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Editorial

Despite ongoing COVID-19 situation and dwindled official activities to minimum, the editorial board worked efficiently to publish the July 2020 journal.

Each and every article was reviewed and amended internally and externally; as a result, a standard and scientific journal was prepared to be published. Every research was unique in its own way but only the qualified and eligible ones were chosen in such a way to bring maximum variety for the journal.

It is passionate about papers that contribute to local efforts to improve the health of populations and save lives. The primary target audiences of this journal are medical professionals working in the country who are seeking research based support to develop their capacity and competency for patient's management.

The compilation and publication of the journal was made as perfect as possible but still there may be some unavoidable errors which we hope to be conscious in the future.

Special thanks and gratitude to researchers, all the editorial board members, reviewers and everybody associated with this publication.

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Thanks

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Original Article

Evaluation of Risk Factors in Deep Vein Thrombosis in Patient Admitted in a Tertiary Care Hospital

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Abstract

Deep vein thrombosis (DVT) remains as a common complication in hospital admitted patients. Both DVT and its consequences, pulmonary embolism (PE) may lead to death. As it is preventable by early identification and administration of anticoagulant therapy, therefore, knowing the risk factors particularly in medicine practices can improvise the knowledge regarding this field and can save thousands of lives. Thus, this cross sectional study was carried out to assess the risk factors associated with DVT in patients admitted in Dhaka Medical College Hospital during May-October 2018. Of the total 50 study population, more than one fourth (26.0%) patients belonged to the age 51-60 years. Male female ratio was 1.2:1. Forty two percent patients were overweight and 14.0% were obese. Regarding the risk factors, 54.0% were smoker followed by 34.0% having hypertension, 28.0% had diabetes, 18.0% used to take alcohol and 16.0% having the history of taking oral contraceptive pills (OCP). Regarding antibody screening, 4.0% patients were associated with ANA, 4.0% with anti dsDNA Ab, 4.0% was with anti cardiolipin Ab, 4.0% had have anti phospholipid, Ab, 2.0%was RA and 2.0%was anti CCP Ab. It is evident from the study that mostly the noncommunicable diseases are associated with the development of DVT. So, strengthening of the programme for the prevention and control of NCDs in the country thus suggested.

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INTRODUCTION

The term thrombosis refers to the formation, from constituents of blood, of an abnormal mass within the vascular system. When this process occurs within the deep veins, it is termed as deep vein thrombosis (DVT).[1] An accurate diagnosis of DVT is essential to prevent potentially fatal acute complication of pulmonary embolism (PE) and long-term complications.[2] One-half of the patients with DVT will have long-term sequels including post thrombotic syndrome and venous ulcers. Beside these, a significant number of patient showed recurrence within 10 years.[3] An estimate suggests that, DVT and PE are the two most important manifestations of venous thromboembolism (VTE), which is the third most common life-threatening cardiovascular disease, after myocardial infarction and stroke, in the United States.[4] It affects approximately 0.1% of persons per year and there is approximate 100 persons/100,000 in each year were identified as new cases. The overall average age- and sex-adjusted annual incidence of venous thromboembolism (VTE) is 117 per 100,000 ; DVT) 48 per 100,000; PE, 69 per 100,000, with higher age adjusted rates among males than females (130 Vs. 110 per 100,000 respectively).[1] Incidence rate increases exponentially with age to up to one case per hundred people older than 80 years and ranged as low in children (5/100,000) to as high about 400-500/100,000 adults aged 80 and older.[6,7]

There are also differences in incidence of diagnosed venous thrombosis among ethnic groups.[8] Compared with white individuals, incidence is higher in black

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people[9] and lower in Asian people[6] and with some studies reporting an approximate 25.0% higher rate in African-Americans.[8] There was little data about the incidence of DVT among South-East Asian region. In Hong Kong, the incidence of DVT in the general Hong Kong population was estimated as 17 per 100 000 and in Malaysia the rate is 3 per 10 000 population.[10-12] Whereas, Lee at el. in his retrospective study reported incidence of VTE among Indian population was about 17.46 per 10 000 admissions.[13] Despite limited study in Bangladesh, it can be assumed that the incidence will not be much less than Indian population.

The causes of DVT are usually divided into genetic and acquired risk factors.[10] Acquired risk factors include older age, medical disorders such as heart failure and acute respiratory failure. Malignancy is another potential threat for development of DVT in individuals. In addition, lupus anticoagulant, trauma, long-distance travel, obesity, smoking, and immobilization were the most frequent causes. Several studies have been shown that surgery alone increase several fold risk of DVT[10,14-16] On the other hand, genetic risk factors include the thrombophilic disorders (protein C and S deficiency, antithrombin deficiency, factor V Leiden, high concentration of factor VIII, and hyperhomocystenemia) also predispose to developing DVT.[10,17] Although our knowledge of risk factors has increased over the past decades, a third to a half of venous thromboembolism episodes do not have an identifiable provoking factor and are therefore classified as unprovoked.[18] The remaining episodes are caused

(provoked) by transient or persistent factors that additively or multiplicatively increase the risk of venous thromboembolism by inducing hyper-coagulability, stasis, or vascular wall damage or dysfunction (panel).[19,20] So far our knowledge, as no such study has been conducted in the country, this study was carried out to assess the risk factors associated with DVT in patients admitted in a tertiary care hospital in Dhaka.

MATERIALS AND METHODS

This observational, cross sectional study was carried out in the Department of Medicine, Dhaka Medical College Hospital fromMay 2018 to October 2018. A total of 50 patients (both male and female), who were of 18 years and above age group were studied. Patients not on anticoagulation therapy, non-pregnant , without history of surgical procedure in last 3 months were enrolled in this study. A purposive and convenient sampling method was done to obtain the samples. Deep vein thrombosis was documented using consistent clinical features along with at least one of the following objective tests- Duplex ultrasound venography, B-mode ultrasonography. Information on age, body mass index (BMI), varicose veins ,family history ,oestrogen containing oral pills , intravenous drug use, history of myocardial infarction or heart failure , inflammatory bowel disease, malignancy ,nephrotic syndrome, pneumonia, neurological conditions associated with immobility (e.g. stroke, paraplegia, GBS etc.) and others were recorded.[14] Standard reference values for nutritional status, serum creatinine, HbA1C and others were used.

RESULT

Of the total study population, more than one fourth (26.0%) patients belonged to age group 51-60 years. The mean age was 47.5±14.8 years with a range from 18 to 77 years.

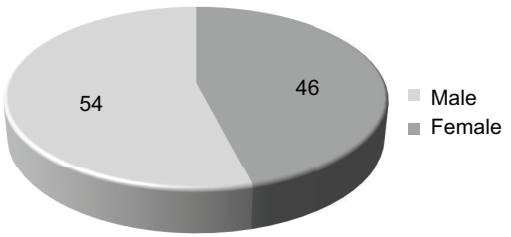

Figure 1 : *Sex distribution of the study population (n=50)*

Majority (54.0%) of the patients were male. Male female ratio was 1.2:1 (Figure 1)

Table-I: *Nutritional status of the study patients according to BMI (n=50)*

BMI (kg/m^2)	No. of patients	Percentage
<18.5 (Underweight)	1	2.0
18.5-24.9 (Normal)	21	42.0
25.0-29.9 (Over weight)	21	42.0
> 30.0 Obese	7	14.0

It was to be found that 42.0% patients were overweight and 14.0% were obese. The mean BMI was found 25.5±3.4 kg/m^2 with range from 16.8 to 33.0 kg/m^2 (Table-I).

The mean monthly income was to be found that 19828.0±7165.1 taka with range from 7000 to 40000 taka.

Table-II: *Cardiovascular risk factors of the study subjects (n=50)*

Complains	No. of patients	Percentage
Smoker	27	54.0
Hypertension	17	34.0
Diabetes	14	28.0
Alcohol habit	9	18.0
H/O taking OCP	8	16.0

Among the study subjects, 27(54.0%) patients were smoker followed by 17(34.0%) were hypertensive, 14(28.0%) were diabetic, 9(18.0%) were alcoholics and 8(16.0%) were with the history of taking OCP.

Table-III: *Distribution of the study population according to malignancy site (n=9)*

Malignancy site	No. of patients	Percentage
Lung	3	33.33
Cervix	1	11.11
Stomach	2	22.22
Lymphoma	3	33.33

Out of the total study population, nine cases were associated with malignancy. Of these, 3 (33.33%) having malignancy in lung, 3 (33.33%) having lymphoma, 2 (22.22%) in stomach and 1(11.11%) in cervix (table III).

It was to be found that 25(50.0%) were presented with tenderness, 23(46.0%) with engorged vein and 16(32.0%) with raised temperature.

Table IV: *Distribution of the study subjects according to duration of the disease (n=50)*

Duration of the disease	Number of patients	Percentage
15	19	38.0
16-30	15	30.0
>30	16	32.0
Mean±SD	29.6±17.8	
Range	54 - 60	

Of them,19 (38.0%) patients had duration of disease d"15 days. The mean duration of disease was found 29.6±17.8 days with range from 5 to 60 days (Table IV).

Amongst them, the mean Hb was found 11.2±2.1 mg/dl with range from 5.6 to 16.9 mg/dl. 1 (2 %) had high ESR. The mean ESR was found 46.9±27.2 mm with range from 8.0 to 108.0 mm.

Table V : *Distribution of the study subjects according to blood sugar (n=50)*

Investigations	No. of patients	Percentage
FBS (mmol/L)		
<7.0 (Normal)	32	64.0
≥7.0 (Abnormal)	18	36.0
Mean ±SD	6.6 ±2.2	
Range (min-max) (mmol/L)	4.2 - 16.1	
3 hr after blood sugar (mmo/L)		
≤11.0 (Normal)	35	70.0
>11(Abnormal)	15	30.0
Mean ±SD	10.0 ±3.2	
Range (min-max) (mmol/L)	4.5 - 22.0	

The mean FBS was found 6.6±2.2 mmol/L with range from 4.2 to 16.1 mmol/L. The mean 2 hour after blood sugar was found 10.0±3.2 mmol/L with range from 4.5 to 22.0 mmol/L. (table V)

Table VI *: Serum total cholesterol and LDL among the study subjects (n=50)*

	No. of patients	Percentage
Serum total cholesterol (mg/dl)		
<200.0 (Normal)	26	52.0
≥200.0 (Abnormal)	24	48.0
Mean ±SD	209.1	±55.3
Range (min-max)	120.0	-364.0
Serum LDL (mg/dl)		
<130.0 (Normal)	24	48.0
≥130.0 (Abnormal)	26	52.0
Mean ±SD	141.5	±51.9
Range (min-mix)	64.0	-280.0

The mean serum cholesterol was found 209.1±55.3 mg/dl with range from 120.0 to 364.0 mg/dl. The mean serum LDL was found 141.5±51.9 mg/dl with range from 64.0 to 280.0 mg/dl (table VI).

Majority (58.0%) of the study subjects was found with normal (<6.5%) HbA1c. The mean HbA1c was found

6.5±1.0 percent with range from 4.9 to 8.4 percent. Regarding the serum creatinine, almost three fourth (74.0%) patients had normal (<1.4 mg/dl) serum creatinine. The mean serum creatinine was found 1.36±0.82 mg/dl with range from 0.6 to 5.8 mg/dl.

Table VII *Distribution of the study subjects according to auto antibody (n=50)*

Auto antibody	Number of patients
ANA	2
Anti dsDNA Ab	2
Anti Cardiolipin Ab	2
Anti Phospholipid Ab	2
RA	1
Anti CCP Ab	1

It was to be found that 2(4.0%) patients was associated with ANA, 2(4.0%) with anti dsDNA Ab, 2(4.0%) was with anti Cardiolipin Ab, 2(4.0%) had Anti Phospholipid, Ab,1(2.0%) was RA and 1(2.0%) was anti CCP Ab.

Table VIII *Distribution of the study populations according to USG findings (n=50)*

USG findings	No. of patients	Percentage
Site involvement		
Right	33	66.0
Left	17	34.0
Region affected		
Proximal	17	34.0
Distal	18	36.0
Both	15	30.0

In USG findings, 33(66.0%) patients were found with right sided involvement and 17(34.0%) had left sided involvement. More than one third (36.0%) patients had distal, 17(34.0%) proximal and 15(30.0%) both (distal +proximal) veins involvement (table-VIII).

It was to be found that majority (54.0%) of patients had hospital stay >7 days. The mean hospital stay was found 8.9±4.1 days with range from 3 to 20 days.

DISCUSSION

In this study, it was observed that more than one fourth (26.0%) patients belonged to age 51-60 years. The mean age was to be found 47.5±14.8 years with range from 18 to 77 years. Van Gent et al.[27] study observed the mean age was 54.1±21.2 years. In the study conducted by Angral et al.[21] the average age was 51.5 years. Singh et al.[15] in their study observed the average age of patients was 53.04 years. Study conducted by Binder et al.[28] showed that 52.5% of patients suffering from DVT were aged between 40–50 years. The mean age was 59.1±17.3 years in a study as observed by Samama[16]

In this study, it was observed that the majority (54.0%) of the study subjects were male and 23(46.0%) patients were female. Male female ratio was 1.2:1. Van Gent et al.[27] showed 73.6% patients were male and 26.4% were female in their study. Study conducted by Singh et al.[15] showed 178 (59.13%) were males and 123 (40.86%) were females.

Several studies have already investigated the risk factors for DVT, especially in women. [21–23] Samama[16] reported 818 patients were women and 454 were men.

In the present study, it was observed that more than one third (34.0%) patients had completed primary education followed by 16 (32%) had higher secondary, 5(10.0%) had graduate and 12(24.0%) had illiterate. It was evident that education having no influence on the DVT.

In this study that 21 (42.0%) patients had normal BMI 18.5-24.9 kg/m^2 and 21 (42.0%) patients were overweight 25.029.9 kg/m^2. 7 (14.0%) patients were obese. The mean BMI was found 25.5±3.4 kg/m^2 with range from 16.8 to 33.0 kg/m^2.

Van Gent et al.[27] 25.0% patients were associated with obesity. Angral et al.[21] the mean BMI was found 23.6 kg/m^2 with range from 19.8 to 28.1 kg/m^2. Leizorovicz et al.[24] showed BMI of ≥30 kg/m^{2}was recorded in 12.2% of patients.Kim et al. study showed that 33 % patients were associated with obesity, 26 % patients were overweight.

The current study showed that, among the cardiovascular risk factors, 27(54.0%) patients were smoker followed by 17(34.0%) had hypertension,

14(28.0%) had diabetes, 9(18.0%) were used to take alcohol and 8(16.0%) had the history of taking OCP. Van Gent et al.[27] showed 17.5% patients were smoker. Samama[16]study observed 71(14.4%) patients were smoker, 112(22.7%) were alcohol consumer and 45 (9.1%) was diabetes. Kim et al. study showed that 67 % of study patients never smoked in life, 21 % are current smoker and 12 % used to smoke in the past.

In this study, 9 cases (18.0%) was found malignant among them 3 (33.33%) was found in lung, 3 (33.33%) in lymphoma, 2 (22.22%) in stomach and 1(11.11%) in cervix. Flintermanet al.[29] reported that 13.0% patients had malignancy. Lee et al.[13] malignancy (31.0%) was the most common predisposing factor, followed by postoperative status (30%).

In this study presentation of clinical features showed that shows that 25(50.0%) were presented with tenderness, 23(46.0%) with engorged vein and 16(32.0%) with raised temperature. Angral et al.[21] reported that out of 10 positive cases for DVT, only 5 had clinical signs of DVT like calf swelling and tenderness. This confirms unreliability of physical signs in the diagnosis of DVT as shown by Stulberg et al.[30] As the paralyzed limb lies immobile and loses the vascular tone resulting in stasis, the SCI patients are supposed to be at a higher risk of developing DVT.[31]

This study showed that mean Hb was found 10.6±2.1 mg/dl with range from 5.6 to 16.9 mg/dl. Only 1 (2 %) patient had high hemoglobin suggestive of polycythemia. The mean ESR was found 46.9±27.2 mm with range from 8.0 to 108.0 mm. Kim et al. study showed that the mean hemoglobin was found 13.5±2.1 g/dl.

This study showed that mean FBS was found 6.6±2.2 mmol/L with range from 4.2 to 16.1 mmol/L. The mean 2 hour after blood sugar was found 10.0±3.2 mmol/L with range from 4.5 to 22.0 mmol/L.

The present study observed that majority (58.0%) patients was found with normal (<6.5%) HbA1c. The mean HbA1c was found 6.5±1.0 percent with range from 4.9 to 8.4 percent.

This study showed that almost three fourth (74.0%) patients had normal (<1.4 mg/dl) serum creatinine. The mean serum creatinine was found 1.36±0.82 mg/dl with range from 0.6 to 5.8 mg/dl.

Autoantibody screening of this study shows that shows that 2(4.0%) patients was associated with ANA, 2(4.0%) with anti ds-DNA Ab, 2(4.0%) was with anti Cardiolipin Ab, 2(4.0%) had Anti Phospholipid, Ab, 1(2.0%) was RA and 1(2.0%) was anti CCP Ab. this study demonstrates that presence of autoimmune diseases notably rheumatological diseases could be a predominant risk factor for development of deep vein thrombosis.

In present study observed that majority of (82.0%) patients was found with normal echocardiography followed by 4(8.0%) had left ventricular hypertrophy, 3(6.0%) had anterior wall hypokinesia, 1(2.0%) presented with LVH with anterior wall hypokinesia and 1(2.0%) had aortic sclerosis.

In USG findings, 33(66.0%) patients were found with right sided involvement and 17(34.0%) were with left sided involvement. More than one third (36.0%) patients was found with distal veins, 17(34.0%) was with proximal veins and 15(30.0%) had both (distal +proximal) veins affected. Angral et al.[21]out of these 10 patients, only 5 patients had evidence of proximal DVT while the remaining 5 patients showed distal DVT. Only three patients had evidence of proximal DVT while the remaining six patients showed distal DVT. Binder et al.[28] reported that the most commonly affected site is the lower leg (55.5%), followed by the calf muscle veins (25.3%). Singh et al. observed 58.06% had proximal DVT, 37.09% distal, and 4.83%, above inguinal compared to their 79%, 17%, and 4%, respectively.

In this study, more than half (54.0%) of patients had hospital stay >7 days. The mean hospital stay was 8.9±4.1 days with range from 3 to 20 days. Van Gent et al.[27] In-hospital mortality rates were 3.3% in non-events, 7.2% for DVT Only, and 15.8% for PE Only. In addition to variation among its clinical predictors, patients may experience dynamic changes in post-injury DVT and PE risk over the duration of the hospital stay.[32-33] Cheng et al.[10] observed DVT developed in these 56 patients after at least 3 days of hospital stay (median 10 days, range 3–84 days). Leizorovicz et al.[24] showed median duration of hospital stay was found 13 days with range from 8 to 19 days.

Conclusion

It is evident from the study that the most important risk factors are older age, DM, overweight, malignancy, hyperlipidemia, previous cardiovascular events and association with

autoimmune diseases. Cardiovascular risk factors are smoking hypertension, diabetes, alcohol habit and H/O taking OCP. More than one third subject was to be found that found distal and more than half of patients had hospital stay >7 days which might be a contributing factor also. So, strengthening of the programme for the prevention and control of NCDs to reduce DVT in the country thus suggested. However, studies with large sample size are also recommended to conclude the comment.

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Original Article

Efficacy of Pap Smear Cytology and Visual Inspection with Acetic Acid for the detection of Cervical Lesions

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ABSTRACT

Background: *Detection of cervical lesion is very crucial for the early treatment of the patients.* ***Objective:*** *The purpose of the present study was to see the effectiveness and compare the pap smear cytology and visual inspection with acetic acid for the detection of cervical lesions.* ***Methodology:*** *This cross-sectional study was carried out in the Department of Pathology at MAG Osmani Medical College, Sylhet, Bangladesh. All women with pervaginal discharge, irregular pervaginal bleeding, post- coital bleeding, lower abdominal pain and back pain between 21 to 60 years of age and patient with grossly abnormal cervix were included in this study. After recording clinical history and physical examination, Pap smears were collected. After collection of Pap smears, VIA were done by 5.0% acetic acid. Positive cases by both screening methods and grossly abnormal cervix even with negative screening test were subjected to biopsy.* ***Result:*** *Among 200 cases, 4 smears were unsatisfactory and remaining 196 smears were satisfactory. On cytological examination 5 cases were of squamous cell carcinoma; 8 cases were high- grade lesions; 20 cases were low-grade lesions and remaining 163 cases were negative for intraepithelial lesions or malignancy. In case of VIA test, 55 cases were positive and 145 cases were negative. Pap smear cytology results and VIA test results were reviewed with histopathology of 80 biopsy cases. Of 80 biopsy cases, 34 cases were positive and 46 cases were negative. The review findings of Pap smear cytology of this study showed that out of 80 cases, 67(83.75%) cases were correctly diagnosed and remaining 13(16.25%) cases were incorrectly diagnosed. Out of 34 positive cases 9(26%) cases were false negative and out of 46 negative cases 4(9%) cases were false positive. The observed sensitivity, specificity, PPV, NPV, accuracy of Pap smear cytology were 73.53%, 91.30%, 86.20%, 82.35%, 83.75% respectively. In VIA test, it was found that out of 80 cases, 59 (73.75%) cases were diagnosed correctly with 41% (19 of 46) false positive and 6% (2 of 34) false negative cases. So the measured sensitivity, specificity, PPV, NPV, accuracy of VIA test were 94.12%, 59.28%, 62.74%, 93.10%, 73.75% respectively.* ***Conclusion:*** *In conclusion the sensitivity of VIA test is higher than the Pap smear cytology but the specificity and accuracy of Pap smear cytology are higher than VIA test; however, the overall accuracy of combined procedure is higher than individual diagnostic method.*

Keywords: *Comparison; Pap Smear Cytology; Visual Inspection with Acetic Acid; Cervical Lesions*

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INTRODUCTION

The diagnostic cytology has been established as a reliable technique[1]. It may be used, extensively in the early diagnosis of malignant and pre-malignant lesions of many sites in the body[2] (Silverman, 1968; Camilleri, 1968). Pap smear is an exfoliative cytology test, which is composed of cellular material obtained from the uterine cervix[3].

The Pap smear generally is considered to be a very specific test for high-grade lesions or cancer, but moderately sensitive. In support of this view one study of Pap smear screening test had shown a specificity of 99.8% and a sensitivity of approximately 85.0%

cases[4]. Though Pap smear is an established method of screening in developed countries but in developing countries often lack the necessary resources to use the Pap smear as a screening tool for cervical abnormalities. Because the burden of cervical cancer is highest in such low-resource settings, alternative techniques have been sought[5]. Visual inspection with acetic acid (VIA) is another cervical screening test. Various studies show that VIA is simple, accurate, cost-effective and acceptable screening method to most women[6]. Screening programmes based on Pap smears require technical capabilities and systems for transportation, communication, follow-up and training that are beyond the capacity of healthcare infrastructure in most less-developed countries[7].

Visual inspection with acetic acid (VIA) involves swabbing the cervix with 3 to 5% acetic acid solution and examination of cervix in good light. Abnormal cells temporarily turn white and reveal aceto-white epithelium on the cervix where nuclear overcrowding occurs as in CIN[8]. VIA has potential advantages over traditional screening techniques in poorly resourced locations as there is immediate feedback of test results to the patient and treatment can be provided immediately after the test[7].

Acetic acid visualization of the cervix may be useful in settings where important cervical screening tests such as Pap smear cytology, colposcopy are limited, like Bangladesh and other underserved countries[7]. It has been observed that there is wide variation in sensitivity and specificity of different studies of Pap smear as well as VIA[10]. If facilities are available in the health centre, both Pap smear and VIA can be done in the same sitting. Again if results of combined Pap smear and VIA show more accuracy that will be meaningful gain in the detection of cervical lesions. The purpose of the present study was to see the effectiveness and compare the pap smear cytology and visual inspection with acetic acid for the detection of cervical lesions.

METHODOLOGY

This cross-sectional study was carried out in the Department of Pathology at MAG Osmani Medical College, Sylhet, Bangladesh from July 2005 to June 2006 for a period of one year. All patients with gynaecological complaints reporting in the Gynaecology outpatient department of MAG Osmani Medical College Hospital, Sylhet, Bangladesh were selected as study population. Patients were consecutively selected for this study according to enrolment criteria. All the patients with pervaginal discharge, irregular pervaginal bleeding, post- coital bleeding, lower abdominal pain and back pain between 21 to 60 years of age and patient with grossly abnormal cervix were included in this study. Mentally retarded women, histopathologically proven cases of cervical lesions, age more than 60 years or less than 21 years, pregnant and menstruating women or unmarried women were excluded from this study. Data were collected from the enrolled patients by using a standardized questionnaire. After recording clinical history and physical examination, Pap smears were collected by using wooden Ayre-spatula after putting an unlubricated self-retaining speculum into the vagina. After collection of Pap smears, VIA were done by 5.0% acetic acid. Positive cases by both screening methods and grossly abnormal cervix even with negative screening test were subjected to biopsy. Clinical history, physical findings, Pap smear findings, VIA findings and histological findings were recorded in the pre-designed patient's profile made for the study. All the data were evaluated by standard statistical methods. And various indices such as false positive, false negative, sensitivity, specificity, accuracy, predictive value of positive and predictive value of negative were calculated by SPSS 22.

RESULT

A total of 200 cases were selected. After recording the clinical informations and pervaginal examination cervical smears were collected by Ayre spatula. Then VIA were done by 5% acetic acid and the findings were noted. Histopathological examinations of biopsy specimens were done in Pap smear positive cases, VIA positive cases and clinically suspicious cases even with negative screened. A total of 80 cases were subjected to biopsy.

Initially, without knowing the result of VIA findings, Pap smears diagnoses were made. Of the 200 cases satisfactory smears were obtained in 196(98%) cases and 4(2%) smears were unsatisfactory which were included in others diagnostic criteria. On cytological examination 5(2.5%) cases were of squamous cell carcinoma, 8(4%) cases were of High-grade squamous intraepithelial lesions, 20(10%) cases were of Low-grade squamous intraepithelial lesion.

Remaining 156(78%) cases were diagnosed as "Inflammatory/Negative for intraepithelial lesions or malignancy. Smears were inflammatory with squamous metaplasia in 4(2%) cases, atypical squamous cell of undetermined significance (ASCUS) in1(.5%) case and normal in 2(1%) cases, which were included in others diagnostic findings. These are shown in table-I.

Table-I : *Pap smear cytopathologic diagnosis of 200 cases of cervical lesions*

Pap smear findings	Frequency	Percent
Inflammatory	156	78.0
LSIL	20	10.0
HSIL	8	4.0
Carcinoma	5	2.5
Others(unsatisfactory, normal, ASCUS,metaplasia)	11	5.5
Total	200	100.0

Among 200 patients included in this study subsequent VIA examination showed 55(27.5%) positive cases and 145(72.5%) negative cases (Table-II)

Table II: *VIA test findings of 200 cases of cervical lesions*

VIA findings	Frequency	Percent
Positive	55	27.5
Negative	145	72.5
Total	200	100.0

Biopsy specimens were available in only 80 cases. Of histopathological diagnosis of 80 cases 44(55%) cases were diagnosed as chronic cervicitis, 2(2.5%) cases were diagnosed as chronic cervicitis with squamous metaplasia, 22(27.5%) cases were diagnosed as CIN-I, 7(8.75%) cases were diagnosed as CIN-II/CIN-III and 5(6.25%) cases were diagnosed as invasive squamous cell carcinoma. Table-III shows final histopathological diagnosis of 80 cases of cervical lesions. Here 46 cases are inflammatory or negative for intraepithelial neoplasia /malignancy and 34 cases are positive for intraepithelial neoplasia or malignancy.

Table III: *Histopathological diagnosis of 80 cases of cervical lesions*

Histopathological diagnosis	Frequency	Percent
Chronic cervicitis	44	55.0
CIN-I	22	27.5
CIN-II/III	7	8.75
Squamous cell carcinoma	5	6.25
Others(squamous metaplasia)	2	2.5
Total	80	100.0

After histopathological diagnosis of 80 cases, results of pap smear cytology and VIA test findings were compared with histopathological diagnosis. In pap smear cytology positive cases were 29 and negative cases were 51. Among 29 cytologically positive cases, 4 cases were false positive which indicates 4 cases are histopathologically negative but cytologically positive. Of 51 cytologically negative cases,9 cases were false negative that is 9 cases were histopathologically positive but cytologically negative. These are shown in table-IV.

Of the total 80 cases in which biopsy were done,VIA tests were positive in 51 cases and negative in 29 cases. Out of 51 positive cases 19 cases were false positive and of 29 negative cases 2 cases are false negative(table-V).

Table IV: *Histopathological and Pap smear cytological diagnosis of 80 cases of cervical lesions*

Pap smear cytologicaldiagnosis	Histopathological diagnosis				Total
	Positive	- 34	Negative	-46	
Positive	True positive	- 25	False positive	- 4	29
Negative	False Negative	- 9	TrueNegative	- 42	51
		34		46	80

Table V: *Histopathological diagnosis and VIA test findings of 80 cases of cervical lesions*

VIA test findings	Histopathological diagnosis				Total
	Positive	-34	Negative	-46	
positive	True positive	-32	False positive	-19	51
Negative	False Negative	-2	TrueNegative	-27	29
		34		46	80

When the two tests were combinedly evaluated, there was no false negative case and false positive cases were also reduced(table-6)

Table VI: *Histopathological diagnosis and combined test findings*

Combined test findings	Histopathological diagnosis				Total
	Positive	-34	Negative	-46	
positive	True positive	-34	False positive	-3	37
Negative	False Negative	-0	TrueNegative	-43	43
		34		46	80

Statistical Analysis :

The statistical evaluation was based on histologically confirmed 80 cases. In the present study, Pap smear cytology showed sensitivity, specificity, PPV, NPV and accuracy as 73.53%, 91.30%, 86.20%, 82.35% and 83.75% respectively of the cases with 74%(25 of 34) true positive, 26% (9 of 34) was false negative, 91% (42 of 46) true negative and 9%(4 of 46) were false positive results. In VIA test sensitivity, specificity, PPV, NPV and accuracy were 94.12%, 59.28%, 62.74%, 93.10% and 73.75% respectively of the cases with 94% (32 of 34) true positive, and 6% (2 of 34) false negative, 59% (27 of 46) true negative and 41% (19 of 46) false positive results. When the two tests were combined evaluated there was no false negative case and false positive cases were also reduced. The overall accuracy of combined procedure was 96.25%, which was higher than individual diagnostic method (Table -VII).

Table VII: *Diagnostic Efficacy of Pap smear cytology, VIA test and combined test*

Diagnostic Methods	Sensitivity	Specificity	PPV	NPV	Accuracy
Pap smear	73.5%	91.3%	86.2%	82.3%	83.7%
VIA test	94.1%	59.3%	62.7%	93.1%	73.7%
Combined	100%	93.5%	91.9%	100.0%	96.2%

True positive (TP)-CIN-I, CIN-II/III, Carcinoma; True negative (TN)-Chr.cervicitis, Chr.cervicitis with squamous metaplasia; PPV-Positive predictive value; NPV-Negative predictive value.

DISCUSSION

Cancer of cervix is the commonest malignancy of women in the developing countries and it is the second most common cancer in women world-wide with approximately half a million new cases each year[11]. In Bangladesh cervical cancer is also the commonest malignancy of women[12]. This high incidence of cervical cancer is attributed to the lack of screening program, particularly in the women of low socio-economic status. Pap smear cytology and VIA test were done on all 200 cases. Biopsies were done in Pap smear positive cases, VIA positive cases and clinically suspicious cases even with negative screening test. A total of 80 cases were subjected to biopsy. On histopathological examinations of 80 biopsy specimens, 44 (55%) cases were diagnosed as inflammatory or chronic cervicitis, 22(27.50%) cases were diagnosed as CIN-I, 4(5%) cases were diagnosed as CIN-II, 3(3.75%) cases were diagnosed as CIN-III, 5 (6.25%) cases were diagnosed as invasive squamous cell carcinoma and 2(2.5%) cases diagnosed as chronic cervicitis with squamous metaplasia. Study carried out by Sayeeda[13] showed the incidence of inflammation was 44.93%, CIN-I 19.23%, CIN-II 11.59%, CIN-III 1.92% and invasive carcinoma was 3.84%, which were not similar to this study. This discrepancy might be due to small sample size, difference in the selection criteria of the present study and lack of colposcopic examination.

In this study it was found that most of the cervical cancer cases were in the age group 41-50 years and most of the CIN cases were in the age group 31-40 years which was almost similar to other studies. A review of the literature revealed that the peak incidence of cervical cancer occurs at the age of 40-45 years and precancerous lesions occurs at about 30 years[15].

On the histologic basis, among the 44 chronic cervicitis cases, 40(91%) cases were correctly diagnosed cytologically as inflammatory cytology or Negative for intraepithelial lesions. Out of the 22 CIN-I lesions, 14(64%) cases were diagnosed as low-grade squamous intraepithelial lesions (LSIL) and out of 7 CIN-II/III 6(86%) cases were diagnosed correctly as high-grade squamous intraepithelial lesions (HSIL) by cytology. All the cases (100%) of squamous cell carcinoma were correctly diagnosed by Pap smear cytology. Israt[14] observed that Pap smear cytology could correctly diagnose 100% chronic cervicitis, 11% cases of CIN-I as low-grade intraepithelial lesions, 75% cases of CIN-II/III as high--grade intraepithelial lesions and 100% squamous cell carcinoma. The present study reveals similar findings in case of carcinoma cervix and almost similar in cases of chronic cervicitis as well as high -grade lesions. The present study showed dissimilarity in case of CIN-I with Israt[14].

The statistical evaluation of this study was based on histologically confirmed 80 cases. In the present study, Pap smear cytology was diagnostically accurate in 83.75% of the cases with 74 % true positive, 26% false negative, 91% true negative and 9% false positive cases. VIA test was accurate in 73.75% of cases with 94% true positive, 6% false negative, 59% true negative and 41% false positive cases. The sensitivity, specificity, Positive predictive value (PPV), Negative predictive value (NPV), for the Pap smear were 73.52%, 91.30%, 86.20%, 82.35%, and for the VIA test were 94.11%, 59.28%, 62.74%, 93.10%,respectively. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and accuracy of combined procedure were 100%, 93.47%, 91.89%, 100% and 96.25% respectively. The overall accuracy of combined procedure was higher than individual diagnostic method.

Organized screening program has been successful in reducing the mortality in some of the developed countries but practically it had failed to eradicate the theoretically preventable cancer in any developing country[6]. The sensitivity of cytologic examination is the subject of debate. Approximately two-third of false negative smears were related to sampling errors and remaining third were due to screening and/or interpretative error[15]. Tayyeb et al[16] showed that sensitivity, specificity and accuracy for Pap smear were 46.9%, 69.5%, 52.8% as well as for VIA were 93.9%. 30.4%, 77.5% respectively. Doh et al[7] observations of sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) for Pap smear cytology were 47.7%, 94.2%, 67.2%, 87.8% and for VIA were 70.4%, 77.6%, 44.0%, 91.3% respectively. Study of Hussain[9] showed sensitivity specificity, positive predictive value (PPV), negative predictive value (NPV) for Pap smear were ,54.3%, 94.5%, 67.9%, 90.7% and for VIA were 80%, 88.5%, 59.6%, 95.4%. In this type of study validity refers to its ability to diagnose cases of neoplastic disorders and distinguish them from non-neoplastic conditions. Though accuracy of test show overall success of study but sensitivity and specificity are two important parameters of test. Sensitivity measures how well a test identify truly ill peoples and specificity measures how well a test identify truly well peoples. Sensitivity will be high if false negative report is low. Specificity will be high when false positive report will be low. In reviewing the observations by different authors it had been seen that sensitivity of Pap smear ranged from 44.3% to 54.3% and specificity of Pap smear ranged from 69.5%[12] to 94.5%[16]. Regarding VIA test sensitivity ranged from 70.4%[7] to 93.9%[11] and specificity ranged from 30.4%[16] to 88.5%[13].

The present study of Pap smear showed that sensitivity was better than others and specificity was more or less similar to others. This study also showed that for VIA sensitivity was in the upper limit of range observed by others and specificity was' more or less similar to other observations. The result of comparative study between Pap smear and histopathology was significant ($P<0.05$). The comparative study between VIA and histopathology was significant ($P<0.001$) and the result of comparative value between Pap smear and VIA was also significant ($P<0.001$).

It is noted that VIA test is superior to Pap smear in sensitivity that is VIA can more accurately identify the CIN/cancer patients and Pap smear is superior to VIA in specificity that is it can more accurately

identify the truly well peoples. The positive predictive value and negative predictive value for Pap smear of this study were 86.20% and 83.35%. These values were more or less similar to those of others[7]. In explaining the present study, it had been shown that after getting a negative Pap smear result, the probability of not having CIN/cancer was 83.35% and the chance of missing CIN/cancer was 16.65%.

This rate was very high and not suitable for cancer screening. The positive predictive value and negative predictive value for VIA were 62.74% and 93.10% in this study. These values were also closely similar to those of others[7,11]. The negative predictive value for VIA in this study also reflects a chance of missing CIN/cancer was 6.90%. So this is also an unsuitable screening test. The positive predictive values of both Pap smear and VIA were high. That indicates the chances of over diagnosis of CIN/cancer. But the chances of over diagnosis was much greater (37.26%) VIA. The most appreciable finding of this study was negative predictive value of combined Pap smear and VIA which was 100%. But this value was not similar to others, who observed combined[13]. The findings of present study indicate that there was no chance of missing CIN/cancer when both tests were done combined.

The observation was that the routine Pap smear test was better than that of VIA test as a single screening test. But Pap smear cytology is not so much established cervical screening method in our country for different reasons. VIA can be used as an alternative and cost effective cervical screening test in our country as it can be done by paramedics in health center.

CONCLUSION

In conclusion, the sensitivity of VIA test was higher than the Pap smear cytology but the specificity and accuracy of Pap smear cytology were higher than VIA test. By combining the two methods (Pap smear and VIA) a correct diagnosis of positive cases (CIN-I, CIN-II, CIN-III, squamous cell carcinoma) are correctly diagnosed by both tests. Therefore, the overall efficacy of combined procedure is higher than individual diagnostic method.

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Original Article

Effects of Different Regimens of Insulin Commonly Used in Type 2 Diabetes Mellitus on Body Mass Index (BMI)- A Comparative Study

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ABSTRACT

Background: *Weight gain is an ongoing challenge when initiating insulin therapy in patients with type 2 diabetes mellitus. The aim of this study is to observe the effect of commonly used regimens of insulin on body mass index (BMI) among type 2 diabetes patients.*

Materials and methods: *A hospital based cross-sectional comparative study was conducted in Dhaka Medical College and Hospital and in Ibrahim General Hospital (National Healthcare Network) from, July 2018 to June 2019. During 12-weeks of data collection period, total one hundred diagnosed case of type 2 diabetes patients were included according to selection criteria. 50 patients who were prescribed with premixed 30/70 insulin twice daily were included in group I (n=50) and 50 patients who were prescribed with insulin glargine once daily with a bolus insulin three times before large meals were included in group II (n=50). BMI was calculated from height and weight of the patients initially as baseline data then again after 12-weeks of treatment and results were compared between two groups. FBG, 2hrs ABF and HbA1c changes was also observed from diagnostic reports during study period.*

Results: *After 3 months (12weeks) of treatment mean body weight (mean ± SD) was increased significantly from 59.82 ±12.33kg to 60.40 ±13.38kg in group I (p value 0.01) and from 59.00±12.36kg to 60.33 ±12.97kg in group II (p value 0.02) during 12-weeks study period. Mean BMI (mean± SD) increased significantly from 23.71 ± 4.69kg/m2 to 24.10 ± 4.17kg/m2 in group I (p value 0.01) and from 24.00 ± 4.30kg/m2 to 24.43 ± 4.59kg/m2 in group II (p value 0.02) during study period. The mean BMI compared between two study groups (24.10 ± 4.17 vs 24.43 ± 4.59) kg/m2 after 12-weeks of treatment was not significant (p value 0.816). Total 64.0% patients in group I and 68.0% in group II has shown weight gain and BMI change after 12-weeks. Mean HbA1c (mean ± SD) reduced significantly from 10.40±2.17 percent to 7.76±1.41 percent in group I and from 10.41±1.80 percent to 7.63±1.37 percent in group II.*

Conclusion: *From this current study it can be concluded that both insulin regimens cause weight gain but the changes are not statistically significant. This result may provide some preliminary information for further investigation.*

Keywords: *type 2 diabetes mellitus, weight gain, BMI, Premixed 30/70, Glargine, bolus insulin.*

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INTRODUCTION

Diabetes Mellitus is a complex metabolic disease which is associated with hyperglycemia occurring either from deficiency in insulin secretion, insulin action or both. This long-standing hyperglycemia in diabetes mellitus causes damage, dysfunction and failure of different organs especially eye, kidney, nerve, heart and blood vessels[1].

The prevalence of diabetes mellitus is rising globally. It has been estimated that in 2017, there were 425 million people (aged 20-79yrs) who had diabetes and by the year 2045 the number is expected to be 693

million[2]. According to IDF 2017 the prevalence of diabetes in Bangladesh was 6.9%, but it is estimated 8.5% and 10% by some studies[3]. By the year 2030 Bangladesh is likely to be the 8th highest ranking country in the term of the number of diabetes peoplet. Approximately 4.0 million people has died from diabetes worldwide in 2017, which equivalent to one death in every eight seconds.

According to World Health Organization diabetes will be the 7th leading cause of death by the year 2030u.

Diabetes is a major cost burden on health care facilities in all countries. In 2017 the total healthcare expenditure attributed to diabetes was estimated USD 727 billion, which was 8% more, compared to the healthcare expenditure estimated in 2015v . In Bangladesh diabetes patients need two times more inpatient admission, 1.3 times more outpatient visits and 9.7 times more prescribed medicine annually compared to nondiabetes patients in Bangladesh. Total healthcare expenditure is around US$5.3 billion in Bangladesh. Based on total annual point-of-service payment the healthcare expenditure was estimated 6.12 times higher for diabetes patients compared to nondiabetesw.

The aim of optimum glycemic control in type 2 diabetes mellitus is to reduce the risk of long term macrovascular and microvascular complicationsx . Dietary and Life style modifications are the first approach to maintain optimum glycemic control (HbA1c <7.0%, FBS 4.4- 7.2 mmol/l, 2hr after meal < 10 mmol/l), beside that many oral and injectable anti diabetic drugs are also used based on effectiveness, cost, risk of hypoglycemia, weight gain and patient's preferencey . Insulin is the most effective antidiabetic medication. Early starting of insulin in type 2 DM ensure superior glycemic control and improve patient's quality of life, but it may cause weight gain and hypoglycemia as well. The fear of daily injection as well as weight gain and risk of hypoglycemia are the barrier for early initiation of insulin for the patients as well as for the physicians[1]p .

According to United Kingdom Prospective Diabetes Study (UKPDS), patients who are in intensive insulin therapy gained more weight at a shortest period of time, approximately 2 to 6 kg weight gain occurred during the period of 6 to 12 months[11]. This insulin induced weight gain may be related to dyslipidemia, hypertension and adverse cardiovascular outcome[12].

In comparison between basal-bolus and premixed insulin Home et al. has shown that HbA1c, FBS and 2hs ABF were significantly reduced in both study groups with significant weight gain occurred in both groups[13].

Several studies have been conducted worldwide which observed effectiveness of different insulin regimens in the term of glycemic control and also observe their weight gaining property. But as per my knowledge no such study has been done in Bangladesh though prevalence of type 2 diabetes is raising and different insulin regimens are prescribing every day. This study may give an idea about the effects of commonly used insulin regimens on body mass index and may help the physicians to select a suitable regimen in a suitable patient in an appropriate time and corelate further complications.

MATERIALS AND METHODS

This cross-sectional comparative hospital-based study was carried out in the Endocrinology outpatient Department of Dhaka Medical College and Hospital and the outpatient Department of Ibrahim General Hospital (National Healthcare Network) in Mirpur, Dhaka. Ethical clearance was taken from ethical review committee of both Dhaka Medical College Hospital and Ibrahim General Hospital authority. These two hospitals in Dhaka were selected for convenient of communication and data collection. Patients were selected from above mentioned hospitals according to the inclusion and exclusion criteria. Signature in the informed written consent was taken from the patients after complete explanation of procedure and purpose of the study. Type 2 diabetes mellitus patients of both gender and aged (30-70) years who were diagnosed by physician and diagnosis was written in prescription or in diabetic book, patients who were prescribed with premixed 30/70 insulin and glargine based basal-bolus regimen for the first time and patients who were willing to continue their insulin throughout then study period were included into the study group.

Patients with insulin regimen other than premixed 30/70 and glargine based basal-bolus regimen, patients not willing to continue treatment throughout the study period, diagnosed case of type 1 diabetes and Gestational Diabetes Mellitus and also patients with history of cancer, active tuberculosis, chronic kidney disease or drug that may influence their body weight were excluded during selection.

Procedure of data collection:

Data were collected from outpatient department of both Dhaka Medical College and Hospital and Ibrahim General Hospital (National Healthcare Network). Total Data collection period was 12 weeks from July, 2018 to June, 2019. Both centers were covered for 4-5 days in a week from 9:00 am to 1:00 pm. Data were taken from those who were willing to give their information after proper describing the purpose of the study. Total 135 patients were interviewed from two centers and their baseline height, weight, BMI, FBG, blood glucose 2hrs ABF and HbA1c were recorded during first visit. Then the patients were counselled for a follow up visit in the same diabetes center after 3 months with their relevant investigation reports. Again, in follow-up visit information of FBG, 2hrs ABF, HbA1c, height, weight and any history of hypoglycemia in last 3 months were recorded in the data collection form. During follow-up visit some patients were dropped out because they did not come for follow up and some did not do any investigations which were advised. Finally, total 100 patients were included in the study group. Among them 50 patients who were in premixed 30/70 insulin included in group I and 50 patients who were in glargine based basal-bolus insulin included in group II. Quantitative data were expressed as mean ± SD (standard deviation). The p value ≤0.05 was considered as statically significant at 95% CI (confidence interval). The data were analyzed by using statistical software SPSS (version 22.0).

RESULTS:

The baseline characteristics of the participants are shown in (Table-I). In this study it has been observed that mean body weight was significantly increased from 59.82±12.33 kg to 60.40 ± 13.38 kg in group I and from 59.00 ± 12.36 kg to 60.33 ± 12.97 kg in group II after 12-weeks of treatment but in comparison between two groups there was no significant (p value 0.741) difference. After 12-weeks 64.0% patients in group I and 68.0% patients in group II gained body weight, 16.0% patients in both groups had weight lost and weight remain unchanged among 20.0% patients in group I and 16.0% patients group II. The mean BMI increased significantly from 23.71 ± 4.69 kg/m2 to 24.10 ± 4.17 kg/m2 in group I and from 24.00 ± 4.30 kg/m2 to 24.43 ± 4.59 kg/m2 in group II after 12-weeks (table-II) but mean BMI compared between two groups after 12-weeks there was no significant difference(Table-III). In comparison of mean difference of BMI of male and female participants between two groups, result is also insignificant (table-IV). The mean HbA1c level reduced significantly in both insulin groups after 12-weeks, from 10.40 ± 2.17% to 7.76 ± 1.41% and from 10.41 ± 1.80% to 7.63 ± 1.37% in group I and in group II respectively. 48% patients in group I and 56% patients in group II achieved their HbA1c target <7% after 12-weeks of treatment.

In this study FBG level was significantly reduced from 12.50±4.28mmol/l to 6.98±1.52mmol/l (p value 0.001) in group I and from 12.49 ± 5.64mmol/l to 6.64±1.00mmol/l (p value 0.002) in group II. About 52.0% patients in group I and 60.0% patients in group II achieved glycemic target FBG 4.4-7.2mmol/l. Blood glucose level 2hrs ABF was also significantly reduced from 16.86 ± 6.93mmol/l to 9.35±1.47mmol/l (p value 0.003) in group I and from 17.85±5.36mmo/l to 10.05±2.18mmol/l (p value 0.001) in group II after 12-weeks of treatment. About 28% patients in group I and 20% patients in group II gave history of hypoglycemia during the study period.

Table-I: *Baseline characteristics of participants*

Characteristics	Group I (n=50)	Group II (n=50)
Age (in years) (mean ± SD)	48.24 ± 9.75	49.80 ± 9.17
Gender		
Male	58.0%	54.0%
Female	42.0%	46.0%
Positive family history of diabetes	76.0%	82.0%
Duration of type 2 DM		
< 5 years	56.0%	62.0%
≥5 years	44.0%	38.0%
Body weight (kg) before treatment (mean ± SD)	59.82 ± 12.33	59.00 ± 12.36
BMI (kg/m2) before treatment (mean ± SD)	23.71 ± 4.69	24.00 ± 4.30
HbA1c (%) before treatment (mean ± SD)	10.40 ± 2.17	10.41 ± 1.80
FBG (mmol/l) before treatment (mean ± SD)	12.50 ± 4.28	12.49 ± 5.64

Table -II: *The mean body mass index (BMI) in two study groups during the study period (12-weeks)*

Body mass index (BMI) (kg/m2)	Group I (n=50) Mean ± SD (kg/m2)	Group II (n=50) Mean ± SD (kg/m2)	P-value
Before Treatment	23.71±4.69	24.00±4.30	0.01
After 12- Weeks of treatment	24.10±4.17	24.43±4.59	0.02

Table III: *Mean BMI compared between two study groups after 12-weeks of treatment*

Study groups	Duration of treatment 12 weeks	
	Mean ± SD (kg/m2)	p Value
Group I	24.10 ± 4.17	0.816
Group II	24.43 ± 4.59	

Table-IV: *Comparison of mean Body Mass Index (BMI) between male and female participants of Group-I and Group-II*

Group-I	Group-II	Mean Difference	Standard Error	P value
Male	Male	-0.0774	1.360	0.955
	Female	0.827	1.1411	0.595
Female	Male	0.566	1.250	0.652
	Female	1.471	1.305	0.263

DISCUSSION:

This hospital based cross-sectional comparative study has been carried out to compare the effect of premixed 30/70 insulin and glargine based basal-bolus insulin regimen on body mass index (BMI) of type 2 diabetes patients. In this study, demographic profile showed that insulin was prescribed more to male patients (58.0% in group I and 54.0% in group II) in comparison to female patients which may indicate that males were predominantly coming for consultation than female. This finding is similar with previous study conducted by Bhuyan and Fardus, 2019[1]t , where males were more (53.6%) than female (46.4%) but Fottrell, et al., 2018 shown number of females were more than male in their study[1]u . Like previous similar type of study, the predominant age group of this study was also 50-59 years (36% in group I and 40% in group II). In the study conducted by Samdani, et al., 2017, showed major age group was 50-59 years (37.5%)[16]. In this study patients of both groups have positive family history of diabetes mellitus, 76.0% and 82.0% in group I and group II respectively. Haque, et al., 2017, in their study also shown most of the patients had positive family history of diabetes[18]. In this study respondents were distributed by the duration of type 2 diabetes (<5years and ≥5years). The duration of type 2 diabetes in most of the patients was <5 years, 56.0% in group I and 62.0% in group II. Islam, et al., 2015, in their study shows similar findings[1]y .

In this study mean body weight was increased from 59.82 ± 12.33kg to 60.40±13.38kg in group '! significantly (p value 0.01) who were prescribed with premixed 30/70 and from 59.00 ± 12.36kg to 60.33 ±12.97kg in group a! significantly (p value 0.02) who were prescribed with glargine based basal-bolus regimen. But the mean body weight compared (60.40 ± 13.38kg in group I vs 60.33 ± 12.97kg in group II) between two study groups after 12-weeks of treatment was not statistically significant. Similar type of study was conducted by Shanmugasundar, et al., 2012, on type 2 diabetes patients also found that there was significant increase of body weight from 74.6 ± 11.9kg to 76.0 ± 11.6kg in premixed arm and from 85.5 ± 14.0kg to 86.9 ± 14.4kg in glargine based basal-bolus arm after 12-weeks of treatment but in comparison between two groups there was no significant difference[2]. In this study 64.0% patients with premixed insulin and 68.0% patients with basal-bolus insulin gained body weight after 12-weeks. Body weight remain unchanged in 20.0% patients in

group I and 16.0% patients in group II and weight lost has occurred in 16.0% cases in both groups. A prospective study conducted by Jansen, et al., 2014 also shown in their study that 71% patients gained weight and 29% patients showed stable body weight or even lost body weight after 12-months[21].

In this study mean BMI increased significantly in both study groups after 12-weeks of treatment from 23.71 ± 4.69kg/m2 to 24.10 ± 4.17kg/m2 in group I (p value 0.01) and from 24.00 ± 4.30kg/m2 to 24.43 ± 4.59kg/m2 in group II (p value 0.02), but BMI (24.10 ± 4.17kg/m2 vs 24.43 ± 4.59kg/m2) compared between two study groups was not statistically significant (p value 0.816). Shanmugasunder et al., 2012, has shown in the study that body mass index increased by 0.58 ± 0.61kg/m2 in premixed and 0.62±0.6kg/m2 in basal-bolus arm which were significant but comparison between two groups were not significant[20] .

There was significant reduction of HbA1c from 10.40 ± 2.17% to 7.76 ± 1.41% and 10.41 ± 1.80% to 7.63 ± 1.37% in group I (p value 0.001) and group II (p value 0.001) respectively. Anyanwagu, et al., 2017, in 24-weeks, randomized study has shown there was significant reduction of HbA1c by 0.28% and 1.4% in basal-bolus and premixed 30/70 arm respectively[22]. According to American Diabetes Association, 2018, HbA1c target <7% was achieved by 48.0% patients in group I and 56.0% patients in group II after 12-weeks of treatment. In the aspect of FBG, significant reduction of fasting blood glucose in both groups from 12.50 ± 4.28mmol/l to 6.98 ± 1.52mmol/l in group I and from 12.49 ± 5.64mmol/l to 6.64 ± 1.00mmol/l in group II. In the study conducted by

Shi, Li and Hou, 2017, has shown similar result[23]. In this study 28.0% patients in group I and 20.0% patients in group II gave history of hypoglycemia during the period of 12weeks but none of the patients required hospital admission. Jin, et al., 2016, shown in their study that patients of basal-bolus group experienced more hypoglycemia than premixed group[2]t but Home, et al., 2015, in their study has shown more patient in premixed group (19.1%) had hypoglycemia than basal-bolus group (14.8%) [13].

CONCLUSION:

On the basis of this study findings, it can be concluded that, both premixed 30/70 and glargine based basal-bolus regimen causes weight gain and body mass index (BMI) change in type 2 diabetes patients but the changes are not statistically significant. This result may provide some preliminary information for further investigation.

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Conflict of interest None declared.

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Original Article

Effects of Infrared Photo Therapy in Diabetic Peripheral Neuropathy

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ABSTRACT

Objectives: *Diabetes is a common cause of peripheral neuropathy and there is no definitive intervention for the treatment of diabetic peripheral neuropathy. Infrared photo therapy or infrared light therapy is a relatively new modality used worldwide for reducing pain, restoration of sensation & improving balance by conduction method. The aim of this study was to determine the effectiveness of infrared photo therapy by conversion method in reducing pain, restoring sensation specially fine touch and improving balance in diabetic peripheral neuropathy.*

Methods: *This was a randomized clinical study carried out from April 2013 to March 2014 in the Department of Physical Medicine and Rehabilitation, Bangabandhu Sheikh Mujib Medical University, Dhaka. A total number of 58 cases clinically were diagnosed as diabetic peripheral neuropathy in which 30 patients were treated with infrared photo therapy in addition to drugs (pregabalin and nortriptyline) and exercises in group A. In group B 28 patients were treated with only same drugs and exercises as group A. Pain measured on a visual analogue scale, sensation and balance deficits were documented before and after receiving the 18 therapy sessions.*

Result: *Before starting the intervention Visual Analog Scale (VAS) were 6.19 ± 0.75 and 6.27 ± 0.88 respectively (P=0.4018). After intervention Visual Analog Scale (VAS) were 3.96 ± 1.22 in Group A and 5.31 ± 0.93 in Group B (P=0.001). The improvement of the sensory system: touch after intervention was statistically significant in group A (P=0.032) but the pin prick, position sense, vibration sense were not statistically significant (P=0.2848, P=0.3928 and P=0.3928). After intervention there was significant differences in balance impairment reduction observed in Group A than Group B (P=0.048).*

Conclusion: *Infrared photo therapy may play an important role in treating diabetic peripheral neuropathy by reducing pain, restoring sensation specially fine touch and improving balance.*

Keywords*: Infrared photo therapy, diabetic peripheral neuropathy, balance impairment.*

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INTRODUCTION:

Peripheral neuropathy defines as wide a variety of symptoms due to autonomic and sensory nerve dysfunction and is estimated to affect more than 22% of adults aged 60-74[1]and as many as 20 million people of all age[2]. Peripheral nerves are composed of sensory, motor and autonomic elements. Diseases can affect the cell body of a neuron or its peripheral processes, namely the axons or the encasing myelin sheaths. Most peripheral nerves are mixed and contain sensory and motor as well as autonomic fibers. So, peripheral neuropathies can impair sensory, motor or autonomic function, either singly or in combinations[3].

Diabetic peripheral neuropathy is the most common peripheral neuropathy encountered in clinical

practice[4].This is a relatively early and common complication affecting approximately 30% of diabetic patients[5]. Risk factors for the development of diabetic peripheral neuropathy include long standing, poorly controlled DiabetesMellitus[3] andage and duration of diabetics & low socioeconomic status[6]. Despite the prevalence of diabetic peripheral neuropathy, many patients are asymptomatic and therefore do not seek care for it[7].

Patients with diabetic peripheral neuropathy usually experience pain in the lower limbs (dull, aching and /or lancinating, worse at night and mainly felt on the anterior aspect of the legs), burning sensation in the soles of the feet, paraesthesiae in the feet, rarely in the hands, cutaneous hyperaesthesia, often associated with a sense of numbness in the feet[5]. Patients may show reduced ability to detect temperature changes[8] and diminished perception of vibration sensation distally, "glove -and- stocking" impairment of all other modalities of sensation and loss of tendon reflexes in the lower limbs[5]. These are associated with postural instability, loss of leg & foot strength & reduced proprioceptive thresholds in foot inversion, eversion, plantar flexion & dorsiflexion[8]. Therefore, patients with diabetic peripheral neuropathy often develop gait & balance dysfunction that leads to an increased risk of falling, foot ulcers & amputation. Consequently, patients are often encouraged to use compensatory strategies such as walking aids (cane or walker) & learn about palliative & protective foot care in an effort to identify potential environmental hazards that could lead to pedal cutaneous compromise or injury[7]. As such diabetic peripheral neuropathy presents both a substantial economic cost to the health care system and potentially debilitating consequences for those affected[9].

Although there is no definitive intervention for the treatment of diabetic peripheral neuropathy, the mainstay generally hinges on vigorous glycemic control and reduction of pain and paresthesia by either topical or systemic means [8]. So, there is a need to manage Diabetic peripheral neuropathy by a measure along with different medications.

Physical therapy can be an effective and alternative treatment option for patients with diabetic peripheral neuropathy[10]. This may help reduce dependency on pain relieving drug therapies. Certain physical techniques can help alleviate symptoms brought on from Diabetic peripheral neuropathy such as pain in the lower limbs, tingling, burning sensation in lower extremities, muscle weakness & diabetic foot.

Infra means below or beyond. In the electromagnetic spectrum the radiation band which falls just below the visible red is called infrared radiation. A therapeutic use of this infrared as a superficial dry heat modality in various clinical conditions is known as infrared photo therapy or infrared light therapy. Infrared photo therapy is a relatively new modality used in the United States for reducing pain and increasing circulation[7]. Infrared photo therapy was cleared by the United States Food and Drug Administration (FDA) in 1994 for increasing circulation and reducing pain.

The infrared photo energy penetrates the skin enough to be absorbed by haemoglobin in the capillary loops in the papillary dermis[7]. The infrared light causes a release of nitric oxide from the body's red blood cells, and in turn creates better blood flow and circulation, thus reducing swelling, pain and stiffness[11]. In addition to increasing circulation, infrared also creates angiogenesis (the growth of new blood vessels from existing ones) which helps patients with neuropathy.

A few studies shows that monochromatic infrared photo energy (MIRE) has effective efficacy to reduce pain, improving foot sensation and increasing balance in patients with diabetic peripheral neuropathy[7,9,10,12,13,14,15]. On the other hand a few studies show that there is no improvement of neuropathy following monochromatic infrared photo energy in the naturopathic feet of diabetic patients[16, 17]. All those studies are conducted by monochromatic infrared photo energy (MIRE) machine. MIRE at a wavelength of 890 nm is produced by an array of 60 gallium aluminum arsenide light–emitting diodes located on flexible pads which must be placed in direct contact with the target skin. This research conducted by conversion method which has the advantages of these modalities is that the heat can be applied without touching the body and the skin stays dry[11]. Heat lamps are used for application. This technique is less expensive, easily available and more comfortable to patient. So, it is important to find out an appropriate treatment for diabetic peripheral neuropathy to reduce economic cost to the health care system in Bangladesh. That purpose the aim this study is to evaluate the effectiveness of infrared photo therapy on the patients with diabetic peripheral neuropathy.

METHODS:

Research Design & Participants

This was a randomized clinical study carried out from April 2013 to March 2014 in the Department of Physical Medicine and Rehabilitation, Bangabandhu Sheikh Mujib Medical University, Dhaka.Subjects were selected purposively according to the availability of the patients who fulfill the inclusion criteria.Immediately after the examination, the patients were randomized by drawing lottery. Each patient had an equal chance of being allocated to any one of the assigned group. With all possible sources and with the help of outdoor of Neurology and Endocrinology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka and with the limitation of time only 58 patients were selected. Inclusion criteria for the study were as follows: 1. Patients with diabetes with clinical features of diabetic peripheral neuropathy.2. Patients of both sexes were included. Exclusion Criteria for the study were as follows: 1.Patients who have definitive anesthetic area in the lower limbs 2.Patients who have uncontrolled hypertension of > 180 mm of Hg systolic or >110 of Hg diastolic 3.Patients who are pregnant or breast-feeding or likely to become pregnant during the study 4.Patients who had severe damage as a result of prior reconstructive or replacement surgery of knee or back 5.Patients who had active malignancy on the lower extremities 6.Patients who were suffering from spinal stenosis, spinal compression or radiculopathy 7.Patients who were suffering other causes of peripheral neuropathy.

A total number of 58 cases were clinically diagnosed as diabetic peripheral neuropathy, then 30 cases were randomly selected for Group A and twenty eight (28) cases were randomly selected for Group B. During follow up after 6 weeks 4 from Group A and 2 from Group B were dropped out. Because they did not come for follow up. So finally 26 cases for Group A and 26 cases for Group B were studied. In this randomized clinical study, data from 26 patients who were treated with drugs, exercises, and Infrared photo therapy (belonged to group-A) and 26 patients who were treated with same drugs and same exercises as group-A (belonged to group-B).

Procedue

Infrared photo therapy **to be** applied on the both legs and the both feet with 300 watt, 230 Volt , Philips bulb with distance of the therapy 1.50 feet, 30 minutes per therapy session, 3 sessions per week for 6 weeks (Total 18 sessions). Infrared photo therapy was applied by the same physiotherapist to all the patients of Group-A.

Active lower extremity strengthening exercises (hip extensors, hip abductors, hip adductors, quadriceps, ankledorsiflexors) and stretching exercises of the hip, knee and ankle flexor musculature were prescribed. Exercises were done 10 repetitions twice daily. Patients in both groups were educated as to the rationale for the exercises and they received verbal instruction related to the proper method of exercises and they demonstrated to the treating therapist their ability to properly perform the prescribed exercises. All patients were instructed to exercise at home on the days that they did not go to the hospital for supervised intervention.

Cap pregabalin 75 mg twice daily and Tab Nortriphyline 25 mg before sleep given to all patients for 45 days from the same companies.

Main outcome variable

Measurement of variables: Age, sex, body weight, type of diabetes mellitus, duration of diabetes mellitus, duration of neuropathic pain and outcome measures. Outcome variable: Assessment of improvement had done using following parameters: 1. Measurement of pain on a Visual Analogue Scale (VAS) -10 points scale from none to unbearable 2. The sensory System-Light touch, Superficial pain, Deep pain, Temperature Sensation, Vibration Sense, Position sense 3. Balance.

Assessment Tools

Pain measurement- For measurement of pain used Visual Analogue Scale (VAS). VAS is a continuous scale of a Horizontal (HVAS) or Vertical (VVAS) line, usually 10 centimeters in length, anchored by 2 verbal descriptors, one for each symptom extreme. For pain intensity the scale is most commonly anchored by no pain (score of 0) and pain as bad as it could be or worst imaginable pain (score of 10). In this study for assessment of pain used Horizontal Visual Analogue Scale (HVAS).

The sensory System-The assessment of the sensation usually done by 5.07 or 6.65 Semmes Weinstein Monoûlament (SWM) which is generally accepted as an effective, portable, painless, easy to administer, and reliable screening method but in this study used conventional method due to unavailability of this instrument.

Touch-With the closure the eyes, use a wisp of cotton wool and ask the patient to respond to each touch.

Pinprick-Explain the test and ask the patient to report it as soon as he feels discomfort.

Temperature- Do you feel properly hot and cold water?

Position sense- With the closure the eyes hold the distal phalanx of the patient's great toe and move it up and down. Ask the patient to respond with 'up' or 'down' as make these movements.

Vibration- Place a vibrating 128 Hz tuning fork on the tip of the great toe. Ask the patient, 'Do you feel it buzzing?'

Balance-Do you feel off balance or feel like you are going to fall? Answer: YES/NO.

Data Management and Analysis

On 1st visit, the initial evaluation for patients with diabetic peripheral neuropathy begins with an accurate history and through clinical and relevant investigations carried out properly. After treatment of the patients as per schedule, the patients followed up and the outcome recorded in the assessment data sheet. The data sheet coded without the name of the patient. All data were recorded in a structured questionnaire then final analysis was done with the data of 52 patients by using computer software statistical package for social sciences (SPSS). Level of significance set as 0.05 and P<0.05 considered as significant. Student's t- testand Chi-square tests were done to test the hypothesis which appropriate.

Results

In this study 30(57.7%) patients were male and 22(42.3%) were female.The mean age of the patients was 51.12 ± 9.63 years (range 25-70years) in group-A and 51.88 ± 8.88 years (range 25-70years) in group-B (P>0.05).The mean body weight of this study was 58.19 ± 8.19 kg in group-A and 60.00 ± 7.38 kg in group-B(P>0.05). In both groups maximum patients had type 2 diabetes mellitus.The mean duration of diabetes mellitus of this study was 10.62 ± 5.85 years in group-A and 9.85 ± 5.00 years in group-B. The mean duration of suffering from neuropathic pain was 1.43 ± 0.95 and 1.29± 0.76 years respectively.But there was no statistically significant difference observed between both groups.

In this study there was a significant reduction in neuropathic pain based on Visual Analog Scale (VAS) score in group A after intervention. Before starting the intervention Visual Analog Scale (VAS) were 6.19 ±0.75 and 6.27±0.88 respectively. After intervention Visual Analog Scale (VAS) were 3.96± 1.22 in Group A and5.31± 0.93 in Group B (Table 1). The improvement of the sensory system – touch after interventionwas statistically significant in group–A but the pin prick, position sense, vibration sense were not statistically significant.After intervention there was significant differences in balance impairment reduction observed in Group A than Group B (Table II).

Table I: *Distribution of the respondents by in Visual Analog Scale (VAS) score the both groups before and after intervention (n=52)*

Visual Analog	Type of respondents		Student's	P value*
Scale (VAS)	Group A (n=26)	Group B (n=26)	t- test value	
Before intervention	6.19(0.75) #	6.27(0.88)	0.250	0.4018ns
Before intervention	3.96(1.22)	5.31(0.93)	3.214	0.0011s

ns= non-significant , s= significant

* Student's t- test was done to measure the level of significance.

Values are mean (standard deviation)

Table II: ***Di****stribution of the respondents by finding of the sensory system examination &Balance in the both groups before and after intervention (n=52)*

Sensory system ex. & Balance	Before intervention/ After intervention	Type of respondents Group A (n=26)	Group B (n=26)	Chi sq. value (df)	P value*
Touch	Reduced(before inter)	20(76.9%)	18(69.2%)	4.56 (1)	0.0327s
	Improved(after inter)	15(75.00%)	05(27.7%)		
Pin prick	Reduced(before inter)	10(38.5%)	8(30.8%)	1.144 (1)	0. 2848ns
	Improved(after inter)	5(50.0%)	2(25.0%)		
Position sen	Reduced(before inter)	17(65.4%)	18(69.2%)	0.73 (1)	0.3928ns
	Improved(after inter)	11(64.7%)	4(22.2%)		
Vibration se	Reduced(before inter)	16(61.5%)	15(57.7%)	0.37 (1)	0.5430ns
	Improved(after inter)	10(62.5%)	4(26.7%)		
Balance	Reduced(before inter)	14(53.9%)	12(46.2%)	3.891 (1)	0.0485s
	Improved(after inter)	9(64.3%)	3(25.0%)		

s= significant

*Chi square test was done to measure the level of significance.

DISCUSSION:

In this study 30(57.7%) patients were male and 22(42.3%) were female. In Tarek A. Ammar (2012) study 18(43.9%) were male and 23(56.1%) were female. In Volkert et al. (2006) studied 128 patients of diabetic peripheral neuropathy and found 69(54%) male and 59(46%) female. This discrepancy of the current study with the other studies could be due to general attitude of our female patients towards hospitals which they frequently tried to avoid.

In this study the mean age of the patients was 51.12 ± 9.63 years (range 25-70years) in group-A and 51.88 ± 8.88 years (range 25-70years) in group-B. In Leonard et al. (2004) studied the mean age of the patients was 61±12 years in group 1 and 64±9 years in group 2. In Liu Jie et al. (2005) studied? the mean age of the patients was 67.45±9.03 years in group 1 and 66.20 ±7.74 years in group 2. The discrepancy with present study could be due to fact that this is a small study with very few patients and life expectancy relatively low in our country.

The mean body weight of this study was 58.19 ± 8.19 kg in group-A and 60.00 ± 7.38kg in group-B. But 68.32±10.19 kg in group 1 and 73.1±9.61 kg in group 2 in Tarek A. Ammar (2012) study. This discrepancy of the current study with the other studies could be due to general height and weight relatively low compare to western world.

Diabetic peripheral neuropathy is common in type 2 diabetes mellitus. In this study 94.2% respondents had type 2 diabetes mellitus. In a study conducted by Leonard et al. (2004) shows 92.6% had type 2 diabetes mellitus. The present study agrees with the above study.

The duration of diabetes mellitus of this study was 10.62 ± 5.85 years in group A and 9.85 ± 5.00 years in group-B. In Lavery et al. (2008) study the duration of diabetes mellitus was 13.4 ± 2.0 years in group 1 and13.4±2.1 years in group 2. The discrepancy with present study could be due to fact that life expectancy relatively low in our country.

In this study there was a significant reduction in neuropathic pain based on Visual Analog Scale (VAS) score in group A after intervention. Before starting the intervention Visual Analog Scale (VAS) were 6.19 ±0.75 and 6.27±0.88 respectively (P=0.4018). After intervention Visual Analog Scale (VAS) were 3.96± 1.22 in Group A and 5.31± 0.93 in Group B (P=0.0011). Self-reported pain (VAS) in the Group A subjects, decreased from 6.19 ±0.75 to 3.96± 1.22 after 18 therapy sessions. VAS in the Group B subjects was much more than in Group A whereas self-reported pain decreased 6.27±0.88 to 5.31± 0.93 after intervention.

The improvement of the sensory system – touch after intervention was statistically significant in Group–A (P=0.032) but the pin prick, position sense, vibration

sense were not statistically significant (P=0.2848, P=0.3928 and P=0.3928). At initial evaluation, 20 out of 26 patients in Group A and 18 out of 26 patients in Group B reduced fine touch sensation in the lower limb but after intervention 15 out of 20 patients (75%) in Group A and 5 out of 18(27.7%) patients in Group B were improved. On the other hand, 10 out of 26 patients in Group A and 8 out of 26 patients in Group B reduced pinprick sensation in the lower limb at initial evaluation but after intervention 5 out of 10 patients(50%) in Group A and 2out of 8(25%) patients in Group B were improved. In case of position sense 11 out of 17 patients (64.7%) in Group A and 4 out of 18(22.2%) patients in Group B and in case of vibration sense 10 out of 16 patients (62.5%) in Group A and 4 out of 15(26.7%) patients in Group B were improved after intervention.

Balance- the questionnaire required a yes or no response to the following question: "Do you feel off balance or feel like you are going to fall?" At initial evaluation, 14 of the 26 in Group A subjects (53.9%) answered this question afûrmatively. After 18 therapy sessions 9 subjects out of 14 (64.3%) already improved. In Group B subjects 12 out of 26(46.2%) also answered the balance impairment question afûrmatively before the start of treatment. After intervention 3out of 12 patients (25%) improved. After intervention there was a significant difference in self-reported balance impairment reduction observed in Group A than Group B (P=0.0485).

A number of published articles mentioned above conducted by conduction method but no one study was done by conversion method like this which is less expensive, easily available and more comfortable to patient. With some limitations of the study Infrared photo therapy may play an important role in treating diabetic peripheral neuropathy by reducing pain, restoring sensation specially fine touch and improving balance. Until treatment options for diabetic peripheral neuropathy become adequate, all interventions that help a patient should be considered.

CONCLUSION:

As the numbers of patients studied were very small, no firm conclusion could be drawn from this study. But from this randomized clinical study, it could also be concluded that the Infrared photo therapy may play an important role in treating diabetic peripheral neuropathy by reducing pain, restoring sensation specially fine touch, and improving balance but Infrared photo therapy was non effective in the improvement of the sensory system specially pin prick, position sense and vibration sense.

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Review Article

Violence Against Women: Role of Medical Professionals & Legislation in Bangladesh.

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ABSTRACT

Violence against women is one of the most widespread persistent and devastating human rights violations throughout the world today. Though it is yet relatively hidden & ignored forms of violence due to the impunity, silence, stigma & shame surrounding it. Women & girls are subjected to gender-motivated killings, sexual violence in conflict & non conflict settings, including rape, female genital mutilations & sexual harassment in the workplace, other institutions & public spaces, so called "Honor" crimes, early, forced & child marriage ,deprivation from inheritance of property, vitriolage, trafficking, for sexual exploration & other forms of verbal, psychological, emotional & physical & sexual abuse. It is rooted in gender inequality that women face throughout their lives from childhood through to old age. Many women are terrified by these threats of violence & this essentially influences their lives so that they are impeded to exercise their human rights; for instance, they fear contributing to the development of their communities socially, economically & politically. Violence against women continues to be an obstacle to achieving equality, development, peace as well as to the fulfillment of women & girl's human rights. So women & girls must not be seen only as victims, but as agents of change and equal partners in ending discrimination and violence. To end violence against women we must change gender stereotypes, attitudes and beliefs that condone violence and harmful constructions of masculinity. Efforts to prevent gender based violence must be accelerated along with increased access to justice, Including reparations, and access to comprehensive services. The empowerment of women and girls and the eradication of stigmatization of survivors. The government had taken a good initiation for such survivors by establishing One Stop Crisis Centre which provide one door services with multidimensional activities. Healthcare professionals working in diverse settings can contribute in violence against women by recognizing the manifestations and referring victims to OCC-an appropriate source of health and support. This paper also focuses on existing legislations in our country ensuring greater accountability from government to eradicate violence against women.

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Violence against women:

"Any act of gender-based violence that results in, or is likely to result in, physical, sexual or psychological harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or in private life."

UN Declaration on the Elimination of Violence against Women (DEVAW, 1993)

Gender-based violence:

"Violence that is directed against a woman because she is a woman or that affects women disproportionately."

CEDAW General Recommendation no. 19 (1992)

Violence against women in different settings:

Within Family:
Battering, sexual abuse of female children in the household, dowry-related violence, marital rape, female genital mutilation and other traditional practices harmful to women, non-spousal violence and violence related to exploitation.

Within Community:
Rape, sexual abuse, sexual harassment and intimidation at work, in educational institutions and elsewhere, trafficking in women and forced prostitution.

Forms of GBV:
GBV encompasses a broad range of harmful acts:

- Physical violence, e.g.: slapping, hitting, pushing, choking, shaking, spitting, restraining, use of weapons. May or may not cause injuries
- Sexual violence, e.g. rape, other forms of sexual assault, forced marriage, forced abortion, forced sterilization, female genital mutilation (FGM)
- Psychological violence, e.g. threats, emotional violence, use of children
- Economic violence, e.g. withholding money, prohibiting the woman to work, excluding her from financial decisions.

Physical Abuse:
Any physical force that injures one or put one's health in danger. When this abuse occurs in an intimate partner relationship then it is called domestic violence.

Physical Abuse includes shaking, burning, chocking, hair pulling, hitting, slapping, kicking and any type of harm with a weapon like a knife or gun.

Why PA is common in BD?

- Refusal to bring demanded dowry
- Economical insufficiency
- Failure to give birth of a male child
- Adultery
- Failure to perform household works
- Grown up through a broken/unstable family .

Dowry related violence against married womwn
January 2014 - December 2018

Years	Killed	Physically abused	Suicide	Total
2018	71	69	2	142
2017	118	127	11	256
2016	107	94	5	206
2015	119	77	6	202
2014	123	103	11	237

MYTHS:

- Battering is not a crime. Men have the right to control their wive's behaviour and to discipline them.
- Battered women allow abuse to happen to them. They can leave if they really wanted to.
- Conflicts and losing control are a normal part of any relationship.
- Domestic violence is a private family matter and therefore the state or service providers have no right to intervene.

Acid Throwing/Vitriolage:
Throwing of any corrosive on a person with malicious intent.

Sulphuric Acid(Oil of Vitriol) is most commonly used for this purpose. So named as Vitriolage.

Cause:
In the aspect of our country, the main cause is- Rejection of love

Why Acid Throwing is common in BD :

- Relatively cheap as compared to weapons
- Readily available at hand.

Effects:

- Permanent Disfiguration
- Scar
- Corneal destruction or even blindness
- Social, psychological and economical difficulties.

Sexual Assault:
Rape:
It is defined as unlawful sexual intercourse by a man with a woman below the age of 16 years with or without her consent, at or above the age of 16 years without her consent & against her will or if the consent is taken by some unlawful means i.e. by applying force , fear or fraud.

Procedure of examination of rape victim:

- *Prerequisites:*
  I. Requisition from proper authority.
  II. Escorting police constable.
  III. Two copies PP size photograph , attested at least by a second class gazetted officer.
  IV. One female attendance.
  V. Informed written consent.

- *History of the case should be taken from the victim & record in brief.*
- *Medical examination proper.*
- *Investigations.*
- *Opinion.*

Positive findings of sexual assault on a young unmarried girl:

- Abrasions and bruises on the neck, back of the chest, inner aspect of the thigh or over the vulva.
- Presence of seminal matter in her vagina.
- Nail scratches, bite marks over the face, breast and Mons venerum.
- Foreign pubic hair matted with the victim's own pubic hair. Matting with semen in the groin.
- Rupture of hymen with several hymeneal lacerations (usually in the posterior midline). Margins of the tear will be reddish, swollen with oozing of blood.
- Labia majora shows congestion & scratches.
- Labia minora may show staining and injury.
- Clothing's may be torn and stained with semen, blood etc .

Investigations necessary for alleged case of rape:

- High vaginal swab into the department of microbiology for detection of spermatozoa.
- For assessment of the age to the radiology department.
- Blood & urine to determine whether she was intoxicated or not.
- Vaginal smear for detection of presence of blood of the victim & the offender.
- Cervical smear for detection of gonococcal infection.
- Urine for Beta-HCG & USG to determine pregnancy.

Materials to be preserved from a rape victim

- High vaginal swab.
- Vaginal smear & cervical smear.
- Foreign , victim's & matted pubic hair.
- Scrapping from suspected stain mark from body surface.
- Scalp hair.
- Swab from teeth bite marks.
- Wearing dress & under garments.
- Scrapping from nail beds.
- Blood & urine.

Opinion:

Considering physical examination, microbiological examination of the high vaginal swab and radiological examination, My opinion is that the victim "X", daughter of "Y" is about 14 years of age and she has sign of forceful sexual intercourse.

Consequence of Sexual Harassment/Stalking against girls: January 2014 - December 2018

	Situation of girls				
Year(s)	Suicide	Killed	Injured	Assaulted	Abducted
2018	9	2	33	27	4
2017	17	4	42	42	3
2016	7	4	35	53	7
2015	8	7	14	25	2
2014	14	2	35	20	8

One Stop Crisis Centre:

- OCC Centre was first established at the emergency block of DMCH on 19th August 2001 by the joint initiative of the govt of Bangladesh and Denmark under the ministry of Women & Children Affairs – providing shelter as well as medical, legal and psychological support for the women and children who have been victims of violence.
- Now at present 8 OCC in Dhaka, Chittagong, Rajshahi, Sylhet, Barishal, Khulna, Rangpur and Faridpur Medical College Hospital are being run by multi sectoral program and violence against women.
- The idea behind OCC is to provide all required services for a woman victim of violence in one place.
- OCC provided necessary services to 34247 women and children till August 2018.

Legislation:

According to Women's & Children Repression Act 2003:

Sec 11(a): If wife dies due to being battered by husband, punishment is-

- Death sentence or
- Lifelong imprisonment

Sec 11(b): If grievous hurt occurs due to being battered by husband, punishment is-

Minimum 5yrs & maximum 12 yrs imprisonment.

Sec 11(c): If simple hurt occurs due to being battered by husband, punishment is-

Minimum 1yr& maximum 3yrs imprisonment.

Punishment of Vitriolage:

According to Acid Control Act 2002:
*If throwing vitriol causes –

- Death
- Distortion of sight & hearing
- Disfiguration of face, breast, sex organs

Punishment is Death Sentence or Lifelong Imprisonment with fine of TK.1lakh.

***If throwing vitriol causes -**
Disfiguration or distortion of another organ, gland or any part of body.

Punishment is maximum 14yrs rigorous imprisonment & minimum 7yrs rigorous imprisonment with fine of TK.50000.

*Throwing or Attempt to throw vitriol over any child or women, whether there is any injury or not-

Punishment is maximum 7yrs & minimum 3yrs imprisonment.

Punishment of Rape:
According to Women's & Children Repression (Amendment Act 2003):

Death sentence or Lifelong Imprisonment.

Role of a Medical Professional:

- Taking a complete medical history.
- Thorough physical examination
- Detailed genito-anal examination.
- Collection of indicated medical specimen for diagnostic purpose.
- Collection of forensic specimen.
- Labelling , packaging & transporting of forensic specimen to maintain the chain of custody of evidence.
- Therapeutic opportunities according to the cause.
- Arranging follow up care.
- Provision of medico legal report.
- Arranging Psychological support.

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Case Report

Meropenem induced pancytopenia, a threatened adverse effect: a case report

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ABSTRACT:

Meropenem is one of the most commonly used carbapenem antibiotics with relatively few side effects. Serious adverse reactions reported with meropenem are rare with an incidence of 1 %. Recently we have found a meropenem induced pancytopenia, a rare adverse effect. To the best of our knowledge, only few cases have been reported in the literature that documents an association between meropenem administration and pancytopenia. With the use of meropenem becoming more widespread, these rare but fatal complications of meropenem should be borne in mind.

Keywords: *Meropenem, Pancytopenia, Fatal complications*

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INTRODUCTION

Meropenem is a broad spectrum bactericidal antibiotic. It is used to treat a wide variety of Gram-positive and Gram-negative bacterial infections. FDA first approved it for clinical use in July 1996. It penetrates well into many tissues and body fluids including the cerebrospinal fluid, bile, heart valves, lung and peritoneal fluid and interferes with the synthesis of vital cell wall components. The most common adverse effects are diarrhea (4 – 5 %), nausea and vomiting (1 – 4 %), injection-site inflammation (2 %), headache (2 %), rash (2 – 3 %), and thrombophlebitis (1 %). Rarely, it has been associated with pancytopenia, sepsis, toxic epidermal necrolysis, renal damage and acute renal failure.

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CASE HISTORY:

Mr. Sayed Ahmed came to our hospital with the complaints of fever for 2months with multiple joint pain and rash over both lower limbs for 15days. He was diabetic, hypertensive and his PTCA was done on 2018.Prior to admission in this hospital he was treated with intravenous ceftriaxone 2gm 12hrly for 7days, but his fever didn't subside. We diagnosed him as having septicemia on the basis of initial lab investigations. His blood c/s,urine c/s revealed no growth. ICT for malaria was negative. CRP, RA was

Positive, SGPT-527, CPK-68U/L, ANA and anti-dsDNA were negative. Anti-CCP-negative S.Ferritin-3000, S.billirubin-5.8mg/dl,allviral markers negative. Triple antigen-only TH titer increased (1:160),

S.creatinine-1.84mg/dl. Then we started IV meropenem 1gm 8hrly from 02.03.19.After 3days he became afebrile buthis complaints of extreme weakness and on physical examination jaundice and anemia were noticed. His blood picture showed pancytopenia. After taking expert opinion from hematologist,we did S. bilirubin,S.LDH,anti-HBc total, coombs test, reticulocyte count.After 10days we stopped meropenem and oral doxycycline 100mg 12hrly was started. His blood picture improved after 3days after stopping of IVmeropenem.

Investigation	2.03.2019	7.03.2019	12.03.2019	16.03.2019
HB%	8.1gm/dL	7.6gm/dL	7.2gm/dL	9.2gm/dL
ESR	23mm 1st hr	45mm1st hr	62mm1st hr	50mm1st hr
WBC	6000/µl (N_{88}, L_{-10})	2000/µl (N_{-80},L_{-16})	4000/µl (N_{-80},L_{-16})	4200/µl (N_{69},L_{16})
TPC	150,000/µl	80,000/µl	157,000/µl	180,000/µl
PBF	Microcytic hypochromic anemia	Normocytic normochromic		

DISCUSSION:

Meropenem is often used as a broad-spectrum antibacterial agent for empirical therapy prior to the identification of causative organisms[1]. Local epidemiology and susceptibility patterns may contribute to the empiric selection of therapy[3]. Two previous safety reviews have established that meropenem has a favorable and acceptable safety profile[5]. Resistance to meropenem is uncommon in most bacteria and is a well-tolerated antibiotic when used as initial empirical monotherapy[6]. But in our clinical practices meropenum resistance is common. Pancytopenia is a rare life-threatening complication of meropenem[2]. The overall incidence of non-chemotherapy drug-induced agranulocytosis ranges from 2.6 to 10 cases per million patients exposed to the drugs per year[4].

Neutropenia usually leads to severe sepsis and is often treated empirically by IV meropenem as in our patient. The severity of neutropenia and its duration impact on the outcome. Haemopoetic growth factors have been shown to shorten the duration of neutropenia in drug-induced agranulocytosis. With appropriate management, the mortality rate is around 5 %[4].

Meropenem induced pancytopenia among patients has been reported in eHealthMed based on 87 reports from FDA and user communities[2]. Fifty nine percent of people who had pancytopenia while taking meropenem was male and 38 % of them were > 60 years old. Most of these 87 patients also had Pseudomonas infection. Another study of bacterial sepsis among people who had taken meropenem, published in eHealthMed and based on 7 reports from FDA and user communities. They reported that 57 % of those who had bacterial sepsis had neutropenia.

In our patient, we came across a rare life threatening complication of meropenem, namely, pancytopenia. There have been reports in the past regarding the fatal outcome of meropenem-induced pancytopenia and sepsis. Our patient developed pancytopenia. The meropenem, at a dose of 1gm 8hourly was given to our patient. After 3days of treatment fever was subsided but anemia, jaundice, severe neutropenia and thrombocytopenia were observed (Table-1). Analysis also revealed reticulocytes 1.5%, total bilirubin 1.7mg/dl, S.lactate dehydrogenase (LDH) 200IU/l. lymphoid populations were normal and a negative direct Coombs (IgG) was found. The serological testsHepatitis B and Cwere negative. We switched meropenem to oral doxycycline and he improved clinically and his blood picture returned to normal after 3days (Table-1).

CONSENT

Informed written consent from the patient was taken for publication.

CONCLUSION

Meropenem is used to treat a wide variety of bacterial infections. Before the use of meropenem generally we treated septicemia with more than one antibiotic, but as meropenem have broad spectrum of coverage, we can use only one antibiotic. The most common side effects of this drug is not life threatening, but the fatal rare complications of meropenem should be borne in mind while using this drug. Clinicians should also take into consideration the important adverse effects mentioned in this report, so we should closely monitor the patients who are on treatment with meropenem,to prevent any fatal complication.

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Successful Outcome of a Case of Recurrent Symblepharon by Oral Mucous Membrane Graft

Zaman H

Abstract:

Symblepharon is always a challenge in ophthalmic practice. Recurrent symblepharon is not uncommon but invariably difficult to treat. Here is a case report of a successful outcome both cosmetically and visually in a nine years old boy who was suffering from extensive recurrent symblepharon with pyogenic granuloma in both eyes compromising his vision significantly with the diagnosis of epidermolysis bullosa. He underwent symblepharon lysis followed by oral mucous membrane transplantation in the third attempt of previous surgical failures. The graft had been taken from his own buccal mucosa and then sutured successfully with the tarsal plate and the result was amazing with a return of vision 6/18 in his right eye and 6/36 in his left eye and he had his photophobia and watering decreased and he started schooling and was Symptom free without recurrence in one year follow up. Autologous oral mucosa can still be a good substitute for conjunctiva in situations where cost and inadequate infrastructure are concerned.

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INTRODUCTION:

Management of symblepharon is always challenging. Symblepharon is simply the adhesion between tarsal and palpebral conjunctiva resulted from either inflammation like Steven Johnson Syndrome, Pemphigoids, rosacea, surgery or trauma or sometimes from an ophthalmic complication of an auto-immune disorders like Epidermolysis Bullosa (EB). EB is characterized by easy skin blistering following relatively minor injuries, friction or scratching. It occasionally involves eye with recurrent corneal erosions, blisters, lid ectropions and symblepharon. Junctional EB (5%) and Recessive Dysmorphic EB (10%) patients have the eye involvement and blindness was reported in 6.47% cases[1]. Repeated corneal erosion and blistering of conjunctival epithelium subsequently led to symblepharon formation. Primary management includes of both oral and topical steroids with frequent lubrications to supplement tear production. Sequalae like dry eye and cicatricial changes often jeopardize functional and visual outcome and obviate surgical correction. Denig (1911), first described mucous membrane grafting for the treatment of symblepharon[4]. Since then, it has been popularized for treating different eyelid and conjunctival disorders. Which is now largely replaced by amniotic membrane transplantation. But due to difficulty in managing freshly prepared amniotic membrane, an autologous oral mucus membrane is still a gold standard for conjunctival replacement.

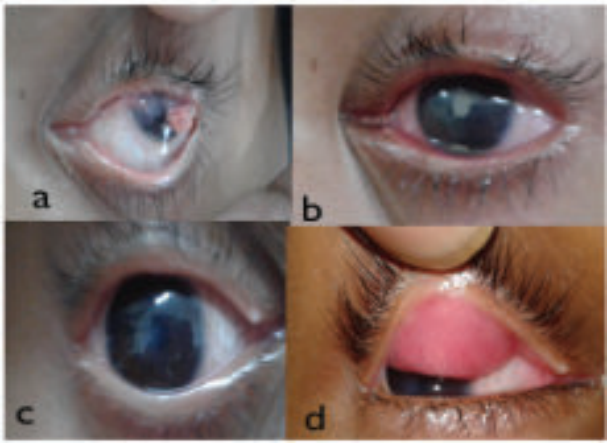

Figure 1 *a preoperative picture left eye b postoperative picture left eye after three months c &d postoperative picture right eye after one year.*

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CASE REPORT

A nine years old boy was presented with reduced vision, cosmetic disfigurement, difficulty in eye opening, watering and severe photophobia. His diagnosis was epidermolysis bullosa having multiple ulceration, vesicular eruption and impetigo in face, ear, genitalia and legs. His ophthalmic problem was pyogenic granuloma, a mass involving the cornea of both eyes, started at his age of seven years. For this he had multiple sitting of surgical excision of the mass in each eye and finally presented with recurrent symblepharon. He had his vision HM (hand movement) in both eyes and a fleshy mass along the upper lid margins joining the central cornea of both eyes causing reduced vision as well as restricted ocular motility (Fig 1 a). It was really difficult to operate the case at third attempt. Considering his stage of symblepharon and location of adhesions, surgery was planned. Incision was made along the edges of the symblepharon allowing the conjunctiva to retract to its normal anatomical position (symblepharon lysis), then fibrous tissue was excised to the maximum extent from tarsal plate and the fleshy mass as well as superficial corneal epithelium was removed from central cornea (Fig 2A). A free mucosal graft was then harvested from buccal mucosae and excess fat was removed (Fig 2 B &C). Conjunctival defect over the tarsal plate was covered with harvested mucosa and sutured (Fig 2 C & D). Bulbar defect was closed by sliding the rest of the adjacent conjunctiva. Finally, a bandage contact lens was placed over the eye for one month to avoid recurrence. Topical antibiotics and steroids were given for one month along with frequent lubricants for three months. Follow up was scheduled once in a week for the first month and then quarterly for one year. With a return of vision 6/18 in his right eye and 6/36 in his left eye, he had his photophobia and watering decreased and he started schooling and was symptom free without recurrence in one year follow up. (Fig 3A, B, &C)

DISCUSSION

The choice of the ideal conjunctiva-replacing tissue or material depends on the predominantly lost conjunctival function in the individual situation[2]. To reconstruct and maintain the ocular surface, a healthy conjunctiva if available, is the ideal material for grafting and if a conjunctiva is not available a full-thickness oral mucous membrane is the simplest graft to use [3]. Several authors have presented different techniques for the treatment of symblepharon using

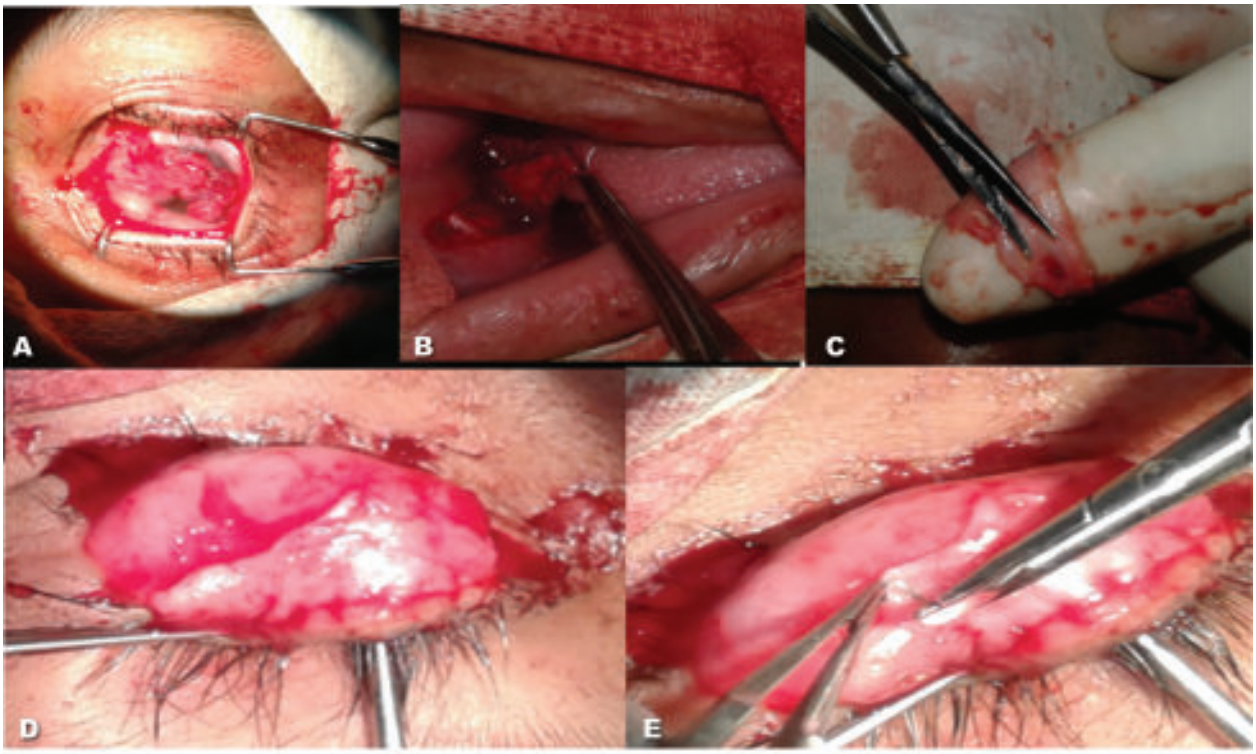

Figure 2 *Surgical steps: A. Symblepharon lysis B. Harvesting oral mucosae C. Trimming of fat D. Covering tarsal plate with mucosae E. Anchoring oral mucosae with tarsal plate.*

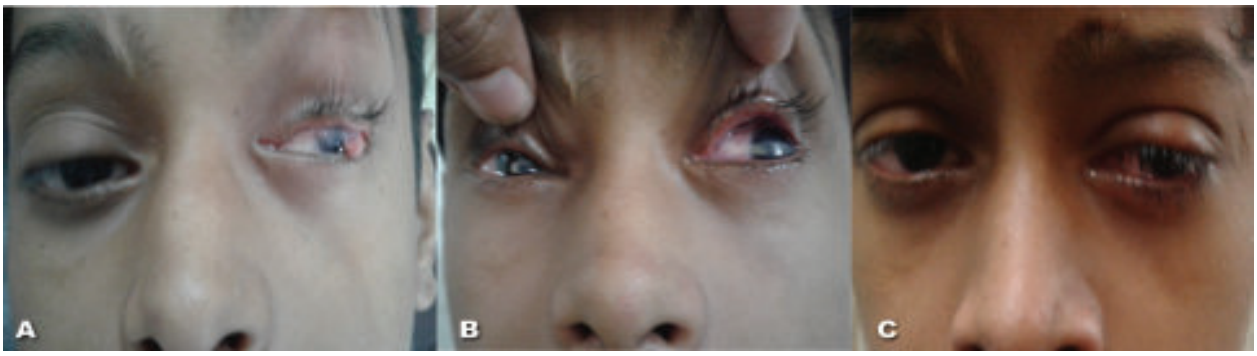

Figure 3 *Appearance A. Before surgery B. After mucous membrane grafting. C. After one year*

substitutes for conjunctiva that range from alloplastic material such as polytetraûuoethylene to nasal or amniotic membranes, egg membrane, rectal mucosa, preputial mucosa and maxillary sinus mucosa. The most popular technique is the use of oral mucosa and the outcome is successful in about 85 to100% of cases of symblepharon[4]. One of the difûculties found in operating on these patients was the cicatricial changes found in their eyes, which were probably caused by the disease itself and by previous surgeries. Sant' Anna AE et al showed results of their study with improvement in symptoms like decrease of foreign body sensation in 53.6%, photophobia in 50.2% and pain in 54.8% of cases by using oral mucous membrane graft. In our case there was minimum cicartrization but visual compromise and difficulty in eye opening were so severe that he had to stop schooling. These troublesome symptoms were significantly improved after surgery with significant visual gain as well as satisfactory cosmetic appearance.

But it has also disadvantage like difficulty in harvesting oral mucosa as well as its limited availability and potential complications at the donor site. In this case buccal mucosa was harvested instead of labial mucosa and wound was closed with absorbable 6/0 vicryl suture so the donor site healed up quickly without causing any harm. Jayanta Kumar Das et al presented a case report of mucous membrane grafting for the post-Steven–Johnson syndrome symblepharon[5]. A split-thickness graft was more preferable from the cosmetic point of view because of its lesser bulk with pinky appearance containing some goblet cells that might have some secretory function. However, amniotic membrane transplantation (AMT) is an accepted approach to the surgical management of chronic symblephera because of the unique properties of the membrane[6], especially in cases with significant limbal stem cell deficiency[7]. It is highly effective in both promoting re-epithelialization and suppressing inflammation. Amniotic membrane provides a new basement membrane that helps in the migration of epithelial cells, reinforces adhesion of basal epithelial cells, promotes epithelial differentiation and prevents epithelial breakdown[8]. But preserved one is very difficult in handling while it is very thin to get rolled up easily and it absorbs very quickly and does not have any secretory function.

Ahmad Kheirkhah, Eye Research Center, Farabi Eye Hospital, Tehran University of Medical Science suggests a combined approach of Amniotic Membrane and Oral Mucosa transplantation for fornix reconstruction[9]. So it can be combined with limbal transplantation and with an adjunctive antimetabolite. However, in cases with an adequate reserve of limbal stem cells, mucosal tissue transplantation achieves equally good results[10] as seen in our case where the fornixes were free and its reconstruction was not necessary.

Again, freshly prepared amniotic membrane is hard to prepare and is not accepted by all patients. Moreover, in this case, tarsal conjunctiva of the lid margin was the main trigger zone for recurrence where oral mucosa is the choice to prevent keratinization[2]. Considering all these grounds, oral mucous membrane suited him the best.

CONCLUSION

Symblepharon is always a great challenge in ophthalmic practice. Autologous oral mucosal grafting is still an up-to-date procedure and can be a good substitute for conjunctiva in situations where cost and availability of preserved amniotic membrane are concerned.

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Conflict of Interest: No Conflicts of interest

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