty seven patients and found 0.51 mm/week mean rate of tooth movement in nickel titanium closed coil springs group^{13,15}.

In our study mean space closer rate in mandibular canine retraction is 1.07 ± 0.12 mm/month in Ni-Ti closed coil spring method with p value<0.001.

Conclusion:

This study revealed that space closer rate by Ni -Ti closed coil spring in mandibular canine retraction is 1.07 ± 0.12 mm/month.

Conflict of Interest: None.

Acknowledgement:

I would like to express my gratitude to all my teachers and supervisor who guide me and all my patients who in spite of their sorrows and sufferings helped me in getting all my clinical information. Last of all I like to acknowledge the sacrifice and support of my family members.

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Coexistence of Pelviureteric Junction Obstruction and Vesicoureteral Reflux

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Abstract

Introduction: The most common upper urinary tract problem in children is obstruction at the pelviureteric junction. It happens with varying degrees of seriousness. Ultrasonography and DTPA (Diethylene Triamine Penta-acetic Acid) renography are commonly used to detect it. **Objective:** To find out the coexistence of ipsilateral pelviureteric junction obstruction with vesicoureteral reflux. **Materials and Methods:** This prospective study was conducted in the Department of Paediatric Surgery, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh from January 2006 to May 2007 over a period of 1 year 5 months. Thirty-five patients with unilateral hydronephrosis due to PUJ obstruction were included in this study (age: 1 month-15 years). Results were analyzed using Statistical Package for Social Science (SPSS). **Results:** Incidence of Vesicoureteral reflux (VUR) among pelviureteric junction (PUJ) obstruction patients was 8.6%. Of them Grade-I VUR was 33.3% and grade-II VUR was 66.7%. Mean age of the patients was 4.71 ± 1.97 years and with VUR was 9.33 ± 4.93 years. Male to female ratio was 4:1. Only 5.7% mothers had regular antenatal checkup and 28.5% had irregular. Majority of the patients 28 (80%) were presented with painless loin mass, 6 (17.1%) with fever, 8 (22.9%) with loin pain and 8 (22.9%) with failure to thrive. Three patients (8.6%) showed abnormal R/M/E and all of the abnormal R/M/E samples showed positive culture. **Conclusions:** Incidence of Vesicoureteral reflux (VUR) among pelviureteric junction (PUJ) obstruction patients was 8.6%.

Keywords: Vesicoureteral reflux (VUR), Pelviureteric junction (PUJ).

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Introduction:

Obstruction at the pelviureteric junction is the commonest problem of the upper urinary tract in children. It occurs with all degrees of severity^{1,2}. It is usually detected by ultrasonography and DTPA (Diethylene Triamine Penta-acetic Acid) renography³. In most cases, a congenital intrinsic lesion is responsible for the pelviureteric junction obstruction⁴.

The overall incidence of pelviureteric junction (PUJ) obstruction approximates 1 in 1500. The ratio of male to female is 2:1 in the neonatal period, with left-sided lesions occurring in 60 percent⁵.

Vesicoureteral reflux (VUR) is the common abnormal condition of the child's lower urinary tract. VUR is a dynamic event, the retrograde flow of urine from the bladder to the upper urinary tract⁶. This anomaly is considered primary when there is no demonstrable urinary out flow obstruction⁷. Primary reflux results from mal development or delayed maturity of VUJ. PUJ may be distorted by changes in the bladder wall secondary to other pathology, called secondary reflux. In both situations the pathophysiological consequences of VUR are the same in exposing the kidneys to pressure changes and urine, normally confined to the bladder⁸.

In 2001, Yeung and colleagues⁹ have shown that low-grade reflux coexists with pelviureteric junction obstruction. When pelviureteric junction obstruction coexists with vesico ureteral reflux both operation may be necessary¹.

Voiding cystourethrography (VCUG) is the standard diagnostic investigation for VUR⁸. Nuclear cystogram can also be used as diagnostic tool. But conventional VCUG has some advantages over

nuclear cystogram– it can also diagnose other VUR problems and posterior urethral valves; it yields other details of bladder anatomy and function that the nuclear cystogram does not; it stages the severity of reflux more accurately and it detects reflux in a duplex system¹⁰.

A voiding cystourethrogram should always be obtained in case of PUJ obstruction to look for the presence or absence of vesicoureteral reflux. Severe reflux and subsequent ureteral ectasia may kink the PUJ and cause delayed drainage of the pelvis. Milder degrees of reflux may also be seen concomitant with PUJ obstruction¹¹.

Materials and Methods:

This prospective study was carried out in the Department of Paediatric Surgery, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh from January 2006 to May 2007 over a period of 1 year 5 months. Thirty-five patients with unilateral hydronephrosis due to PUJ obstruction were included in this study (age: 1 month-15 years). Patients suffering from parenchymal renal disease, bilateral hydronephrosis and patients with solitary kidney were excluded from this study. All the selected patients underwent voiding cystourethrography on the Radiology and Imaging Department of Bangabandhu Sheikh Mujib Medical University. Results were analyzed using Statistical Package for Social Science (SPSS).

Results:

Nineteen patients were <5 years (54.2%) and 45.7% were ≥ 5 years old. All of the VUR patients were ≥ 5 years old. Males were predominant than females. Male to female ratio was 4:1 (Table-I).

Table-I: Incidence of VUR in PUJ obstruction patients (N=35).

VUR	Frequency (n)	Percentage (%)
Present	3	8.6
Absent	32	91.4
Grade of VUR		
Grade-I	1	33.3
Grade-II	2	66.7

Incidence of Vesicoureteral reflux (VUR) among pelviureteric junction (PUJ) obstruction patients was 8.6%. Of them Grade-I VUR was 33.3% and grade-II VUR was 66.7%.

Table II: Demographic profile of the patient (N=35).

	Total	VUR		p-value
		Present	Absent	
Age				
<5	19 (54.2)	0 (0.0)	19 (59.4)	0.085
≥5	16 (45.7)	3 (100.0)	13 (40.6)	
Mean±SD	4.71 ± 1.97	9.33 ± 4.93	4.28 ± 1.70	<0.001
Min - max	0.08 - 15	6 - 15	0.08 - 9	
Gender				
Male	28 (80.0)	3 (100.0)	25 (78.1)	1.000
Female	7 (20.0)	0 (0.0)	7 (21.9)	

Left sided hydronephrosis was 66.7% and right sided 33.3% among VUR patients (Table-III).

Table -III: Side of hydronephrosis of the patient (N=35).

Side of hydronephrosis	Total	VUR		p-value
		Present	Absent	
Left	25 (71.4)	2 (66.7)	23 (71.9)	1.000
Right	10 (28.6)	1 (33.3)	9 (28.1)	

Ten mothers (28.5%) had history of irregular antenatal, 23 mothers (65.8%) had no antenatal checkup and only two mothers had regular antenatal checkup (5.7%) (Table-IV).

Table -IV: Antenatal checkup of the mother of the patient (N =35).

	Frequency (n)	Percentage (%)
No checkup	23	65.8
Irregular	10	28.5
Regular	2	5.7

Majority of the patients 28 (80%) were presented with painless loin mass, 6 (17.1%) with fever, 8 (22.9%) with loin pain and 8 (22.9%) with failure to thrive (Table-V).

Table -V: Clinical presentation of the patient (N =35).

Clinical presentation	Frequency (n)	Percentage (%)
Painless loin mass	28	80.0
Loin pain	8	22.9
Failure to thrive	8	22.9
Fever	6	17.1

Palpable kidney was the commonest physical finding (80.0%) followed by pallor (17.1%) and only one patient (2.9%) was associated with distal penile hypospadias (Table-VI).

Table-VI: Physical finding of study patients (n=35).

Physical findings	Frequency (n)	Percentage (%)
Palpable kidney	28	80.0
Pallor	6	17.1
Associate anomaly	1	2.9

Three patients (8.6%) showed abnormal R/M/E and all of the abnormal R/M/E samples showed positive culture. Rests of the 32 patients (91.4%) showed normal R/M/E and negative C/S (Table-VII).

Table-VII: Microscopic examination of urine and culture sensitivity (n=35).

	Frequency (n)	Percentage (%)
Urine R/M/E		
Normal	32	91.4
Abnormal	3	8.6
Urine C/S		
Negative	32	91.4
Positive	3	8.6

Discussion:

PUJ obstruction is the commonest cause of hydronephrosis in paediatric. It is usually diagnosed by ultrasonography and renal scan³.

Nineteen study subjects were <5 years (54.2%) and 45.7% were ≥ 5 years old. All of the VUR patients were ≥ 5 years old. This finding is consistent with the findings of others^{12,13}. Males were predominant than females. Male to female ratio was 4:1. In one series male to female ratio was 4.5:1¹².

Majority of the mothers (65.8%) of this study had no antenatal checkup at all, 10 (28.5%) had irregular checkup and only two mothers (5.7%) had regular antenatal checkup.

Majority of the patients of this study (80.0%) presented with a painless loin mass. This finding is not consistent with the findings of western countries where most of the cases were diagnosed by antenatal USG¹⁰. Here patients also had fever (17.1%), loin pain (22.9%) and failure to thrive (22.9%). This observation also matched with that of Rodriguez and his co-workers¹⁴.

In this study, 25 (71.4%) cases were of left sided and 10 (28.6%) cases were of right sided pelviureteric junction obstruction. It may indicate that congenital PUJ obstruction predominantly affects left sided kidney. This finding is consistent with other studies where 2/3rd of cases were left sided^{3,10,14}. In the present study out of 3 patient 2 cases were of left-sided VUR and 1 case were of right sided. It may indicate that VUR with PUJ obstruction predominantly occur left-sided kidney. This finding is consistent with other studies where 2/3rd of cases were left sided¹⁰.

Among them, 3 showed features of UTI (pus cell > 10/HPF in R/M/E of urine) and their culture revealed, growth of E.coli (CFU>1x10⁵). In rest of the 32 cases urinalysis reports were normal. Urine became sterile after using a course of sensitive antibiotic in all the infected case.

Incidence of Vesicoureteral reflux (VUR) among pelviureteric junction (PUJ) obstruction patients was 8.6%. Of them Grade-I VUR was 33.3% and grade-II VUR was 66.7%. This result indicates that PUJ obstruction co-exist with VUR. In one series the co-existence was 14.0%¹⁵ and another series that was 8.5%¹⁶⁻¹⁹.

This study demonstrates that Hydronephrosis due to pelviureteric junction obstruction coexist with VUR so voiding cystourethrography is routinely recommended to detect vesico ureteral reflux in children with uretero pelvic junction obstruction²⁰⁻²².

Conclusion:

From this study, it can be concluded that there is coexistence of pelviureteric junction obstruction with low grade ipsilateral VUR. And a routine voiding cystourethrography can be recommended to detect VUR in children with uretero pelvic junction obstruction.

Conflict of Interest: None.

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A Clinical Study of Visual Outcome after Nd YAG Laser Capsulotomy

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Abstract

Introduction: Posterior capsular opacification is caused by migration and proliferation of cuboidal epithelium from remnant of anterior capsule and equatorial part of the lens capsule. Posterior capsular opacification also called after cataract is a nagging post surgical complication following phacoemulsification or non phaco cataract surgery (small incision cataract surgery or conventional cataract surgery) ECCE with posterior chamber intraocular lens implantation. Posterior capsular opacification is actually misnomer. Though there are many factors suggested to reduced posterior capsular opacification. The incidence of PCO still exists considerably. Aims and Objective are to find out the visual improvement after Nd yag laser posterior capsulotomy. **Materials and Methods:** The prospective study was conducted in the department of ophthalmology of Ad-din Women Medical College Hospital, Dhaka, Bangladesh from June 2014 to June 2018. 175 patients of 189 eyes with significant PCO. Before laser capsulotomy all patients were assess by routine slit lamp examination, IOP measurement and posterior segment examination done for every patient for exclusion of Gross posterior segment pathology. **Results:** The study had female preponderance (58.86%). Most of the patients 165 were 40 to 80 years old (87.31%). The patients had pre laser visual acuity 6/9 to 6/18 (31.75%) 6/24 to <6/60 (68.25%). After laser capsulotomy functional visual acuity upto 6/8 were 169 (89.42%) and 6/24 to <6/60 were 20 (10.58%). The mean pre and post laser capsulotomy visual functional score were 54.45±36.44 and 94.16±50.36 respectively. **Conclusion:** Nd YAG laser capsulotomy is safe, non-invasive and effective procedure.

Keywords: PCO, ND YAG Laser Capsulotomy, Visual Acuity.

Number of Tables: 08; **Number of References:** 21; **Number of Correspondence:** 02.

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Introduction:

Cataract is the most common cause of curable blindness world wide. Prevalence of blindness due to senile cataract is high in rural and urban population¹. PCO is Characterized by Proliferation, Migration and Transformation of the germinative zone of cuboidal epithelial cells of lens which from plaque on the non

epithelial posterior capsule^{2,3}. Posterior capsular opacity (PCO) develops following cataract surgery between 2 months and 5 years after extracapsular cataract extraction with posterior chamber intra ocular lens implant. The prevalence of PCO was reported to be 8.3 -33.7%². It results in decreased vision, glare and other symptoms mimicking that of original cataract. It is treated by a non-invasive procedure; laser capsulotomy e.g Neodymium yttrium aluminium garnet laser (Nd YAG). It causes reduction in visual acuity (VA) and contrast sensitivity by obstructing the view or by scattering the light that is perceived by patients as glare^{4,5}. PCO Causes the deterioration of visual acuity. However, there no absolutely effective methods to prevent it. Nd YAG laser therapy presents the advantage of a non-invasive, effective, relatively safe technique to manage intact posterior capsule that opacify post operatively. Nd YAG laser capsulotomy is magic event. It does not need patient hospitalization. Various published articles on PCO estimate, a postoperative PCO incidence of 11.8% at 1 year, 20.7% at 3 years and 28.5% at 5 years. It is a also major problem in paediatric cataract where incidence approaches 100% between 2 months to 5 years after the initial surgery^{6,7}. The actual gain in visual function and the quality of life following Nd YAG laser posterior capsulotomy in pseudophakic patients with PCO can be assessed in terms of improvement in visual function index^{8,9}.

Materials and Methods:

This study was conducted in the department of ophthalmology of Ad-din Women Medical College Hospital, Dhaka-1217 from June 2014 to June 2018. Total eyes 189 of 175 patients who were

history taking and ocular examination were done to evaluate the severity of PCO. Visual acuity and contrast sensitivity 189 eyes of 175 patients. The patients were included depending upon the inclusion and exclusion criteria. The patients were pseudophakic with posterior chamber intraocular lens (IOL) implantation included and who had PCO associated with ocular diseases and complications like retinal degenerations, glaucoma, complicated and traumatic cataract and patient with significant media opacities eg corneal opacity etc were excluded.

Examination of each patient was done on presentation and best corrected visual acuity was recorded using snellen's chart for distance and near vision chart. Intraocular pressure was measured by Goldman Applanation Tonometer. Slit lamp examination was done to evaluate the anterior chamber and the nature as well as the density of the PCO. Patients who needed were prescribed glasses to give best corrected visual acuity in the better eye and were advised to wear the prescribed glass constantly. After 2 weeks, the patients were asked to attend the OPD when they were questioned about their performances in daily life activities, coarse and fine, as per the VF-14 index quality of life (QOL) questionnaire.

Visual function indexing and scoring were done. The patients were then subjected to Nd:YAG posterior capsulotomy in the affected eye. A minimum period of 4 months interval following cataract surgery was taken for Nd: YAG posterior Capsulotomy. The patients were followed up at 1st week, 3rd week, 3rd month and 6th months after capsulotomy to evaluate visual outcome or presence any complication. During these follow up visits, thorough examination was done with help of slit lamp biomicroscope and direct or indirect ophthalmoscope for anterior and posterior segment.

Results:

Most of the patients 165 (87.31%) were between 40 to 80 years (Table-I). The study had female preponderance 103 (58.86%) than male 72 (41.14%) (Table 3). Most of the patients had pre laser visual acuity 6/9 to 6/18 60 patients (31.75%) and <6/60 to 6/24 patients no 129 (68.25%). After laser capsulotomy Visual acuity 6/6 to 6/18 no of patients 169 (89.42%) and <6/60 to 6/24 No of patients 20 (10.58%). The post laser capsulotomy, patients had improvement of visual acuity which was significant. Two lines improvement of visual acuity in snellen's chart was found in most of the patients after capsulotomy (Table-VI).

There were some apparent difference in the age and gender but those difference were not statistically significant. The amount of gain was rather dependent upon the pre capsulotomy visual function status. Less satisfactory VF score was obtained in some cases where there was evidence of associated ocular diseases in posterior segment like temporal pallor of the disc. Age related macular degeneration,

choroidal sclerosis, healed cystoids macular edema and chorioretinitis. There were very few cases of complications such as lens pitting, raised intraocular pressure and cystoids macular edema noticed following laser capsulotomy (Table-VI).

Table I: Age distribution.

Age	No	%
15 -29 yrs	12	6.35%
30-39	07	3.70%
40-50	35	18.52%
51-60	61	32.28%
61-70	46	24.34%
71-80	23	12.17%
81-90 and above	05	2.65%

Table -II: Side of the eyes.

Side	No of Patients	%
Right eye	112	59.26%
Left eye	77	40.74%
	189	100%

Table-III: Sex distribution.

Sex	No	%
Male	72	41.14%
Female	103	58.86%
Total	175	100%

Table-IV: Time interval between PCO formation and Nd YAG laser capsulotomy.

Time interval	No of eyes	%
6 months	10	5.29%
01 year	78	41.27%
02 years	36	19.05%
03 years	42	22.22%
4 years	23	12.17%
	189	100%

Table-V: Energy level used for capsulotomy:

Energy level (MJ)	No of eyes	%
1-2	62	32%
2.1-2.5	48	25%
2.6-3	31	16%
3.1-3.5	28	14.81%
3.6-4.0	11	5.82%
4.1-4.5	09	4.76%

Table-VI: Complications of post Nd; YAG laser capsulotomy:

Complication	No of patients	Percentage
IOL pitting	12	6.35%
Transient IOP elevation	09	4.76%
Cystoid macular edema	02	1.05%
Uveal reaction	03	1.59%
Total	26	13.75%

Table VII: Comparison of best corrected visual outcome before and after laser capsulotomy:

Visual acuity	Pre capsulotomy	Post capsulotomy	Remark
CF-to less than 6/60	10 (5.29%)	1 (0.53%)	
6/60	36 (19.05%)	2 (1.06%)	
6/36	35 (18.52%)	4 (2.12%)	
6/24	48(25.40%)	13 (7.94%)	
6/18	45(23.81%)	11 (5.82%)	
6/12	12(6.35%)	16 (8.47%)	
6/9	3 (1.59%)	70(37.04%)	
6/6	0 (0)	72(38.10%)	

Table-VIII: Improvement of visual Acuity after Nd yag laser capsulotomy in snellen's chart distance vision:

Improvement snellen's chart	No of patients
1 line	13 (6.88%)
2 lines	48 (25.40)
3 lines	38 (20.11%)
4 lines	33 (17.46)
5 lines	46 (24.34)
6 lines	7 (3.70%)
7 lines	4 (2.11%)
Total	189 (100%)

Discussion

The technique of Nd yag laser capsulotomy has become most popular procedure of posterior capsulotomy and it has been established as a standard treatment for PCO replacing manual surgical capsulotomy^{10,11}. The study done by Hasan et al¹² and Tayyab et al¹³ showed that it had male preponderance but our study had female preponderance. Piyali sarkar et al research also show female preponderance¹⁴ sarkar and Baral Zarnowski.zogorski¹⁵ had included 25 and 25 eyes respectively and visual outcome was 89% and 95% respectively and in our present study it was 89.42% VA 6/18 to 6/6). The assessment of visual function including visual acuity by various sophisticated devices, the ultimate gain by visual function following laser posterior capsulotomy can be judged by assessment of ability in daily life activities of an individual by health related quality of life (QOL) questionnaire method^{16,17}. VF 14 QOL questionnaire was developed and used to assess the visual outcome following cataract surgery at flinders Medical centre, Adelaide, South Australia since 2005 VF14 QOL questionnaire reflects the changes in self reported satisfaction with vision. It was later adopted in the studies relating the assessment of visual function and health related QOL following Nd :YAG laser posterior capsulotomy in pseudophakic patients¹⁸. In the present study the VF 14 QOL questionnaire was used but in a modified way to fit the socio-economic profile of the present set of patients. The question related to outdoor games and driving were excluded from the questionnaire as per suggestion of Friedman et al. in the present study there was a considerable improvement of BCVA(best corrected visual acuity) both for distance and near following posterior capsulotomy. BCVA for distance improved by 1-7 with a mean of 4 snellen's acuity lines. This result is more encouraging than that found in the study done by Terry et al¹⁹ where the improvement was 1-2 snellen's acuity lines. The improvement of near vision was upto N 12 to N6. This finding corroborates with the results in the other previous studies²⁰ as for the visual function²¹ indexing, the observation from the present study was quite satisfactory.

Conclusion:

The posterior capsule opacification which is worldwide common delayed complication after cataract surgery can be managed noninvasively, effectively and safely as an outdoor procedure by Nd ;YAG laser capsulotomy with remarkable improvement in visual outcome.

Conflict of Interest: None.

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Maternal Outcome of Anemic Pregnant Mother at Private Hospitals in Dhaka City

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Abstract

Introduction: The study carried out among the pregnant women who had anemia during pregnancy with the objectives to determine their maternal outcome at private hospitals in Dhaka city. **Materials and Methods:** The total sample size was 110. Data was collected by interviewing the respondents with a structured pre-tested questionnaire. The study was conducted in pregnant women with anemia at or after 28 weeks of gestation and had delivered at Obstetrics Department of Ad-Din Barrister Rafique ul-Huq Hospital, Jurain and Bashundhara Ad-Din Medical College Hospital South Keranigonj. **Results:** Most of the respondents (38.2%) belonged to the age group between 16-20 years. The mean age was 23.74 ± 5.127 years. Almost (49.1%) up to primary & (38.2%) were up to secondary/higher secondary level. Most of the respondents were homemaker (87.3%); Monthly income means was 19340.91 ± 12459.647 . Most (90.9%) of the respondents had received ANC and 79.1% respondent's hemoglobin level was below 10 gm. /dl. Among them 90.9% of the respondent's fetal outcome were healthy & alive baby. More than half (51.8%) of the respondent's baby were ≤ 2.5 kg birth weight. Study also shows that 55.5% respondents had anemia after delivery, 28.2% had sickness and 22.7% were sulfured with complications after delivery. There was a significant relationship with low birth weights (LBW) to less high education. **Conclusion:** All women should be given advice regarding diet in pregnancy with details of foods rich in iron. Dietary changes alone are not sufficient to correct an existing iron deficiency in pregnancy and iron supplements are necessary.

Keywords: Anemic pregnant, Hemoglobin level, Gestational age, maternal outcome.

Number of Tables: 05; **Number of Figures:** 03; **Number of References:** 25; **Number of Correspondences:** 05.

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Introduction:

Anemia is recognized as a major public health problem, affecting over 1.2 billion people in developed and developing countries¹. The prevalence is highest in developing countries. Maternal anemia is a common problem in pregnancy in developing countries like Bangladesh. According to WHO anemia is defined as a Hemoglobin level of <11 gm. /dl. in adult. In many regions, 2 anemia due to iron deficiency has serious health and functional consequences and the most of its nutritional component is controllable. It is estimated that 1200 million people are anemic globally. The consequences of anemia are reduced level of energy and poor pregnancy outcome (miscarriage, still birth, prematurity, low birth, perinatal mortality). Some studies have shown a strong association between low Hb before delivery and adverse outcome².

Worldwide anemia is a major cause of morbidity and mortality, mainly due to malnutrition & infection in the developing countries. Correction of this continues to pose an apparently insurmountable challenge, but for

the economic & social reasons rather than back of medical knowledge³. Total prevalence of anemia in the world is 30% of estimated world population of 5000 (1985) million people. Young children & pregnant women are mostly affected globally. Regions with higher prevalence of anemia are South Asia & Africa⁴.

Clinically, anemia is any hemoglobin (Hb) level <10.5 g/dL regardless of age; however, the World Health Organization (WHO) recommends maintaining Hb levels ≥ 11.0 g/dL during pregnancy. Anemia in pregnancy develops when physiological changes reduce Hb concentrations. These changes are mainly a result of nutritional deficiencies of which iron deficiency is the most common cause. Iron deficiency is the major cause for anemia in pregnant women, accounting for ~75% of all pregnancy related anemia⁵.

Maternal mortality is higher in rural areas and among poorer and less educated communities. Adolescents face a higher risk of complications and death as a result of pregnancy than older women⁶.

The reduction of maternal and child death is a high priority for the international community, especially in view of the increased attention on the Millennium Development Goals 4 and 5. The South East Asia region accounts for almost one-third of global mortality in neonates and children under 5 years of age. Despite of wide disparities in socio-economic and health indicators, many countries in this region are unlikely to reach Millennium Development Goals 4 and 5⁷.

Bangladesh has made commendable progress in achieving MDG 4 and 5. Since 1990, there has been a remarkable reduction in

maternal and child mortality, with an estimated 57% reduction in child mortality and 66% in maternal mortality. Bangladesh is on track for achieving MDG 4 and 5, progress in universal access to reproductive health is not yet at the required pace to achieve the targets set for 2015. In addition, Bangladesh needs to further augment activities to get better newborn health and promote skilled attendance at birth. In South East Asia, child and infant mortality has reduced considerably but the neonatal mortality rate is still high. Newborn care is immense importance for the proper development and healthy life of a baby. A study in Bangladesh revealed an urgent need to educate mothers, and train traditional birth attendants and health workers on clean delivery practices, early neonatal care and prevention of delivery complications⁸.

Globally, the mean blood hemoglobin concentration was 11.1 g/dl. Anemia resulting from iron deficiency adversely affects cognitive and motor development, causes fatigue and low productivity and, when it occurs in pregnancy, may be associated with low birth weight and increased risk of preterm delivery. The mechanisms causal to these effects are unknown, but they may be related to reduce oxygen delivery to the placenta and fetus, increased rates of infection, or adverse effects of iron deficiency on brain development^{8,9,10}. Anemia is one of the most prevalent nutritional deficiency problems affecting pregnant women. The prevalence of anemia in pregnancy differs significantly because of variations in socioeconomic conditions, lifestyles, and health-seeking behaviors across different cultures^{11, 12}.

Study in Turkey reported that approximately 90% of adolescent pregnancies are unplanned, and a great amount unplanned adolescent pregnancies are unintended. Adolescent pregnancy is associated with high risk of serious obstetric complications and poor neonatal outcomes such as abortion, preterm delivery, preeclampsia, significant anemia, and mechanical and operative delivery¹³.

The major complication in young mothers are thought to be high blood pressure, iron deficiency anemia, cephalopelvic disproportion and low birth weight¹⁴.

Adolescent girls are at a risk of having anemia in pregnancy, which is considered to be mainly responsible for the prevailing high maternal mortality and high incidence of low birth weight deliveries in India¹⁵.

Study shows that Anemia was the commonest (50%) form of maternal complication, followed by pregnancy-induced hypertension (26%), postpartum hemorrhage (30%), pre-term labor (18%), prolonged labor (14%), obstructed labor (12%), and failure of or inadequate lactation (10%)¹⁶.

The United States, approximately 52 out of 1,000 adolescent girls gave birth while in the United Kingdom there were about 30 births in 1,000 adolescent girls. It has been reported that 51% of adolescent pregnancies end in live birth. Different reports suggested that adolescent pregnancies are associated with increased incidence of medical and

obstetrical complications including anemia, pregnancy-induced hypertension and prematurity. Whereas the incidence of preterm labor was significantly higher in the adolescent pregnancy group (14.6% vs 8%, respectively; Concerning labor performance in both the groups, the incidence of caesarean section was significantly lower (7.1% vs 16.8%) and the incidence of spontaneous delivery was significantly higher (61.8% vs 52.6%) with a significant increase in the duration of second stage of labor (26 ± 26.5 vs 12.6 ± 17.3) in the adolescent pregnancy. This finding is supported by many authors who have suggested that adolescent pregnancies are associated with increased risk of preterm labor¹⁷.

In developing countries, most anemia are due to nutritional iron deficiency, although some other causes include malaria and parasitic infections. Adolescents are at increased risk of iron deficiency because they are still growing and at the onset of menstruation. The analysis results show that more than fifty percent adolescent suffer pregnancy complications whereas only eight percent female suffer those complications that experience conception at age 20 years and later. The maximum adolescents suffer anemia complication during the time of pregnancy. About 98 percent adolescent suffer delivery complications like eclampsia, lengthy delivery, excess hemorrhage, and delay in delivery of placenta whereas only 16 percent suffer these complications that are pregnant at age 20 years and later¹⁸.

A study in USA reveals girls under 15 have a maternal mortality rate 3 times that of women aged 20-24 years. At the other end of the scale, the risk associated with child bearing begins to rise again after the age of 30 or 35 years¹⁹.

Study on teenage child bearing in the United States showed that the negative consequences of teenage child bearing were severe. Teen mothers are less likely to receive timely prenatal care and they have higher rate for certain risk factors for poor pregnancy outcomes¹⁶.

A north Indian study also shown that the prevalence of anemia is high 69 (46%) among teenage mothers, which occurs due to low intake of dietary iron²⁰.

In Ghana (2017) by Anlaakuu Study found that out of the 316 participants, 129 (40.8%) were found to be anemic (Hb <11.0 g/dl) at the time of their first ANC visit (mean Hb: 11.21 g/dl, range 6.8–15.1 g/dl). Seventy-nine (61.2%) of them had mild anemia (Hb 9.0–10.9 g/dl), 48 (37.2%) had moderate anemia (Hb 7.0–8.9 g/dl) whilst 2 (1.6%) had severe anemia (Hb <7.0 g/dl). During their most recent ANC visit, the prevalence of anemia was found to be similar to that of the first visit with 131 (41.5%) of them being anemic [mean Hb: 11.24 g/dl, range 8.10–14.5 g/dl]. The hemoglobin levels however improved significantly during the most recent visit compared to the first with none of the women being severely anemic (Hb <7.0 g/dl). The prevalence of moderate anemia reduced from 37.2% (CI 28.9–46.2) during the first visit to 19.1% (12.7–26.9)

during the most recent visit, a reduction of 48.7%²¹.

Bangladesh; Institute of Nutrition and FOOD science, University of Dhaka by Jahan K. showed that many gaps in our knowledge about the adverse effects of maternal anemia and iron deficiency on pregnancy outcome. Our study showed significant association between anemia and preterm birth and pre-eclampsia, still larger studies with more cases showing this association with severe maternal anemia carries significant risk of hemorrhage and infection in mother and small for gestational age infants as well as low APGAR score and high prenatal mortality. However, there is substantial evidence that maternal iron deficiency anemia increases the risk of preterm delivery and subsequent low birth weight, certainly, iron supplements improves the iron status of the mother during pregnancy and during the post-partum period, even in women who enter pregnancy with reasonable iron stores²².

The United States. MMWR Morb Mortal Wkly Rep. Study showed that the major concern about the adverse effects of anemia on pregnant women is the belief that the population is at greater risk of perinatal mortality and morbidity. Maternal mortality in selected developing countries ranges from 27 (India) to 194 (Pakistan) deaths per 10,000 live births for example in a large Indonesian study the maternal mortality rate for women with a hemoglobin concentration <10 gm./dl was 70.00/10000 deliveries compared with 19.7/10000 deliveries for non-anemic women²³.

The Indian study effect of maternal iron deficiency anemia on fetal outcome by Russia U study found that the relation between maternal anemia and birth weight has been reviewed more extensively elsewhere in the issue. In severe studies, AV staped association was observed between maternal hemoglobin concentration and birth weight. Low birth weight of anemic women has been reported in several studies²⁴.

Human nutrition and Dietetics by Hallberg L. study found that There is a substantial among of evidence showing that maternal iron deficiency anemia early in pregnancy can result in low birth weight subsequently to preterm delivery for example, Wilson women who were first diagnosed with anemia at 13-24 wk. of gestation had a 1.18-1.75-fold higher risk of preterm birth, low birth weight and perinatal mortality²⁵.

Materials and Methods:

This cross sectional study was carried out at Obstetric Department of Ad-Din Barrister Rafique ul-Huq Hospital, Jurain, Dhaka and Bashundhara Ad-Din Medical College Hospital, South Keranigong, Dhaka. The study population was pregnant women with anemia at or after 28 weeks of gestation who delivered at these two private hospitals in Dhaka city. The sample size was 110. There was purposive selection of sample during study period. Data was collected by face to face interview of the respondents with a structured pretested questionnaire. All the collected data were organized and analyzed with the help of the software SPSS for windows.

Results:

In this study 110 anemic pregnant women were studied in two hospitals and the results shows highest 38.2% of pregnant women have found in the age group 16-20 years and mean ($\pm$ SD) 23.74($\pm$ 5.127). Respectively second and third highest 30% and 20.9% in the age group 21-25 years and 26-30 years. Majority (97.3%) was Muslims. About half (49.1%) of the respondent's educational level was up to primary level, 38.2% of the respondents were up to secondary/higher secondary and 4.5% were up to graduate and above. Most (87.3%) of the respondents were homemaker by occupation and 12.7% respondents in business and in job. The mean ($\pm$ SD) of monthly family income was taka 19340.91 ($\pm$ 12459.647). More than one third (37.3%) of the respondents were from low income family followed by 40.9% by middle income and high income family (21.8%) (Table I).

Table-I: Socio-demographic characteristics of the respondents (n=110).

Variables	Frequency	Percent
Age groups		
16-20 years	42	38.2
21-25 years	33	30.0
26-30 years	23	20.9
31-38 years	12	10.9
Religion		
Muslim	107	97.3
Hindu	3	2.7
Educational level		
Illiterate	8	7.3
Non formal education	1	.9
Primary level	54	49.1
Secondary/higher secondary	42	38.2
Graduate & above	5	4.5
Occupation of respondents		
Homemaker	96	87.3
Business & job	14	12.7
Monthly income (in Tk)		
Low (5000-10000)	41	37.3
Middle (10001-20000)	45	40.9
High (>20000)	24	21.8
Total	110	100.0

The mean age at marriage was 17.79 $\pm$ 3.400. More than half (55.5%) of the respondents got married in the age interval of 16-20 years and about half (47.3%) of the respondents had concept 13- 19 years' age at first time. The mean age at first time of concept 20.12 $\pm$ 3.173 (Table II).

Table-II: Distribution of the respondents by age at marriage & first time concept (n=110).

Variables	Frequency	Percent
Age at marriage		
10- 15 years	28	25.5
16-20 years	61	55.5
21-25 years	17	15.5
26-27 years	4	3.6
Age at first time concept		
13- 19 years	52	47.3
20-24 years	45	40.9
25-29 years	13	11.8
Total	110	100.0

Figure no. 1 shows that more than two third (67.3%) of the respondents had knowledge about anemia but 32.7% of the respondents had no knowledge about this.

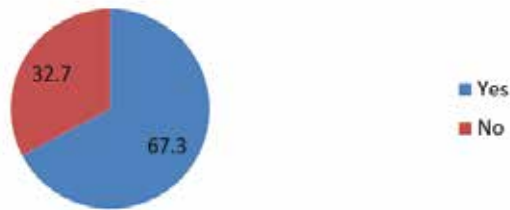


Figure 1: Distribution of the respondents by knowledge anemia (n=110).

Figure 2 shows that most (90.9%) of the respondents had received ANC during pregnancy, only 9.1% respondents had not received ANC during pregnancy

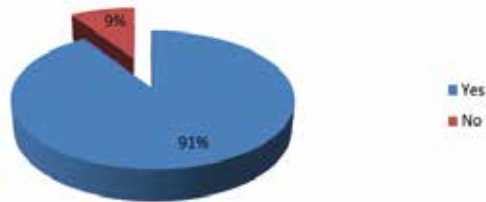


Figure 2: Distribution of the respondents by received ANC during pregnancy (n=110).

Most (78.2%) of the respondents was gestational age of full term, 16.4% were before term and only 5.5% were postdated of present baby. It also shows that past of obstetric history 93.1% had alive baby. A large percentage hemoglobin level of respondents had (66.4%) by 6-7.9 gm./dl (Table III).

Table-III: Distribution of the respondents by gestational age, past obstetric history and Hb level (n=110).

Variables	Frequency	Percent
Gestational age		
Full term	86	78.2
Before term	18	16.4
Postdated	6	5.5
Obstetric history		
Alive baby	110	93.1
Dead after birth	6	5.1
Still birth	1	0.8
Abortion	1	0.8
Hb level		
10-10.9 gm./dl	23	20.9
8-9.9 gm./dl	73	66.4
6-7.9 gm./dl	14	12.7
Total	110	100.0

Among them 90.9% of the respondent's fetal outcome were health & alive baby only 9.1% were alive but sick baby. More than half (51.8%) of the respondent's baby were 2.0-2.5 kg birth weight and 48.2% baby were more than 2.5 kg birth weight (Table IV).

Table- IV: Distribution of the respondents by maternal outcome (n=110).

Variables	Frequency	Percent
Fetal outcome		
Healthy & alive	100	90.9
Alive but sick	10	9.1
Birth weight		
2.0-2.5 kg	57	51.8
> 2.5 kg	53	48.2
Total	110	100.0

Figure 3 shows that maximum (83.6%) of the respondents were Lucs mode of delivery and 16.4% were NVD delivery.

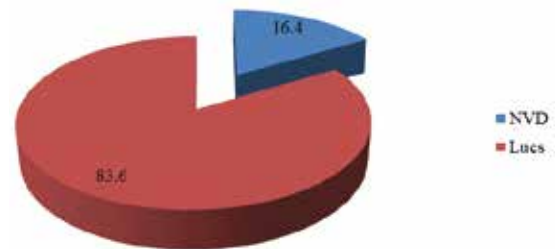


Figure-3: Distribution of the respondents by mode of delivery (n=110).

From Table-V shows that more than half (55.5%) of the respondents had anemic status after delivery, 28.2% were sickness after delivery and 22.7% of the respondents were complication after delivery.

Table- V: Distribution of the respondents by condition of mother after delivery (n=110).

Condition of mother after delivery	Frequency	Percent
Sickness	31	28.2
Anemic	61	55.5
Complication	25	22.7

Discussion:

The present study was conducted with the objective to find out the pregnancy outcome of anemic mother in a private hospital in Dhaka city. The mean age was $\pm$ SD = 23.74 ± 5.127 years, 38.2% of the respondents were in age group between 16-20 years. Most of the respondents (97.3%) were religion Islam whereas only 2.7% were Hindu. About half (49.1%) of the respondent's educational level was up to primary level & 38.2% were up to secondary/higher secondary level Most (87.3%) of the respondents were homemaker by occupation and 12.7% respondents in business and in job. The mean ($\pm$ SD) of monthly family income was taka 19340.91 (± 12459.647). More than one third (37.3%) of the respondents were from low income family followed by 40.9% by middle income and high income family (21.8%). As per Bangladesh Demographics profile 2013, majority (89.5%) of the people in Bangladesh are Muslims which is nearly consistent with this study⁹.

In presents study found that mean age at marriage was 17.79 ± 3.400 . More than half (55.5%) of the respondents got married in the age interval of 16-20 years and about half (47.3%) of the respondents had concept 13-19 years' age at first time. The mean age at first time of concept 20.12 ± 3.173 . (Table II). Bangladesh population and Housing census 2011 found the mean age at marriage was 17.5 years which is similar to this study. Remarkably, their peek age at 1st delivery was around the age of 20 years. The mean age of first child birth was 20.67 years with standard deviation (SD) of ± 2.15 year. Lowest age was 14 years and highest was 30 years. Bangladesh demographic profile

index mundi 2013, found mean age at 1st delivery was 18.1 years which is almost similar to this study^{9, 10}.

Regarding knowledge on anemia found that more than two third (67.3%) of the respondents had knowledge about anemia but 32.7% of the respondents had no knowledge about this. Most (90.9%) of the respondents had received ANC during pregnancy. These findings were consistent with the findings by Acheampong K. et al. (2018) Ghana. International Journal of Health Sciences & Research¹¹.

From study showed that gestational age most (78.2%) of the respondents' gestational age of full term, 16.4% were before term and only 5.5% were postdated of present baby. Distribution of past obstetric history. Among them maximum (93.1%) of the respondents had alive baby. Hemoglobin level shows that 20.9% of the respondents had 10-10.9 gm. /dl of Hb level, 66.4% had 8-9.9 gm. /dl and rest 12.7% of the respondents had 6-7.9 gm. /dl of Hb level. Among them 90.9% of the respondent's fetal outcome were health & alive baby only 9.1% were alive but sick baby and 69.1% of the respondents had no problem of new born but 15.5%, 11.8% had respiratory distress, Jaundice and rest 3.6% had fever. Only 12.7% of the respondents had congenital anomaly of newborn otherwise 87.3% had no congenital anomaly of newborn. More than half (51.8%) of the respondent's baby were 2.0- 2.5 kg birth weight and 48.2% baby were more than 2.5 kg birth weight. These findings were nearly consistent with the findings of Adolescent Pregnancy Complication and Wastage in Bangladesh. Journal of Nepal Pediatric. Society, 2010 by Rahman MM, Hasan M, Akhter S, Sultana P¹².

This study also found that 83.6% of the respondents mode of delivery were Lucs, more than half (55.5%) of the respondents had anemic status after delivery, 28.2% were sickness after delivery and 22.7% of the respondents were complication after delivery (Table-V).

Conclusion:

From this study it is revealed that majority anemic women belonged to teenage age group. This study is a small sample size study; further studies with large sample size well establish the actual factors for anemic pregnant women. Nevertheless, our results provide the basis for taking necessary measures to aware the mass population and thereby prevent and control anemia in pregnancy.

Conflict of Interest: None.

Acknowledgement

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Efficacy and Safety of Gabapentine and Duloxetine in Diabetic Peripheral Neuropathic Pain

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Abstract:

Introduction: Diabetic peripheral neuropathy (DPNP) is not uncommon now a days. As the pathophysiology is not completely understood, symptoms relief is still the main goal of treatment. Gabapentine and Duloxetine are being using around the world for this purpose. But clinical data regarding its efficacy and safety are not sufficiently available. **Materials and Methods:** This prospective comparative clinical study conducted in Sylhet MAG Osmani Medical College and Sylhet Diabetic Hospital, Bangladesh from January 2013 to December 2013. Diagnosis of DPNP confirmed by Michigan Neuropathy Screening Instrument (MNSI) and Douleur Neuropathic en-4 (DN4). Patients were treated by Gabapentine (Group-A) and Duloxetine (Group-B); and followed up at 4th, 8th and 12th week of treatment using 11-point numerical pain rating scale (NRS), clinical global impression of change (CGIC) score and patient's global impression of change (PGIC) score. **Results:** A total of 72 patients with DPNP were recruited. Final comparison was done in 64 patients – 33 in Group-A and 31 in Group-B. Changes in NRS ($p = <0.001$), CGIC ($p = <0.001$) and PGIC ($p = <0.001$) were statistically significant during the course of treatment. However, inter-group variation of NRS, CGIC and PGIC were not statistically significant at the beginning and 4th, 8th and 12th week of treatment. Insignificant adverse effects were noted between the groups in this study except constipation ($p = 0.022$) and nausea-vomiting ($p = 0.01$) of Duloxetine taking group. **Conclusion:** Gabapentine and Duloxetine are equally effective in the treatment of DPNP with good safety profile.

Key words: Gabapentine, Duloxetine, Efficacy, Safety, Neuropathy.

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Introduction:

Diabetes Mellitus (DM) is an Endocrine and metabolic disorder characterized by hyperglycemia. The earlier onset and increasing prevalence of diabetes appear as an important public health issue. Recent estimates suggest that of the total cost of diabetes in 2007 is \$174 billion, one-third (\$58 billion) was for the care of diabetes-related chronic complications and was twice the cost of direct diabetes treatment¹. It was estimated that the developing countries will bear the brunt of diabetes epidemics in the 21st century².

Patients with long-standing diabetes are in risk of developing a variety of complications. About 25% of people with Type 2 Diabetes Mellitus (T2DM) have evidence of diabetes complications at the time of initial diagnosis³. Micro-vascular complications of diabetes include retinal, renal, and possible neuropathic disease. Macro-vascular complications include coronary artery and peripheral vascular disease. Diabetic neuropathy affects both autonomic and peripheral nerves⁴.

Among various complications, diabetic peripheral neuropathic pain (DPNP) is one of the most common causes of neuropathic pain⁵. It affects about 10% to 47% of patients with diabetes in the world and 28.5% patients with diabetes in the U.S^{6,7}. Chronic painful diabetic neuropathy affects 16.2% in UK,⁸ 24.0% in Sri Lanka⁹, 14.0% in Turkey¹⁰, 8% in France¹¹, 14% in Belgium¹², 29% in India¹³, and 39.6% in Pakistan¹⁴ from all the diabetic patients.

The DPNP prevalence in Bangladesh was estimated 19.7%, male

was 20.9% and female was 18.7% of diabetic patients. The prevalence rate increased with increasing age (from 11.1% in the 23-40 years-old group to 32.3% in the 60-80 years-old group) and duration of diabetes (from 14.1% in patients with 5-years to 29.2% in patients with 9-11 years' duration)¹⁵.

The factors leading to the development of diabetic neuropathy are not understood completely, and multiple hypotheses have been postulated. It is generally accepted to be a multifactorial process. Development of symptoms depends on many factors, such as total hyperglycemic exposure and other risk factors such as elevated lipids, blood pressure, smoking, increased height, and high exposure to other potentially neurotoxic agents such as ethanol. Genetic factors may also play a role. Important contributing bio-chemical mechanisms in the development of the more common symmetrical forms of diabetic poly-neuropathy likely include the polyol pathway, advanced glycation end products, and oxidative stress¹⁶.

DPNP ravages patient's health and life through its tingling (paraesthesias) pain, burning pain, shooting pain, lancinating pain, contact pain, pain on walking, sensations of heat or cold in the feet, persistent achy feeling in the feet, and cramp-like sensations in the legs^{17,18}. These symptoms often deprive patients from sleep, conducting normal daily activities, and maintaining full employment, therefore, negatively affect their quality of life¹⁹.

Several pharmacological agents have been used in treatment of DPNP including Tri-cyclic anti-depressants, selective serotonin re-uptake inhibitors, serotonin-norepinephrine re-uptake inhibitors (SNRI), anti-convulsants, opioids, non-steroidal anti-inflammatory drugs, and others^{20,21}. So far, only Duloxetine (SNRI) and Gabapentine (Anti-convulsant) are approved by the Food and Drug Administration in the USA for the management of DPNP. Gabapentine is believed to exert its analgesic effect via reduction of calcium influx through its binding to the α -2-presynaptic voltage gated calcium channels, which in turn reduces the release of excitatory neurotransmitters associated with neuropathic pain mechanism²²; while Duloxetine is a dual re-uptake inhibitor of serotonin and nor-epinephrine neurotransmitters which modulate descending inhibitory pain pathways²³. The efficacy and safety of Gabapentine and Duloxetine in DPNP management have been studied in many clinical trials, and several studies have also assessed the use of Duloxetine or Gabapentine in real-world practice^{24,25}.

Both of these drugs have been shown to be effective in clinical trials in DPNP. A recent meta-analysis, in which Duloxetine was compared to Gabapentine in the treatment of DPNP, concluded that the two drugs exhibit comparable efficacy and tolerability. However, to the best of our knowledge, no comparative studies have been carried out between Gabapentine and Duloxetine in Bangladeshi population on DPNP. Therefore, this study was aimed to evaluate the efficacy and safety of Gabapentine and Duloxetine in patients with DPNP in Bangladesh.

Materials and Methods :

This prospective comparative clinical study was conducted in the Department of Pharmacology and Therapeutics of Sylhet MAG Osmani Medical College and Sylhet Diabetic Hospital, Bangladesh from January 2013 to December 2013. Newly diagnosed patient's neuropathy for more than three months who has history of DM and a pain score of at least 4 on the 10 numeric pain rating scale (NRS) were included in this study. Patient's with other comorbidities (like hepatic, cardiac and renal failure), history of amputation of limb (or part of a limb), pregnancy and lactating mother were excluded.

Data collected at the starting of the study and followed-up at the end of 4th, 8th and 12th week, and recorded. The patient's neuropathy was diagnosed by Michigan Neuropathy Screening Instrument (MNSI)²⁶ and Douleur Neuropathic en 4 (DN4) diagnostic tool²⁷. Those were diagnosed as DPNP and fulfilled the inclusion and exclusion criteria were enrolled in this study, and grouped into Group-A (received 300 mg Gabapentine 12 hourly for 12 weeks) and Group-B (received 30 mg Duloxetine 12 hourly for 12 weeks); no dose adjustment was allowed during the study period. Patients were followed-up by using 11-point numerical pain rating scale (NRS)²⁸, patient's global impression of change (PGIC) score²⁹, and Clinical Global Impression of Change (CGIC) score³⁰, treatment emergent adverse events (TEARs), vital signs, and body weight changes were recorded as efficacy and safety parameters.

Ethical approval taken from the Ethical Committee of Sylhet MAG Osmani Medical College. Furthermore, informed written consent was taken from each of the participants. They were assured to keep their data confidential and they had full right to withdraw themselves from the study at any moment. Data were analyzed using SPSS, 12.0 version. Appropriate statistical methods were used based on the data. A probability value of <0.05 was considered statistically significant.

Results:

There were 72 diabetic patients with DPNP of both sexes recruited in both study groups equally in this study. Eight patients removed themselves and finally 33 patients in Group-A and 31 patients in Group-B left finally for analysis. The groups were statistically similar in terms of their mean age ($p = 0.677$), sex distribution ($p = 0.222$), duration of diabetes ($p = 0.602$), duration of DPNP ($p = 0.301$), mean RBS ($p = 0.109$), HbA1c ($p = 0.54$) and serum creatinine ($p = 0.678$). The MNSI, DN4, NRS and CGIC score were also similar between the study groups; p -values were 0.401, 0.908, 0.613 and 0.758 respectively (Table I).

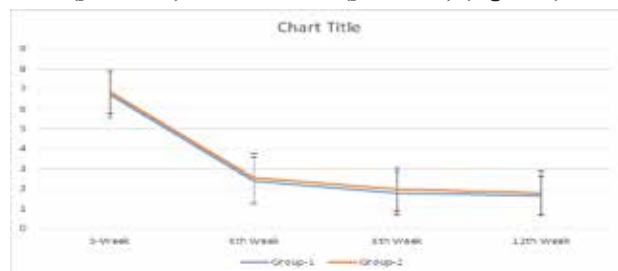
Table-I: Baseline characteristics of the patients.

Parameters	Group-A	Group-B	p-value
Age (years)	52.21±8.08	51.32±8.90	0.677*
Sex			
Male	11 (33.3%)	15 (48.4%)	0.222#
Female	22 (66.7%)	16 (51.6%)	
Duration of diabetes (years)	6.79±3.81	6.31±3.54	0.602*
Duration of DPNP (months)	9.59±8.49	7.60±6.62	0.301*
RBS (m.mol/L)	12.04±3.54	13.54±3.83	0.109*
HbA1c (%)	8.09±1.56	8.32±1.40	0.54*
Serum Creatinine (m.mol/L)	1.02±0.26	1.05±0.20	0.678*
MNSI	5.48±1.39	5.21±1.20	0.401*
DN4	5.45±1.00	5.48±1.02	0.908*
NRS	6.70±1.16	6.84±1.07	0.613*
CGIC	3.61±0.93	3.68±0.91	0.758*

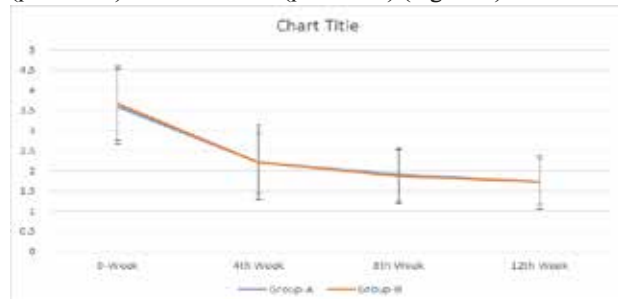
*Unpaired t-test, #Chi-Square test

Change in Numeric pain Rating Scale (NRS) score:

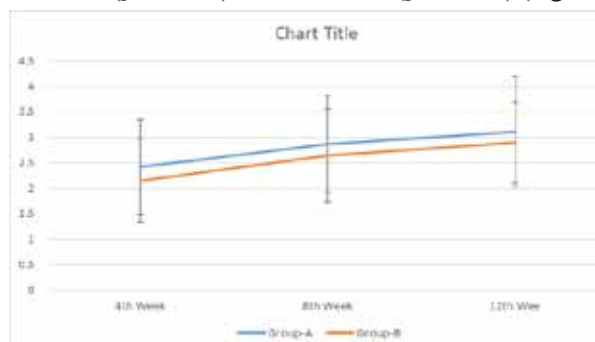
The score was 6.70±1.16 in Group-A and 6.84±1.07 in Group-B at baseline. The scores became 2.39±1.17 and 2.55±1.21 at 4th week, 1.79±1.08 and 1.97±1.08 at 8th week, and 1.6±0.96 and 1.77±1.12 at 12th week in respected study groups. The scores were reduced significantly with the course of treatment within both groups ($p = <0.001$ in both groups), but there was no significant difference observed between the groups at baseline ($p = 0.613$), 4th week ($p = 0.605$), 8th week ($p = 0.508$) and 12th week ($p = 0.598$) (Figure 1).

**Figure-1: Change in the Numeric pain Rating Scale (NRS) score recorded at 0-week, 4th week, 8th week and 12th week of treatment.****Change in Clinical Global Impression of Change (CGIC) severity at different time interval:**

The score was 3.60±0.93 in Group-A and 3.68±0.91 in Group-B at baseline. The scores became 2.21±0.74 and 2.22±0.92 at 4th week, 1.91±0.68 and 1.87±0.67 at 8th week, and 1.73±0.57 and 1.73±0.64 at 12th week in respected study groups. The scores were reduced significantly with the course of treatment within both groups ($p = <0.001$ in both groups), but there was no significant difference observed between the groups at baseline ($p = 0.758$), 4th week ($p = 0.324$), 8th week ($p = 0.822$) and 12th week ($p = 0.908$) (Figure 2).

**Figure-2: Change in Clinical Global Impression of Change (CGIC) severity score recorded before and 4th week, 8th week and 12th week after the treatment.****Change in Patient Global Impression of Change (PGIC) score at different time interval:**

In Group-A, the score was 2.42±0.94 at 4th week, 2.88±0.96 at 8th week, and 3.12±1.08 at 12th week of treatment. On the other hand, the score was 2.16±0.82 at 4th week, 2.65±0.91 at 8th week, and 2.90±0.79 at 12th week in Group-B. The impression was improved significantly with the course of treatment within both groups ($p = <0.001$ in both groups), but there was no significant difference observed between the groups at 4th week ($p = 0.238$), 8th week ($p = 0.323$) and 12th week ($p = 0.364$) (Figure 3).

**Figure-3: Change in Patient Global Impression of Change (PGIC) score recorded at 4th week, 8th week and 12th week of the treatment.**

Adverse effects: Overall distribution of adverse effects appeared in this study was found to be insignificant difference between the groups (Table-II). Observed adverse effects were dizziness, constipation, somnolence, peripheral edema, weight gain, dry mouth, nausea and/or vomiting. However, percentage of constipation ($p = 0.022$) and nausea-vomiting ($p = 0.01$) in Duloxetine group observed significantly higher than the Gabapentine group.

Table-II: Distribution of patients adverse effects recorded at 4th, 8th, and 12th week of treatment.

Adverse effects	Group-A	Group-B	p-value
Dizziness	7 (21.2%)	2 (6.5%)	0.150*
Constipation	0 (0%)	5 (16.1%)	0.022*
Somnolence	4 (12.1%)	2 (6.5%)	0.238*
Peripheral edema	4 (12.1%)	0 (0%)	0.114*
Weight gain	1 (3.0%)	0 (0%)	1.00*
Dry mouth	0 (0%)	2 (6.5%)	0.231*
Nausea-vomiting	0 (0%)	6 (19.4%)	0.01*
Total	13 (39.4%)	11 (35.5%)	0.747#

Discussion:

Neuropathic pain is often associated with diabetic peripheral neuropathy and is defined as pain initiated or caused by a primary lesion or dysfunction in the nervous system³¹. A major goal of pharmacologic treatment on DPNP is to control pain. Simple analgesic may provide partial, short-term relief, but more specifically targeted drugs are normally required for sustained control of pain of neuropathic origin³¹.

Gabapentine was approved in 2004 for the treatment of peripheral neuropathic pain in Europe, and in 2005 for the treatment of neuropathic pain associated with diabetic peripheral neuropathy and post herpetic neuralgia in the

US. Duloxetine is a relatively balanced and potent reuptake inhibitor of serotonin and nor-epinephrine, approved in the Europe and the US for the treatment of DPNP.

This study was conducted to compare the efficacy and tolerability of Duloxetine, which is approved for the treatment of DPNP, with formerly licensed agent Gabapentine. In this study, there was significant reduction in mean Numeric pain Rating Scale (NRS) score and Clinical Global Impression of Change (CGIC) severity score in both Gabapentine and Patient Global Impression of Change (PGIC) score also improved significant in both groups after the treatment. However, there was no significant difference observed between the study groups in NRS score, CGIC severity score and PGIC score at 4th week, 8th week, and 12th week of treatment. The study of Devi et al.³² also reported similar observation at the end of the study. Compared to their result, this study also showed relatively similar reduction in NRS and CGIC in during first follow-up (4th week); but Gabapentine showed more steep and faster reduction than Duloxetine and Gabapentin in their study.

Similar significant improvement in Gabapentine and Duloxetine taking patients with DPN also reported in several studies. Quilicis et al.³¹, Devi et al.³², Goldstein et al.,³³ Baron et al.,³⁴ and Tolle et al.³⁵ reported significant improvement in daily pain score compare to placebo and other comparable drugs. Significant reduction in CGIC score reported by Wernicke et al.,³⁶ Tolle et al.,³⁵ Baron et al.,³⁴ and Gao et al.,³⁷ in comparison with placebo and other comparable drugs. Greater improvement in PGIC score showed by Wernicke et al.,³⁶ and Gao et al.,³⁷ also compared with placebo and other drugs. Tolle et al.³⁵ showed better improvement in Gabapentine taking group compared to placebo ($p = 0.02$). Devi et al.³² also showed significantly higher response by Gabapentine than Duloxetine in PGIC scores, whereas, this study showed similar effect by both drugs. Disparaging report presented by Tanenberg et al.,²⁵ where they showed some changes in daily pain score and CGIC severity score, but they were statistically insignificant.

Adverse effects in this study were mild in intensity and drug discontinuation was not needed. In Gabapentine group, 39.4% patients experienced development of adverse effects, and 35.5% patients were suffered. Tolerability profile in this study was generally consistent with previous studies.^{31,33} Devi et al.³² reported lower rate (9.2%) of development of adverse effect, those were mild, self-limiting and did not require to discontinuation of therapy. Tanenberg et al.²⁵ reported higher adverse effects ($p = 0.04$) in Duloxetine group than Gabapentine group.

Conclusion:

Monotherapy either Gabapentine or Duloxetine produced substantial pain relief, while none of the drug appeared superior at the 12-weeks of treatment in patients with DPNP. Overall, all treatments were well tolerated with minor side effects. In conclusion, Gabapentine and Duloxetine are equally effective in treatment of DPNP with good safety profile.

Conflict of Interest: None.

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Lipid Profile in Relation to Body Mass Index among Medical College Students in Dhaka, Bangladesh.

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Abstract:

Introduction: In Bangladesh, adolescents have unhygienic eating habits; often eating nutritionally unbalanced and junk & fast food diet that is low in dietary fibre and high in cholesterol, simple sugars, fats and additive. These types of dietary habit lead to obesity and dyslipidaemia. Obesity is a worldwide health problem and it is associated with dyslipidaemia and other metabolic syndrome. **Objectives:** To observe the relationship between Body Mass Index (BMI) and lipid profile among medical college students in Bangladesh. **Materials & Methods:** This cross sectional observational study was conducted in Department of Medicine, Sir Salimullah Medical College & Mitford Hospital, Dhaka, among the 100 undergraduate medical students. Detailed history, clinical examination and thorough investigations were done and the findings were recorded on a proforma. Data was processed and analysed with the help of computer program SPSS and Microsoft excel. **Results:** Maximum subjects (57.0%) were in the age group 21-23 years. Mean age was 23.42±4.5 years. The prevalence of the different abnormal lipid profile including hypercholesterolaemia, low level of HDL, high level of LDL and hypertriglyceridaemia were: 22.0%, 31.0%, 30.0% and 28.0% respectively. Hypercholesterolaemia and hypertriglyceridaemia levels were significantly associated with increasing body mass index. **Conclusion:** Overweight and obesity is common among the study subjects and those with higher BMI particularly the older ones tend to have abnormal lipid profile. Therefore adequate dietary control, food habit & life-style modification is needed for prevention of dyslipidemia at early life.

Key words: Dyslipidaemia, Body mass index, Obesity

Number of Tables: 06; **Number of Figure:** 01; **Number of References:** 20; **Number of Correspondences:** 05.

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Introduction:

Obesity is an emerging public health problem throughout the world. In Bangladesh, obesity is emerging as an important health problem particularly in urban areas. The prevalence of obesity is rising to epidemic proportions at an alarming rate in both developed and less developed countries around the world. Recent time shows that overweight and obesity is common among the adolescence and adulthood and those with higher BMI¹. In obese there is a positive correlation between BMI and TC and LDL-C levels. In these children, proatherogenic lipid profiles begin early in life². Obesity is associated with hypertension, osteoarthritis, dyslipidemia, indigestion, respiratory and musculoskeletal disorders. In addition, it can cause psychological effects influencing, the quality of life. Central obesity is related to increase in LDL-C/HDL-C ratio, blood pressure and TG levels. Therefore, assessment of BMI should be incorporated into school health programme and those with overweight/obesity subjected to routine lipogram in order to timeously apply preventive as well as therapeutic measures in order to save lives¹. The associations between overweight and many diseases have been established. Body fat distribution could possibly identify subjects with the highest risk of disturbed lipid profile and hypertension. Disturbed lipid profile has always been associated with cardiovascular diseases. Anthropometric measurements can easily reflect any changes in the lipid concentration in the human body. It was reported that 30% of the population in the United States in 1995 were overweight. Obesity may increase the risk of many diseases such as diabetes, atherosclerosis, hypertension, hyperlipidemia,

gall bladder diseases and cardiovascular diseases³.

Intra-abdominal fat has been identified as being the most clinically relevant type of fat in humans. Increased level of LDL, high TC, and low levels of HDL are frequently observed in combination with hypertriglyceridemia⁴. Body mass index, waist and hip circumferences were found to be useful anthropometric predictors for cardiovascular risk⁵. A comprehensive nutritional evaluation is also important in these cases. It should involve the subject and his family members. Even adolescents in charge of their own meals should have family members involved in parts of the assessment and counseling⁶. The dietary assessment should include: usual food choices at home, sources of saturated fat and cholesterol, and food choices away from home including those from vending machines, snack, and school lunch⁷. Adolescents with high TC or LDL may have a genetic disorder of lipid metabolism such as familial hypercholesterolemia. Those with homozygous chromosomes forms can experience myocardial infarction or other events in early age. Familial hypercholesterolemia is often diagnosed in adolescence and is characterized by high LDL levels that can be refractory to dietary treatment⁸. Other causes of dyslipidemia include: anabolic steroid use, anorexia nervosa, cigarette smoking, diabetes, glycogen storage diseases, hypothyroidism, liver disease and such medications like corticosteroids, anticonvulsants and certain oral contraceptives. Other causes like overweight and obesity, renal disease, therapeutic diet (ketogenic and high carbohydrate diet) and transplant (bone marrow, heart, kidney, or liver) may also cause dyslipidemia⁹. In adults, high LDL is strongly associated with a higher risk of coronary heart disease (CHD) while high HDL is usually protective. Lowering lipids through dietary or pharmacological therapy has been shown to decrease the incidence of atherosclerotic events. The extent of abnormal lipids and other cardiovascular risk factors in adolescence is related to the severity of atherosclerosis¹⁰. Encouraging omega-3-fatty acid consumption, increasing dietary fibre intake, fruits, vegetables, cereals, oats, whole grains and legumes are good sources of soluble fibre. Antioxidant food sources - carotenoids and vitamins C and E - may lower CHD risk. Recommended antioxidant-rich foods such as whole grains, citrus fruits, melons, berries and dark orange/yellow or leafy green vegetables act as supplements^{11,12}. Body mass index (BMI) has become the medical standard used to measure over weight and obesity. This is a measure of how appropriate person's weight is for his/her height BMI was calculated as weight in kilograms divided by height in meters squared as indicated by the World Health Organization^{13,14}. Association of lipid profiles with obesity and BMI has been reported^{13,15}. Therefore, aim of this study is to find out the relationship between Body Mass Index (BMI) and Lipid profile among undergraduate students.

Materials and Methods:

This descriptive, cross sectional study was conducted in Department of Medicine, Sir Salimullah Medical College

& Mitford hospital, Dhaka, from 1st July 2018 to 31st December 2018. Total 100 undergraduate medical students were selected according to purposive sampling technique. Subjects with hypothyroidism, obstructive jaundice, on corticosteroid therapy, chronic renal disease, nephritic syndrome, diabetes Mellitus and H/O taking excess alcohol were excluded from study. Detailed history, physical examination and essential investigations like CBC, RBS, serum creatinine and serum lipid profile were done. Subjects are briefed about the objectives of the study, risk and benefits, freedom for participating in the study and confidentiality. Informed consent was obtained accordingly.

Anthropometric: Body mass index (BMI) is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m^2), or ($\text{BMI} = \text{kg/m}^2$). Height was measured using the height meter and Weight with standardized scale. For Asian population obesity define as BMI between >25.0, overweight is 23.1–25.0 and normal weight is 18.5–23.0.

Lipid profile: The lipid profile of the study sample was analysed according to the according to Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) classification for identification of dyslipidaemia. Lipid profiles (Total cholesterol, low density lipoprotein, high density lipoprotein, and triglycerides) were measured by direct methods with an automated biochemical analyzer using commercially available diagnostic kit.

Lipids	Value (mg/dl)	Comments
Total Cholesterol	<200	Desirable
	200-239	Borderline high
	≥240	High
HDL Cholesterol	<40	Low
	≥60	High
LDL Cholesterol	<100	Optimal
	100-129	Near optimal
	130-159	Borderline high
	160-189	High
	≥190	Very high
Triglyceride	150-200	Borderline
	201-499	High
	≥500	Very high

Dyslipidaemia: The result were considered as dyslipidaemia when lipid profile shows a total cholesterol level of ≥ 240mg/dl; HDL-C level is <40mg/dl in male and <50mg/dl in female; LDL level is ≥100mg/dl; triglyceride level is ≥ 200mg/dl. All the information were recorded in a structured questionnaire. Data was checked and rechecked for omissions, inconsistencies and improbabilities. Data analysis was performed by Statistical Package for Social Science (SPSS), version-22. Data was edited, coded and entered in to the computer. Statistical analyses were done and level of significance was measured by using appropriate

hypothetical testing. Level of significance (p value) is set at 0.05 and confidence interval at 95%. Results were presented as text, tables and diagram.

Result & Observation:

Total of 100 patients fulfilling inclusion/exclusion criteria were studied. Results and observations are given below: Overall demographic features of 100 subjects are shown in Table I.

Table-I: Demographic characteristics of the patients (n=100).

Age (years)	Frequency		Total
	Male (n= 83)	Female (n= 17)	
<20	9 (10.84%)	0	9
21-23	48 (57.83%)	9 (52.94%)	57
24-26	19 (22.89%)	7 (41.17%)	26
>26	7 (8.43%)	1 (5.88%)	8
Mean $\pm$ SD	23.42 $\pm$ 4.5		

In the study, maximum subjects (57.0%) were in the age group 21-23 years. Mean age of the participant was 23.42 $\pm$ 4.5 years. Out of 100 cases (83%) cases were male and (17%) were female. Male and female ratio was 4.88:1.

Body mass index demonstrated in Table II. In this study majority of subjects (e.g., 39%) had BMI 23.1–25.0 (or overweight). Normal weight or BMI 18.5–23.0 kg/m² were in 28.0% subjects and obese were 33 subjects.

Table- II: Evaluation of body mass index (n=100).

BMI (kg/m ²)	Frequency	Percentage (%)
18.5–23.0	28	28
23.1–25.0	39	39
>25.0	33	33

Table III shows, there were 22 patients with high total cholesterol level (> 240 mg/dl), 46 patients with total cholesterol less than 200 mg/dl and 32 patients with borderline cholesterol level between 200-239 mg/dl. The highest level of cholesterol was dominant in obese cases. The mean value of total cholesterol level was 242.8 $\pm$ 56.1 mg/dl. The result was significant (p=0.032).

Table-III: Association of BMI with serum total cholesterol level (n=100).

Cholesterol level	Distribution of cases according to BMI ((kg/m ²))		
	Normal weight	Over weight	Obese
< 200 mg/dl (desired)	20	25	1
201-239 mg/dl (borderline)	8	11	13
> 240 mg/dl (high)	0	3	19
Mean $\pm$ SD (mg/dl)	156.2 $\pm$ 34.8	192.7 $\pm$ 57.2	242.8 $\pm$ 56.1

The table IV shows the HDL cholesterol limit. The mean HDL cholesterol level was 57.1 $\pm$ 7.2 mg/dl in normal subjects, 48.9 $\pm$ 5.8 mg/dl in overweight and 46.1 $\pm$ 5.2 mg/dl in obese. The difference was statistically non-significant.

Table-IV: Association of BMI with HDL cholesterol (n=100).

HDL cholesterol	Distribution of cases according to BMI ((kg/m ²))		
	Normal weight	Over weight	Obese
< 40 mg/dl (low)	5	7	19
41-59 mg/dl (borderline)	13	21	10
> 60 mg/dl (high)	10	11	4
Mean $\pm$ SD (mg/dl)	57.1 $\pm$ 7.2	48.9 $\pm$ 5.8	46.1 $\pm$ 5.2

In this study there were 2 patients with LDL cholesterol level more than 190 mg/dl (very high level), 5 patients with LDL cholesterol level between 160-189 mg/dl (high level), 23 patients with LDL cholesterol level between 130-159 mg/dl, 39 patients with LDL cholesterol level between 100-129 mg/dl, and 31 patients with LDL cholesterol level less than 100 mg/dl (optimal level). The mean LDL cholesterol level was 89.4 $\pm$ 15.8, in normal subject, 104.6 $\pm$ 20.1 in overweight and 105.9 $\pm$ 19.9 in obese. The result was statistically non-significant (Table V).

Table-V: Association of BMI with serum LDL cholesterol (n=100).

LDL cholesterol level	Distribution of cases according to BMI ((kg/m ²))		
	Normal weight	Over weight	Obese
< 100 mg/dl (optimal)	18	7	6
101-129 mg/dl (beyond optimal)	3	17	19
130-159 mg/dl (nearly high)	4	12	7
160-189 mg/dl (high)	2	3	0
> 190 mg/dl (very high)	1	0	1
Mean $\pm$ SD (mg/dl)	89.4 $\pm$ 15.8	104.6 $\pm$ 20.1	105.9 $\pm$ 19.9

Table-VI: Association of BMI with serum triglyceride (TG) level (n=100)

TG level	Distribution of cases according to BMI ((kg/m ²))		
	Normal weight	Over weight	Obese
< 150 mg/dl	24	22	9
151-199 mg/dl (borderline)	3	8	6
200-499 mg/dl (high)	1	5	16
> 500 mg/dl (very high)	0	4	2
Mean $\pm$ SD (mg/dl)	96.7 $\pm$ 14.8	112.7 $\pm$ 17.2	187.5 $\pm$ 18.1

Table VI shows majority of cases of normal weight & overweight participant (e.g., 46.0%) have normal range of triglyceride. But in obese cases, 16 participants have high level of TG. The high level of triglyceride was dominant in obese respondents. The mean triglycerides level was 96.7 $\pm$ 14.8 in normal subject, 112.7 $\pm$ 17.2 in overweight and 187.5 $\pm$ 18.1 in obese. The result was statistically significant (p=0.016).

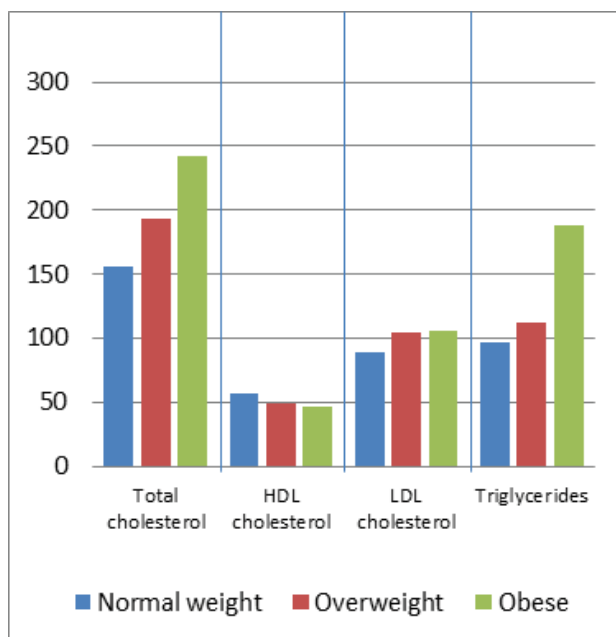


Figure- 1: Summary of dyslipidemia in different group of subjects (n=100).

In this study significant association was found in total cholesterol level & triglyceride level with obesity. HDL cholesterol and LDL cholesterol was non-significant. Among the total 28 cases of normal weight subject, no cases detected cholesterol abnormality, 3(10.71%) were high LDL, 15(53.57%) were low HDL and 1(3.57%) were high TG level. (Blue column) Among the 39 cases of overweight subject, 3(7.69%) found high cholesterol, 17(43.58%) were high LDL, 7(17.94%) recorded low HDL and 9(23.07%) cases were raised TG level. (Red column) Among the total 33 cases of obese cases, 19(57.57%) were high serum cholesterol, 1(3.03%) detected as high LDL, 19(57.57%) low HDL and 18(54.54%) of cases found high TG (Olive green column).

Discussion:

There has been rising burden of childhood & adolescent obesity in most developing countries despite high prevalence of under nutrition. Obesity is associated with abnormal lipid levels that could result in a variety of metabolic and cardiovascular complications. Therefore present study was conducted to determine the association of body mass index (BMI) and lipid profile in undergraduate medical student. In this study, maximum subjects (57.0%) were in the age group 21-23 years. Mean age of the participant was 23.42 ± 4.5 years. Out of 100 cases (83%) cases were male and (17%) were female. On evaluation of BMI, 33% and 39.0% were obese and overweight respectively. The prevalence of the different abnormal lipid profile including hypercholesterolaemia, low level of high density lipoprotein cholesterol (HDL-C), high level of low density lipoprotein cholesterol (LDL-C) and hypertriglyceridaemia were: 22.0%, 31.0%, 30.0% and 28.0% respectively. Findings consistent with result of previous study. Eke et al reported that prevalence of the different abnormal lipid profile

including hypertriglyceridaemia, low level of high density lipoprotein cholesterol (HDL-C), hypercholesterolaemia, and high level of low density lipoprotein cholesterol (LDL-C) were: 13.4%, 9.4%, 6.3% and 5.4% respectively. Hypercholesterolaemia, hypertriglyceridaemia and increased LDL-C levels were significantly associated with increasing body mass index in the study subjects¹. Rising prevalence of obesity and overweight has been reported globally, and obesity is now a leading nutritional disorder requiring urgent attention. Obesity earlier considered a problem of high income countries is now on the rise in most low and middle income countries particularly in urban settings¹. In this study maximum participant were urban population and middle to high class of economic background. The current study has demonstrated that there is a positive correlation between high body mass index (as evident in overweight and obesity) with abnormal lipid profile including hypercholesterolaemia, hypertriglyceridaemia and a high LDL – C among subjects. In this study significant difference in serum total cholesterol & triglycerides was observed with high BMI, but LDL-C and HDL-C was non-significant. Findings of our study are consistent with the previous studies^{1,13}. Begum et al noted that no significant difference in serum total cholesterol ($P=0.37$), LDL-C ($P=0.53$) triglycerides ($P=0.06$) and HDL-C, ($P=0.54$) in three BMI groups¹³. Eke et al reported that prevalence of the different abnormal lipid levels including hypertriglyceridaemia 13.4% (47), low HDL-C 9.4% (23), hypercholesterolaemia 6.3% (22), and increased LDL-C 5.4% (19) respectively. Similarly, subjects that were overweight and obese had high mean values for TC, and triglycerides ($p = 0.000$) respectively and lower mean values for HDL – C ($p = 0.351$) compared to normal and underweight subjects¹. Being overweight or obese can lead to adverse metabolic effects on, cholesterol and triglycerides. Free fatty acids (FFA) are released in abundance from adipose tissue mass. As a consequence, FFA increases the liver production of TG and secretion of VLDL. Hypertriglyceridaemia and VLDL reduce HDL cholesterol¹⁶. Circulating FFA, may contribute to the induction of hypertension¹⁶. Obesity in older children is a known predictor of adult obesity and longitudinal studies in adult populations point to a strong association with cardiovascular disease risk¹⁷. The burden of these likely cardiovascular diseases and insulin resistance syndrome including type 2 diabetes mellitus (DM) have been reported to have poor outcomes in developing countries of sub-Saharan Africa owing to limited economic resources, high prevalence of infectious diseases as well as poor infrastructural facilities to cope with the complications¹⁸. These findings can be explained by the results of certain studies that showed that hyperinsulinemia and insulin resistance are strongly correlated with obesity. It has been estimated that risk of myocardial infarction is 35% to 55% less in adults and normal weight as compared to obese adults¹⁹. However, the influence of obesity on cardiovascular risk begins before adulthood and overweight during adolescence is associated with an increased risk of coronary heart disease

in male and female subjects²⁰. As >50% students of our total study population are overweight & obese, so number of at-risk individuals is much higher. Therefore, strategies designed to limit cardiovascular risk should address weight reduction during childhood and adolescence.

Conclusion:

In this study overweight and obesity is common among the undergraduate medical student. Subjects with high BMI tend to have abnormal lipid profile. It was evident that high percentage prevalence of overweight, obesity is the major driving forces in the development of diabetes mellitus, coronary heart disease and metabolic syndrome. We concluded from this study that obesity in significant number of young medical student population. This prevalence may be due to lack of awareness, sedentary lifestyle and unhealthy diet, so health education and more preventive measures should decrease the prevalence of obesity and cardiac risks in our adolescent population by modifying their lifestyle. From our study we have drawn the following suggestions, to decrease the obesity, initially identifying students who are gaining weight, overweight or obese. First step in preventing and treating overweight by interventions, "We recommend to governments to create environments that allow for lifestyle changes. This will require a coordinated approach across all sectors including health, education, sports and agriculture, but it is the only way we can curb the burden of type 2 diabetes and cardiovascular disease."

Conflict of Interest: None.

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Colonoscopic Yield in Patients with Lower Gastrointestinal Bleeding – A Study of 309 Cases

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Abstract:

Introduction: This retrospective study was done to see colonoscopic yields in patients presenting with lower gastrointestinal bleeding. **Materials & Methods:** Reports of patients undergoing colonoscopy due to bleeding per rectum were retrieved from endoscopy records. Patients' particulars and colonoscopic findings were recorded in a data sheet. Analysis was done using SPSS 20 version. **Results:** A total of 309 patients (male 211 (68.3%) and female 98 (31.7) with mean age 40.3 years %) were included in this study. According to colonoscopic yield, causes of LGIB were haemorrhoids 137 (44.33%), rectal and colonic growth 58 (18.77%), rectal and colonic polyps 54 (17.47%), anal fissure 38 (12.29%), proctitis 18 (5.82%), colitis 18 (5.82%), ileal ulcer and ileitis 34 (11.0%). Colorectal growth was more common among patients age 26 to 60 years. Among male rectal growth was slightly higher than female. **Conclusion:** Lower gastrointestinal bleeding is more common among males. Commonest cause of LGIB are internal haemorrhoids, rectal growth, rectal and colonic polyps and anal fissure. Colorectal neoplasm, proctitis, colitis and ileal inflammation and ulcers constitute small part.

Key words: Colonoscopy, Lower GI bleeding.

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Introduction:

Lower gastrointestinal bleeding (LGIB) is defined as bleeding beyond the ligament of Treitz¹. It may range from occult intestinal bleeding to life threatening overt fresh bleeding – haematochezia. Annual hospitalization rate due to LGIB ranges from 20-30 per 100,000 persons². Incidence of lower gastrointestinal bleeding increases with age i.e., hospitalization rate with men predominance³. Patients with LGIB rarely experience shock and have higher haemoglobin levels⁴. Overall mortality from LGIB is about 2-4%⁵. There is a regional difference in aetiology of LGIB. Diverticulosis coli is common in western Europe and the United States⁵. In western countries, diverticular bleeding, angiodysplasia, haemorrhoids and polyps constitute 17-56%, 3-30%, 3-28% and 2-30% respectively⁶. Colitis (i.e., ischaemic, infectious, inflammatory bowel disease) radiation proctitis, neoplasia and post polypectomy haemorrhages, haemorrhages from upper gastrointestinal sites, Crohn's ileitis, Meckel's diverticulitis and tumor causes 9-21%, 11-14%, 4-10%, 0-11% and 2-9% of LGIB⁷⁻⁹. Published report of aetiology of LGIB in our country is not available. With this background this retrospective study was carried out retrieving data from endoscopy records of North East Medical College, Sylhet from January 2016 to December 2018.

Material and Methods:

This study was retrospective study. Data of consecutive patients undergoing colonoscopic examination presenting with LGIB were retrieved from the registrar of endoscopy of North East Medical College, Sylhet from January 2016 to December 2018. Their demographic information and colonoscopic findings were recorded on a predesigned data sheet. Statistical analysis was done using SPSS version 20. Percentage, mean and SD were calculated.

Results:

A total of 309 patients (male 211 (68.3%) and female 98 (31.7%) were included in this study (Table I). Age of them varied from five years to 90 years (mean 40.3 years with SD 14.17) in this series 54(17.5%), 120 (38.8%), 104 (34.0%) and 30 (9.7%) were within up to 25 years, from 26-40 years, 41-60 years and above 60 years age group.

Table-I: Showing demographic characteristic.

Clinical characteristic	Number	Percentage
Total	309	
Male	211	68.3
Female	98	31.7
Age up to 25 years	54	17.5
Age 26-40 years	120	38.8
Age 41-60 years	105	34.0
Age >60 years	30	9.7

Causes of LGIB were haemorrhoids 137 (44.33), rectal and colonic growth growth 58 (18.77) rectal and colonic polyps 54 (17.47), anal fissure 38 (12.29), proctitis 18 (5.82), colitis 18(5.82), ileal ulcer and ileitis 34 (11.00) and colonic growth 4(1.29) (Table II).

Table-II: Showing colonoscopic diagnosis.

Aetiology (no)	Age up to 25 (%)	26-40 y (%)	41-60 y (%)	>60 y (%)	Male (%)	Female (%)
Fissure 38	7 (18.42)	18 (47.36)	9 (23.68)	4 (10.52)	24 (63.15)	14 (36.84)
Haemorrhoids 137	18 (13.14)	49 (35.76)	54 (49.41)	6 (4.37)	98 (71.53)	39 (28.46)
Rectal ulcer 3	2 (66.66)	1 (33.33)	0	0	2 (66.66)	1 (33.33)
Rectal polyp 33	4 (12.12)	16 (48.48)	11 (33.33)	2 (6.06)	25 (75.75)	8 (24.24)
Rectal growth 53	5 (9.43)	19 (38.849)	19 (38.849)	10 (18.867)	28 (52.83)	25 (47.17)
Proctitis (nonspecific) 3	2 (66.66)	0	1 (33.33)	0	2 (66.66)	1 (33.33)
Radiation proctitis 2		1 (50.00)	1 (50.00)	0	0	2 (100)
Ulcerative proctitis 13	4 (30.76)	5 (38.46)	4 (30.76)	0	10 (76.92)	3 (23.07)
Colitis (distal), 4	1 (25.0)	1 (25.0)	0	2 (50.0)	3 (75.0)	1 (25.0)
pancolitis 4	1 (25.0)	2 (50.0)	1 (25.0)	0	2 (50.0)	2 (50.0)
Nonspecific colitis 14	3 (21.42)	3 (21.42)	7 (50.0)	1 (7.14)	11 (78.57)	3 (21.42)
Crohn's 4	1 (25.0)	1 (25.0)	2 (50.0)	0	3 (75.0)	1 (25.0)
Nonspecific ileal ulcer 17	4 (23.52)	6 (35.29)	7 (41.17)	0	14 (82.35)	3 (17.65)
Tubercular ileal ulcer 3	2 (66.66)	1 (33.33)	0	0	3 (100.0)	0
Caecal ulcers 2	1 (50.0)	0	1 (50.0)	0	1 (50.0)	1 (50.0)
Colonic growth 5	0	3 (60.0)	1 (20.0)	1 (20.0)	2 (40.0)	3 (60.0)
Colonic polyp 21	2 (9.52)	6 (28.57)	12 (57.14)	1 (4.76)	18 (85.71)	3 (14.28)
diverticulum 4	1 (25.0)	0	2 (50.0)	1 (25.0)	3 (75.0)	1 (25.0)
Vascular ectasia 2	0	0	1 (50.0)	1 (50.0)	2 (100.0)	0
normal 17	4 (23.52)	2 (11.76)	9 (52.94)	1 (5.88)	11 (64.7)	5 (29.41)

Haemorrhoids was the predominant cause in all age groups and male. Rectal growth was more common among patients age 26 to 60 years. Among male rectal growth was slightly higher than that of female.

Discussion:

Causes of LGIB are multiple. And severity of LGIB also varies. Most of the LGIB cases have favourable outcome. In our study incidence of LGIB is higher (about 54%) among younger population (age up to 40 years)¹⁰. It is consistent with Indian report¹⁰. But in western countries incidence increases with age reaching hospitalization 200 per 100,000 in the ninth decade². Again mean age of

patients with lower GI bleeding in our series is (40.3 years). Mean age of patients with LGI from Pakistan¹¹, Nepal¹² and India^{10,13,14} vary from 35 to 48 years. But in west it is higher varies from 63 to 67 years¹⁵. In our series males are more affected than females. Reports from Pakistan¹¹, Nepal¹², India^{10,13,14} and China¹⁶ also showed male predominance.

In our region aetiology of LGIB differs from west. Haemorrhoids, inflammatory bowel disease are common causes and usually present at early age.

In our study commonest cause of LGIB are haemorrhoids which is consistent with report from Pakistan¹¹, , Nepal¹² and India^{13,14}. But in western countries diverticular disease, vascular ectasia are the commonest causes². This difference may be due to differences in food habit, ie, high fibre diet taken in our country.

Carcinoma rectum is second commonest cause of LGIB in our series. In west colorectal carcinoma was predominant cause in early 20th century¹⁷ when diverticular disease was rare which is the leading cause of LGIB at present. Trend of LGIB etiology is changing. Advancing age, regular CRC screening may influence this change of etiology in the west². Dietary habit, use of NSAID, sedentary life style and obesity, diseases like hypertension, ischaemic heart disease, chronic renal failure, dyslipidaemia are probably associated with this change in western countries.

Radiation proctitis is very low in our series which indicates low prevalence or lower rate of patient getting treatment for carcinoma cervix. But prevalence of radiation proctitis is higher in India¹⁰.

Tuberculosis is low in our series. But our country is endemic for tuberculosis¹⁸. Ours is the report from only one centre of Sylhet a city in the north east part of Bangladesh. Again it may not cover all population in the region. Indian reports also shows higher incidence of tuberculosis as etiology of LGIB^{10,19}.

Etiology of LGIB also varies with age of patients¹⁶. In our series, anal fissure, IBD (ulcerative colitis) constitute majority of LGIB among patients age up to 40 years. Colorectal carcinoma is (slightly) higher among patients of age group 41 to 60 years. It is consistent with reports from India^{10,19} and Jordan²⁰.

Conclusion:

Lower gastrointestinal bleeding is more common among males. Commonest cause of LGIB are internal haemorrhoids, rectal growth, rectal and colonic polyps and anal fissure. Colorectal neoplasm, proctitis, colitis and ileal inflammation and ulcers constitute small part. Prospective multi centre study with large sample size and full work up is recommended in future.

Conflict of Interest: None.

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Echocardiographic Right Heart Study in Patients with Chronic Obstructive Pulmonary Disease

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Abstract:

Introduction: Chronic obstructive pulmonary disease (COPD) has considerable effects on cardiac functions, including those of the right ventricle, left ventricle, and pulmonary blood vessels. Most of the increased mortality associated with COPD is due to cardiac involvement. Echocardiography provides a rapid, noninvasive, portable, and accurate method to evaluate the cardiac changes. **Aims:** We aimed to prospectively study the patients with diagnosed COPD with echocardiogram for evaluating the right heart. **Materials & Methods:** Our study was an observational, cross sectional study was done on 50 patients with COPD who were admitted at Department of Cardiology, CMCH and underwent echocardiographic evaluation from November 2017 – October 2018. All echocardiographic parameters focused on right heart and its function were assessed. **Results:** Out of total 50 COPD patients studied, majority of them were male (46 patients, 92%). The mean age group of the studied patients was 58.4 ± 7.7 years. Pulmonary hypertension defined as $sPAP > 30$ mmHg was evident in all of the patients; with 30 patients (60%), 14 (28 %) and 6 (12 %) patients having severe, moderate and mild pulmonary hypertension respectively. RV dysfunction was evident with reduced average TAPSE values (1.59 ± 0.38 cm) and elevated RIMP values (0.58 ± 0.16). **Conclusion:** Majority of COPD patients had evidence of pulmonary hypertension. Echocardiogram can be a helpful tool to assess early changes on the right heart size and function in patients with COPD and also monitor these patients for rapid progression of the illness.

Key words: COPD- Chronic obstructive pulmonary disease, PH- Pulmonary Hypertension, RV dysfunction, CMCH- Chittagong Medical College Hospital.

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Introduction:

Chronic obstructive pulmonary disease (COPD), defined by GOLD as a preventable and treatable disease with some significant extra-pulmonary effects, is a very common clinical entity in clinical practice¹. COPD is currently the 4th leading cause of death in the world and a burning problem among the Bangladeshi population. Globally, COPD has emerged as the major cause of morbidity and mortality and is expected to become the 3rd most leading cause of death². Cardiac manifestations are the most common extra pulmonary effects in COPD patients³. COPD affects pulmonary blood vessels, right ventricle, as well as left ventricle leading to development of pulmonary hypertension, cor-pulmonale, right ventricular dysfunction, and left ventricular dysfunction⁴. Right ventricle (RV) dysfunction is common in patients with COPD particularly in those with low oxygen saturation. Pulmonary hypertension (PH) affects the right ventricle function leading to cor-pulmonale and once developed these patients have poor prognosis. So, the early recognition of RV dysfunction and pulmonary hypertension may help in treatment and prolonging the survival of the patients with cor-pulmonale. Echocardiography provides a rapid, noninvasive method to evaluate the right ventricle chamber size and function⁵. This study was done to identify the prevalence and degree of pulmonary hypertension by echocardiography in COPD patients. COPD affects pulmonary blood vessels, right ventricle, as well as left ventricle leading to development of pulmonary hypertension, cor-pulmonale, right ventricular dysfunction, and left ventricular dysfunction too. Echocardiography provides a rapid, noninvasive

portable and accurate method to evaluate the right ventricle function, right ventricular filling pressure, tricuspid regurgitation, left ventricular function and valvular function⁵. Many studies have confirmed that echocardiographically derived estimates of pulmonary arterial pressure co-relate closely with pressures measured by right heart catheter ($r > 0.7$)^{6,7}. Hence the present study was undertaken with the following aims to assess the cardiac changes secondary to COPD by echocardiography.

Materials and Methods:

The study was an observational cross sectional study. The study population consisted of patients with a diagnosis of Chronic obstructive pulmonary diseases (COPD), who were admitted to Department of Cardiology of (CMCH) between November 2017 and October 2018 and who subsequently, underwent Echocardiography. The inclusion and exclusion criteria were as follows:

Inclusion criteria:

1. All COPD patients attending the echocardiography room during the study period.

Exclusion criteria:

1. Patients who cannot lie for long enough to complete the study
2. H/O of diagnosed chronic lung disease other than COPD like-
 - a) Interstitial lung disease,
 - b) Old pulmonary TB with sequelae.
3. Any systemic disease that can cause pulmonary hypertension,

Fifty (50) patients of COPD confirmed by history, clinical examination, radiology of chest, and pulmonary function test were selected from Department of Cardiology of CMCH, Chattogram.

All selected patients were subjected to routine investigations, including complete blood count, lipid profile, blood sugar, blood urea, serum creatinine, ECG, chest X-ray, Spirometry and Urine R/E.

All patients were subjected to resting two-dimension transthoracic & Doppler echocardiography in the Echo. Room and associated by expert cardiologists. The machine used was VIVID 6 model of GE health care system with a multifrequency probe with a range of 2–4.3 MHz. Both 2D and M-Mode studies were done. Echocardiography was reviewed to assess the pericardium, valvular anatomy and function, left and right side chamber size and cardiac function. Tricuspid regurgitant flow was identified by color flow Doppler technique and the maximum jet velocity was measured by continuous wave Doppler without the use of intravenous contrast.

Right ventricular systolic pressure was estimated based on the modified Bernoulli equation and was considered to be equal to the sPAP in the absence of right ventricular outflow obstruction: sPAP (mmHg) = right ventricular systolic

pressure = trans-tricuspid pressure gradient (TTPG) + right atrial pressure (RAP), where trans-tricuspid gradient is $4v^2$ (v = peak velocity of tricuspid regurgitation, m/s)^{7,8,9}.

RV systolic function, as assessed by at least one or a combination of the following: DTI-derived tricuspid lateral annular systolic velocity wave (S'), tricuspid annular plane systolic excursion (TAPSE), and RV index of myocardial performance (RIMP). RV systolic pressure was calculated using the tricuspid regurgitation jet and an estimation of RA pressure based on inferior vena cava (IVC) size and collapsibility. Hence, pulmonary artery systolic pressure (PASP) was calculated by using continuous wave Doppler and applying the equation below:

$$\text{PASP} = 4 \times (\text{peak TR velocity})^2 + \text{RAP}$$

RAP was empirically estimated as 15 mmHg before 1997. Since 1997, RAP was estimated to be 5, 10, or 15 mmHg based on the variation in the size of inferior vena cava with inspiration as follows: complete collapse, RAP = 5 mmHg; partial collapse, RAP = 10 mmHg; and no collapse, RAP = 15 mmHg¹⁰.

IVC diameter < 2.1 cm that collapses >50% with a sniff suggests normal RA pressure of 3 mm Hg (range, 0–5 mm Hg), whereas IVC diameter > 2.1 cm that collapses < 50% with a sniff suggests high RA pressure of 15 mm Hg (range, 10–20 mm Hg). In scenarios in which IVC diameter and collapse do not fit this paradigm, an intermediate value of 8 mm Hg (range, 5–10 mm Hg) was used¹¹. TAPSE measures predominately the longitudinal systolic function and values <17mm is highly suggestive of RV systolic dysfunction. Right atrium pressure can be estimated with the IVC diameter and its changes with respiration.

Pulmonary hypertension (PH) was defined in this study as sPAP ≥ 30 mmHg¹². This value was chosen according to the definition of pulmonary hypertension. PH was classified into mild, moderate, and severe category as sPAP 30–50, 50–70, >70 mmHg, respectively (using Chemla formula, mean pulmonary arterial pressure (MPAP) = $0.61 \text{ PASP} + 2$ mmHg and putting value of 25–35, 35–45, and >45 mmHg of MPAP for mild, moderate, and severe pulmonary hypertension, respectively)¹³.

Right ventricle dimension was measured by M-Mode echo and right ventricular dilation or cor pulmonale was said to be present when it exceeded the normal range of 0.9–2.6 cm. Right ventricle contractility was also noted and right ventricular systolic dysfunction was said to be present when it was hypokinetic.

Left ventricular function was also assessed by using the following parameters: EF (ejection fraction) = measure of how much end-diastolic value is ejected from LV with each contraction (56%–78%).

FS (fractional shortening) = it is a percentage change in LV dimension with each LV contraction (28%–44%).

LV mass = left ventricular mass (88–224 g).

E/A = diastolic filling of left ventricles usually classified

initially on the basis of the peak mitral flow velocity of the early rapid filling wave (E), peak velocity of the late filling wave caused by atrial contraction (A). In normal subjects LV elastic recoil is vigorous because of normal myocardial relaxation, therefore more filling is completed during early diastolic, so left ventricular diastolic dysfunction (LVDD) is said to be present when E/A is <1.3 (age group 45–49 years), <1.2 (age group 50–59 years), <1.0 (age group 60–69 years), and <0.8 (age group ≥70 years)¹⁴.

The calculations were done by Microsoft Excel 2007, and Statistical Package for Social Sciences, SPSS version 20; and the data were presented in the form of tables and diagrams. Appropriate statistical tests were carried out to compare the data, and a level of significance of 0.05 was used. Values were expressed as mean ± standard deviation.

Results:

Our study included 46 (92%) males and 4 (8%) females, with mean age of 58.4±7.7 years, ranging from 40 to 79 years old. Most patients had moderate to severe obstruction. Demographic characteristics and spirometric results of our cases are shown in Table-I.

Table-I: Demographic characteristics and spirometric results of the studied cases.

Variables	Mean±SD	Range
Age (years)	58.4±7.7	40.0-79.0
Sex		
Male	46 (92)	
Female	4 (8)	
Occupation		
Manual	42 (84)	
Official	8 (16)	
Smoker		
Never	03 (6)	
Ex-smoker	14 (28)	
Current Smoker	34 (68)	
FEV1/FVC	54.6±11.2	30.0-70.0
FEV1%	48.6±18.1	24.0-86.0

Forty seven patients (94%) studied had significant ECG abnormality out of which P 'pulmonale' was the most common 45 patients (90 %) while atrial arrhythmias in the form of Atrial fibrillation (AF) or Multifocal tachycardia (MAT) (6 patients, 12 %) being the least common finding (Table II).

Table-II: ECG abnormalities in COPD patients.

Characteristics	Male (n=46)	Female (n=4)	Overall (n=50)	p value
ECG abnormalities	44 (95.6%)	3 (74%)	47 (94 %)	> 0.05
P 'pulmonale'	43 (93.4%)	2 (50%)	45 (90%)	<0.05
R/S ratio in V1	R/S ratio in V1	R/S ratio in V1	R/S ratio in V1	R/S ratio in V1
> 1	30 (65.2%)	2 (50 %)	32 (62 %)	>0.05
< 1	16 (34.7 %)	2 (50%)	18 (36%)	>0.05
RBBB	18 (36%)	1 (25 %)	19 (38%)	<0.05
AF/MAT	5 (10.8%)	1 (2.1%)	6 (12%)	>0.05

Echocardiography done in the studied patients showed evidence of varying degrees of pulmonary hypertension along with enlargement of right sided chambers of the heart.

Tricuspid regurgitation peak gradient a useful marker for indirect evidence of pulmonary hypertension was studied in all the patients. Pulmonary hypertension defined as sPAP (Peak systolic pulmonary pressure) value > 30 mmHg was observed in all of the patients in the study group. The mean TRPG value studied was 63.76 ± 20.57mmHg with the range of 26-100 mmHg and their corresponding peak systolic pulmonary artery pressure (PASP) mean value was 75.26 ±21.18 mmHg. Among patients with evidence of pulmonary hypertension, 30 patients (60%) had severe PAH, 14 patients (28%) had moderate PH and 6 patients (12%) had mild degree of pulmonary hypertension as shown in Table III.

Table-III: Pulmonary hypertension (PH) Grade (n=50).

Pulmonary hypertension	Numbers	Percentage
Mild(>30-50mmHg)	6	12 %
Moderate (>50-70)	14	28%
Severe (>70 mmHg)	30	60%

Other parameters of right heart enlargement and function such as RA area, RV base and mid diameter, TAPSE, RIMP, S' were studied. The mean RV diameters were increased as compared to normal adult values and parameters for RV function like TAPSE and RIMP also showed that majority of patients had significant RV dysfunction in our study (Table IV).

Table-IV: Echocardiographic RV parameters.

	Range	Mean
RA Area (cm ²)	8.8-39	20.57±6.8
RV diameter (base)/cm	3.6-6.8	5.04±0.66
RV diameter (mid)/cm	3.4-6.8	4.68±0.58
RV wall thickness /cm	0.5-1.1	0.77±0.11
TAPSE /cm	0.9-2.3	1.59±0.38
TDI s' /cm/s	6.7-19	11.5±2.95
RV MPI	0.35-0.98	0.58±0.16
TRPG /mmHg	26-110	63.76±20.57
PASP	36-120	75.26±21.18

Table-V: Frequency of cor pulmonale with severity of PH.

Severity of PH	Frequency of cor pulmonale
Mild (6)	16.6% (1)
Moderate (14)	71.4% (10)
Severe (30)	96.6% (29)

Inferior vena cava diameter (IVCd) at diastole is a surrogate marker for increased right atrial pressure and is useful for estimation of peak pulmonary artery pressure. The mean IVC diameter was 1.88±0.35 cm as shown in -Table VI.

Table-VI: Echocardiographic LV parameters and IVC size.

	Range	Mean
LVDD /cm	2.8-5.7	4.01±0.64
LVSD/cm	1.5-4.5	2.48±0.63
IVS/cm	0.6-1.1	0.79±0.09
PW/cm	0.6-1.2	0.82±0.01
EF %	50-65	60.34±3.89
IVC d/cm	1-2.4	1.88±0.35

*LVID – LV internal diastole diameter, LVSD- LV systole diameter, IVS – Inter-ventricular septum, PW- Posterior wall thickness, EF – Ejection fraction.

Discussion:

The cardiac manifestations of COPD are numerous. Impairment of right ventricular dysfunction and pulmonary blood vessels are well known to complicate the clinical course of COPD and co-relate inversely with survival. Significant structural changes occur in the pulmonary circulation in patients with COPD. The presence of hypoxemia and chronic ventilator insufficiency is associated with early evidence of intimal thickening and medial hypertrophy in the smaller branches of the pulmonary arteries. Coupled with these pathological changes are pulmonary vasoconstriction arising from the presence of alveolar hypoxemia, destruction of pulmonary vascular bed, changes in intrinsic pulmonary vasodilator substances (such as decrease in PGI₂s (prostacyclin synthase), decrease in eNOS (endothelial nitric oxide synthase), and increase in ET1 (endothelin1) leads to remodeling, increase in blood viscosity, and alteration in respiratory mechanics. All these lead to a significant increase in pulmonary vascular resistance, the consequence of which is pulmonary hypertension. Although the true prevalence of PH in COPD is unknown, an elevation of pulmonary arterial pressure is reported to occur in 20%–90% of patients when measured by right heart catheterization with some evidence that pulmonary hemodynamic worsens with worsening airflow obstruction¹⁵⁻²⁰. Two studies have shown an abnormal increase in mean pulmonary arterial pressure (Ppa) in COPD of 0.4–0.6 mmHg per year. These studies illustrate that PH in COPD progresses slowly and occurs in mild as well as severe forms of disease^{21,22}. The level of PH has a prognostic value in COPD patients that has been demonstrated by several studies. In one of these studies, the 5-year survival rates were 50% in patients with mild PH (20–30 mmHg), 30% in those with moderate-to-severe PH (30–50 mmHg), and 0% in the small group of patients with very severe PH (>50 mmHg). Thus a high degree of PH bears a poor prognosis, and this also has been observed in COPD patients receiving long-term oxygen therapy²³. In our study, all 50 patients had evidence of pulmonary hypertension (sPAP > 30 mmHg) with majority of them (60 %) having higher grades of pulmonary hypertension maybe because of the chronicity of the disease and the study was mainly done in admitted patients with COPD. There was significant evidence of right ventricular enlargement as well as decline in RV systolic function through various parameters studied by echocardiography. All COPD patients studied had shown an increase in RV enlargement in form of increased RV diameters (RV base = 5.04 ± 0.66 and RV mid = 4.68 ± 0.58 cm). RV systolic function as assessed by TAPSE and RIMP also showed values below normal adult population values which indicate majority of COPD patients studied had evidence of RV dysfunction as well. (TAPSE, mean = 1.59 ± 0.38 , RIMP = 0.58 ± 0.16). Saxena N et al.²⁴ showed tricuspid annular systolic velocity (TAPSE) is a useful measurement in determining right ventricular systolic function regardless of pulmonary artery pressures in a study of 52 patients.

Evidence of right ventricular hypertrophy was also seen in most patients with the average RV wall thickness of 0.77 ± 0.11 mm as compared to normal adult value of 3–5 mm. In the current study, no motion wall abnormalities were found in the echo findings of the patients. This disagreed with Freixa et al.²⁵ who found that 30% of patients with LVSD presented left ventricle wall motion abnormalities. This difference might be owing to a large number of included-patients. In current study, no statistical significant correlation was found between left ventricular systolic function and dimensions and the severity of COPD. This is similar to Freixa et al.²⁵. Frequent reports about the prevalence of LVDD in patients with COPD have been shown in many studies. The prevalence of LVDD in this study was ~20%. This was in contrary to Huang and colleagues, who showed a higher frequency of LVDD in patients with COPD (65.6%) and Caram and colleagues who reported high frequency up to 88%. Another study by Lopez Sanchez et al.²⁸ focused on severe COPD outpatients and showed a highest prevalence of LVDD (90%)^{26,27}. In this study, there was no correlation between LVDD and the severity of COPD. This is similar to the study conducted by Huang et al.²⁶. The current study showed that RV dilatation was found in early stages of COPD. This agreed with Hilde et al.²⁹. Moreover, there was a positive correlation between severity of COPD and RV size. This is similar to the study conducted by Jatav et al.³⁰. In the present study, tricuspid regurgitation was present in ~75% of the patients with variable grades from mild to severe. There was a positive correlation between grades of obstruction and tricuspid regurgitation. Similar findings were observed in study of Maula et al.³¹. True prevalence of PH in COPD is unknown. A reported elevation of pulmonary arterial pressure is between 20 and 90% measured by right heart catheterization, with some evidence that PH increases with increase airflow obstruction^{32,33,34}. The current study showed that the presence of PH, that is, moderate pulmonary artery systolic pressure more than 50 mmHg, was 28%. PH appeared more in severe and very severe grades of the disease than in mild/moderate disease. These results agreed with Jatav et al.³⁰ and El Wahsh et al.³⁵ who showed that increased pulmonary artery systolic pressure was found in 44 and 55.56% of patients, respectively, and also showed a positive correlation with severity of COPD. Most of the patients (12%) in the current study with PH had mild degree of PH, and this was in agreement with Freixa et al.²⁵ who found that the magnitude of PH was mild in most cases and only 3% of patients had severe PH. In the current study, TAPSE was used as easily obtainable measure of RV systolic function, and it was normal in all patients, who is in contrary to Hilde et al.²⁰ who included some patients with COPD with very severe degree of obstruction with respiratory failure and TAPSE was lower in them than controls. In this study, there were some limitation such as using two-dimensional Doppler echocardiogram with color flow without using

tissue Doppler echocardiography, which made the assessment of prevalence of LVDD less accurate. Right heart catheterization was not available for definitive diagnosis of PH and detection of its prevalence.

Conclusion:

This study reveals that chronic obstructive pulmonary disease with pulmonary hypertension is highly prevalent in our country. Echocardiographic right heart profile assessment should be an additional tool to detect and prognosticate patients with various degrees of pulmonary hypertension.

Conflict of Interest: None.

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A Study on Seasonal Variation of Bell's Palsy in a District Area of Bangladesh

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Abstract:

Introduction: Bell's palsy is a common cranial neuropathy causing acute onset of unilateral lower motor neuron type of seventh cranial nerve palsy that result in ipsilateral facial muscle weakness. The aim of this study was to determine the possible correlation of Bell's palsy and seasonal influence in a district area of Bangladesh. **Materials & Methods:** This is an observational study in which we collect, compiled and analyzed the patients information who attended in outpatient department of neuromedicine unit at Cumilla medical college hospital Cumilla from January 2018 to December 2019. **Results:** In our study, out of 214 patients male were 117(54.7%) and female were 97(45.3%). Age range from 4 to 90 yrs, median age was 40.0 ± 17.6 . Number of patients with Bell's palsy presented in various seasons include 44% during winter, 35% during summer, 9% during fall monsoon and 12% during autumn period. We analyzed the data by using Mean $\pm$ SD and chi-square test. A significant association was evident in winter and summer season ($P=0.04$ and $P=0.045$) respectively. **Conclusion:** In our present study we found significant relation between seasonal variation and occurrence of Bell's palsy.

Key words: Bell's palsy, facial paralysis, seasonal variation.

Number of Tables: 02; **Number of Figures:** 04, **Number of References:** 20; **Number of Correspondences:** 03.

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Introduction:

Bell's palsy, which was first described by Sir Charleo Bell, is partial or full peripheral nerve paralysis which has an acute onset, is idiopathic and generally involves only one side of the face¹. The annual incidence 11.5-40.2/100,000 in the general population². Bilateral involvement is seen in 0.3% of Bell's palsy patient³. Though it is seen at all age, but most frequent in the 15-40 years of age group⁴. While the cause of Bell's palsy remains unknown, a reactivation of

latent herpes viruses (HSV-10) in the geniculate ganglia of facial nerve may play an important role in its pathogenesis⁵. In a study of Murakami et al.⁶ DNA of herpes simplex was found on the facial nerve endoneurium of patient diagnosed with Bell's palsy. Bell's palsy is seen more frequently in Germany in winter season, this fact support this hypothesis. It is assumed that with vasomotor changes in a facial region exposed to cold leads to partial ischemia in facial nerve and initiate inflammation around the nerve. Cold air again more easily reactivates the latent remaining viral infection^{7,8}. Bell's palsy is a clinical diagnosis and its features reaches peak by 72h⁹. It's differential diagnosis are broad and the rate of misdiagnosis by initial consulting physician is 10.8%^{10,11}. Associated symptoms of neck, mastoid or ear pain are usually support the diagnosis¹². PCR have failed to demonstrate any consistent correlation between viral load and clinical features^{13,14}. Though MRI has limited value as diagnostic tool but NCS can predict degree of recovery¹⁵. The aim of the study was to evaluate the relationship of seasonal variation of Bell's palsy in a district area like Cumilla of Bangladesh.

Materials and Methods:

This retrospective observational study was made of 214 patients who were presented with facial paralysis at the neurology outpatient department of Cumilla medical college hospital from the period of January 2018 to December 2019. In this study Bell's palsy was defined as the acute disorder of the facial nerve which may begin with symptom of pain or discomfort in the ear and the mastoid region, by hypersensitivity to noise, decreased tear production, reduced taste in the affected side of the tongue and full or partial paralysis of one side of the face¹⁶. The condition is diagnosed after other possible cause of facial weakness has been ruled out. Patient were excluded if they had chronic otitis media, facial palsy developed after trauma, mass in the parotid region, surgery in this area, such as acoustic neuroma involve the

facial nerve. The age and gender of the patient were evaluated separately according to the month and season in which facial paralysis are seen. Seasons were classified as winter (December to February), summer (March to May), fall (June to August) and autumn (September to November) according weather bureau of Bangladesh. All data are calculated by percentage, mean $\pm$ S.D and chi-square test and statistical analysis were done by SPSS version 22.

Results:

Table I show, out of 214 cases with Bell's palsy comprised 117(54.7%) male and 97(45.3%) female with a mean age was 40.0 ± 17.6 and male female ratio was 1.5:1. Most of the person affected at the age of 21 to 30 years and mean percentage was 24.30%. In our study showed number of cases increases from December to March and peak was in January. Bell's palsy presented 44% in winter, 35% in summer, 12% in autumn and 9% in fall. Cases are increases in winter and summer seasons which were statistically significant ($P=0.04$ and $P=0.045$) respectively.

Table-I: Distribution of the study patients by age (n=214).

Age (years)	Number of patients	Percentage
≤ 10	3	1.4
11-20	30	14.0
21-30	52	24.3
31-40	43	20.1
41-50	32	15.0
51-60	27	12.6
61-70	16	7.5
71-80	8	3.7
>80	3	1.4

Mean $\pm$ SD = 40 ± 17.6

Range = 4.0-90.0
(min-max)

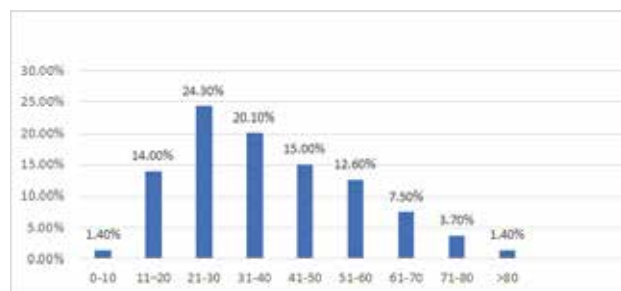


Figure-1: Distribution of age (n=214). n=number of patient

Table-II: Distribution of the study patient by sex.

Sex	Number of patients	Percentage
Male	117	54.7
Female	97	45.3

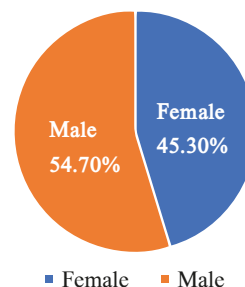


Figure-2: Distribution of the study patients by sex.



Figure-3: Number of cases of Bell's palsy according to month.



Figure-4: Number of cases of Bell's palsy according to season.

Discussion:

The most common type of Idiopathic facial paralysis or Bell's palsy is peripheral facial palsy which is typically self-limiting, has an acute onset and affects all the muscle groups of only one side of the face¹⁷. The study showed that out of 214 cases mean age distribution was 40 ± 17.6 and peak incidence was 3rd to 5th decade. Sex distribution showed male 117(54.7%) and female 97(45.3%) and male female ratio was 1.5:1 Hebung Erdur et al & Ru-Lan Hsieh et al. assure that mean age of patient was (49.2 ± 18) and (43.1 ± 16) respectively and incidence of Bell's palsy rises among male and younger patient which is similar to our study. The presentation of Bell's palsy differed according to months with highest likelihood in December to March and the lowest in June to October. On average 44% presented in Winter (Dec. to Feb.), 35% in Summer (March to May), 9% in Fall (June to August) and 12% in Autumn (Sept. to Nov.) respectively. There was statistically significant in Winter and Summer season ($P=0.04$ and $P=0.045$). Karen E. Campbell and Brundage¹⁸ showed that the incidence of Bell's palsy was higher in cold and dry environment than in wetter or warm environment. Leibowitz¹⁹ showed that high incidence of Bell's palsy occurred more frequently in younger patients during the cold seasons and older patients during the warm seasons. Spengos et al.²⁰ showed that Bell's palsy incidence was lower in the Summer and higher

in the Autumn and Winter seasons and the month with the highest incidence was January. In a study Hsieh et al, which was conducted in the sub tropical climate of Taiwan, no statistically significant difference was determined between the seasons but when age sub groups were examined there was statistically significant in the incidence of Bell's palsy in cold season in those aged less than 50 years. In the current study the highest incidence of Bell's palsy was determined in the Winter seasons especially in the month of December to February. This environmental factor causes acute respiratory tract infections possibly by reactivating latent virus infections. However the findings of other studies investigating seasonal variation of Bell's palsy are heterogeneous and discrepancies may be due to the geographic and climate area where the study was conducted. Limitations of our study include the hospital based and low number of cases per season which precluded a statistical analysis of variation of seasonal incidence across the study period.

Conclusion:

We assessed the association of seasonal variation of Bell's palsy among a district area of Bangladesh. Our study showed that during the winter season the incidence of Bell's palsy increased among men and younger population in Bangladesh. Prospective study with a large sample size is to be required for more confirmation of our findings.

Conflict of Interest: None.

Acknowledgment:

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Non-viral Microbial Keratitis in a Tertiary Care Hospital in Bangladesh

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Abstract:

Introduction: Microbial keratitis is a serious ocular infectious disease that can lead to significant visual loss and ophthalmic morbidity. Objectives were to see the profile of non-viral microbial keratitis in a tertiary care hospital in Bangladesh. **Materials and Methods:** This cross-sectional study was conducted in the Department of Ophthalmology, Sylhet MAG Osmani Medical College Hospital, Sylhet between January 2015 and December 2016. **Results:** The mean age of the patients was 46.7 ± 16.5 years with male preponderance (54.4%). The most common predisposing factors were trauma (66.7%), and chronic dacryocystitis (25.6%). Fungal growth was more frequent compared to bacterial growth 70 (77.7%) versus 30 (33.3%), $p < 0.01$. Gram positive organisms were *Staphylococcus epidermidis* (11.1%), *Staphylococcus aureus* (3.3%); gram negative organisms were *Pseudomonas aeruginosa* (12.2%), *Klebsiella* species (3.3%) and *Escherichia coli* (3.3%). *Aspergillus* species (71.4%) was the commonest fungus. Others were *Penicillium* species (7.1%), *Fusarium* species (8.6%), *Mucor* (10.0%) and *Rhizopus* (2.9%). **Conclusion:** Fungi are more frequent cause of non-viral keratitis. Watering, redness, pain or burning sensation, corneal opacity and dimness of vision are clinical profiles of non-viral microbial keratitis.

Key words: Microbial keratitis, Predisposing factors, Clinical profile.

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Introduction:

Keratitis is a vision threatening disease. The special importance of disease of the cornea lies in the fact that a corneal scar is the final outcome of any inflammation. Unlike healthy transparent corneal tissue, scar tissue is white and opaque in varying degrees of severity. They often leave permanent opacities which substantially diminish visual acuity, while the associated complications which not infrequently follow them may even lead to complete loss of vision¹. Surveys in Asian countries (India, Bangladesh, Pakistan) for blindness and visual impairment also listed corneal scarring second only to cataract as the major etiology of blindness and visual disability²⁻⁴. In Bangladesh, 33.55% of all cases of unilateral blindness were reported due to complication of corneal ulcer⁵. Considering the predisposing factor of ocular trauma was predominant in all type of microbial keratitis. Other predisposing factors were ocular diseases, ocular surgery contact lens⁶. A wide spectrum of microbial organisms can produce corneal infection. The severity of corneal infection depends on the underlying condition of the cornea and pathogenicity of the infecting organism, and consequently the therapeutic strategies may be variable. Many differences in keratitis profile have been noted between populations living in rural or in urban areas in Western, or in developing countries. Gram positive bacterial species are more frequently recovered in temperate zones and gram-negative species are found in tropic climates⁷. Fungi reside as commensals in flora of the conjunctival sac in 3-28% of healthy eyes. Thus in the tropical countries, humid atmosphere and outdoor occupations make the population more vulnerable to fungal infections⁸. Besides, the bacteriological profile and their susceptibility as well as resistant patterns vary from place to place and in the same place from time to time⁹. Untreated, infective keratitis may lead

to opacification and perforation of the cornea. The associated morbidity is the result of several factors and is directly affected by difficulties in patient's management because of a lack of diagnostic facilities and appropriate treatment. Specific treatment requires prompt and accurate identification of causative micro-organisms¹⁰. This study is conducted to identify the spectrum of non-viral microbial infectious keratitis in Sylhet MAG Osmani Medical College Hospital, Sylhet.

Materials and Methods:

This cross-sectional study was conducted in the Department of Ophthalmology, Sylhet MAG Osmani Medical College Hospital, Sylhet during the period from 1st January 2015 to 31st December 2016. Ninety (90) patients of non-viral microbial keratitis aged older than 18 years and both sexes were included. Patients with suspected viral keratitis (typical dendritic ulcers with decreased corneal sensations), shield corneal ulcer of vernal catarrh, neurotrophic corneal ulcers (painless ulcers without infiltrates and minimal conjunctival congestion) and systemic disease associated with keratitis were excluded from the study. All the patients were assessed by history, physical examination and investigations. Non-viral microbial keratitis was defined as loss of corneal epithelium with underlying stromal infiltrate associated with signs of inflammation with or without hypopyon.¹¹ Ocular examination of visual acuity, corneal sensation and slit lamp examination was done to detect any other eye diseases. The best corrected visual acuity in Snellen format (BCVA) at the time of admission, ulcer size in mm along greatest dimension and hypopyon (vertical height in mm at 6 o'clock) using slit lamp were also documented.

Pattern of organisms on culture: A sterile cotton swab soaked with sterile normal saline was used to collect specimens from base and margin of the ulcer by rubbing before instillation of local anesthetic. It was inoculated on to Blood agar and MacConkey's agar and incubated at 37°C for 24 hours in the Department of Microbiology, Sylhet MAG Osmani Medical College, Sylhet. Bacteria grown in colonies were identified presumptively on the Blood agar and MacConkey's agar by following colony characteristics against each of the organism. The isolates were further identified using standard identification protocol such as Gram's staining, motility test and biochemical tests. Catalase test, coagulase test and mannitol fermentation tests were done for the identification of *S. aureus* and *S. epidermidis*. Members of enterobacteriaceae such as *E. coli*, *Klebsiella* and *Pseudomonas* were identified by their characteristics of sugar fermentation, indole production and citrate utilization.

Fungal microscopy and culture: Three corneal scrapings were taken from leading edge and floor of ulcer using Bard-Parker blade (No.15) after instillation of 0.4% oxybutyrocaine without preservative. First scraping was used for 10% potassium hydroxide (KOH) wet mount. Fungus was cultured on Sabouraud's Dextrose Agar (SDA) media from second scraping material and last scraping was used for gram staining. Inoculated SDA media was incubated at 25°C

and was observed daily for first 7 days and on alternate days for the next 7 days for observing slow growing fungi. Identification of fungal growth was done by its macroscopic and microscopic features. This procedure was done in the department of microbiology under supervision of microbiologist.

Identification of fungi: The fungi grown in primary plates and subcultures were identified on the basis of their gross colonial characteristics and microscopic findings.

Microscopic examination of colony: Scotch tape mount was applied for microscopic study of the colony character of isolated fungi.

Scotch tape mount: For making this mount, a clean glass slide was taken and lactophenol cotton blue stain was placed in the slide, then the sticky surface of the scotch tape was touched to the surface of the fungus out growth. The sticky surface of the tape was then pressed down to a slide and examined under microscope using 10x and 40x objectives.

Gross characteristics of colony: Colonial characteristics such as colour of surface and reverse side (i.e. white, cream, brown, buff, pink, brick-red, yellow etc.), topography (contours, margin, elevation, folding etc.) and texture (granular, powdery, velvety, waxy etc.) were observed and recorded.

Intervention: All patients were treated conservatively. (1) For bacterial keratitis with ciprofloxacin orally, moxifloxacin eye drop and atropine eye drop; and (2) For fungal keratitis fluconazole orally, natamycin eye drop and atropine drop.

Statistical Analysis: Data were processed manually and analyzed using SPSS (Statistical Package for Social Sciences) Version 21.0. A probability value of $p < 0.05$ was considered statistically significant.

Ethical Consideration: Informed consent was taken after discussing purpose of the study in detailed. An approval of the study protocol was obtained from the ethical committee of Sylhet MAG Osmani Medical College, Sylhet before the commencement of the study.

Results:

The age of the patients ranged from 18 years to 75 years with the mean age of 46.71 ± 16.52 years with male predominance (1.2:1). Farmer (34.4%) and house wife (30.0%) were the most frequent occupations, while primary education (30.0%) and illiterate (25.6%) were the level of education in most cases (Table-I).

Table-I: Socio-demographic characteristics of the patients (n=90).

Variables	Frequency	Percentage
Age		
15-24 years	13	14.4
25-34 years	14	15.6
35-44 years	12	13.3
45-54 years	21	23.3
55-64 years	13	14.4
65-75 years	17	18.9

Variables	Frequency	Percentage
Sex		
Male	49	54.4
Female	41	45.6
Occupation		
Farmer	31	34.4
Manual workers	13	14.4
Student	11	12.2
House wife	27	30.0
Others	8	8.9
Educational status		
Illiterate	23	25.6
Primary	27	30.0
Secondary	18	20.0
SSC	10	11.1
HSC or above	12	13.3
Residence		
Rural	52	57.8
Urban	38	42.2

Clinical features were watering and redness of eye (100.0%), pain or burning sensation (75.6%) and dimness of vision (100.0%); and the signs were blepharospasm (93.3%), ciliary congestion (100.0%), corneal opacity (100.0%) and corneal vascularization (16.7%) (Table-II).

Table-II: Showing distribution of patients according to clinical presentation (n=90).

Clinical Presentation	Frequency	Percentage
Symptoms		
Watering and Redness	90	100.0
Pain or burning sensation	68	75.6
Dimness of vision	90	100.0
Signs		
Blepharospasm	84	93.3
Ciliary congestion	90	100.0
Corneal opacity	90	100.0
Corneal vascularization	15	16.7

Common predisposing factors were trauma (66.7%) and chronic dacryocystitis (25.6%) (Table-III).

Table-III: Showing distribution of patients according to predisposing factors of non-viral microbial keratitis (n=90).

Predisposing Factors	Frequency	Percentage
Trauma		
Paddy	42	46.7
Leaf	10	11.1
Soil	6	6.7
Blunt trauma	2	2.2
Chronic dacryocystitis	23	25.6
Entropion	5	5.6
Exposure keratitis	2	2.2
Total	90	100.0

Visual acuity at presentation was 6/12 in 10 (11.1%) patients, 6/18 in 12 (13.3%) patients, 6/24 in 17 (18.9%) patients, 6/36 in 31 (34.4%) patients, 6/60 in 7 (7.8%) patients and perception of light in 13 (14.4%) patients.

Culture was found positive in 77 (85.6%) cases with pure fungal growth in 47 (52.2%) cases, pure bacterial growth in 7 (7.8%) cases and mixed growth (both fungus and bacteria) in 23 (25.6%) cases. Therefore fungal growth was in 70 (77.8%) cases and bacterial growth in 30 (33.3%) cases. Significantly higher frequency of fungal growth was isolated than that of bacterial growth ($\chi^2=16.000$; $p<0.01$). *Staphylococcus epidermidis* (11.1%) and *Staphylococcus aureus* (3.3%) were gram positive organisms; while *Pseudomonas aeruginosa* (12.2%), *Klebsiella species* (3.3%) and *Escherichia coli* (3.3%) were gram negative organisms (Table-IV). *Aspergillus species* (55.0%) was the commonest fungus of which *Aspergillus nigar* (22.2%), *Aspergillus flavus* (17.8%), *Aspergillus terreus* (7.8%) and *Aspergillus fumigatus* (7.8%). Others were *Penicillium species* (5.6%), *Fusarium species* (6.7%), *Mucor* (7.8%) and *Rhizopus* (2.2%) (Table-IV).

Table-IV: Showing isolation of organism from patients with non-viral microbial keratitis (n=90).

Organism	Frequency	Percentage
Bacteria		
<i>Staphylococcus epidermidis</i>	10	11.1
<i>Staphylococcus aureus</i>	3	3.3
<i>Klebsiella species</i>	3	3.3
<i>Pseudomonas aeruginosa</i>	11	12.2
<i>Escherichia coli</i>	3	3.3
Fungus		
<i>Aspergillus nigar</i>	20	22.2
<i>Aspergillus terreus</i>	7	7.8
<i>Aspergillus flavus</i>	16	17.8
<i>Aspergillus fumigatus</i>	7	7.8
<i>Penicillium species</i>	5	5.6
<i>Fusarium species</i>	6	6.7
<i>Mucor</i>	7	7.8
<i>Rhizopus</i>	2	2.2

Discussion:

Regarding the age distribution, the age of the patients ranged from 18 years to 75 years with the mean age of 46.71 ± 16.52 years. These findings were consistent with the study done by many other workers^{6,12-14}. In the present study, males were predominant with a ratio of male to female was 1.2:1. It was matched with other studies done in different countries^{6,15,16}. Regarding occupation, this study revealed that most of the patients were farmer (34.4%) and house wife (30.0%). This finding was comparable with the studies done in other countries^{12-14,16}. This study showed that primary (30.0%) and illiterate (25.6%) were the frequent level of education. Payal et al.¹⁷ reported 79% patients were literate and 21% were illiterate in their study in Western India.

In this study, majority of the patients (57.8%) were from rural area and the rest were (42.2%) from urban area. This finding was comparable with other studies^{6,13,14,16}. In this study the symptoms at presentation were watering and redness of eye (100.0%), pain or burning sensation (75.6%) and dimness of vision (100.0%). The signs at presentation were ciliary congestion (100.0%), corneal opacity (100.0%), blepharospasm (93.3%) and corneal vascularization (16.7%). The Hong Kong Microbial Keratitis Study Group,¹⁸ reported that the major presenting symptoms of microbial keratitis were red eye (56%), blurring of vision (50%), foreign body sensation (32%), eye discharge (22%), photophobia (14%) and pain (72%) cases. Rubab et al.¹⁹ found that the common clinical findings included mild conjunctivitis (38.7%), purulent conjunctivitis (14.7%), corneal ulcer (24%), corneal abscess (11.3%), hypopyon (9.3%), descemetocoele (3.3%) and corneal perforation (2.7%) cases. In this study the visual acuity at presentation was 6/12 in 10 (11.1%) patients, 6/18 in 12 (13.3%) patients, 6/24 in 17 (18.9%) patients, 6/36 in 31 (34.4%) patients, 6/60 in 7 (7.8%) patients and perception of light in 13 (14.4%) patients. Rubab et al.¹⁹ found that 74.3% affected eyes with keratitis were suffering from severe visual impaired or blindness (<6/60 to no perception of light). Hussain et al.¹¹ checked visual acuity in 214 patients (93.8%), and the rest being young children and found that 20 patients (9.3%) had good vision ($\geq 6/18$), 23 (10.7%) had moderate vision ($\leq 6/24$ to $\geq 6/60$) and 171 (79.9%) had poor vision ($< 6/60$) at presentation. The most common predisposing factor was trauma (66.7%) and the trauma are due to paddy (46.7%), leaf (11.1%) soil (6.7%) and blunt trauma (2.2%), other predisposing factors were chronic dacryocystitis (25.6%), entropion (5.6%) and exposure keratitis (2.2%). The findings coincided well with other studies^{13,20}. Trauma was found to be the most common risk factor reported in the developing world²¹⁻²³. In the developed world, the use of contact lens is the commonest risk factor for microbial keratitis²⁴. The reason might be that the use of contact lens has not gained much popularity in Bangladesh. This study showed that culture was positive in 77 (85.6%) cases. Fungal growth was isolated in 70 (77.8%) cases and bacterial growth in 30 (33.3%) cases. Significantly higher frequency of fungal growth was isolated than that of bacterial growth ($p < 0.01$). Pure fungal growth was isolated in 47 (52.2%) cases, pure bacterial growth in 7 (7.8%) cases, mixed microbial growth (both fungus and bacteria) in 23 (25.6%) cases and no growth was observed in 13 (14.4%) cases. Similar findings were reported in a study in Bangladesh,⁶ and several studies in India,^{13,15} But Dunlop et al.²⁵ isolated 53.5% bacterial and 35.9% fungal agents in a study conducted in Chittagong Eye Infirmary, Bangladesh. Akter et al. showed 42.86% fungal growth, 25% bacterial growth and 16.07% mixed microbial growth (both bacteria and fungi) in a study in Rajshahi Medical College Hospital¹⁶. In this study *Aspergillus* species (55.0%) was the commonest fungus of which *Aspergillus niger* (22.2%), *Aspergillus*

flavus (17.8%), *Aspergillus terreus* (7.8%) and *Aspergillus fumigatus* (7.8%). Others were *Penicillium species* (5.6%), *Fusarium species* (6.7%), *Mucor* (7.8%) and *Rhizopus* (2.2%). The fungal species detected in the present study was equally comparable with that of others^{13,14}. *Aspergillus* species was the most predominant fungal pathogen in Bangladesh, Eastern India, Egypt and Uttarakhand, India^{6,13,14,16}. Gram positive bacterial Isolates in the present study were *Staphylococcus epidermidis* (11.1%) and *Staphylococcus aureus* (3.3%); while gram negative organisms were *Pseudomonas aeruginosa* (12.2%), *Klebsiella species* (3.3%) and *Escherichia coli* (3.3%). *Staphylococcus epidermidis* was isolated in 21.9% and 20% cases in Iran and Oman respectively^{12,26}. *Pseudomonas species* was the most common representing bacterial isolates were seen in other studies in Bangladesh, Iran, Thailand, Oman and Hong Kong^{12,15,25,26}. But Tewari et al.²⁷ found 32.7% *Staphylococcus aureus*, 6.8% *Klebsiella species* and 5.1% *Escherichia coli* in Ahmedabad, India. These might be due to variation in the principle causative microbial agents of infective corneal ulcer in different countries.

Conclusion:

It may be concluded that fungi are more frequent cause of non-viral keratitis. Watering, redness, pain or burning sensation, corneal opacity and dimness of vision are clinical profiles; and the common predisposing factors are trauma and chronic dacryocystitis. Ophthalmologist should keep in mind that fungus may be the cause of non-viral microbial keratitis. Avoid ocular trauma to prevent non-viral microbial keratitis including bacterial and fungal infection. However further large scale multicentre study is warranted.

Conflict of Interest: None.

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Evaluation of Gartland Type-III Closed Supracondylar Fracture of Humerus in Children Treated by Lateral Percutaneous K-Wires under C-Arm Guidance

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Abstract

Introduction: This study has been designed to evaluate the success rate of closed reduction and stabilization by two lateral parallel percutaneous K-wires with the help of C-arm in the management of Gartland type-III closed supracondylar fracture of humerus in children. **Materials and Methods:** A prospective quasi experimental study was conducted from January 2015 to December 2016 in NITOR. A total of 30 patients of Gartland type-III closed supracondylar fracture of humerus in children presenting between ages 3-12 years. Informed written consent was taken from patient's guardian. Regular follow up was targeted for at least 6 month's. Result was evaluated according to Flynn's grading. **Results:** Mean age was 6.85 ± 2.37 years, number of patients were 30, Male patients were more affected 22 (73.33%) than female 8 (26.67%), left side patients were more affected. Mean loss of elbow flexion was 9.53 degrees, mean loss of carrying angle was 8.5 degrees. Complications included four (13.33%) cases of pin tract infection, four (13.33%) cases of fracture blister, one (3.33%) case of median nerve palsy, two (6.66%) cases of inadequate pin fixation at first attempt. There were six excellent (20%), eighteen good (60%), three (10%) fair and three (10%) poor results according to Flynn's grading. The overall 90% satisfactory result and rest 10% unsatisfactory result. **Conclusion:** Closed reduction and stabilization by two lateral parallel percutaneous K-wires is a better method for treatment of Gartland type-III closed supracondylar fracture in children.

Key words: Evaluation of Gartland Type-III, Supracondylar Fracture of Humerus.

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Introduction:

In children supracondylar fracture of humerus is the commonest fracture. This fracture is common in the 1st decade of life due to ligament laxity. The fracture line is generally transverse; results from a fall on the outstretched hand, and should always be suspected, if child complains of pain in the elbow after such an injury. These injuries can also occur due to fall from height and assault by any mean¹. The most popular method of treating the severely displaced unstable supracondylar fracture was described by Dunlop. Other methods are modifications of Dunlop's, employing skeletal traction through the olecranon, pulling horizontally or vertically. Traction methods need approximately three weeks of hospitalization. Treatment in traction usually loss of carrying angle. Treatment by open reduction and internal fixation is not popular because the method has some complications such as limitation of motion². The extension type of supracondylar fracture of the humerus is the most common, occurring in 95% of cases. About one-third show little or no displacement and in these treatment is simple. The remainder is associated with varying degrees of major displacement which is difficult to treat. For most cases, manipulative reduction and immobilisation in a plaster slab is the procedure of choice, but early and late complications can occur. Cubitus varus is the commonest of the late complications. When the elbow is in extension, both the extensor and the flexor muscles are mechanically neutralized and the carrying angle can be judged accurately, clinically and radiologically. In recent study it is postulated that a method of manipulative

reduction, immobilization and fixation using a U-shaped plaster slab with the elbow in full extension would allow the displaced fragment to be easily reduced and retained after reduction³. There are various modalities of treatment advised for the management of Gartland type III closed supracondylar fracture of humerus. At present closed reduction and percutaneous pin fixation is most widely accepted treatment method for displaced supracondylar fracture but controversy persists regarding the optimal pin fixation technique. The purpose of the study was to compare the stability and risk of ulnar nerve injury treated by lateral entry pin fixation with that of medial and lateral pin fixation for Gartland type III supracondylar fracture⁴. In third and fourth century, Hippocrates described supracondylar fractures (SCF) of the humerus in children⁵. In 1826, Astley Cooper and in 1921, Robert Jones recommended treating these fractures using the collar and cuff technique cited in English-language literature⁶. In 1965, El-Sharkawi and Fattah described the treatment of supracondylar fractures in extension: in one of these a plaster cast was used⁷. Devkota et al. 2008, studied 102 displaced supracondylar fractures of humerus, aged between one and half to 13 years. They were treated closed reduction percutaneous Kirschner wire fixation under C-arm fluoroscopy. Seventy nine patients were treated by cross K-wires and in twenty three cases lateral two K-wires were put. All patients were followed upto 14th week postoperatively⁸. At the lower end, four secondary centres appear. There is one for capitulum and lateral ridge of the trochlea at 2nd year, one for medial epicondyle at 5th year, the remainder of the trochlea at the 12th year and the lateral epicondyle at the 13th year. The medial epicondyle remains as a separate centre, separated by a downward projection of the shaft from the other three which fuse together. Union with the shaft occurs at about 16th year. (Skaggs and Flynn, 2015)⁹.

This study designed to evaluate how much effective the procedure that is closed reduction and stabilization by two lateral parallel percutaneous 'K'-wires for treatment of Gartland type-III closed supracondylar fracture of humerus in children.

Materials and Methods:

This prospective quasi experimental study was conducted from January 2015 to December 2016 (24months) at National Institute of Traumatology and Orthopedic Rehabilitation (NITOR), Dhaka. All patients suffering from closed supracondylar fracture of humerus in children. Each Gartland type-III closed Supracondylar Fracture of humerus among supracondylar Fracture in children attended at emergency, outpatient department and admitted in NITOR from January 2015 to December 2016. Purposive sampling (non-randomized) according to availability of the patient and strictly considering the inclusion and exclusion criteria.

Inclusion criteria: Age: between 3 to 12 years, Sex: Both sexes, Type III supracondylar fracture of humerus in children, Those presented within 5 days after injury, Closed fracture, Extension type. Exclusion criteria: Open fractures, Pathological fractures, Age before 3 and after 12 years. Flexion type, Type III fracture with compartment syndrome,

late presentation after 5 days. 1.8mm or 2mm K wires selected according to the age. First wire started from the tip of lateral epicondyle directed across the fracture towards the medial cortex in 50° to 60° angle. K wire position in lateral view confirmed. 2nd wire passed 1 cm below the first K wire and passed exactly parallel to it, crossing the olecranon fossa and having 4 cortical purchase. Elbow extended and rotated, stability of fracture assessed under C-Arm. If we feel like cortical purchases are inadequate, remove wire and again we can put 2nd wire in similar fashion, between the parallel wires. All wires cut after bending, outside the skin and supported by LABS.

Results:

The results were assessed on the basis of Flynn's criteria (Flynn, et al., 1974). Table-1 shows that are The youngest patient in our series is 3 years old and the oldest is 12 years. Majority were in 5-8 years. Among 30 patients mean age was 6.85 years with SD = $\pm$ 2.37 years. In the present series, maximum patients were male 22 (73.3%) and 8 (26.7%) patients were female. Male female ratio 2.75:1. Male patients were predominant in this study. The results are shown in table-II. In the present series, 19 (63.3%) with left sided supracondylar fracture of humerus and 11(36.7%) presented with right sided supracondylar fracture of humerus. The results are shown in Table-III. Out of 30 cases 15 (50%) cases gave history of fall from tree, 6(20%) cases gave history of fall from bed, 4(13.3%) cases gave history of fall during playing, 5(16.7%) cases gave history of RTA due to fall from bicycle.

Table-I: Age, Sex, Side and Causes distribution of the participants (n=30).

	Group of variable	No of Patient	Percentage (%)	Mean $\pm$ SD
Age	0-4	6	20.0	6.85 $\pm$ 2.37 Years
	5-8	18	60.0	
	9-12	6	20.0	
	Total	30	100.0	
Sex	Male	22	73.3	
	Female	8	27.7	
	Total	30	100.0	
Side	Left	19	63.3	
	Right	11	36.7	
	Total	30	100.0	
Causes	Fall from tree	15	50.0	
	Fall from bed	6	20.0	
	Road traffic injury	5	16.7	
	Fall during playing	4	13.3	
	Total	30	100.0	

Table-II: Time interval between injury and operation.

Time in interval in hours	Number of patient	Percentage (%)	Mean($\pm$ SD)
(0-6) hours	1	3.3	8.06 $\pm$ 5.52 Hours
(7-12) hours	11	36.7	
(13-18) hours	16	53.3	
(19-24) hours	2	6.7	
Total	30	100.0	

Out of 30 patient's about 16 (53.3%) of the patient's was operated between (13-18) hours of receiving injury, 11 (36.7%) with in (7-12) hours and 1 (3.3%) within (0-6) hours of injury and 2(6.7%) with in (19-24) hours of injury, mean interval between injury and Operation was 8.06 ± 5.52 hours.

Table-III: Distribution of the patients by loss of carrying angle according to Flynn's criteria (n=30).

Loss of carrying angle in degrees	Number of patient	Percentage (%)	Mean($\pm$ SD)
No Loss	3	10.0	8.5 $\pm$ 5.61 Degrees
1-5	4	13.3	
5-10	17	56.7	
10-15	3	10.0	
> 15	3	10.0	

Among 30 Patient, mean loss of carrying angle was 8.5 ± 5.61 degrees.

Table-IV: Distribution of the patients by loss of elbow flexion and carrying angle according to Flynn's criteria.

		No of Patient	Percentage (%)	Mean $\pm$ SD
Loss of range of motion in degrees	No Loss of flexion	3	10.0	9.53 $\pm$ 5.048 Degrees
	1-5	3	10.0	
	5-10	18	60.0	
	10-15	3	10.0	
	>15	3	10.0	
	Total:	30	100%	
Loss of carrying angle in degrees	No Loss	3	10.0	8.5 $\pm$ 5.61 Degrees
	1-5	4	13.3	
	5-10	17	56.7	
	10-15	3	10.0	
	> 15	3	10.0	
	Total:	30	100%	

Table-V: Distribution of complications (n=30).

Complication	No. of Patients	Percentage (%)
Pin tract infection	4	13.3
Fracture blister	4	13.3
Median nerve palsy	1	3.3
Failure of fixation	2	6.7
Volkman's Ischemia	0	0
Radial nerve palsy	0	0
Ulnar nerve palsy	0	0
No complications	19	63.3

In this series 4 (13.3%) patients out of 30 cases developed pin tract infection, 4(13.3%) patients out of 30 cases were developed fracture blister. All are superficial infection and culture shown staphylococcal infection, according to sensitivity, antibiotic was given and cured. In this series 1% (3.3%) patient's median nerve palsy and 2(6.7%) patients had inadequate pin fixation first attempt. The pins had to removed and refixed after second reduction.

Table-VI: Shows loss of motion and carrying angle in different groups of functional outcome.

Loss of motion in degree	Loss of carrying angle in degree	Grading	Percent (%)
0-5	0-5	Excellent (6)	20.0
5-10	5-10	Good (18)	60.0
10-15	10-15	Fair (3)	10.0
> 15	> 15	Poor (3)	10.0

Functional outcome was analyzed by Flynn's grading. In this study, all 30 patients were treated by closed reduction and percutaneous K-wire fixation. 6 (20%) out of 30 were provided excellent results, 18 (60%) out of 30 cases shown good results and 3 (10%) out of 30 fair outcome and 3 (10%) out of 30 cases poor outcome.

Table-VII: Final outcome according to Flynn Criteria.

No. of Cases	Grading			
	Excellent Number (%)	Good Number (%)	Fair Number (%)	Poor Number (%)
30	6(20.0)	18 (60.0)	3 (10.0)	3 (10.0)

Final Outcome was analyzed by Flynn's grading. In this study there were 6(20.0%) cases with excellent, 18(60.0%) were good and 3 (10.0%) were fair and 3(10.0%) were poor functional outcome.

Table-VIII: Distribution of the patients by radiological outcome and functional outcome (n=30).

	Results	No. of patients	Percentage (%)
Radiological outcome	Sufficient callus formation	27	90
	No sufficient callus formation	03	10
	Total	30	100
Functional outcome	Satisfactory	27	90
	Unsatisfactory	03	10
	Total	30	100

In this series, among 30 Patients, 27(90.0%) had radiologically sufficient callus formation and 3(10.0%) patients had no sufficient callus formation. Functional outcome was satisfactory result (Excellent, Good and Fair) were 27(90.0%) and unsatisfactory result (poor) was 3(10.0%).

Discussion:

In this series, sample sizes was 30 the fracture was found more common in boys 22(73.3%) than girls 8(27.7%). In other series of supracondylar fracture, there was a higher frequency in male patients 70%, female 30%, sample size was 20⁹.

In this study mean age of the patients were 6.85 ± 2.37 years. In other series of supracondylar fracture, mean age of 6.1 ± 3.07 years¹⁰.

In this study, left side was more involved in 19 (63.3%) of patients. While right side fracture was 11(36.7%). In other series of supracondylar fracture, left side (60.24%), right side (39.76%)¹¹.

In this studies most common cause of supracondylar fracture was due to fall from tree 50%, fall from bed 20%,

road traffic injury 16.7%, fall during playing 13%. Other series of supracondylar fracture most common cause fall from height 46.66%, fall from bed 6.66%, fall during playing 20%, fall due to RTA 26.68%¹². In this study, among 30 Patient, there are 27(90.0%) radiologically sufficient callus formation and 3(10.0%) patients had no sufficient callus formation. In radiological union- 3 out of 4 cortices with bridging callus¹³. In this study, the loss of flexion of elbow, 10% no loss of flexion, 10% show's loss of flexion of elbow was (1-5) degrees, 60% shows loss of flexion of elbow was (6-10) degrees and 20% shows loss of flexion of elbow was (11-15) degrees, mean loss of flexion of elbow was 9.53 ± 5.048 degrees. In other series; Anowar et al. 2011, the mean loss of elbow flexion were $8.38^\circ \pm 3.10$ degrees, Foad et al. the loss of elbow flexion were 8.68° in medial-lateral pin fixation, the loss of elbow flexion were 11.26° in two lateral pin fixation¹⁴. Percutaneous lateral parallel K-wire fixation can solve the problem. It requires general anaesthesia, aseptic precaution, C-arm followed by antibiotic therapy. Percutaneous pin can be fixed through lateral condyle. Though stability of fixation incase of medial-lateral pin fixation is biomechanically more than lateral pin fixation but there is more chance of ulnar nerve injury in medial K-wire fixation. This problem can be solved by only lateral pin fixation. We think that the treatment of Gartland type-III closed supracondylar fracture of the humerus in children with only a lateral K-wire would be safer and more convenient¹⁵. In this series patient usually presented with a range of 2 hours to 24 hours, average delay at presentation was 8.06 hours. In other series of supracondylar fracture patient usually presented with a range of ½ an hour to 72 hours, average delay of more than 12 hours in presentation¹⁶. In this series patient usually presented with a range of 2 hours to 24 hours, average delay at presentation was 8.06 hours. In other series of supracondylar fracture a delay of more than 12 hours in presentation¹⁷. In this study, mean loss of carrying angle was 8.5 ± 5.61 degrees. Vaidya (2009) showed in group A (Lateral pin fixation) mean loss of carrying angle was 3.70° and In group B (both side pin fixation) mean loss of carrying angle was 3.57° ¹⁸. In this study mean age of the patients were 6.85 ± 2.37 years. In other series of supracondylar fracture, mean age of 5.8 years¹⁹. In this study, the loss of flexion of elbow, 10% no loss of flexion, 10% show's loss of flexion of elbow was (1-5) degrees, 60% shows loss of flexion of elbow was (6-10) degrees and 20% shows loss of flexion of elbow was (11-15) degrees, mean loss of flexion of elbow was 9.53 ± 5.048 degrees. In other series; Foad et al. the loss of elbow flexion were 8.68° in medial-lateral pin fixation, the loss of elbow flexion were 11.26° in two lateral pin fixation²⁰. In this study, 1(3.33%) patient had medial nerve palsy, pin tract infection 4(13.33%), fracture blister 4(13.34%), failure of fixation 2(6.67%), 2 patients had inadequate pin fixation at first attempt, which did not get contact with the proximal fragment. In other series, cited an incidence of 18% vascular and 8% neural complications in his 72

displaced supracondylar fracture study². In this study, Final outcome of our study, 6(20.0%) cases were excellent, 18(60%) were good and 3(10%) were fair and 3(10%) had poor result among 30 cases. The overall satisfactory result (including the excellent, good and fair) was 90%. In other series of supracondylar fracture, Flynn et al. (1974) achieved 98% satisfactory results. Good functional and cosmetic outcome is our goal. For this closed reduction and stabilization by two lateral parallel percutaneous K-wire is a better option.

Conclusion:

There are several methods of treatment of this fracture, closed reduction and percutaneous lateral K wire pinning through lateral epicondyle provides good stabilization with less chance of iatrogenic nerve injury, less complications, no fracture re-displacement, no post-operative deformity and almost quite normal functional outcome.

Conflict of Interest: None.

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Outcome of Preterm Labour in SSMC Mitford Hospital, Dhaka.

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Abstract:

Introduction: : Preterm birth as a consequence of preterm labour is the major clinical problem associated with perinatal mortality, serious neonatal morbidity and moderate to severe childhood disability and two-thirds of all perinatal deaths. Moreover, preterm labour comprises a large number of low birth weight babies. Global incidence of preterm labour is 5-10% of all births. The aim of this study was to determine the clinical profile and to find out pregnancy outcomes of preterm labour. **Materials & Methods:** This cross-sectional study was conducted in Sir Salimullah Medical College Mitford Hospital, Dhaka from January 2005 to December 2005. A total 103 gravid women who got admitted with established premature labour pain were included as study patients. Preterm labour associated with severe pre-eclampsia, eclampsia, antepartum haemorrhage and intrauterine fetal death were excluded. Data were collected in a pre-designed questionnaire and analyzed by SPSS software. **Results:** Incidence of preterm labour was found 6.3%. Among maternal morbidities, puerperal sepsis found to be highest (14.56%) followed by UTI (7.77%), PPH (6.80%), wound infection (5.83%) and retained placenta (3.88%). This study found perinatal mortality 32.0% and morbidity 49.5% of which RDS contributed highest (24.27%) followed by neonatal jaundice (11.65%), septicemia (8.73%), neonatal convulsion (2.91%) and umbilical sepsis (1.94%). **Conclusion:** Preterm labor followed by preterm birth significantly contributes to maternal morbidity and perinatal morbidity and mortality.

Key words: Preterm labour, Preterm birth.

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Introduction

One of the most sensitive indicators of a nation's commitment to its people is the rate of perinatal mortality. Preterm labour (PTL) is one of the important causes of prematurity that accounts for 50-70% of all neonatal mortality and morbidity and two-thirds of all perinatal deaths worldwide¹⁻³. Preterm delivery is a major obstetric and public health problem in developing countries which is easily demonstrated by virtue of its contribution to total perinatal mortality. Each year about 8 million perinatal deaths occur worldwide and 98% of them are in the developing countries⁴. Preterm labour is defined as one where labour starts before 37 completed weeks, counting from the 1st day of last menstrual period. Though the lower limit of gestation is not uniformly defined, developed countries have brought it down to 20 weeks, whereas in developing countries it remained at 28 weeks⁵. Perinatal mortality has not decreased satisfactorily in spite of substantial improvements have been made in reducing perinatal mortality rate. Because issues of preterm birth are complex and causes are poorly understood, therapy is often palliative and of limited benefit. The consequences of preterm birth often far exceed the neonatal period and might impact significantly on economy of parents as well as society. Moreover, a low socio-economic condition, high birth orders especially among poor and illiterate people with high perinatal and infant mortality rate with a limited health care facility complicating the scenario⁶. Data regarding perinatal mortality in developing countries derive mainly from hospital-based studies. This fact hampers a proper assessment of causes of poor perinatal outcomes because 95% of all deliveries are conducted at home

and remaining 5% delivered at hospitals. Hospital records of our country based on population of hospital births revealed that after exclusion of birth with congenital anomaly, preterm birth was responsible for 85% of all remaining neonatal deaths^{7,8}. The objective of this study was to highlight the impacts of preterm labour among admitted obstetrics patients and to identify factors those contributed to preterm labour with a view to reduce perinatal mortality and morbidity. Moreover, the results of this study might contribute to gain a comparable perspective as well as to identify perinatal risks in high mortality societies.

Materials and Methods

This cross-sectional study was conducted in department of Obstetrics & Gynaecology of SSMC Mitford Hospital, Dhaka from January 2005 to December 2005. A total of 103 cases, irrespective of parity, who got admitted with established PTL were included. Pregnancy between 28 to <37 completed gestational weeks with at least 1 painful uterine contraction in 10 minutes lasting for ≥ 30 seconds and progressive cervical dilation and effacement was defined as PTL. Patients with severe pre-eclampsia, eclampsia, antepartum haemorrhage and intrauterine fetal death were excluded. All study patients were assessed by detailed relevant history and physical examination. Gestational age was confirmed either from last menstrual period, previous antenatal records or earliest ultrasonography report, as applicable. In each case, labour was monitored and managed in standard ways upto delivery. Data were collected in structured, preformed questionnaires by directly questioning, physical examination, daily follow-up of patients till their discharge and also from clinical records of patients and neonates. The obtained data were checked, verified, coded and analyzed by using SPSS software system. Data were presented as mean $\pm$ standard deviation or frequencies and percentages as appropriate using tables.

Results

During one-year study period total 1629 patients were admitted for delivery. Of them, 1526 patients had term and 103 patients had preterm deliveries with a prevalence of preterm delivery 6.3%. Mean age of study patients was 22.5 years. Majority (62.14%) had average nutritional status and nearly half (48.54%) completed only primary education. Majority (69.90%) study patients were housewives and 53.40% husbands were service holders. Majorities (63.11%) were primigravida, only 43.69% had regular ANC and 53.40% had rupture of membrane at admission. Vaginal delivery occurred in 69.90% patients and 38.84% experienced morbidity where puerperal sepsis being predominant (14.56%). RDS was leading perinatal morbidity (24.27%) followed by neonatal jaundice (11.65%) and septicemia (8.73%). Neonatal death was 32.04%.

Table-I: Demographic characteristics of study patients (n=103).

Demographic variables	n	%
Age group (in years)		
15-19	12	11.65
20-24	52	50.49
25-29	25	24.27
30-34	8	7.77
35-39	6	5.82
Monthly income (in taka)		
< 6,000	23	22.33
6,000-9,000	62	60.19
> 9,000	18	17.47
Nutritional status		
Average	64	62.14
Below average	39	37.86
Educational status		
Illiterate	27	26.21
Primary	50	48.54
SSC	24	23.30
HSC	2	1.94
Occupation		
Housewife	72	69.90
Service holder	17	16.50
Maid servant	13	12.62
Others	1	0.97
Occupation of husband		
Service	55	53.40
Business	29	28.16
Agriculture	3	2.91
Others	16	15.53

Table-II: Obstetrics characteristics of study patients (n=103).

Obstetrics variables	n	%
Gravida		
Primi	65	63.11
Multi	38	36.89
Antenatal check-up		
No	10	9.70
Irregular	48	46.60
Regular	45	43.69
Gestational age (in weeks)		
28-30	5	4.85
31-34	51	49.51
35-<37 completed	47	45.63
Previous obstetric history		
Uneventful	75	72.82
Preterm labour	16	15.53
MR	4	3.88
Abortion	6	5.83
Perinatal death	2	1.94
No. of pregnancy		
Singleton	98	95.15
Twin	5	4.85

Table-III: Membrane status at the time of hospital admission.

Membrane status	n=103	%
Ruptured	55	53.40
Not ruptured	48	46.60

Table-IV: Mode of delivery of study patients.

Mode of delivery	Primigravida (n=65)		Primigravida (n=65)		Total n %
	n	%	n	%	
Vaginal delivery (VD)	42	40.77	30	29.13	72 (69.90)
Lower segment caesarean section (LSCS)	23	22.33	8	7.76	31 (30.09)

Table-V: Distribution of indications of caesarean section (n=31).

Indications of LSCS	n	%
Fetal distress	11	35.48
Malpresentation	6	19.35
Chorioamnionitis	4	12.90
Cervical dystocia	3	9.68
Occipito-posterior position	3	9.68
Previous caesarean section	2	6.45
Multiple pregnancy	2	6.45

Table-VI: Distribution of maternal outcomes (n=103).

Maternal outcomes	n	%
Healthy	63	61.16
Maternal morbidity	40	38.84
Puerperal sepsis	15	14.56
UTI	8	7.77
PPH	7	6.80
Wound infection	6	5.83
Retained placenta	4	3.88

Table-VII: Distribution of perinatal outcomes of study patients (n=103).

Perinatal variables	n	%
APGAR score		
> 7	25	24.27
5-7	40	38.83
< 5	38	36.89
Birth weight (in kg)		
< 2.3	64	62.14
2.3-2.5	38	36.89
> 2.5	1	0.97
Neonatal resuscitation		
Required	54	52.42
Not required	49	47.57
Referral to NICU		
Needed	38	36.89
Not needed	16	15.53
Perinatal outcomes		
Apparently healthy	52	50.48
RDS	25	24.27
Neonatal jaundice	12	11.65
Septicemia	9	8.73
Umbilical sepsis	2	1.94
Neonatal convulsion	3	2.91
Neonatal death	33	32.04

Discussion

Preterm delivery is the leading cause of perinatal mortality and morbidity and is the main risk factor for adverse pregnancy outcomes^{2,3}. Premature infants have an increased risk of mental retardation, blindness and bronchopulmonary dysplasia⁹. The cost to society in terms of acute and chronic medical care as well as long term handicaps has made preterm delivery a serious subject for research. Till today we don't have a national statistics indicating the affection of patients with preterm labour/delivery. In majority countries of the world, estimates of incidence are principally based on hospital admission rather than total population. Therefore, it is not always possible to establish the true incidence. This study found incidence of PTL 6.3%; whereas in India it is 10-16%, in Europe 10-11%, in Australia 6.8%, in Canada and North America 9.6-11.6%¹⁰⁻¹³. Although risk factors of PTL are complex, multifactorial and difficult to understand, epidemiological review have identified several risk factors¹⁴⁻¹⁷. Maternal age is one of them. Pregnancy in teenagers is not quite uncommon in our country. Olansson and co-workers found an increased risk of preterm delivery among teenagers¹⁸. Though this study encompassed a wide-ranged age groups but half of study women (50.49%) with PTL was of 20-24 years with a mean age 22.5 years. Iams et al. found mean age 25 years ranging from 14 to 39 years¹⁹. Socio-economic status is indirectly reflected through education, occupation and monthly income of the family. Most of the study patients (73.79%) at least completed primary education (Table I). This might reflect the influence of female education in creating awareness and seeking early obstetric care before any serious complication arises. Though the incidence of PTL found to be slightly higher in middle socio-economic group having monthly income 6,000-9,000 taka, this needs to be verified further. One consistent major risk factor for PTL is prior history of preterm birth. The recurrence rate in this study was 15.53% compared to 21% shown by Nacey²⁰. Occurrence of abortion or MR in previous pregnancy may increase the risk of PTL in current pregnancy. In this study, 5.83% and 3.88% patients gave a history of previous abortion and MR respectively. The association between PTL and prior preterm birth may be due to some biological and genetic factors those to be determined or may be due to infection or cervical injury during previous operative interference. Almost half of study patients (49.51%) had 31-34 gestational weeks with singleton pregnancy (95.15%) and ruptured membrane (53.40%). (Table II & III) Two-thirds of study patients (69.90%) delivered vaginally whereas one-third (30.09%) needed caesarean section. (Table IV) The commonest indication of LSCS being foetal distress (35.48%) followed by malpresentation (19.35%). Chorioamnionitis ranked third (12.9%). (Table V) Maternal morbidity following PTL seems to be relatively high many folds due to increased operative interference and frequent association of puerperal infection of several kinds. Though this study found no maternal mortality, 38.84% patients experienced morbidity in various forms. Puerperal sepsis

was found to be the leading maternal morbidity (14.56%) followed by UTI (7.77%), PPH (6.80%), wound infection (5.83%) and retained placenta (3.88%). (Table VI) Several studies also support these findings^{3,7,19,20}. Regarding perinatal outcomes, 62.14% babies had birth weight < 2.3kg, 52.42% required resuscitation and 36.89% needed NICU referral. Though 50.48% babies were born apparently healthy, 32.04% mothers had perinatal deaths during their hospital stay. Perinatal morbidity was encountered in 49.51% study patients, of which respiratory distress syndrome (RDS) topped in the list (24.27%) followed by neonatal jaundice (11.65%), septicemia (8.73%), umbilical sepsis (1.94%) and neonatal convulsion (2.91%). (Table VII) Many other studies found similar findings,^{2,7,9,11} although dissimilarities are not scarce^{3,20}.

Conclusion

Preterm labour was found to be associated with several maternal morbidities like puerperal sepsis, UTI, PPH, wound infection and retained placenta. Along with neonatal mortality this study also found to contribute in a wide range perinatal morbidity like low birth weight, increased need of NICU, RDS, neonatal jaundice, septicemia, umbilical sepsis and neonatal convulsion. So, this study concludes that preterm labour adversely affect the health outcomes of both mother and newborns.

Conflict of Interest: None.

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Correlation of Carotid Artery Intima-Media Thickness with Age, Body Mass Index and Glomerular Filtration Rate in Chronic Kidney Disease Patients

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Abstract:

Introduction: Ultrasound measurements of the intima media thickness (IMT) in the carotid arteries is a strong predictor for cardiovascular events both in the general and diseased population. **Materials & Methods:** This cross-sectional analytic study was conducted to observe correlation of CIMT with age, body mass index (BMI) and glomerular filtration rate (GFR) in chronic kidney disease (CKD). The study was done in Department of Nephrology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, on 80 chronic kidney disease patients, from July 2014 to June 2015. All the biochemical parameters were measured according to the standard laboratory techniques. Body mass index (BMI) was calculated by person's body weight divided by height. Glomerular filtration rate (GFR) was calculated using the modification of diet in renal disease (MDRD) formula. CIMT measurement was done by duplex study of carotid vessels through high resolution B-mode ultrasound. **Results:** Mean age of the patients was 36.1 ± 9.5 years. 20 (25%), 26 (32.5%) and 34 (42.5%) patients were in CKD stage 3, 4 and 5 respectively. Age, serum creatinine and GFR showed statistically significant difference among stage 3, 4 and 5 CKD patients ($p < 0.001$). However, no difference was evident in BMI and mean CIMT among stage 3, 4 and 5 CKD patients. Significant positive correlations were found between age and CIMT ($r = +0.332$; $p = 0.003$) and BMI and CIMT ($r = +0.294$; $p = 0.008$). However, no significant correlation was evident with estimated glomerular filtration rate (eGFR) and CIMT ($r = -0.181$; $p = 0.109$). **Conclusion:** Age, serum creatinine and estimated glomerular filtration rate showed statistically significant difference among different stages of CKD patients (stage 3, 4 and 5). There were significant positive correlations found in between age and CIMT as well as BMI and CIMT in chronic kidney disease patients, with an exception to GFR and CIMT.

Key words: Carotid artery intima-media thickness, Age, Body Mass Index, Glomerular filtration rate, Chronic kidney disease.

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Introduction

Patients with chronic kidney disease (CKD) are at high risk for developing cardiovascular disease (CVD)^{1,2}. In 2017, globally CKD resulted in 1.2 million deaths with an additional 1.4 million deaths from cardiovascular disease which were attributable to impaired kidney function³. Ultrasound measurements of the intima media thickness (IMT) in the carotid arteries is a non-invasive, yet strong predictor for cardiovascular events both in the general and diseased population^{4,5}. Atherosclerosis and arterial calcification can be predicted by age, gender and metabolic status in CKD patients^{5,6}. The level of glomerular filtration rate (GFR) is widely accepted as the best overall measure of kidney function in health and disease². The risk of death from cardiovascular disease increases along with the decrease in renal function. A slight decline in glomerular filtration rate in the advanced stage of chronic renal insufficiency results in two- to threefold higher risk of CVD⁷. For example, in patients under dialysis, this risk is increased from 10 to 100 times in comparison with the general population⁷. Numerous epidemiological studies in Europe, Americas and Far East have analyzed traditional risk factors like age, body mass index (BMI) and non-traditional risk factor like GFR associated with atherosclerosis development in CKD patients and investigated on correlation of those factors with CIMT^{7,8}. However, the correlation of traditional those cardiovascular risk factors and stages of chronic kidney disease (CKD) with CIMT has not been studied much in our country to date. Hence, the aim of the present study was to observe correlation of

CIMT with age, body mass index (BMI) and glomerular filtration rate (GFR) on chronic kidney disease (CKD) patients in a tertiary level renal treatment facility in Bangladesh. It is expected that CIMT would be correlated with those CVD risk factors, and the results would predict both possibilities of cardiovascular events and progression to end-stage renal disease, which ultimately could be a useful tool for prediction and helpful to plan early management and prevent further morbidity and mortality in chronic kidney disease patients.

Materials and Methods:

This cross-sectional analytic study was conducted in Department of Nephrology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, from July 2014 to June 2015. The study population were the patients with chronic kidney diseases, who were admitted into BSMMU Hospital during that period. However, convenient sampling technique was adopted. Finally, a total of 80 patients were selected based on inclusion and exclusion criteria. Inclusion criteria were – age ranging from 18 to 50 years, and only patients of CKD stage 3, 4 and 5 (as defined by KDOQI Clinical Practice Guidelines for Chronic Kidney Disease, 2002)². Exclusion criteria were – patients having acute kidney injury, carotid surgery, smokers or alcoholics, or on lipid lowering agents, and having history of ischemic heart disease or stroke. Data collection was done after taking written informed consent from each patient or from his/her legal guardian who fulfilled the criteria. They were evaluated by history, clinical examinations and laboratory investigations as per data collection sheet. The patients were investigated with complete blood count, urine routine examination, serum creatinine and fasting lipid profile, ECG and carotid artery ultrasound. All the biochemical parameters were measured according to the standard laboratory techniques. Body mass index (BMI) is a measure of body fat and was calculated by dividing weight in kilograms by height in meters squared in each patient. Then based on BMI, the patients were categorized as per guideline of WHO Expert Consultation (2004)⁹. Serum creatinine was measured by alkaline picrate method (Jaffe kinetic assay). Serum creatinine was determined as mol/L and converted to mg/dl by conversion factor 88.4. With serum creatinine level, Glomerular filtration rate (GFR) was calculated using the Modification of Diet in Renal Disease (MDRD) formula¹⁰. Carotid artery intimal-medial thickness (CIMT) measurement was done by duplex study of carotid vessels through high resolution B-mode ultrasound technique¹¹. High resolution 7-18 MHz linear probe was used and done by a highly skilled sonologist. Normal carotid artery diameter is 4-6 mm. CIMT was measured in its posterior wall, from inner echogenic margin to outer hypoechoic line. CIMT ≤ 0.8 mm in adults was considered as normal¹². The presence of any atheromatous plaques was also noted. However, the extent of the lesions was not quantified.

The statistical software SPSS (Statistical Package for Social Science) version 22.0 was used for statistical analysis. The

results were presented in tables and figures. The quantitative variables were compared using the Unpaired student 't' test and ANOVA test. Pearson's correlation coefficient test was done to find out the value of correlation coefficient using data from graph. The study was approved by the Institutional Review Board (IRB) of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh.

Results:

Among 80 patients, 29 (36%) were in 18-30 age group, 18 were (23%) 31-40 age group and 33 (41%) were between 41-50 age group; mean age was 36.1±9.5 years (Table-I). 51 patients (64%) were male and 29 (36%) were female. 20 (25%), 26 (32.5%) and 34 (42.5%) patients were in CKD stage 3, 4 and 5 respectively. Based on calculated BMI, 52 patients (65%) were within the normal weight range, while 16 (20%) were found underweight, 6 (7.5%) were overweight and 6 (7.5%) were obese (Table-II). Age, serum creatinine level and estimated glomerular filtration rate (eGFR) showed statistically significant difference among stage 3, 4 and 5 CKD patients ($p < 0.001$); however, no difference was evident in BMI and mean CIMT (Table-III). Significant positive correlations were found between age and mean CIMT ($r = +0.332$; $p = 0.003$) (Fig. 1) and between BMI and mean CIMT ($r = +0.294$; $p = 0.008$) (Fig. 2). However, no significant correlation was evident between estimated glomerular filtration rate (eGFR) and mean CIMT ($r = -0.181$; $p = 0.109$) (Fig. 3).

Table-I: Age distribution of the study patients (n=80)

Age range (in years)	Frequency	Percentage
18-30	29	36
31-40	18	23
41-50	33	41
Total	80	100
Mean±SD	36.1±9.5	

Table-II: Distribution of the study patients by BMI (kg/m²) (n=80)

BMI (Kg/m ²)	Frequency	Percentage
Underweight (18.5 or less)	16	20.0
Normal weight (18.5-22.99)	52	65.0
Overweight (23-24.99)	6	7.5
Obesity (25 or more)	6	7.5
Total	80	100

Table-III: Clinical and biochemical parameters in different CKD stages (n = 80)

Variables	CKD stage			P value
	Stage-3 (n=20)	Stage-4 (n=26)	Stage-5 (n=34)	
Age (years)	39.4 ± 7.5	40.3 ± 8.6	30.7 ± 8.7	<0.001*
BMI (Kg/m ²)	21.8 ± 3.2	22.1 ± 5.2	21.7 ± 7.4	0.967 ^{NS}
Mean CIMT (mm)	1.1 ± 0.2	1.1 ± 0.1	1.1 ± 0.3	0.943 ^{NS}
eGFR (ml/min/1.73m ²)	30.3 ± 15.0	19.3 ± 6.6	7.3 ± 3.0	<0.001*
Serum creatinine (mg/dl)	2.8 ± 2.2	3.2 ± 1.0	9.7 ± 4.6	<0.001*

ANOVA test was performed to compare the parameters among different stages of CKD. NS = Non-significant; * = Significant at the level of $p < 0.001$.

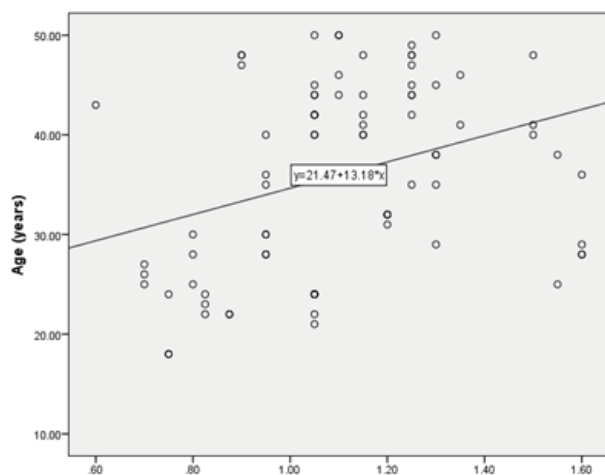


Fig. 1. Scatter diagram showing positive correlation between age and mean CIMT ($r = +0.332$; $p = 0.003$).

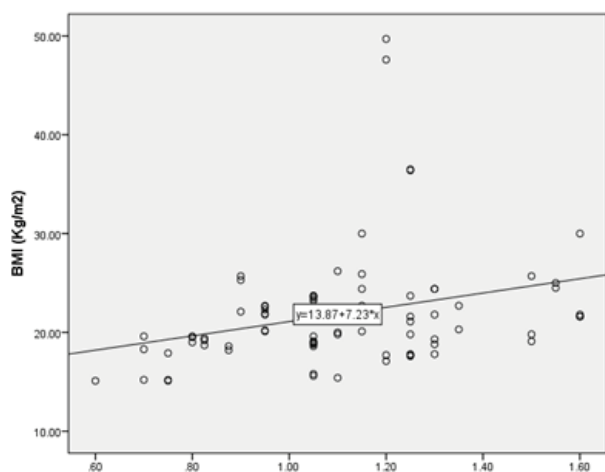


Fig. 2. Scatter diagram showing significant positive correlation between BMI and mean CIMT ($r = +0.294$; $p = 0.008$).

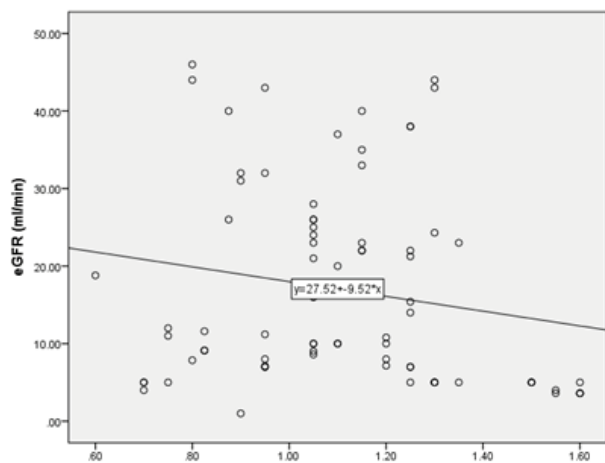


Fig. 3. Scatter diagram showing the correlation between eGFR and mean CIMT ($r = -0.181$; $p = 0.109$).

Discussion

The present study showed mean age of the CKD patients 36.1 ± 9.5 years. The result is supported by the report of Jha et al.¹³ that showed CKD occurs commonly in young adults between the ages of 20 and 50 years in developing countries of different regions of the world, unlike the comparatively older age groups affected in developed countries. The justification for the younger age of patients with CKD in the developing world include high preponderance of infections/infestations, especially in childhood leading to chronic glomerulonephritis, which is one of the prevailing causes of CKD in South Asia and Sub-Saharan Africa^{3,13}. Age contributes to thickening of the arterial wall in all people⁴. However, the present study showed a significant positive correlation between CIMT and age in CKD patients. Similar results were observed in several other studies as reported by Shoji et al.¹⁴ ($r=0.270$; $p<0.001$), Brzosko et al.¹⁵ ($r=0.68$; $p=0.001$), Preston et al.¹⁶, Bevc et al.¹⁷ ($r=0.589$; $p=0.0001$), Szeto et al.⁴ ($r=0.373$; $p<0.001$), Kawamoto et al.¹⁸ ($p<0.001$), and later by Olechnowicz-Tietz S⁷ et al. ($p=0.008$), Chhajed et al.⁸ ($r=0.605$; $p<0.001$) and Hinderliter et al.¹⁹ ($r=0.61$; $p<0.001$). These results reflect that the atherosclerosis increases with age and CKD patients have more vulnerability. Higher CIMT is correlated with obesity-related anthropometric parameters or body fat content including body mass index (BMI)^{8,20}. The present study also showed that CIMT positively correlated metabolic status of the patients, i.e. with BMI. Similar association was observed in previous studies done by Brzosko et al.¹⁵ ($r=0.50$; $p=0.02$), and Chhajed et al.⁸ ($r=0.377$; $p<0.001$). However, Kawamoto et al.¹⁸ found no correlation between the BMI and CIMT in both men ($r=-0.055$; $p=0.253$) and women ($r=-0.021$; $p=0.616$). Later, Olechnowicz-Tietz et al.⁷ found that BMI ≥ 30 kg/m² was most common among patients with CKD patients of stage 3 and 4 (39.4% and 60%, respectively), they could not find any correlations though. Similarly, Hinderliter et al.¹⁹ did not find any correlations ($r=0.05$; $p=0.445$). The present study showed no significant correlation between CIMT and eGFR. Similar results were observed by Chhajed et al.⁸ ($r=-0.130$, $p<0.283$) and Hinderliter et al.¹⁹ ($r=-0.04$; $p=0.541$), as they reported that mean CIMT did not directly correlate with eGFR. However, Olechnowicz-Tietz et al.⁷ observed association of CIMT with eGFR (continuous variable) ($p = 0.001$) and with eGFR at advanced CKD ($p = 0.009$). Similarly, Kawamoto et al.¹⁸ found that correlation between the eGFR and CIMT was significant in both men ($r=-0.210$; $p<0.001$) and women ($r=-0.208$; $p<0.001$). In our study, the linear regression model showed that factors associated with CIMT were predominantly traditional atherosclerotic risk factors e.g. age and BMI, whereas eGFR was not independently associated with CIMT, which indicates that increased CIMT in patients with CKD might be caused at least in part by those traditional risk factors⁸.

Conclusion:

In summary, age, serum creatinine and estimated glomerular filtration rate showed statistically significant difference

among different stages of CKD patients (stage 3, 4 and 5). There were significant positive correlations found in between age and CIMT as well as BMI and CIMT in chronic kidney disease patients, with an exception to GFR and CIMT (as no correlation found). We recommend further studies in the same ethnic population with larger samples and long duration, to determine the mechanism of atherosclerosis in early stages of kidney disease, and the relationship between increase of CIMT and patients' prognosis, with better treatment facility and high technical back-up.

Conflict of Interest: None.

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Early Neonatal Outcome of Clinically Diagnosed Fetal Distress in Low Resource Areas

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Abstract

Introduction: Fetal distress is a high risk obstetric situation associated with increased perinatal morbidity and mortality. It is also a major contributor to operative interventions in the majority hospitals of developing countries. The objective of this study was to observe clinically diagnosed fetal distress and early neonatal outcome after delivery. **Materials and Methods:** This hospital based cross-sectional study was carried out in Department of Obstetrics and Gynecology at Bashundhara Addin Medical College Hospital, Keraniganj during the period of January to December 2019. 212 women in active phase of labor at term pregnancy who met the inclusion and exclusion criteria were enrolled. Fetal distress was diagnosed by abnormal FHR and/or presence of meconium in amniotic fluid after rupture of membrane. Neonatal outcome was assessed by 1st & 5th mins Apgar Scores after delivery, babies requiring immediate resuscitation and admission to neonatal care unit & recorded. **Result:** Among fetal distress 11.32% babies had Apgar score <7 as compared to babies without fetal distress that had 5.66% apgar score <7 at 5th minutes ($p < 0.05$). 28.3% fetal distressed born babies required NICU admission rather than only 9.44% of without fetal distress. **Conclusion:** This study shows relative adverse neonatal outcome for fetal distressed babies than without distress.

Keywords: Fetal distress, Apgar scores.

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Introduction:

Fetal distress is a widely used but poorly defined term¹. Alternative terms- Nonreassuring fetal status (NRFS) which indicate that the fetus is compromised. It can be identified by suboptimal values in fetal heart rate, oxygenation of fetal blood & other parameters². Signs and symptoms of fetal distress include-decreased movement felt by mother (count to ten or Cardiff count to 10), meconium in the amniotic fluid, abnormal fetal heart rate (tachycardia > 180 bpm; bradycardia < 110 bpm, cardiotocography (persistent severe variable deceleration) and acid-base of capillary blood $PH < 7.15^{3,4}$. Some of these signs are more reliable predictors of fetal distress than others. For example; cardiotocography can give high false positive rates, even when interpreted by highly experienced medical personal. Acidosis is a highly reliable predictor, but is not always available. A highly effective method of assessment of distress would be to use fetal heart rate as a first indicator of distress². In resource rich countries, the incidence of fetal distress is about 1/1000 live births⁵. In resource-poor countries it is much more common i.e. 5-10/1000 live births⁶. The etiology of fetal distress may be present before the onset of labor (especially maternal disorder & placental pathology) or occur during labor. About 23-40% of fetal distress occurred in pregnancies with no clinical risk factors⁷. Male fetuses are at increased risk for fetal distress during labor which is evidenced by low Apgar scores or perinatal death⁸. The outcome of baby with fetal distress is quite variable. Severity can be ascertained by two clinical methods- (i) Apgar scores (ii) Measurement of degree of acidosis or hypoxia of fetal blood. Low Apgar scores were observed in neonates with moderate or severe fetal distress at delivery⁹. Severe fetal

distress may results in cerebral oedema, seizures, necrotizing enterocolitis, epilepsy, mental retardation & abnormal physical growth, perinatal death, or still birth but the majority will be normal¹⁰. To prevent severity of fetal distress, early diagnosis is to be made by close monitoring during labor and must be treated with intrauterine resuscitation technique including correction of maternal hypotension and /or the use of tocolytic agents¹¹. Proper timing of delivery is also necessary. Fetal distress also affects the mode of delivery. Both instrumental as well as caesarean delivery has been found to be increased¹². The main objective of this study was to observe early neonatal outcome of clinically diagnosed intrapartum fetal distress in terms of Apgar scores.

Materials and Methods:

This cross-sectional descriptive study was carried out from January 2019 to December 2019 in Obstetrics and Gynae Department at Bashundhara Addin Medical College Hospital, Keranigaaj. 212 women in active labor were enrolled for the study. Out of them 106 parturient with fetal distress were included in trial group (group-I) and 106 parturient having no fetal distress in comparison group(group-II). Inclusion criteria were women with ages between 18-35 years, singleton term pregnancy (37-40 weeks) with Cephalic presentation in active phase of labor. Multiple Pregnancy, pre-term labor, malpresentation, H/O lower segment caesarean section, cephalo-pelvic disproportion, pregnancy with medical disorders were excluded from this study. Informed consent was taken & proper ethical clearance was obtained before study. Fetal distress was diagnosed by abnormal FHR and/or presence of meconium in amniotic fluid after rupture of membrane. Assessment of neonatal outcome was observed by, 1st & 5th minutes Apgar scores after delivery. Apgar score <7, babies requiring immediate resuscitation and admission to neonatal care unit were considered as adverse outcome of baby. The data was recorded in a predesigned questionnaires and analyzed by SPSS 22.0 software (SPSS, Inc. USA); for analysis chi-square test, Students T test were done where needed. P value <0.05 was assumed as significant.

Results:

Total 216 parturient were included in the study. During study period 16.4% parturient developed fetal distress.

Table -I shows the mode of delivery among the participants. Mode of delivery is significantly influenced by the fetal distress. There was raise of caesarean deliveries (81.13%) in trial group.

Table-I: Mode of delivery among trial and comparison group

Mode of delivery	Case Group	%	Comparison group	%
NVD	20	18.87	88	83.02
LUCS	86	81.13	18	16.98
Total	106	100	106	100
P value	<0.0001			

Comparison between case and comparison group was significant. (P<0.0001). Only tachycardia & thin meconium showed no association with low Apgar scores(Table-II).

Table-II: Clinical profile of fetal distress compared with Apgar score.

Fetal distress	N	%	A/S<7 at 5 min		A/S<7 at 1 min	
			Number	Percentage	Number	Percentage
Tachycardia	11	10.37	0	0	11	9.43
Bradycardia	14	13.21	3	3.77	11	10.38
Thick meconium	40	37.73	2	1.89	38	35.84
Thin meconium	32	30.19	0	0	32	30.19
Abnormal FHR+meconium	9	8.5	6	5.66	03	2.84
Total	106	100	12	11.32	94	88.68

The distribution of early neonatal outcomes of two groups have shown in Table-III & IV. In the present study 45.28% of trial group babies had low apgar score (<7) at 1st minute and 11.32% at 5th minutes as compared to control group where 30.19% and 5.66% had Apgar scores(<7) at 1st minute 5th minutes. A statistically significant difference (p<0.05) was observed in 1st & 5th min Apgar scores & NICU admission. But there was no significant difference for perinatal mortality(p>0.05).

Table-III: Comparison of Apgar score between case & comparison groups.

Apgar Score	1 Minute		5 Minutes		P value
	Case Group	Comparison Group	Case Group	Comparison Group	
0-3	12	5	3	1	0.03
4-6	36	25	10	2	
7-10	58	76	93	103	
Total	106	106	106	106	
P value	0.02		0.03		

Table-IV: Distribution of early neonatal outcome between two groups.

Variable outcomes	Case Group (%)	Comparison Group (%)	P value
1st min apgarscore<7	48 (45.28%)	30(30.19%)	0.02
5thminapgarscore<7	12(11.32%)	3(5.66%)	0.03
Admission in NICU	30(28.30%)	10(9.43%)	0.02
Perinatal mortality	2(1.89%)	1(0.94%)	0.2

Discussion:

The incidence of fetal distress is found to be different in different studies ranging from 6.02% to 22%. In the present study, the proportion is 16.5%. S.S. Bhide, Ramachandra & Gupta et al found the incidence is 6.02%, 9.6% & 14.3% respectively^{13,14,15}. Obstetricians feel unsafe about the state of the fetus, if there is abnormal FHR and the amniotic fluid is meconium stained during labor even in places where other facilities of intrapartum monitoring like, fetal blood sampling and cardiotocography are available. This has influenced the mode of delivery. In present study, 81.13% of group I had caesarean delivery as compared to 16.98% in group II. Findings of this study is comparable to the studies done by Cliford et al who found caesarean section rate was 38% in study group and 26% in control group¹⁶. In this study caesarean rate is too high as compared to other study, because instrumental delivery was not allowed by our patient. Ramachandra, Sashikala, Krzysztof et al also found increase rate of instrumental and caesarean delivery in fetal distress as compared to control group^{14,17,18}. But Rossi et al did not find increased operative delivery¹⁹. Apgar scores have low predictive value for birth asphyxia as it is also affected by other factors. But in this study, we rely on the findings of apgar scores. In the present study 45.28% of distress born babies had low apgar score (<7) at 1st minute and 11.32% at 5th minutes as compared to control group where 30.19% and 5.66% had Apgar scores(<7) at 1st & 5th minutes respectively. These findings are comparable with different other studies. In the study of Ramachandra et al 13% of meconium stained amniotic fluid (MSAF) babies were having low apgar score as compared to only 3.6% in clear liquor group at one minute. At 5 minutes this was 6% in MSAF born babies and 1.8% in clear liquor born babies¹⁴. Gupta et al showed 24.5% of distress babies had low apgar score at one minute compared to 4.1% in without distress born babies¹⁵. Ikechebelu JI found 36.5% babies had Apgar scores of 7 and above, while 63.5% had Apgar scores < 7 in fetal distress group²⁰. In present study 28.3% babies were admitted to neonatal care unit among the babies born with distress group compared to only 9.44% of without distress babies, two babies (1.89%) in study group had neonatal death (NND) both were born with thick meconium. Ikechebelu JI found 3.9% perinatal mortality²⁰.

Conclusion:

Clinically diagnosed Fetal Distress is accurate about one half

of cases evidenced by low apgar scores which suggests a significant association with early neonatal outcome after delivery. So, immediate delivery is expedient in such cases. Future multicenter study is needed to support or refute the findings of the study.

Conflict of Interest: None.

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Clinical Profile and Outcome of Acute Poisoning Cases in Children Living in a Rapidly Urbanizing Area

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Abstract

Introduction: Acute poisoning is a common childhood emergency in Bangladesh. In many cases history and clinical features fail to identify the offending agent. This study was done to identify the specific clinical findings related with the source of poisoning and assess the outcome. **Materials and Methods:** It was a prospective study done from January to June 2020, among 75 indoor children of Tangail District Hospital. A preformed structured questionnaire was filled up by data collected from direct interview with the parents or caregivers, hospital records, during clinical examination. **Results:** We found the mean age of the study population 5.5 ± 1.5 years having male preponderance 1.6:1 in ratio. Kerosene 16(21.33%) and organophosphorus compound 15(20%) were the most common etiological agents and accidental (85%) was the most common mode of poisoning. Most of the cases were asymptomatic 25(33.3%). We encountered only 5(6.6%) death having 62(82.6%) complete recovery. **Conclusion:** Acute poisoning still remains a major cause of child death in Bangladesh. History remains the main information for early diagnosis. We should take necessary steps to prevent exposure to poisonous material in children to reduce related burden of hospitalization, mortality and morbidity.

Keywords: Acute Poisoning, OPC, Kerosene, Children.

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Introduction:

Acute poisoning is a common emergency around the world¹. Although childhood mortality from infectious disease have declined for the last few decades there is steady increased proportion of death resulting from non-communicable diseases like, drowning, poisoning, snake bite, electrocution, injury etc². Reduction of illnesses and deaths from hazardous chemicals and pollution is one of the health related goals of SDG¹. Exposure to poisonous substance is a huge healthcare load for any pediatric emergency and indoor facilities^{3,4}. There is increasing trend of acute poisoning related hospital admission and death in Bangladesh due to rapid economic development and easy accessibility of agro-chemical and other harmful substances^{5,6}. Commonly used

substances for acute poisoning in our country are herbicides, insecticides, sedatives, food substances, kerosene, rat killer, toilet cleaner; spirit and wooden polish etc.^{7,8}. Children are especially vulnerable to accidental than other modes of poisoning^{9,10}. The mortality and morbidity depends upon some factors like age of the patient, type of poison, quantity of exposure, time elapsed before hospital admission^{11,12}. But early detection & effective management also plays key role. This study was done to report the ever changing substance, mode of poisoning and to identify clinical profile along with outcome of acute poisoning cases admitted in a district level hospital where rapidly urbanization is going on. Thus, we can identify any changing pattern of poisoning for future action plan to prevent such a dreadful and upcoming childhood health hazard.

Materials and Methods:

It was a prospective study done from January/2020 to June/2020, among 75 indoor patients at pediatrics department of 250 Bedded General Hospital, Tangail. A Printed structured questionnaire was prepared before study. This was a secondary level district hospital where most of the patients came from primary centers like Upazilla Health Complex (UHC) and Union Sub-centers. Any acute poisoning case below 12 years old admitted by the emergency medical officer (EMO) into the indoor patient department of pediatrics was included in our study. Those children who were more than 12 years of age, treated in outpatient department(OPD) or in emergency room for observation, deny hospitalization, brought death, chronic poisoning, deny to give informed written consent were excluded from this study. Data were collected from parents and caregivers directly by interviewing. Detailed history regarding age, sex, socio-economic condition, mode of poisoning, place of occurrence, residence,

transportation, condition of the children at arrival, time elapsed before admission in hospital was recorded. Clinical examination data were collected from patient's admission file and history sheet filled up by the duty medical officer in the department or by emergency medical officer. Outcome profile was taken from the patient's register book. Data were then analyzed with the use of Statistical package of social science (SPSS) version-23. Informed written consent or thumbprint was taken from each parent. Permission was also taken from hospital authority before study.

Results:

A total 75 patients were enrolled in this study, Age range during admission was 1.5 to 12 yrs, mean average 5.5 ± 1.5 years, Male, female ratio was 1.6:1. About 50% of the total patient came from rural area, 26% patient came from remote area, and rest of the patients came from urban area. Total 50 patient (66.66%) came from poor family, about 15 patients (20%) came from middle class family, and rest 10 patients (13.33%) came from higher society. Among 75, most of the patient affected by kerosene poisoning (21.33%) & OPC poisoning (20%) drug poisoning 16%, unknown poisoning 14.66%, chemical 10.66%, household substances 6.66%, sedatives 6.66%, others 2.66%. Children mostly take the poison accidentally (85.33%). On the other hand mother and caregivers sometimes give the poisonous substances to children unmindfully. Sometimes children accidentally take drugs which are usually used for adults, like sedatives & anxiolytic drugs etc. Now a day's homicidal poisoning (9.33%) is not rare. It mainly occurs in broken family, disharmony of the parents or by the enemies. Due to ignorance or illiteracy, most of the patients did not come to hospital timely. Only 53.33 % patient came to the hospital within 6 hours of ingestion of poison. Gastric lavage performed only 21 patients because most of the patient came in hospital after 6 hours. Some of the patients affected by corrosive agents like kerosene or spirit, where gastric lavage was contraindicated. Ultimate result after admission of the patient was good. Only 5 patients (6.66%) expired, another 5 patients (6.66%) became disable, 3 patients (4%) referred to higher centre for better management and 62 patients (82.66%) completely recovered. Disability occurs due to corrosive substances. Eye, face & oral cavity affected due to corrosive substances (acid or alkali etc).

Table-I, reveals that about 42.66% Children of study group were in between 0 to 5 years of age and 64 patients (85.33%) out of 75 were Accidental Poisoning.

Table-I: Age distribution and pattern of poisoning.

Age Distribution	Pattern of Poisoning			Total	Percentage
	Suicidal	Homicidal	Accidental		
0-5 Years	0	4	28	32	42.66%
6-10 Years	0	2	21	23	30.66%
10-12 Years	4	1	15	20	26.66%
Total	4	7	64	75	100%

Table -II, shows that most of the children came from rural area, it was near about 83% (56.66%+26.66%).

Table-II: Geographical distribution of residence of the patients.

Area of residence	No of patient	Percentage (%)
Urban Area	13	17.33%
Rural Area	42	56.66%
Remote Area	20	26.66%

Table-III, shows that about two third patient's came from poor family).

Table-III: Social economic condition of the parents.

Statuses	No of patient	Percentage (%)
Poor	50	66.66%
Middle Class	15	20%
Affluent society	10	13.33%

Table-IV, reveals that more than 50% children (41.33+12) came to hospital within 6 hours of poison ingestion/inhalation.

Table-IV: Hospital arrival after ingestion/inhalation of poisons.

Time	No of patients	Percentage (%)
0 to 1 hour	9	12%
1 hour to 6 hours	31	41.33%
7 hour to 24 hours	25	33.33%
>24 hours	10	13.33%

Table V showing most of the cases (33.33%) were asymptomatic.

Table-V: Clinical features of acute poisoning cases.

Clinical features	Cases	Percentage (%)
Asymptomatic	25	33.33%
Vomiting	20	26.66%
Abdominal pain	11	14.66%
Dyspnea	8	10.66%
Excessive salivation	7	9.33%
Altered sensorium	5	6.66%

Table VI shows that kerosene Poisoning (21.33%) was the top most cause of acute Poisoning in children.

Table-VI: Source of poisoning.

Types of poison	No of patient	Percentage (%)
Kerosene Poisoning	16	21.33%
OPC poisoning	15	20%
Drug poisoning	12	16%
Unknown poisoning	11	14.66%
Chemical poisoning	8	10.66%
Household substance	5	6.66%
Sedatives	5	6.66%
Others	2	2.66%

Table -VII shows ultimate recovery was good, it was about 82.66%.

Table-VII: Outcome of the cases.

Outcome	No of patients	Percentage (%)
Death	5	6.66%
Disability	5	6.66%
Referred	3	4%
Complete Recovery	62	82.66%

Discussion:

We observed in our study that age of the maximum children (42.66%) who ingested poisons around 5 years. Under five Children mostly affected by accidental poisoning. And it is almost similar to another study that published from another journal of India^{7,8}. Younger children were more commonly affected with household chemicals as compared to older children who affected mainly by drugs¹³. We observed that there is a significant association between the rural residents and intention of poisoning. It has also been shown in another study conducted in Bangladesh³. Our Current study reported that older children easily take medicines which are usually used for the adult like sedatives, anxiolytics and other narcotics. Youngest children take medicinal products accidentally¹³. In Developing country like Bangladesh have the higher risk for medicinal poisoning in children. Sometimes drug overdose become a risk factor for poisoning in case of children¹³. In rural area children usually take herbicides, insecticides and other household substance because it's easy availability within own residence⁹. Sometimes children become victims accidentally by inhalation of insecticides during spraying to the plants. In the Living room area of the house and in kitchen area household containers were the commonest location for the poison in children in developing country. In our study we observed that most of the children found kerosene oil as the most common poisoning and those poisoning occurred in kitchen area or living room¹¹. We observed that the 41.33% children were brought to the secondary care hospital emergency unit within 3 to 4 hours of poison ingestion or inhalation¹⁴. It was very much similar time compared to the other study in the India, that reported 60% affected Children came to nearby facilities within 3-4 hours and 70% within 6 hours⁷. Delayed presentation to the emergency unit following poisoning is associated with increased risk of complications^{15,16,17}. Delayed clinical presentation was inversely proportional to the outcome. Delayed transportation of children after ingestion of poison was one of the important risk factor in acute poisoning in rural area. Ignorance, illiteracy, poverty, lack of transport facilities, superstitions have been reported as the reason of delayed presentation in our country which was similar to another study done in Bangladesh^{2,3}. Different poisoning pattern observed in different countries and regions. It varies country to country, region to region and different parts of the same country^{18,19,20}. In our study we found that medicine accounted for 16% of all acute poisoning in case of

children, we observed a large contribution from medicinal products for acute poisoning in children¹³. During study period 4 patients died due to aspiration pneumonia/chemical pneumonitis in case of kerosene poisoning, one patient died due to OPC poisoning where gastric lavage, atropine, antidote pralidoxime, IV fluid was given. Data derived from our present study reveals that 20% cases due to OPC admitted in hospital³. Current study revealed that only 3 patients transferred to the tertiary care hospital for the further management. Above all results of the study indicates that public awareness must be improved to reduce mortality and morbidity of under 12 year's children. Limitation of the use of insecticides and pesticides should be strictly maintained, easy accessibility of such products should be monitored. In Bangladesh mortality rate from poisoning cases was reported at 5.1%, in our study mortality rate is 6.66 % which is similar to another study was done in rural hospital in Bangladesh³. Slightly higher mortality rate in our secondary level district hospital may be due to lack of ICU support, delayed transportation, immediate hospitalization and some superstitions.

Conclusion:

Acute poisoning still remains a major cause of child death in Bangladesh. Kerosene, OPC and drugs remain the most common source and accidental as the most common mode of poisoning. History remains the main information for early diagnosis. We should take necessary steps to prevent exposure to poisonous material in children to reduce related burden of hospitalization, mortality and morbidity.

Conflict of Interest: None.

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Clinical Outcome and Operative Findings with Ectopic Pregnancy at Tertiary Medical College & Hospital

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Abstract

Introduction: An ectopic pregnancy is an emergency condition worldwide now a days which defined as a pregnancy that progresses after implantation of the blastocyst anywhere other than the endometrium lining the uterine cavity. **Objective:** In this study our main goal is to identify clinical outcome and operative situation in patients. **Materials and Methods:** This descriptive study was performed from January 2015 to December, 2018 at tertiary medical College & Hospital. During the study 200 patients were evaluated and data was extracted from socio-demographic, menstrual, obstetric and clinical history of the patients. **Results:** most of the patients belong to 30 years (19.7%) age group and history of pelvic infection (26.26%), induced abortion (17.4%), previous MR (16.26%) and sub fertility (11.25%) were common risk factor in ectopic pregnancy found in the study. Also majority of the patients faced laparotomy followed by right sided salphingoectomy (40.40%) which was the most common operation. **Conclusion:** quick diagnosis, classifying of risk factors and timely intervention in the form of surgical treatment is necessary for reduction mortality rate in ectopic pregnancy.

Keywords: Ectopic pregnancy, Laparotomy, Pelvic infection.

Number of Tables: 05; **Number of Figures:** 04; **Number of References:** 22; **Number of Correspondence:** 07.

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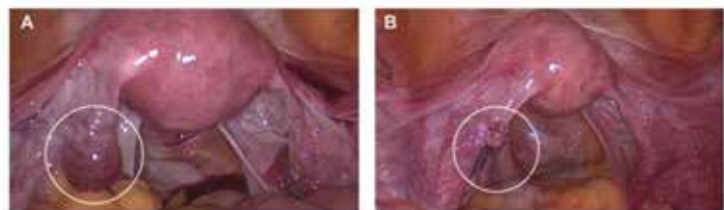
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Introduction

Parenthood, an eternal, universal and inherent dream which every woman has. This dream may not always be satisfying. One of this is ectopic pregnancy: A pregnancy which is associated with life threatening condition¹. The frequency of ectopic pregnancy varies from place to place even in the same country². Recent proof indicate that the occurrence of ectopic pregnancy such as in France- 15 per 1000 pregnancies and in India-1 in 100 deliveries. In the U.K. there are about 11,000 cases of ectopic pregnancies per year (incidence 11.5) per 1000 pregnancies with 4 deaths³. The number of ectopic pregnancies has greater than before in the past few decades in the U.S.A. Established on hospital discharge data, the

occurrence of ectopic pregnancy has increased from 4.5 cases per 1000 pregnancies in 1970 to 19.7 cases per 1000 pregnancies in 1992⁴. In the industrialized world, among 1% and 2% of all reported pregnancies are ectopic pregnancies⁵. The incidence is thought to be higher in developing countries, but specific numbers are unknown. Although the incidence in the developed world has remained relatively static in recent years, between 1972 and 1992 there was an estimated six-fold rise in the incidence of ectopic pregnancy. Ectopic pregnancy is a momentous cause for maternal morbidity & mortality as well as fetal loss⁶. There has been a momentous increase in the number of cases of ectopic pregnancy. Pelvic inflammatory disease, induced abortion, history of infertility, use of intrauterine contraceptive device (IUCD) pelvic surgery, STDs are the causative risk factor for ectopic pregnancy⁷.



Tubal ectopic pregnancy which has been removed by salpingectomy⁸.

In this study our main objective is to identify clinical outcome and operative situation with ectopic pregnancy at tertiary medical College & Hospital.

Objective

General objective:

➤ To identify clinical outcome and operative situation in patients.

Specific objective:

➤ To detect risk factors of ectopic pregnancy.

➤ To evaluate operative findings of the patients

Materials and Methods:

This was a descriptive study. This study was conducted at tertiary medical College & Hospital, from January 2015 to December, 2018. During the study 200 patients data was collected and sampling technique was purposive

Inclusion criteria are Clinically suspected ectopic pregnancy and Clinically diagnosed ectopic pregnancy supported by positive urinary pregnancy test or serum -hCG and USG findings.

Exclusion criteria are Patients who were clinically suspected but laparotomy findings ruled out ectopic pregnancy and Ethical consideration- Ethical issue will be addressed duly with due consent from the patient.

Data collection procedure:

➤ After taking informed consent from each patient, a very careful history with particular attention to socio-demographic, menstrual, obstetric and contraceptive history, a thorough physical examination was done and diagnosis was established clinically in majority of cases. Pregnancy test and ultrasonography were done in most cases to support the clinical diagnosis. Hemoglobin estimation and blood grouping were done in all cases.

Statistical analysis:

➤ Data were analyzed in computer based programme Statistical Analysis for Social Science (SPSS) for windows version 12.

Results:

In table-I shows parity in patients with ectopic pregnancy where the peak percentage was among who are Para 2 (41.26%) and incidence is low (3.74%) among those who are nulliparous. The following table is given below in detail:

Table-I: Parity in patients with ectopic pregnancy.

Parity	Percentage
0	3.74%
1	6.25%
2	41.25%
3	26.26%
4	13%
5 or > 5	9.5%

In figure-1 shows social-economic status of the patients where most of the patients (75.1%) in this study belong to low economy and only 2.5% belongs to higher economy. The following figure is given below in detail:

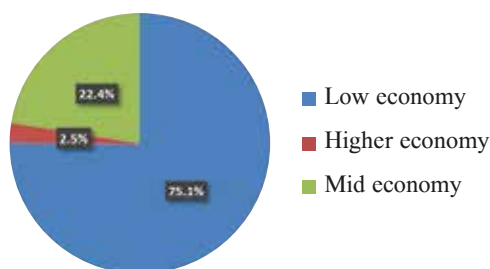


Figure-1: Social-economic status of the patients.

In table-II shows risk factors of ectopic pregnancy where history of pelvic infection (26.26%), induced abortion (17.4%), previous MR (16.26%) and sub fertility (11.25%) constitute the main bulk of risk factors. The following table is given below in detail:

Table-II: Risk factors of ectopic pregnancy.

Risk Factors	Percentage
Pelvic infection	26.26%
Induce abortion	17.4%
Previous MR	16.26%
Sub fertility	11.24%
IUCD insertion	11.26%
D&C	10.1%
LUCS	6.24%
Any pelvic surgery-	3.76%
Appendectomy, ovarian cystectomy, tubal ligation.	
Endometriosis	2.4%
Previous ectopic pregnancy	1.26%

In figure-2 shows symptoms of ectopic pregnancy where abdominal pain (96.24%) is the leading symptom symptoms of ectopic pregnancy. The following figure is given below in detail:

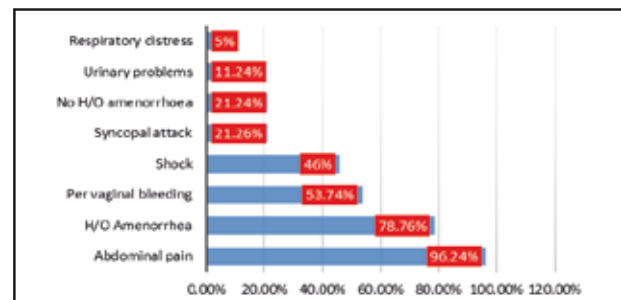


Figure-2: Symptoms of ectopic pregnancy.

In table-III shows signs of ectopic pregnancy where most of the patients (96.26%) has abdominal tenderness & cervical excitation test was positive 94.99% cases. The following table is given below in detail:

Table-III: Signs of ectopic pregnancy.

Signs	Percentage
Anaemia	93.74%
Abdominal tenderness	96.26%
P/V bleeding	51.24%
Cervical exhibition test	94.99%
uterine enlargement	48.76%
Adnexal lump	35.1%
Fullness of pouch of Douglas	51.25%

In figure-3 shows tube affected in the patients where right sided tube (54.5%) has been found affected more than the left. The following figure is given below in detail:

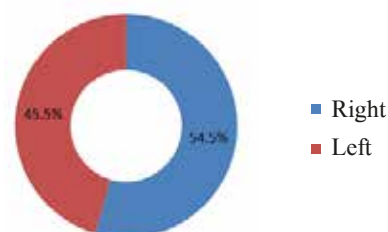


Figure-3: Tube affected in the patients.

In table- IV shows types of operation where all cases were managed surgically. Laparotomy followed by right sided salphingoectomy (40.40%) was the most common operation. The following table is given below in detail:

Table-IV: Types of operation.

Types of operation	Percentage	Frequency
Laparotomy :		80
➤ Right sided salphingoectomy	40.40%	
➤ Left sided salphingoectomy	36.45%	
➤ Peritoneal toileting in tubal abortion	4.40%	
Laparoscopy:		20
➤ Right sided	14.35%	
➤ Left sided	4.10%	
➤ Salphingostomy	0.3%	

In figure-4 shows per operative findings in ectopic pregnancy where most of the cases (88.10%) were hemoperitoneum. Followed by tubal ruptured 8.5%, tubal abortion cases were 2.5%, ovarian ectopic cases were .6%, heterogeneous pregnancy cases were .2% and scar ectopic cases were .1%.

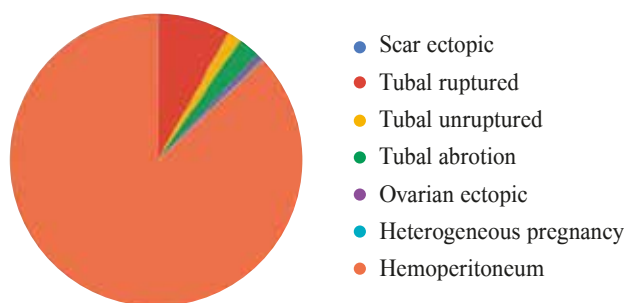


Figure-4: Per operative findings in ectopic pregnancy

In table-V shows Types management of the patients where most of the cases managed by laparotomy (79.9%). Followed by 18.1 % laparoscopy and under conservative management, 2% methotrexate therapy were used. The following table is given below in detail:

Table-V: Types of management of the patients

Types of management	Percentage
Laparotomy	79.9%
Laparoscopy	18.1%
Conservative management:	
Methotrexate therapy	2%

Discussion

The frequency of ectopic pregnancy has been increasing worldwide, varies country to country even place to place in the same country, even place to place in the same country, such as in Jamaica 1 in 28 deliveries^{9,10,11}. In this study out of 200 patients most of them belong to 30 years (19.7%) age group. In one study reported that 65% of cases were between the ages of 26-35 years¹². And other report identified that 38% of the patients were in age group 26- 30

years¹³. In a local study of 300 cases showed that 79%-99% patients in 15-34 years age group¹⁴. In this study we found that the peak percentage was among who are Para 2 the (41.26%) and incidence is low (3.74%) among those who are nulliparous. American Journal of Epidemiology showed different observation from us that para-0 was 39.5% and para-1 35.6%¹⁵. But many other study also showed similar result from us that higher incidence of ectopic pregnancy was present among women of para-2^{12,14}. In one study they reported that ectopic pregnancy was more commonly found in women of low economic status with 90.3%¹⁵. During the study we also found that most of the patients (75.1%) belong to low economy and only 2.5% belongs to higher economy. In this study we found that 63.74% of the patients were illiterate. Also 26.26% were primary passed. Only 1.26% patients were graduate. American Journal of epidemiology showed similar result that primary 7.2%, secondary 69.5% and higher 23.3%¹⁶. One study reported that patients in ectopic pregnancy were higher in urban areas rather rural areas¹⁷ which supports our study where we found that 58.6% patients' lives in urban area and only 39.9% patients' lives in rural. During the study we identified that major risk factor for ectopic pregnancy in patients who had history of pelvic infection 26.26%, induced abortion 17.4%, previous MR 16.26% and sub fertility 11.25%. Which is similar to other study which reported that. In one study reported that 48% cases have H/O PID¹³ and another study found PID in 25% cases⁹. Another study also identified pelvic infection and past history of abortion or MR as the main risk factor for ectopic pregnancy¹². other report observed 48% cases had prior induced abortion¹³. The incidence of unsafe abortion by untrained practitioners is quite high which increases the risk of ectopic pregnancy in our country. Subfertility is a risk factor for ectopic pregnancy in our country. History of subfertility was found 4.59% cases in one study⁹. Use of IUCD is another risk factor for ectopic pregnancy. One study found 17% cases had H/O IUCD insertion. But no patient had IUCD in situ when presented with ectopic pregnancy¹⁸. During the experiment we found that abdominal pain (96.24%) is the leading symptom symptoms of ectopic pregnancy. One study also found similar outcome that 90.82% with abdominal pain, 78.57% with history of amenorrhoea⁹. In the study most of the patients (96.26%) has abdominal tenderness & cervical excitation test was positive 94.99% cases. Which is similar to other study¹³? One study showed that right sided tube was affected more (79%) in ectopic pregnancy¹³. Which support our study where we found that right sided tube (54.5%) has been found affected more than the left. In the ectopic pregnancy we identified that laparotomy followed by right sided salphingoectomy (40.40%) was the most common operation, which is similar to one study¹⁹. In ruptured ectopic pregnancy hemoperitoneum is one of the life threatening situations which was very common in Bangladesh now a days²⁰.

During the study, we also found that most of the cases (87.10%) were hemoperitoneum. Followed by tubal ruptured 8%, tubal abortion cases were 2.5%, ovarian ectopic cases were .6 %, heterogeneous pregnancy cases were .2% and scar ectopic cases were .1%. Many case report showed similar type of outcome like us^{20, 21} but other study reported that ruptured cases were 74.86% and tubal abortion cases were 12.85%⁹. During surgery we found that 50.1% patients need ICU support and only 1.5% patients were dead which quiet similar to one study where they found assessed mortality rate of ectopic pregnancy is between 2 and 4/1000 during the study²².

Conclusion

After many investigation and analysis we can conclude that quick diagnosis, categorizing of underlying risk factors and timely intervention in the form of surgical treatment will help in minimizing the mortality rate associated with ectopic pregnancy.

Conflict of Interest: None.

Acknowledgment:

We would like to thank tertiary medical college & hospital students for their help in data collection.

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Teacher-Student Relationship in Obstetrics and Gynaecology Department in Different Medical Colleges of Bangladesh

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Abstract:

Introduction: Teacher-student relationship is very important element in education to enhance the effectiveness of teaching and learning process. There are multiple factors affecting this relation. If we analyze these factors and take measures to improve these, there will be better relation; and teaching learning will be improved. **Materials & Methods:** This descriptive type of cross-sectional study was carried out in obstetrics and gynaecology department of selected medical colleges of Bangladesh. Five government & three non-government medical colleges were selected purposively situated both in Dhaka and outside during the period of July 2017 to June 2018. Total 170 students and 30 teachers were responded through self-administered semi-structured questionnaire with five points Likert scale. 20 teachers were responded through in-depth interview schedule. Quantitative data analyzed by SPSS version 19. Qualitative data analyzed manually. **Results:** Study revealed that multiple factors were related to the relation among medical teachers and students. Mutual respect, empathy, Good listening skill, mutual respect, sharing expectation, self-disclosure, awareness about own role are the most important influencing factors in this relation (mean score >4). Use of drugs/tobacco, speech difficulty, love affair of students, negatively affect communication. Study also revealed barriers of relation fear and shyness, language barrier and discrimination of students by the teachers. Friendly relationship, open minded behavior, student- teachers cooperation, open discussion, morality and religious practice, motivation of by teachers, understanding each other's, avoidance of student's politics, responsibility of students & teachers, teachers training with reduced workload have great impact on removing these barriers. **Conclusion:** Addressing these issues at all possible levels, proper measures should be taken to improve relation among teachers and students; so that teaching learning process can be enhanced and ultimate goal of medical education can be achieved.

Key words: Communication, Student, Teacher, Teachers' view, Students' view, Teacher-student relation.

Number of Tables: 02; **Number of Figures:** 02; **Number of References:** 20; **Number of Correspondences:** 06.

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Introduction:

Teacher-student relationship is very important element in education which is a vital tool for the welfare of the society¹. Effective relationship between teachers and students is a key factor to enhance the effectiveness of teaching and learning process². Therefore, the effectiveness of the communication is measured by the message sent and feedback received³. Effective communication between teachers and students is a key factor to enhance the effectiveness of teaching and learning process⁴. As teaching learning is a two way process and be effective only when there is appropriate relation. There are

multiple factors affecting relation among teachers and students in gynae and obstetric department⁵. Student's teaching and learning is one the most important tasks for professors and enhancing the quality of learning plays a key role in professor's motivation and efficiency⁵. There are multiple barriers in communication between teacher and students⁶. There are four types of barriers; these are process barriers, physical barriers, semantic barriers, and psychosocial barriers. Affective factors in improving communication among professors and students are essential for improving the educational process⁷. Trust and mutual understanding among students and professors is one of the important factors in learning and communication of students with professors increases students' confidence and motivation in learning⁸. Different studies addressing this relationship done in abroad but factors may be different in our setting. If we analyze these factors and take measures to improve these, there will be better relation; and teaching learning will be improved.

Materials and Methods:

This study was descriptive type of cross sectional study. Study period was from July 2016 to June 2017 (one year). The study was carried out among undergraduate medical students of fourth phase and teachers of all levels (lecturer to professor). Fives public and three non-government medical colleges were included. Fives (three public & two non-govt.) were within Dhaka and rest were from outside Dhaka. Sample size was 170 students and 50 teachers through self-administered semi-

structured questionnaire and 20 teachers for in-depth interview. Medical colleges were selected purposively and convenience sampling technique was adopted for data collection. Pretesting of the questionnaire and in-depth interview schedule was done in a medical college other than the study areas. The questionnaire and interview schedule was finalized and Bangla version of questionnaire was adopted. For data collection written permission from the principals of the medical colleges was taken to conduct the study. The study was carried after prior consent from the students and teachers with necessary clarification. They were free to either participate or quit from study. The filled-up questionnaires were collected from the students at the end of the class and teachers returned those according to their convenience. In-depth interview was conducted according to the teachers' convenience. Researcher was physically present & helped the respondents during the time of response with probing questioning. Response of in-depth interview was noted and tape recorded by the researcher, when allowed. Data were checked, cleaned and edited after collection and then processed and analyzed by computer software SPSS program (IBM SPSS statistics 19). Likert scale was used to measure responses of the respondents of each item. Scores were given to each scale as: **strongly agree=5, agree=4, neither agree nor disagree=3, disagree=2, strongly disagree=1.**

Interpretation of the mean scores were:

If mean score was >4 : situation of the item areas was highly satisfactory

If mean score was $>3-4$: situation of the item areas was satisfactory

If mean score was $>2-3$: situation of the item areas was not satisfactory

If mean score was 1-2: situation of the item areas was very poor in satisfaction

Data derived from in-depth interview was scrutinized immediately on the day of interview. Coding was done on the left margin and comments and reactions were noted on the right margin of the sheets. Useful quotations were identified immediately. Open questions and in depth interview analyzed manually.

Results:

Total 170 students and 70 teachers participated in this study.

Figure 1 Bar diagram shows that among 170 students around 65% (110) students from govt. medical colleges and around 35% (60) from non govt. medical colleges.

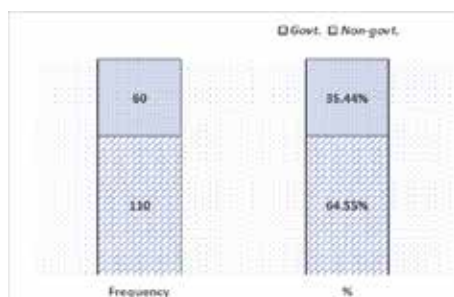


Figure-1: Distribution of students by types of medical colleges.

Fig 2 Bar diagram shows that out of 170 students; 102 (around 60%) respondents were female and 68 (around 40%) were male.

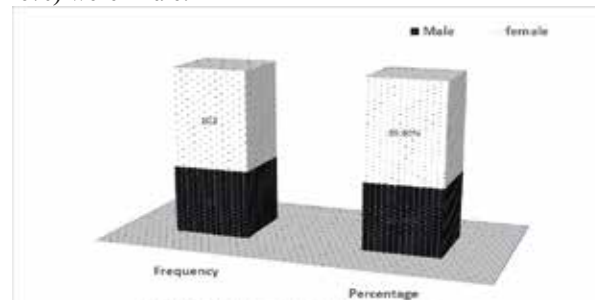


Figure-2: Distribution of students by gender.

Figure 3 Pie diagram shows that out of 70; 40 teachers (56%) were from government medical college and 30 teachers (44%) were from non govt. medical colleges.

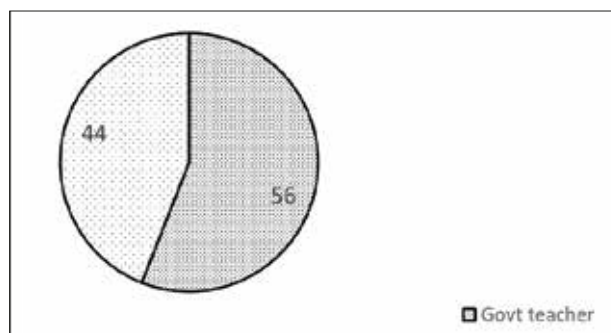


Figure-3: Distribution of teachers by types of their medical college.

Table I shows that these factors have strong positive influence on student teachers' relation (overall mean=4.08), reversed scoring was done before analysis in two factors ;use of drug/tobacco and love affair of students due to negativity of these questions and these two factors negatively influences communication (means are 3.83 & 3.08).

Table-I: Distribution of medical students' opinion regarding the personal factors that influence teacher-student relation (n=170):

Factors	Level of agreement (corresponding score)					Mean (± SD)
	SDA (1)	DA (2)	NAND (3)	A (4)	SA (5)	
	%	%	%	%	%	
No speech difficulty of students	3 (2.2)	11 (6.8)	20 (8.3)	94 (55.6)	46 (27.1)	3.98 (0.911)
Good listening skill of students & teachers	2 (.9)	3 (1.9)	10 (6.1)	97 (57.3)	57 (33.7)	4.321 (0.718)
Good Communication skill of students & teachers	2 (1.1)	2 (1.2)	5 (3.0)	78 (45.8)	83 (48.9)	4.40 (0.713)
Use of tobacco /drug of students	9 (5.11)	17 (10.1)	23 (13.6)	66 (38.7)	55 (32.5)	3.83 (1.139)
Love affair of students	18 (10.4)	42 (25.0)	43 (25.5)	41 (24.10)	25 (14.6)	3.08 (0.968)
Students extracurricular activity	5 (3.2)	12 (6.8)	15 (8.9)	89 (52.1)	49 (29)	3.97 (0.968)
Use of media e.g. Facebook by students & teachers	7 (4.3)	14 (8.1)	28 (16.2)	78 (46)	43 (25.5)	3.8 (1.043)
Awareness about own role (student/teacher)	1 (0.6)	3 (1.8)	74 (7.6)	89 (52.3)	64 (37.7)	4.25 (0.722)
Sharing expectation /role (student/teacher)	1 (0.5)	1 (0.8)	7 (4.1)	82 (48.5)	78 (46.1)	4.29 (0.680)
Mutual respect (student/teacher)	1 (0.5)	2 (1.2)	7 (4.1)	72 (42.4)	88 (51.8)	4.44 (0.680)
Empathy (student/teacher)	2 (1.2)	2 (1.2)	15 (8.6)	72 (42.5)	79 (46.4)	4.32 (0.781)
Self-disclosure (student/teacher)	1 (1.0)	23 (3.8)	16 (9.5)	65 (38.5)	80 (47.1)	4.27 (0.859)
extrovert personality (student/teacher)	1 (1.3)	6 (4.5)	20 (11.7)	75 (43.9)	65 (38.5)	4.14 (0.885)
Overall						4.08 (0.412)

Table II shows that these factors have strong positive influence on student teachers' relation (overall mean=3.82), reversed scoring was done before analysis in two factors ;use of drug/tobacco and love affair of students due to negativity of these questions and these two factors negatively influences communication (means are 2.12 & 2.70).

Table-II: Distribution of medical teachers' opinion regarding the personal factors that influence teacher-student relation (n=50):

Factors	Level of agreement (corresponding score)					Mean (± SD)
	SDA (1)	DA (2)	NAND (3)	A (4)	SA (5)	
	%	%	%	%	%	
No speech difficulty of students	1 (2)	5 (10)	4 (8)	30 (60)	10 (20)	3.86 (0.926)
Good listening skill of students & teachers	0	2 (4)	0 (0)	38 (76)	10 (20)	4.12 (0.594)
Good Communication skill of students & teachers	0 (0)	2 (4)	5 (10)	26 (52)	17 (34)	4.16 (0.766)
Use of tobacco /drug of students	0 (0)	6 (12)	9 (18)	20 (40)	15 (30)	2.12 (0.982)
Love affair of students	1 (2)	14 (28)	11 (22)	17 (34)	7 (14)	2.70 (1.093)
Students extracurricular activity	2 (4)	4 (8)	3 (6)	34 (68)	7 (14)	3.80 (0.926)
Use of media e.g. Facebook by students & teachers	3 (6)	8 (16)	14 (28)	17 (34)	8 (16)	3.38 (1.123)
Awareness about own role (student/teacher)	0 (0)	1 (2)	2 (4)	26 (52)	21 (42)	4.34 (0.658)
Sharing expectation /role (student/teacher)	0 (0)	1 (2)	3 (6)	27 (54)	4 (8)	34.28 (0.671)
Mutual respect (student/teacher)	0 (0)	1 (2)	1 (2)	24 (48)	24 (48)	4.42 (0.642)
Empathy (student/teacher)	0 (0)	1 (2)	4 (8)	18 (36)	27 (54)	4.32 (0.653)
Self-disclosure (student/teacher)	1 (2)	3 (6)	11 (22)	26 (52)	10 (20)	4.42 (0.731)
extrovert personality (student/teacher)	0 (0)	5 (10)	4 (8)	30 (60)	10 (20)	3.86 (.808)
Overall						3.82 (1.283)

Discussion:

Effective relation between teachers and students is a key factor to enhance the effectiveness of teaching and learning process. The aim of study was to identify the effective factors in relation among students and teachers from the students' and teachers' point of views. This study identified most important personal factors as good listening & communication skill, awareness about own role, sharing expectation (student/teacher), mutual respect, self-disclosure (student/teacher), extrovert personality of student/teacher. This study consistent with Abedini M who identified humanity and ethical aspects of professors as well as trust and mutual understanding of students and professors as important factor in their relation³. This study revealed that motivation of students, cooperation among students have positive influence in communication. These findings are not consistent with the findings of Isman⁹. He described scientific knowledge, quality and mastery of teaching as well as teaching styles are more important than professors' experience which enhance the relationship between teachers and students, thereby improve the teaching and learning process consistent with) Aliasgharpour M¹⁰. To be effective, teachers have to try to minimize the barriers to relation with students. By making sure that the room is quiet and well lit; by speaking slowly and clearly; by only using words which the students should be able to understand. However, the most important way to overcome the barriers is two-way

communication¹¹. Process barriers are sender barrier, encoding barrier, medium barrier decoding barrier, receiver barrier and feedback barrier. Physical barriers include a telephone call, drop-in visitors, and distances between people, walls, and static on the radio. Psychological and social barriers are fields of experience, filtering, and psychological distance¹². This study revealed that two-way communication by constructive feedback improve relationship. One-way communication where the sender cannot get any feedback is a barrier. Bharti P also showed that interactive view which includes feedback as well as nonverbal communication can overcome this barrier¹³. In this study mutual respect, sharing expectation, understanding each other (table I and table II) enhance relationship and helps to remove barriers. This finding consistent with Beebe.¹⁴ Eisenberg E M identified mutual understanding and sharing expectation as important factors that improve communication and remove barriers¹⁵. When creating mutual understanding in communication- physical, psychological and semantic barriers are eliminated¹⁶. The same word may mean different things to different people. The words we choose, how we use them, and the meaning we attach to them also the technical jargon causes many communication barriers. This problem is semantic¹⁷. If the source (teacher) of knowledge does not have adequate information about the audience (learners) the interaction will not be effective¹⁸. The quality in communication and its effects on peoples' lives can be improved once we clarify its meaning and also the meaning of education which is the major concept on which a structured society is based¹⁹. Our study conclude that student's teaching and learning is one the most important tasks for professors and enhancing the quality of learning plays a key role in professor's motivation and efficiency; this finding is consistent with Zimmerman T²⁰.

Conclusion:

Effective relationship between medical teacher and students is the key to be succeeded in teaching learning. There are various factors influencing this relation. This cross sectional descriptive study has been done to identify personal factors affecting communication. Teachers and students' views was taken through semi-structured questionnaire and in depth interview of teachers. Multiple personal factors related to the communication between medical teachers and students are identified in this study. Good listening & communication skill, awareness about own role, sharing expectation (student/teacher), mutual respect, self-disclosure (student/teacher), and extrovert personality of student/teacher. Good personality with extrovert characteristic of teachers creates positive impact. Sharing expectation, open discussion and cooperation between teachers and students can remove the gap in communication. Empathy, sympathy, understanding each other and mutual respect can further improve communication. Proper use of multimedia improve communication in classroom. But excessive use of internet and face book distract attention of students thus hamper teacher- student relationship. Maintaining friendly environment and

cooperation between teachers and students were identified as most important factors that improve relationship. But very much politeness, crossing the boundary might make the class out of control. So, continuous effort and positive attitude of the teachers with improved teaching skill can motivate students to learn. Positive and friendly environment with open minded behavior can help the students to achieve instructional objectives; making them lifelong learner. Thus, institutional goals can be achieved if there is proper relation between teachers and students.

Conflict of Interest: None.

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Impact of Covid-19 Pandemic on Mental Health

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Abstract:

Introduction: The year 2019 will be remembered in the human history by the mark of an unknown diseases plaguing the whole world with its devastation, namely coronavirus disease 2019 (COVID-19). This pandemic caused by a novel strain of RNA virus has caused a catastrophic health outcome for millions of world citizens but in many cases only the physical aspect of the disease came under consideration. **Materials & Methods:** This review is based on ample literature search of Medline, the Cochrane Database of Systemic Reviews, and citation lists of relevant publications.

Discussion: COVID-19 pandemic has caused a variety of health problems including mental health issues. Initial panic about the completely unknown (Novel) virus plaguing the world was soon joined by an array of mental health problems like anxiety, depression, combined anxiety and depression, traumatic stress etc. Amidst the chaos of unpredictability, mortality, overstretched health facilities etc. we often downplay the importance of paying attention to the mental side of the disease spectrum. As a result, outcomes like child abuse, domestic violence and suicide can increase. **Conclusion:** It is of utmost importance to educate mass people about the coping strategies to go through this hard time, to ensure proper news sharing, to screen people who are at risk of developing mental health problems and to provide support to those who are in need. Local and International consensus guideline should be planned to deal with this issue.

Key-words: COVID-19, Mental health, Pandemic, SARS-CoV-2.

Number of References: 28; **Number of Correspondences:** 03.

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Introduction:

As a part of normality of human life, we encounter various stressors daily. Although feeling stressed on and off can be of value from existential view point, the overwhelming coercion can be counterproductive. This strain is coped well by many but has the potential to push some to the realm of mental dismay. We, as a race, are facing an unprecedented threat to our graceful living due the emergence of the novel corona virus pandemic. Starting as a cluster of pneumonia cases with atypical features in a wet market of Wuhan, Hubei Province, China¹, the new disease soon crossed border and affected millions across the globe. The causative organism was identified as SARS-CoV-2 (Severe acute respiratory syndrome 2)² and the disease named as COVID-19 (corona virus disease 2019). Severe acute respiratory syndrome 2 virus is a highly transmissible, non-segmented, single-stranded, and positive-sense RNA genome virus belonging to the large family of Coronaviridae. They are called so due to their crown-like (Latin Corona: Crown) structures seen under microscope³. Corona viruses can affect many animals and was circulating among them for long. The human infection is relatively newer and known since 1960s. The species

jump can be a spillover event that took place now and then. Although most of the members of this RNA virus family cause mild influenza like illness in human, three of them has already caused widespread severe disease earning pandemic status. Those three viruses are severe acute respiratory syndrome virus (SARS-CoV), Middle East respiratory syndrome virus (MERS-CoV) and finally the current pandemic of SARS-CoV-2. All the three pandemic causing viruses are beta coronavirus. The novel coronavirus shares 79% of its genome sequence with SARS-CoV and 50% with MERS-CoV⁴. SARS-CoV-2 infection can be traced back to contact with a local seafood seller in Wuhan that illegally sold wildlife animals including bats⁵. Life is not the same ever since this new unseen enemy has started to spread like a wildfire. Global disruption of this scale has the potential to perpetuate pre-existing or new onset mental health issues. In this paper we have tried to focus on the impact of the pandemic on psychological rather than the physical health.

Materials and Methods:

This paper stands on extensive search of relevant articles and citation lists of pertinent publications. Subject heading and key words used include SARS-CoV-2, COVID-19, Mental health, psychological impact etc. Only articles written in English were included.

Discussion:

COVID-19 AS a STRESSOR

People are surprisingly resilient. Most of us can overcome the first hit of a short lived calamity without being succumbed into any mental ailment⁶. For a disaster lasting for months like COVID-19, the same may not be the case. Stressors like greater Confinement, trouble having adequate supplies, difficulty securing medical care and medications and financial losses have impacted people individually and collectively⁷. Other vital stress elements are fear of

exposures, infected family members, death of loved ones and inability to be with others for physical distancing⁶. While trying to keep the world citizens up-to-date about the ins and outs of the crisis, the social media can in fact act as a stressor leading to anxiety, depression or a combination of both⁸. On the other hand, the uncertainty associated with the progression of the course of pandemic and the unpredictability of the seriousness of the disease was found to be a contributing factor to stress for many⁹.

At Risk Population

Everyone has a unique way of adapting to face challenges. Some are more vulnerable than others to suffer from psychological impact of COVID-19 pandemic. Study showed, People who were tested positive for COVID-19 or at increased risk to contract the disease (Elderly, immunocompromised etc.), had pre-existing medical or psychological illness or had substance abuse problem were at heightened risk of adverse psychological outcome¹⁰. Moreover, people with pre-existing mental disorder were found to be at risk of relapse during this pandemic¹¹. Other researchers have found homeless people, migrants and pregnant ladies to be at more risk for mental problems¹²⁻¹⁴.

Often we forget to pay attention to the doctors who are equally human as their patients and thus have their own sets of vulnerabilities¹⁵. The hefty workload, physical and mental exhaustion, fear of getting infected or transmitting it to loved ones, going through the days without appropriate supplies of personal protective equipment can all put a hulking pressure on a physician¹⁶. A Chinese study on health professionals reported that, more than half (50.7%) of the participants had depressive symptoms, 44.7% anxiety, and 36.1% sleep disturbance¹⁷.

Spectrum of the Problem

We are often oblivious of the fact that, pandemic related broad range of mental ailments is a very crucial part to be addressed. It is well established from our past experience with EBOLA¹⁸ and SARS¹⁹ that, a health crisis of this amplitude has a great potential to manifest itself as a mental disorder or escalating the already existing problem. Research showed that, COVID-19 pandemic is associated with psychological distress²⁰ and can cause mental health crisis especially in areas with high case burden²¹. Researcher in Wuhan, China have published study demonstrating markedly increased level of anxiety, depression and combined anxiety depression associated with COVID-19 outbreak. Their study also showed that people who are more exposed to social media are more vulnerable to anxiety and combined anxiety depression²². Pre-existing mental health issues were found to be at increased risk of relapse due to the stress associated with COVID-19²³. Moreover, mental illness itself increases the susceptibility of infection²⁴. Lockdown has already redefined the normality of life but this is even a harder knock for the people suffering from a previous mental sickness. Regular follow up visit to Doctors are kept held for many which can potentially increase the risk of psychiatric emergencies²⁵.

What Can We Do?

To mitigate the risk of adverse psychological impact of this pandemic many countries have taken their own customized approach. As for example, China, where it all started, has integrated psychological crisis intervention and issued the 'Principles for Emergency Psychological Crisis Intervention for COVID-19 Pneumonia Epidemic'²⁶. Chinese have proposed the principle to combat the situation as a three principle approach: elucidating the mental impact of this outbreak, identifying people who are at high risk and providing appropriate support for those in need. Others have proposed that, mass communication media can be used to communicate with people by uploading educational videos, lectures and psychological self-help measures. These will help to ease the stress and will enable people to cope well. These messages can be crafted by health care professionals and be delivered by society leaders²⁷. Mental health professionals have a huge role to play. They can continue consulting patients using virtual platforms, help the community at large to enlighten them about the potential of pandemic to cause debilitating stress and how to deal with that. At a personal level, general people can plan ahead to go through periods of physical distance, financial hard time etc. and can use social media judiciously to maintain online interaction²⁸.

Conclusion:

When a pandemic like COVID-19 strikes, we tend to focus on the infection itself and the physical aspect of it. Mental health issues are so often forgotten and people suffering from them stigmatized. We have seen suicide, domestic violence and child abuse to skyrocket amidst this pandemic. These are real and there is no denying of the fact that, global disruption of this scale has a tremendous impact on mental health. This difficult time has provided us an opportunity to have our policy in place on how to deal with this issue effectively. Although long term mental effect of COVID-19 pandemic will take time to be apparent, we already have enough evidence of short term psychological disruption including anxiety, depression or both. From top down, we should be vigilant about the "Infodemic" as it may perpetuate the negative impact of pandemic. Physicians should be trained to screen psychological distress and to channel awareness to uplift positive coping mechanism among general population.

Conflict of Interest: None.

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Keratoacanthoma, Verruca Vulgaris Arising over Porokeratosis of Mibelli : A New Association

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Abstract

Introduction: This case report highlighting the presence of keratoacanthoma and verruca vulgaris over the lesion of porokeratosis of mibelli. **Case Report:** In this case a 50-year-old housewife came with large well-defined asymptomatic plaque over the upper part of back of the trunk for last 10 years. After evaluation we got the presence of keratoacanthoma and verruca vulgaris on the plaque of porokeratosis of mibelli. **Discussion:** Porokeratosis is a clonal expansion of keratinocytes. Among the neoplasm squamous cell carcinoma (SCC) is the most commonly reported malignancy in porokeratosis. But in our case we didn't find lesion of SCC. Porokeratosis of Mibelli, Keratoacanthoma and Verruca vulgaris have an association with human papilloma virus (HPV). This etio-pathogenesis may be related to our clinical finding. **Conclusion:** There were reporting of squamous cell carcinoma or keratoacanthoma on Porokeratosis of Mibelli. But in our case we found both Keratoacanthoma and Verruca Vulgaris over Porokeratosis of Mibelli.

Key words: Porokeratosis of Mibelli, Keratoacanthoma, Verruca Vulgaris.

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Introduction

Porokeratosis refers to a heterogeneous group of keratinization disorders, in which the presence of a so called 'cornoid lamella' in a lesion can be seen¹. On the other hand, keratoacanthoma is a rapidly evolving tumour of the skin, composed of keratinizing squamous cells originating in pilosebaceous follicles and resolving spontaneously if untreated². Verruca vulgaris are benign tumours caused by infection of keratinocytes with HPV, visible as well defined hyperkeratotic protrusions³. Here we are reporting a case of Keratoacanthoma, Verruca vulgaris in a lesion of Porokeratosis of Mibelli.

Case report

Mrs. Mojiron, 50-year-old housewife, normotensive, nondiabetic hailing from Gendari, Tangail presented to us with a large well-defined asymptomatic plaque over the upper part of back of the trunk for last 10 years. Initially she developed a small papule over her left shoulder, which spreads peripherally, involving her left upper back and part of right upper back of the trunk. She also complained of development of multiple asymptomatic exophytic nodules with warty surface and some smooth dome shaped nodules within the plaque for last two years. There were no history of pain, bleeding on lesional area. There were no history of fever, joint pain, photosensitivity and any symptoms pertaining to other systemic illness. She was a mother of four sons. None of her family members were affected by such condition. Patient was mildly anemic, no lymphadenopathy or organomegaly.

There was a well-defined large plaque about (27×18) cm in diameter situated over left shoulder, left upper back and part of right upper back. Plaque was irregular in outline and surrounded by raised fine keratotic elevated border with a central groove. The enclosed central portion is dry, dyspigmented, scaly and atrophic in some places.

There were multiple dyspigmented nodules of different sizes were situated within the large plaque. Largest one was approx. 20-25 mm in size. Nodules were firm, smooth, shiny and dome shaped. One of them had smooth crater filled with a central keratin plaque situated on the left upper back.

There were some large well-defined plaques situated within and at the margin of the initial large plaque, some of these plaques had verrucous and some had scaly surface. They were hypopigmented to erythematous in color and firm in consistency. There were no active bleeding or discharge on the lesions (figure: 1).

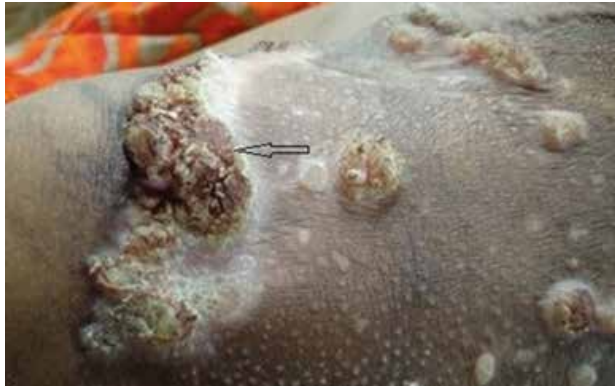


Figure-1: Large plaque with raised fine keratotic border with dome shaped papule with central crater with verrucous surface.

There was a large exophytic nodule with verrucous upper surface and erythematous lateral surface with a collar at the base measuring about 7cm (approx.) in length and 4cm (approx.) in width at base (figure :2).



Figure-2: Exophytic nodule with verrucous upper surface.

With the above scenario our provisional diagnosis was Porokeratosis of Mibeli with Keratoacanthoma with Verruca vulgaris. Our differential diagnoses were Keratoacanthoma centrifugum marginatum, Squamous cell carcinoma, cutaneous horn and Porokeratoma.

We performed an excisional biopsy of a crateriform nodule and Verrucous plaque. A 4 mm incisional biopsy was also taken from the border of the porokeratotic plaque of the patient.

Histopathology of section taken from crateriform nodule reveal a keratoacanthoma. It reveals marked hyperkeratosis (figure :3).

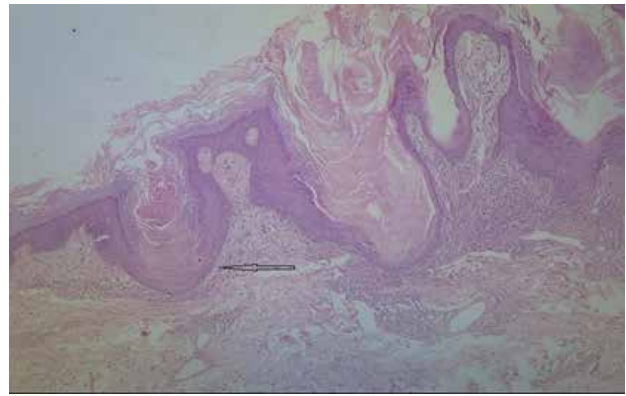


Figure-3: Hyperkeratosis and Keratin-filled crater.

Histopathology of section taken from Verrucous plaque reveal a verruca vulgaris. It shows a papillary process, hyperkeratosis, parakeratosis and Koilocytes (figure:4).

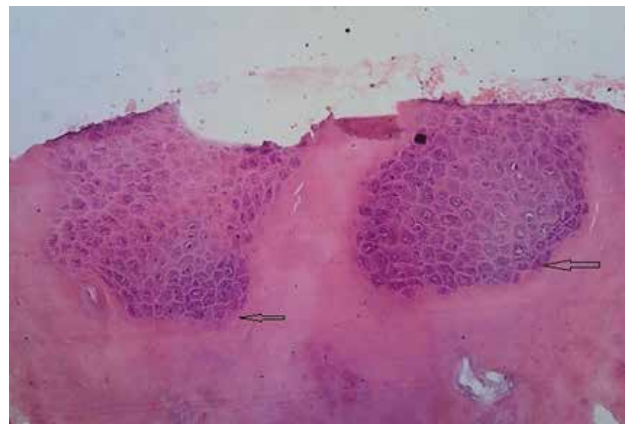


Figure-4: Hyperkeratosis with Koilocytes.

Histopathology of section taken from the margin of Porokeratotic border showed oblique invagination containing coronoid lamella. The squamous cells in the base of invagination show mild dyskeratosis. The dermis contains moderate perivascular infiltration of chronic inflammatory cells (figure:5).

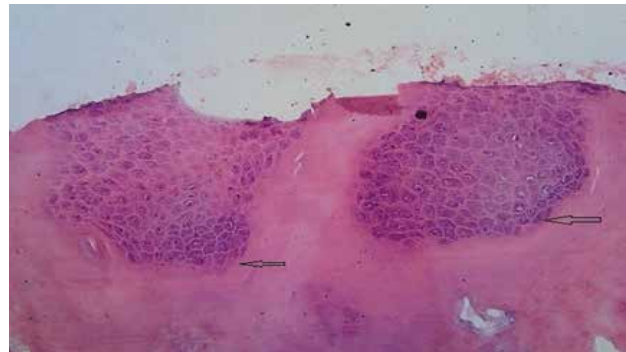


Figure-5: Coronoid lamella with absent granular layer.

On the basis of the benign course of the presenting lesion and clinicopathological features, our final diagnosis was Keratoacanthoma, Verruca vulgaris arising over Porokeratosis of Mibelli.

Considering the scenario, we treated the patient with systemic Acitretin 50mg daily for 3 months (figure: 6) followed by 25 mg daily for one year. Patient improved symptomatically and is under regular follow-up.



Figure-6: Lesional area after 3 months of treatment.

Discussion:

A porokeratosis is a clonal expansion of keratinocytes which differentiate abnormally but are not hyperproliferative. Porokeratoses may present as single or multiple lesions and may be localized or disseminated. All forms show a thin column of parakeratosis, the cornoid lamella, representing the active border^{4,5}. Porokeratosis of Mibelli starts as a single or small group of keratotic papules which may be pigmented. These gradually grow over years to form one or more irregular plaques with a thin, keratotic and well demarcated border. The central area may be atrophic, either hyper or hypopigmented, hairless and anhidrotic. Occasionally, giant and verrucous forms of the disease may occur. Lesions are generally distributed on the extremities but can occur anywhere on the body⁶. It usually begins during infancy or childhood. Inheritance is usually autosomal dominant⁷. Squamous cell carcinoma is the most commonly reported malignancy in porokeratosis. Other associated neoplasms reported are Bowen's disease, basal cell carcinoma, diffuse large B cell lymphoma, and others^{7,8}.

Keratoacanthomas are exoendophytic lesions with an invaginating mass of keratinizing, well differentiated squamous epithelium present at the sides and bottom of the lesion. There is a central keratin filled crater which enlarges with the maturation as well as the evolution of the lesion. Another diagnostic feature is the lipping or buttressing of the edges of the lesion which overlap the central crater, giving it a symmetrical appearance. Epithelial atypia and mitoses are not usual features. There may be a moderately heavy mixed infiltrate of inflammatory cells in the adjacent dermis, and this is often moderately heavy. Histological features which favor a diagnosis of keratoacanthoma over squamous cell carcinoma, low power architecture with a flask like configuration and central keratin plug, as well as the pattern of cell keratinization with large central cells with eosinophilic cytoplasm⁹. The exact etiopathogenesis of

keratoacanthoma is unclear; however, suspected inciting factors include ultraviolet light, genetic factors, immunosuppression, chemical carcinogens, viruses, various types of mechanical trauma, or it may arise secondary to other skin lesions such as psoriasis, discoid lupus erythematosus, herpes zoster, lichen planus, seborrheic dermatitis, pemphigus foliaceus, and others cell carcinoma (SCC) include the characteristic^{10,11,12}.

Verruca vulgaris is the general wart of the skin frequently located on hands, fingers, knees and elbows. It is primarily related to three important human papilloma viruses HPV-2, HPV-4, and HPV-40. HPV causes a restricted growth in the superficial layer of the skin and thus verruca vulgaris is hyperkeratotic, exophytic, dome shaped papules or nodules. The lesions are typically sessile, verrucous with discrete borders. HPV essentially causes intraepithelial extended infectious cycle with no cell death or viraemia¹³.

We are reporting a rare association of Porokeratoses of Mibelli, Keratoacanthoma and Verruca vulgaris in as same lesion. Former studies have indicated an association of Porokeratoses of Mibelli with Keratoacanthoma¹⁴. However till date no case of Verruca vulgaris has been reported to appear over Porokeratosis of Mibelli. In Keratoacanthoma, human papilloma virus like particles has been demonstrated but no predominant HPV type has been found^{15,16}. In Porokeratoses of Mibelli evidence of HPV types 66 and 14 respectively were described¹⁷. Such a disease association is rare and it may be related to HPV. Therefore, we suggest any suspicious skin lesion in porokeratosis of mibelli needs Immunohistochemistry or immunocytochemistry using type common or type-specific antibodies and Polymerase Chain Reaction for HPV DNA.

Conflict of Interest: None.

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