e-ISSN 2408-8714 (Online)
ISSN 1810-1828 (Print)

BMDC RECOGNIZED

MEDICINE today

a professional medical journal

VOL. 31 NO. 02 July 2019

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MEDICINE today

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Volume 31, July 2019

Production Editing: Medical Services Department, Biopharma Ltd.
e-mail: medicinetoday@biopharmabd.com

Published by: Dr. Lokiat Ullah

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Subscription information:

Journal of Medicine Today ISSN 1810-1828 published by the Dr. Lokiat Ullah, Executive Director, BIOPHARMA LTD. two times a year in January and July.

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Manuscripts and other communication for the editors should be address to Medicine Today, **Medical Services Department.**

Biopharma Limited. ***Corporate Office:*** House No: 01, Commissioner Lane, Dhaka Housing, Adabar, Dhaka-1207.

e-mail: medicinetoday@biopharmabd.com

Phone: 01711465704, 01714096030.

DOI: https://doi.org/10.3329/medtoday.v31i2.41945

ORIGINAL ARTICLE OPEN ACCSESS

Prediction of Perineal Tear During Childbirth by the Assessment of Striae Gravidarum Score

Mahbuba Akhter Banu [1], S F Nargis [2], Mohammad Mizanoor Rahman *[3], Md. Mohim Ibn Sina [4], Murshida Pervin [5], Mamata Manjari [6]

Abstract

Introduction: *Perineal tear (PT) is the most frequently occurring injury during vaginal birth. Striae gravidarum (SG) is a reflecting marker of connective tissue elasticity. This study aimed to assess SG score and to predict the likelihood of PT during childbirth.* ***Materials & Methods:*** *This was a cross-sectional study done at Sir Salimullah Medical College & Mitford Hospital. Initially, all pregnant women admitted for vaginal delivery were enrolled but who subsequently needed lower segment caesarean section were excluded. Finally, 189 patients who gave vaginal birth were included. SG score was assessed using the Atwal numerical scoring system. The association was examined between PT as the outcome measure, defined by tears or lacerations and the total striae score (TSS) obtained at abdomen, hips, buttocks and breasts.* ***Results:*** *More than half of study patients developed PT. Majority belonged to moderate striae group. Significant correlation was found between PT and TSS. Moderate and severe striae had significantly increased prevalence of PT as compared to mild striae (43.4% vs. 11.6%). Patients who were given episiotomy in moderate and severe striae group had less PT. Weight gain during pregnancy and TSS were significantly associated with a higher incidence of PT.* ***Conclusion:*** *A woman's SG score in general is a useful clinical predictor of the risk for PT during childbirth. Selective episiotomy in patients with moderate and severe striae can reduce the incidence of PT. SG score can be used as a simple and noninvasive tool by all categories of health personnel to better define women at risk for PT.*

Keywords: *Perineal tear, Striae gravidarum score.*

Number of Tables: 05; Number of References: 13; Number of Correspondences: 06

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Introduction

Perineal trauma is associated with significant short- and long-term morbidity for puerperal women. Acute postpartum perineal pain is very common suffering of women who give birth vaginally and its severity is linked exclusively to that of the perineal injury [1]. Perineal injury may be caused either by surgically-planned episiotomy, or spontaneously occurring injury during labour process. Perineal injuries may also trigger some complications such as urinary and fecal incontinence, dyspareunia and pelvic floor disorders [2,3].

Perineal tear (PT); the most common and frequently occurring form of perineal injury, may be classified as first degree when injury involving perineal skin and mucosa, second degree when extending to perineal muscles and third degree when reaching anal sphincter muscle. These injuries depend on several factors related to mother, fetus and delivery conditions [4].

Striae distensae (SD), or 'stretch marks', though found in a variety of physiological and pathological conditions, are widely associated with pregnancy and are referred to as striae gravidarum (SG)[5]. SG is a common disfiguring condition of pregnancy and an indicator of poor skin elasticity [6]. There are two forms of SD; striae rubra and striae albae. The acute stage (striae rubra) is characterized by the initial erythematous, red and stretched flat (in some cases appear slightly raised) lesions which are aligned perpendicular to the direction of skin tension, whilst the chronic stage (striae alba) is classified when SD have faded and appear atrophic, wrinkled, and hypopigmented6. Striae have been noted to occur in more than 70% of pregnant women and are commonly found on the abdomen and breasts. They tend to

Received: *05 December 2018* ***Accepted revised version:*** *14 February 2019*

develop in the third trimester and fade during postpartum leaving behind permanent silvery scars [5,7]. SG is caused by hormonally-induced changes in the alignment of structural connecti tissue and reduced elastin and fibrillin in the underlying dermis. The type and amount of collagen in connective tissue are considered to determine the individual's elastic index [8,9].

Several epidemiological studies have demonstrated that perineal trauma largely correlates with maternal, fetal and delivery factors[1,7,8]. Classifications for these complications have been devised and named by urogynecologists and obstetricians as Obstetric and Anal Sphincter Injuries (OASIS)[9,10]. A woman's connective tissue elasticity contributes as a factor in maintaining an intact perineum during child birth whereas SG can be considered as a reflecting marker for connective tissue elasticity[4]. Assessment of SG can be performed by midwives and nurses with no need for special equipment or training and via noninvasive, simple observation. Several studies concluded that SG assessment appears to predict the occurrence of PT and recommended training the health personnel to calculate the total striae score (TSS) which can help them to decide if episiotomy is to be given or not[8-10].

Vaginal birth is common in our low income setting country. PT commonly follows vaginal delivery along with significant short- and long-term morbidities[1]. Assessing SG score may be considered as a favorable process to predict the occurrence of perineal injury[9,10]. Episiotomy definitely seems to be preventive for PT but giving episiotomy for the same is still debatable as episiotomy itself is associated with morbidity[11]. Moreover, supportive data regarding this issue is very scarce in our country. So, this study was aimed to determine whether assessment of SG score could predict the occurrence of PT during vaginal birth or not, and if episiotomy will prevent PT in women with high score.

Materials and Methods

This cross-sectional study was conducted in the Department of Obstetrics and Gynaecology of Sir Salimullah Medical College & Mitford Hospital, Dhaka from January 2017 to July 2017. Initially, all pregnant women admitted for vaginal delivery were enrolled but subsequently who needed lower segment caesarean section was excluded. Finally, 189 patients were included who delivered vaginally. Severity scoring of SG was observed using the numerical scoring system of Atwal[10]. This scale provides a rank based on observation of four areas in which SG is most commonly observed (abdomen, hips, buttocks and breasts). The scale comprises the following criteria: (a) the number of SG at each body site (0 = no striae, 1 = 1-4 striae, 2 = 5-10 striae, 3 = more than 10 striae) and (b) the color of the SG which ranges from pale to purple (0 = no redness, 1 = pink, 2 = dark red, 3 = purple). Silvery white striae were considered old striae developed prior to pregnancy and were therefore not included in this study. The final score, considering number and color for each body site, ranged from 0 to 6. Accordingly, the TSS for all four-body sites ranged from 0 to 24. Women who scored up to 12 were considered having mild striae, 13-18 as moderate striae and more than 18 as severe striae. After vaginal delivery, each study patient was examined for PT. All medical, obstetric and demographic data were recorded in a pre-structured, interview and observation-based case record form. Data were summarized in mean ± SD, frequency & percentage and presented in tables using Statistical Package for Social Science (SPSS) version 23. Variables statistically significant in predicting PT namely SG score and episiotomy was analyzed.

Results

In this study, most of the respondents 180 (95.3%) were housewife and majority 170 (89.9%) had only primary education (Table-I). More than half 104 (55.1%) of the study population developed PT (Table-II). Majority (53.4%) belonged to moderate striae group whereas only 8.9% had severe striae (Table II). Statistically significant ($p<0.001$) correlation was observed between PT and SG score. Patients with moderate and severe striae had significantly increased prevalence of PT as compared to mild striae (43.4% vs. 11.6%) (Table III). Patients who were given episiotomy in moderate and severe striae group had significantly less PT ($p<0.01$) (Table IV). Weight gain during pregnancy and TSS were significantly associated ($p < 0.05$) with a higher incidence of PT but without significant association of birth weight of newborns (Table V).

Table-I: Descriptive statistics of study pregnant mothers.

Variables	Values
Age (years)	25.4 ± 4.9
Para	1.45 ± 0.91
Gravida	1.69 ± 1.00
Educational status	
Primary	170 (89.9)
Secondary and above	19 (10. 1)
Occupational status	
Housewife	180 (95.3)
Teacher	5 (2.6)
Services	4 (2.1)
Weight gain during pregnancy (kg)	8.30 ± 1.94
Birth weight of newborn (kg)	2.73 ± 0.16

**Values expressed as Mean ± SD or numbers (n) and percentages (%) in parentheses, as appropriate; SD, standard deviation.*

Table-II: Distribution of striae gravidarum score and perineal tear.

Variables	Frequency	Percent (%)
Striae gravidarum score		
Mild striae	71	37.7
Moderate striae	101	53 .4
Severe striae	17	8.9
Perineal tear		
Yes	104	55.1
No	85	44.9

Table-III: Striae gravidarum score versus perineal tear.

Striae gravidarum score	No perineal tear (n=85)	Perineal tear (n=104)	p value
Mild striae	49 (25.9)	22 (11.6)	
Moderate striae	33 (17.4)	68 (36.0)	< 0.001
Severe striae	3 (1.6)	14 (7.4)	

**Values expressed as number (n) and percentages (%) in parentheses; p value was obtained by Chi-square test; 0.05 was considered as level of significance.*

Table-IV: Episiotomy in different categories of striae gravidarum score.

Striae gravidarum score	Episiotomy	No perineal tear	Perineal tear	p value
Mild striae	Given	15 (7.9)	7 (3.7)	0.23
	Not given	34 (17.9)	15 (7.9)	
Moderate striae	Given	22 (11.7)	16 (8.5)	< 0.0 1
	Not given	11 (5.8)	52 (27.5)	
Severe striae	Given	2 (1.1)	1 (0.5)	< 0.01
	Not given	1 (0.5)	13 (6.9)	

*Values expressed as number (n) and percentages (%) in parentheses; p value was obtained by Chi-square test; 0.05 was considered as level of significance

Table-V: Logistic regression for the prediction of risk for perineal tear by weight gain during pregnancy (kg), total striae score (TSS) and birth weight of newborns (kg).

Variables	Odds ratio	p	OR Lower 95% CI	OR Upper 95% CI
TSS	1.097	0.020	1.051	1.141
Weight gain during pregnancy	1.052	0.034	1.000	1.002
Birth weight of newborns	1.024	0.312	1.002	1.003

Discussion

The aim of this study was to determine whether SG score can be used as a predictor of PT at the time of vaginal delivery. Therefore, TSS can be used as an additional valuable predictor of the risk for PT.

In this observational study, 170 (89.9%) study patients completed their primary education but only 19 (10.1%) completed secondary education. Halperin et al. showed most of the study patients at least completed high school which is not consistent with this resul [12]. More than half of the study patients (55.1%) developed PT and this finding was almost similar to finding by Alves et al [9]. It was observed that there was statistically significant correlation between PT and severity of SG score (Table III). Mild striae score showed significantly less prevalence of PT (11.6% vs. 25.9%). On contrary, PT was significantly higher in moderate & severe striae group (36.0% and 7.4%). Thus SG score was significantly higher in PT cases than no PT cases. Significantly higher striae score was also found by Halperin et al. [12] in women with PT compared with women without PT. Osman et al.[8] showed severity of SG was the predictors of PT which is consistent with this study result. Patients of moderate and severe striae group who were given episiotomy had significantly less PT (Table IV). This suggests that patients who had an episiotomy were less likely to develop perineal tear in most cases. Therefore, this study found that episiotomy has some protective effect against PT. Kapadia et al.[13] also showed similar result. To investigate the role of SG score in predicting the risk for PT, logistic regression analysis was done considering TSS, weight gain during pregnancy and birth weight of newborns among the 126 women in whom episiotomy was not performed. Weight gain during pregnancy and TSS were significantly associated with a higher incidence of PT but without significant association of birth weight of newborns. Halperin et al.[12] showed similar result.

Conclusion

This study concludes that a significant prediction of PT can be done during childbirth using SG score and selective episiotomy can reduce the incidence of PT in patients with moderate and severe striae. The findings suggest that SG assessment may be used in the clinical setting by clinicians, midwives as well as nurses as a straightforward, simple and noninvasive tool to better define women at risk for PT.

Conflict of Interests: None.

Acknowledgement

The authors would like to thank all participating patients for taking part in this study. We are greatly indebted to the institutional obstetric team for their endless support. The authors would like to thank specially our Head of Department for her continuous guidance.

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https://doi.org/10.5455/2320-1770.ijrcog20140342

DOI: https://doi.org/10.3329/medtoday.v31i2.41946

ORIGINAL ARTICLE OPEN ACCSESS

Outcome of Patients Having Acute Myocardial Infarction with and without Streptokinase

Faruque Uddin *[1], AK Fazlul Hoque [2]

Abstract

Introduction: *Acute myocardial infarction is the leading cause of death. Streptokinase is the most commonly used thrombolytic agent. This study was conducted to compare in-hospital outcome of patients with acute myocardial infarction receiving streptokinase with those not receiving it.* ***Materials & Methods:*** *This descriptive observational study was conducted at Coronary Care Unit, North East Medical College Hospital from 1st July August 2016 to 30th June 2018. 340 patients having acute MI were in- cluded in the study. Two groups were formed: sk group receiving streptokinase and non-sk group not receiving. In-hospital mortality was the primary end point while mechanical and electrical complications were the secondary end points.* ***Results:*** *Among 340 patients, 255(75%) were males and 85(25%) females. Out of those 218 received strep-tokinase, while 122 did not. Mean age of sk group was 53.15±10.30 years and non-sk group 60.5±16 ears. Mean time of arrival to the hospital after symptom onset was 10.41±9.97 hours. SK group patients reached in 5.9±4.76 hours while non-sk group in 19.4±10.5 hours. In-hospital mortality in sk and non-sk group was 19(8.7%) and 25(20.5%) respectively, p=0.002. Complication rate was significantly higher in the non-sk group, 54.09% vs 34.86%, p=0.04.* ***Conclusion:*** *Patients of acute myocardial infarction receiving streptokinase have significantly lesser in-hospital mortality and complications as compared to patients not receiving it.*

Keywords: *Acute Myocardial Infarction, Streptokinase, In-Hospital Mortality.*

Number of Tables: 03; Number of References: 20; Number of Correspondences: 02

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Introduction

Acute myocardial infarction (AMI) is the leading cause of death[1]. Myocardial infarction results from prolonged myocardial ischemia precipitated in most cases by rupture of the pre-existing plaque leading to occlusive thrombus formation in the coronary artery[2]. The introduction of coronary care units decreased Acute MI mortality from 30% to 15%, while the use of thrombolytics further de- creased it to 5-7% [3]. Prompt reperfusion of the occluded artery through Percutaneous coronary angioplasty or thrombolytic therapy decreases the duration of occlusion leading to improved mortality [4].

Streptokinase (SK) is the most tested and commonly used thrombolytic worldwide because of its widespread availability and ability to reduce morbidity and mortality[5-7].

Despite abundant evidence in support of use of thrombolytics, approaches in its use still vary with a large number of patients still failing to receive any form of reperfusion[8]. It is partly related to delay in presentation after the onset of symptoms. The effectiveness of fibrinolytic treatment is inversely correlated with the time from the onset of chest pain to the beginning of therapy[9], there is overwhelming evidence of benefit if it is given within first hour of symptom onset, with loss of benefit over time[7].

In Bangladesh in-hospital outcome of acute MI patients treated with streptokinase has been studied in various centers[10-13], but so far no such data is available for peripheral hospital.

We designed this study to compare the in- hospital outcome of acute MI patients receiving SK with those not receiving.

Materials and Methods

This study was conducted at Coronary Care Unit, North East Medical College Hospital from 1st July August 2016 to 30th June 2018. Three hundred & forty patients were included, diagnosed as having AMI on the basis of WHO criteria. Patients presenting with Non- ST elevation MI were excluded.

The study population was divided into two groups:

1. Patients receiving streptokinase after exclusion of any contraindication.

2. Patients not receiving streptokinase because of either late presentation or the presence of any contraindication.

Received: 02 March 2019 *Accepted revised version:* 01 April 2019

Observation regarding age, gender, occupation, address, history of smoking, diabetes mellitus, hypertension, family history of ischemic heart disease and time from the symptoms onset to the hospital arrival was noted on a preformed Proforma. Thorough physical examination was carried out in all the patients. Complete blood count, fasting blood sugar, CK-MB level, serum urea, creatinine, lipid profile, chest x-ray and serial ECG's were carried out in all patients. Echocardiography was performed to look for left ventricular ejection fraction and any mechanical complications. All patients were treated as per CCU protocol[14]. Patients were followed till the discharge or death. In- hospital mortality was the primary end point while the developments of complications during the hospital stay were the secondary end points of the study.

All data was analyzed using Statistical Package for Social Sciences version 11.0. Student t test was applied to analyze continuous variables while chi-square test for the categorical ones.

Results

In 340 patients with Acute MI, 218 (64.11%) were in SK group and 122 (35.88%) in the non-SK group. For baseline characteristics in Table-I. No difference of statistical significance was observed between the two groups.

Table-I: Demographic variables of the patients.

Characteristics	SK group (N= 218)	Non SK group (N= 122)	Total (N= 340)
Age (years) Mean	53.15 ± 10.3	60.50±16.00	55.79±13.11
<45 years	59 (27.1%)	29(23.8%)	88(25.9%)
45-55 years	71 (32.6%)	32(26.2%)	103(30.3%)
<55 years	88(40.4%)	61(50.0%)	149(43.8%)
Gender Male	168(77.1%)	87(77.3%)	255(75.0%)
Female	50(22.9%)	35(28.7%)	85(25.0%)
Diabetes Mellitus	79(36.2%)	59(48.4%)	138(40.6%)
Hypertension	80(36.7%)	46(37.7%)	126(37.1%)
Smoking	133(61%)	69(56.6%)	202(59.4%)
Family history of IHD	74(33.9%)	39(32.0%)	113(33.2%)

In table II- Mean time of arrival to the hospital after symptom onset was 10.41±9.97 hours. Patients in sk group presented earlier than non-sk group, 5.9±4.76 hours' vs 19.39±10.53 hours. In non-sk group 16 (13.1%) had contraindication to thrombolytic therapy Overall in-hospital mortality was 44 (12.9%), with more deaths among patients in non-sk group 25 (20.5%) as compared to 19 (8.7%) in sk group (p=0.002).

Table-II: Characteristics of patients at presentation.

Presentation characteristics	SK Group (n=218)	Non SK Group (n=122)	Total (n=340)
Duration of chest pain	5.9 ± 4.76	19.39. ± 10.53	10.41 ± 9.97
(hours) Mean			
< 3 hours	65 (29.8%)	2 (1.6%)	67 (19.7%)
3-6 hours	100 (45.9%)	5 (4.1%)	105 (30.9%)
6-12 hours	34 (15.6%)	9 (7.4%)	43 (12.6%)
>12 hours	19 (8.7%)	106 (86.9%)	125 (36.8%)
ECG			
Anterior wall MI	129 (59.2%)	73 (59.8%)	202 (59.4%)
Inferior wall MI	77 (35.3%)	39 (32.0%)	116 (34.1%)
Posterior wall MI	8 (3.7%)	4 (3.3%)	12 (3.5%)
Lateral wall MI	3 (1.4%)	5 (4.1%)	8 (2.4%)
LBBB	1 (0.5%)	1 (0.8%)	2 (0.6%)
CK – MB mean (U/I)	199.9 ± 126.7	168.6 ± 85.87	186.6 ±114.6
Serum urea mean (mg/dl)	32.6 ± 21.5	47 ± 64.6	41 ± 27.3
Serum Creatinine mean (mg/dl)	0.99 ± 0.35	1.26 ± 0.87	1.06 ± 0.60

In table-III Complication rate was higher in non-sk group as compared to sk group, p=0.046. LVF was the most common complication 70 (20.6%), it was also the leading cause of death in both the groups; 13 (6%) in sk group and 13 (10.7%) in non-sk group, p<0.0001. VT/VF was the second most common complication 26 (7.6%) and the cause of death in 3 (1.4%) patients in sk and 5 (4.1%) in non-sk group, p<0.0001. Post MI angina occurred in 11 (5%) of cases in sk group as compared to 11 (9%) in non-sk group but was not statistically significant, p>0.05.

Table-III: In-Hospital outcome of patients with and without streptokinase.

Outcome measure	SK Group (n=218)	Non SK Group (n=122)	Total (n=340)	P value
In-Hospital mortality	19. (8.7%)	25. (20.5%)	44. (12.9%)	00.2
Cause of death				
Left ventricular failure	13 (6.0%)	13 (10.7%)	26 (7.6%)	
Asystole	1(0.5%)	3 (2.5%)	4 (1.2%)	0.046
VT/VF	3 (1.4%)	5 (4.1%)	8 (2.4%)	
CHB	2 (0.9%)	3 (2.5%)	5 (1.5%)	
Complications	76 (34.86%)	66(54.09%)	142(41.76)	0.040
Left ventricular failure	39(17.9%)	31 (25.4%)	70 (20.6%)	
Mitral regurgitation	3 (1.4%)	2 (2.5%)	5 (1.5%)	
VT/VF	13 6.0%)	13 (10.7%)	26 (7.6%)	
Complete heart block	7 (3.2%)	4 (3.3%)	11(3.2%)	
Atrial fibrillation	0	1(0.8%)	1(0.3%)	
Post MI angina	11(5.0%)	11 (9.0%)	22 (6.5%)	
Re-infarction	0	2 (1.6%)	2 (0.6%)	
CVA	1 (0.5%)	0	1 (0.3)	
Ventricular septal defect	2 (0.9%)	2 (1.6%)	4 (1.2%)	

Discussion

Acute myocardial infarction still remains the leading cause of death despite recent advances in its management. SK is the most commonly used thrombolytic agent worldwide. In our study the in-hospital mortality of patients with Acute MI was 8.7% in thrombolysed group and 20.5% in non-thrombolysed group. Our results are consistent with the previous studies[5,9-11,15]. In ISIS-2 the in-hospital mortality was 8% in patients receiving re perfusion as compared to 13% in the non-reperfused group[5]. Data from WIRE registry[9] showed in-hospital mortality of 9.25% in sk group which is also similar to our results. Ahmed et al[10]

reported in-hospital mortality of 10% and 19.56% in the thrombolysed and non-thrombolysed groups. In-hospital mortality in ISIS-3 trial[15] was 10.5% and 10.4% in the anistreplase and streptokinase group respectively. In-hospital mortality reported in Khurram et al[11] and French Regitary[16] was 11.5% and 9.3%, while data from GRACE [17] trial showed in-hospital mortality of 7%, which is lower than observed in our study. The reason for low mortality in GRACE study could be that 43% patients received lytic therapy alone while 57% lytic and PCI, while in our study the only reperfusion agent available was sk, which can explain the better results achieved in that trial.

Complication rate in our study was higher in non-sk group (54.09%) as compared to sk group (34.86%). LVF was the most common complication which occurred in 17.9% sk vs 25.4% non-sk group. These findings are consistent with the previous study[18]. In our study VT/VF occurred in 7.6% patients while in Tebbe et al[19] it was 26.9%. It was the second leading cause of death in our study occurring in 1.4% thrombolysed patients as compared to 4.1% non-thrombolysed patients.

A total of 64.11% patients in our study got reperfusion therapy which was similar to reported by other studies such as 68.3%, 52.08%, 68%, 47% and 62% in WIRE registry[9], Ahmed et al[10], Habib et al[12], Chaudhery et al[13], and GRACE[17] respectively.

More patients in our study presented within six hours of symptom onset in the SK receiving group than in the non-sk group (75.7% vs 5.7%). Gurwitz et al[20] reported 40% of patients presenting to hospital six hours after symptoms onset as compared to 49.4% in our study. Patients in our study reported earlier to the hospital after symptom onset than reported by Habib et al[12], mean time of arrival 10.41±9.97 hours' vs 12.4 hours by Habib et al. All the 32% patients who failed to receive thrombolysis presented after 6 hours in study by Habib et al[12] while in our study 94.3% patients in the non-sk group presented after 6 hours of symptoms onset. In our study 13.1% patients had contraindications to thrombolysis which was comparable with 15% reported in WIRE registry[9]. Patients in our study had equal chance of receiving streptokinase; patients in non- thrombolysed group either presented late or had some contraindication to thrombolysis.

Conclusion

Patients with acute myocardial infarction receiving streptokinase have significantly lesser in- hospital mortality and post MI complications as compared to those not receiving it.

Conflict of Interests: None.

Acknowledgement

This research could not have been conducted without the permission and support of North East Medical College hospital authorities and staffs of coronary care unit.

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ORIGINAL ARTICLE OPEN ACCSESS

Frequency of Lympnode Metastasis in Supraglottic Ca Larynx

Mohammad Rokan Uddin Bhuiyan*[1], Mohammad Idris Ali [2], Balayet Hossain Siddiquee [3], Fatema Johora [4], Mohammad Kamal Hossain [5]

Abstract

Introduction: *To observe the association between the level of lymph node metastasis and the T- stage and to evaluate the N- stage in supraglottic carcinoma of larynx.* **Materials and Methods:** *A prospective cross-sectional study was carried out on 80 consecutive cases of supraglottic carcinoma larynx in three tertiary level hospital in Dhaka during July'2009 to March 2011.* **Results:** *The highest number of patients were in the age group 5th and 6th decades. Male to female ratio was 9:1. Topographically 70 cases (87.5%) had lesions involving epiglottis, 5 cases (6.25%) in aryepiglottic fold and 5 cases (6.25%) had lesions at false cord. Majority cases were histopathologically confirmed squamous cell carcinoma (95%) and among them 46 cases (57.5%) had well differentiated. Cervical metastatic lymph nodes were found 40% (32 cases) where level-II was most common. This was most frequent in early supraglottic(T1&T2) carcinoma of larynx (86.25%), P=0.008. A positive correlation was found between the T stage of primary tumours and frequency of cervical lymphadenopathy. Lymph node metastasis were 4.77% in T1, 37.50% in T2, 71.43% in T3 and 91.67% in T4. In early stage lymph node involved 93.75% in Level- II, 6.25% in Level- III & in advanced stage 100% in Level - II, 62.5% in Level - III and 25.0% in Level - IV. Distribution of study cases (31.25%) in stage-II, 25% in stage-I, 22.50% in stage-Ill and 21.25% were in stage-IV.* **Conclusion:** *Result of this study may help the clinician for planning of treatment of this malignant diseases as well awareness.*

Keywords: *Supraglottic carcinoma, Neck node metastatic.*

Number of Tables:06; Number of Figures:02; Number of References:17; Number of Correspondences:05

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Introduction

The larynx is the most common site for primary malignant tumour in head and neck region [1,2,3] which accounts for 25 -30% of Head and neck malignancy. It represents 1-2% of all malignancy in men[4]. Which is the 11th most common cancer in men worldwide[5]. There is a steady rise in the incidence of cancer of the larynx during the past decades[6]. A higher incidence of laryngeal carcinoma has been reported from Asian population. In the western Asia and India, laryngeal cancer account for more than 6% of all cancers among men.

Carcinoma larynx is not uncommon in Bangladesh. Laryngeal cancer is one of the 10 most common cancers in Bangladesh[7]. Study in our country showed that the number of patients suffering from carcinoma larynx is increasing gradually[1,3]. One study in this country had shown 35.32% of all cancer was in head and neck region and the commonest head and neck malignancy was laryngeal carcinoma 31.58% [3]. In a recent study shows the overall incidence of Head and Neck Squamous cell carcinoma was 150 person in 1,00,000 population (0.15%). This study also revealed that incidence of carcinoma of the larynx was 25.22%. Highest incidence was found in the 6th decade of life in both sexes with male female ratio was 4.5:1[8].

One of the most important significant prognostic factors in head and neck cancer is the presence or absence, level and size of metastatic neck disease. A single ipsilateral cervical lymph node metastasis decreases 5- year survival rate by 50% patients with squamous cell carcinoma of the supraglottis of larynx. This survival rate decreases according to the number and level of the metastatic neck node involved and presence of capsular rupture[9]. Nodal metastasis is also associated with a high rate of regional recurrence[10]. This study tries to correlate the metastatic neck node in different stage of supraglottic carcinoma. In this study it has tried to find out significance of frequency of neck node metastasis in different stage of supraglottic laryngeal carcinoma. So far it is known, comparative study on this

Received: 27 February 2019 *Accepted revised version:* 18 April 2019

subject was not carried out previously in our country. The result of the study will provide some knowledge about the incidence and pattern of neck nodal metastasis of the supraglottic laryngeal carcinoma with their presentation and association factors, which may help in the early and appropriate diagnosis of the diseases and choice of treatment modalities.

Materials and Methods

This cross sectional study which was carried out in the department of otolaryngology–Head & Neck Surgery BSMMU, DMCH, SSMC Hospital during this period of July 2009 to March 2011. A total 80 patients of supraglottic carcinoma admitted in the department of ENT Head-Neck Surgery, BSMMU, DMCH, & Mitford Hospital during the study period. All the patients of supraglottic carcinoma admitted in the respective department diagnosed and confirmed by clinical examinations, endoscopic biopsy and histopathology. After taking informed consent and matching the inclusion criteria were included in this study. A Standardized structured data collection instrument was used to collect necessary information of the study subject, which includes-particulars of the patient, demographic profiles, History, clinical examination, laryngoscopic finding, cytological and histological findings, and relevant radiological findings.

Results & Observations

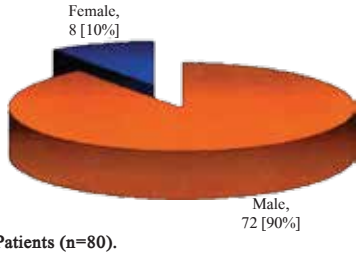

Figure-1: Sex distribution of the Patients (n=80).

Table-I: Age distribution (n=80).

Age	No of Patients	Percentage (%)
40 - 49 Years	16	20.0%
50 - 59 years	38	47.5%
60 - 69 years	20	25.0%
70 - 79 years	4	5.0%
80 + years	2	2.5%
Total	80	100.0%

Table-II: Site of involvement of growth supraglotticcarcinomalarynx (n=80).

Distribution of cases	No. of cases	Percentage
Aryepiglottic folds and Arytenoids with Epiglottis	40	50.00%
Epiglottis with Vestibule	19	23.75%
Epiglottis	11	13.75%
False cord	5	6.25%
Aryepiglottic folds	5	6.25%

Table-III: Histological grading of carcinoma larynx (n=80).

Grading	Degree of differentiation	Number	Percentage
I	Well differentiated	46	57.50%
II	Moderately differentiated	24	30.00%
III	Poorly differentiated	06	7.50%
IV	Undifferentiated	04	5.00%

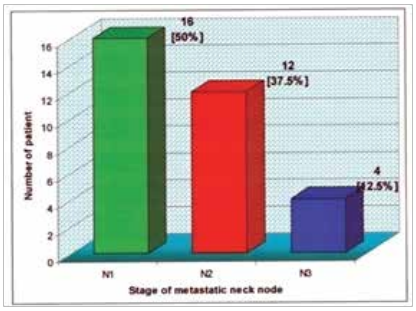

Figure-2: Stage [N] of metastatic neck nodes [n=32].

Table-IV: Distribution of Level of Neck node in different tumor stage (n=32).

Tumour Stage [T]	Level of neek node		
	II	III	IV
Early Stage [Tj& T_2] (n=16)	15 (93.75%,)	1(06.25%)	0
Advance Stage [T_3& T_4] (n=16)	16(100.00%)	10(62.5%)	6(37.51%)
Total (n=32)	31(96.88%)	11(34.38%)	6(18.75%)

Table-V: Nodal involvement in different stage of supraglottic carcinoma (n=80).

Nodal involvement	Early Stage [T_1& T_2]	Advance Stage [T_3&T_4]	Total
Node - Ve	45(56.25%)	3(3.75%)	48 (60.0%)
Node + Ve	16(20.00%)	16(20.00%)	32 (40.0%)
Total	61(76.25%)	19(23.75%)	80(100.0%)

Table-VI: Staging [TNM] patient n=80.

Stage [TNM]	Number of cases	Percentage
Stage-I	20	25.0%
Stage-I	25	31.25%
Stage-Ill	18	22.50%
Stage-IV	17	21.25%

Discussion

Carcinoma larynx is not uncommon in Bangladesh. Laryngeal cancer is one of the 10 most common cancers in Bangladesh[7]. Previous study revealed that incidence of carcinoma of the larynx was 25.22%. Highest incidence was found in the 6th decade of life in both sexes with male female ratio was 4.5:1 [8]. Supraglottic carcinoma of larynx is a common (67-73%) disease in otolaryngology in Bangladesh[11,12,13].

80 patient of supraglottic carcinoma fulfilling the inclusion criteria were included in this cross sectional study from

purposively selected three tertiary hospitals of Dhaka during July 2009 to March 2011. Among them 32 [40%] patient had metastatic neck node.

The incidence (as opposed to mortality) of laryngeal carcinoma is common with other head and neck cancer increase with age. This is predominantly found in patient aged from 50-70 years[14,15,16]. In this study age of the patient ranged from 38-83 years (mean 57.58 ± SD 9.79 years). 38 (72.5%) of patients were in the 5th- 6th decade. Highest number (38, 47.5%) of patient with supraglottis carcinoma larynx was found between 50 to 59 years of age. No case was found below 38 years of age. In the developing countries many cases are diagnosed in individuals before 5th decade of live. Less than 1% of Carcinoma of the larynx occur before age of 30 except for the supraglottic type that has a lower age range[5].

One invariable characteristic of carcinoma of the larynx is its greater predominance in men compared with women[14]. The male/female ratio (8:1) is higher for cancer at any other site, thus emphasizing the rarity of laryngeal cancer among females[11]. This international male/female ratio for the incidence of laryngeal carcinoma Male to female ratio was (M:F)9:1[4]. The overall male to female ratio varies 4:1 to 20:1. Here 72 (90%) patient were male and 8 (10%) were female, Male to female ratio was 9:1, which was consistent with other studies in Bangladesh and in this subcontinent.

Most of the supraglottic growth was exophtic in appearance (60%). 40% lesion was ulcerative type. No fungating type was observed in this study. This two types had no statistically significant difference (P=0.127). This was also similar to study of Haque, 2000.

The most common site of origin of supraglottic carcinoma is the center of infrahyoid epiglottis followed by the false cord, suprahyoid epiglottis, aryepiglottic fold and ventricle[15]. The common site of involvement of supraglottic carcinoma in this study was epiglottis (87.5%). 5 cases (6.25%) were in Aryepiglottic fold and other 5 cases (6.25%) had lesions at false cord. There was statistically significant difference among the involvement of carcinoma in other different sites of the supraglottic larynx (P <0.001).

In this study all the carcinoma larynx were found as squamous cell carcinoma of different variant and degree of differentiation. Majority of the subjects were found well-differentiated (57.5%) which was belong to grade- I. 30% patients had moderately differentiated (grade- II) and 7.5% (grade- II) patients had poorly differentiated carcinoma (grade- III) and 4 (5%) patients had undifferentiated carcinoma (grade- IV).

Out of 80 patient 32 (40%) had their regional lymph nodes involved. There was not a significant difference in the proportions of individuals with the presence or absence of metastatic neck node (z= 1.526, P = 0.127). 16 (50%) patient were found in early stage of neck node metastasis (<3cm in size in ipsilateral side). Homolateral involvement of nodes were found in most cases 28 (87.5%).

One of the most important significant prognostic factors in head and neck cancer is the presence or absence, level and size of metastatic neck disease. A single ipsilateral cervical lymph node metastasis decreases 5- year survival rate by 50% patients with squamus cell carcinoma of the supraglottis of larynx. This survival rate decreases according to the number and level of the metastatic neck node involved and presence of capsular rupture[9]. Nodal metastasis is also associated with a high rate of regional recurrence[10].

Poorly differentiated tumours have the highest of distance metastasis. Though presented late, in no case of our series distant metastasis was found. So, all were in M0 state. In presentation staging was concerned maximum (31.25%) at stage-II followed by 22.50% at stage-III, 25% in stage-I and 21.25% were in stage-IV. (Table-II). The distributing of stage is almost nearer to others studies[11,12,17]. For proper staging CT Scan and MRI were necessary, but could not done for monetary problem of the patients.

Conclusion

To evaluate the cervical lymph node metastasis in different stage of supraglottic laryngeal carcinoma this cross sectional study was done in limited three hospitals in Dhaka among limited number of subjects. Lymph node metastasis was found in early supraglottic carcinoma (T1& T2) of larynx is significantly frequent in level II cervical lymph node. There was also significant association and correlation was found in advance stage of tumour with the size of tumour and node, site of involvement, age and sex groups, smoking and sociodemographicfactors. Result of this study may help the clinician for their planning of treatment of this malignant diseases as well prevention.

Conflict of Interests: None.

Acknowledgement

This study was conducted at the department of otolaryngology& head-neck surgery Bangabandhu Sheikh Mujib Medical University under the guidance of Prof. Belayat Hossain Siddiquee chief of head – neck surgery division, department of otolaryngology & head - neck surgery, BSMMU with help of other authors as a thesis of the corresponding author.

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DOI: https://doi.org/10.3329/medtoday.v31i2.41955

ORIGINAL ARTICLE OPEN ACCSESS

Injury Pattern in Fatal Cases of Stab Wound

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Abstract

Introduction: *Stabbing is the most common method of homicide as like as other parts of the world. Precise examination of stab wound along with the type of other wounds considering their site, shape, number and orientation of the wounds in relation to each other etc. provide a number of clues which may be of paramount importance in reconstruction and interpretation of the whole events.* **Materials and Methods:** *This is a retrospective study carried out in Forensic Medicine Department of Sylhet M.A.G. Osmani Medical College, Sylhet from July 2010 to June 2011 and in the year of July 2017to June 2018 to observe different patterns of injuries in fatal cases of stab wound. 20 autopsies were included in this study using random sampling.* **Results:** *Male(90%) are more victimized than female. The pattern of injury that found to be most common is the penetrating wound of the chest injuring either lung or heart. Second most common injury pattern is the penetrating wound of the chest or abdomen injuring eitherstomach or liver.Another pattern is widely scattered multiple stab wounds both on front and back of the body and the fourth pattern is stab wound of the lower limb causing division of a major blood vessel.* **Conclusion:** *The stab wound is deeper than it is long or wide. This means depth is the greatest dimension in case of Stab wound and that is where the danger lies as it is evident in this study.*

Keywords: *Stab wound, Fatal cases, Injury pattern.*

Number of Tables: 03; Number of References:09; Number of Correspondence: 05

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Introduction

A stab wound is a wound which is produced when force is delivered along the long axis of a narrow and pointed object, such as knife, dagger, sword, chisel, scissors, nail, needle, spear, arrow, screw driver etc. into the depths of the body[1].

The wound is deeper than it is long on the skin surface[2]. Depth is the greatest dimension of this wound and according to how much depth an object has traversed. These are two types. When an object enters a body cavity or viscus, it is called penetrating wound and when an object enters body cavity or viscus from one side and comes out from the other side then it is called perforating wound.

Stabbing is the most common method of homicide in developing countries like Bangladesh, due to quarrel, overpopulation, joblessness, political unrest, poverty, family dispute, etc[3]. All the above mentioned factors lead to a violence which may result ultimately in a fatal outcome.

Stab wound is of major importance in Forensic Medicine as this is a common method of homicide and most deaths from stab wounds are homicidal [3,4]. The basic criteria of the wound–depth indicate about the source of the fatal outcome. Homicidal stab wound need not to be multiple, widely distributed and deep.

Always, it can be single on a vital spot and that is enough to bring a fatal outcome. The sign of struggle sometimes present and in such case there are multiple wounds found on the body.

Sometimes the other wounds found along with stab wound clearly define the nature of the wounds, especially when those other wounds are also present on the vital spot of the body which has become evident in this study. On the other hand, the orientation of the wounds in relation to each other also indicates the intention of the assailant and thus the nature.

Materials and Methods

This study is carried out in Forensic Medicine Department of Sylhet M.A.G. Osmani Medical College, Sylhet from July 2010 to June 2011 and in the year of July 2017 to June 2018 to observe different patterns of injuries in fatal cases of stab wound.

Twenty (20) autopsies were included in this study using random sampling.

Received: 13 March 2019 *Accepted revised version:* 28 May 2019

Necessary information gathered from police inquest report and accompanied friends, neighbors and relatives.

The study based on physical examination using the usual methods and instruments.

No special technique or incision was employed. The variables that are analyzed were sex, age, injury pattern and vital organ injured.

Results

Among the 20 deceased, 18 were male and 2were female and the male female ratio was 18:2. Age of them ranged between 11 years to 52 years. Among 20, 16 were adult and 4 were children (below 18 years). Sex and age distribution are shown in table I & II.

Table -I: Sex distribution.

Sex	Number	Percentage
Male	18	90%
Female	02	10%
Total = 20		

Table-II: Age distribution.

Age	Number	Percentage
Children (below 18 years)	04	20%
Adult (Above 18 years)	16	80%
Total = 20		

As mentioned earlier, the pattern of injuries that found to be most common is the Penetrating type of Stab wound of the chest with the involvement of either heart or lung. Second most common injury pattern is the Penetrating type of Stab wound of the chest or abdomen injuring either stomach or liver. Another pattern is widely scattered multiple stab wounds both on front and back of the body and the fourth pattern is Stab wound of the lower limb causing division of a major blood vessel. (Table III).

Table-III: Distribution according to the injury pattern.

Injury pattern	Percentage
Penetrating type of Stab wound of the chest with the involvement of either heart or lung with an oblique direction from left to right	50%
Penetrating type of Stab wound of the chest or abdomen injuring either stomach or liver with an oblique direction from left to right and/or from above downwards	30%
Widely scattered multiple stab wounds both on front and back of the body	10%
Stab wound of lower limb causing division of a major blood vesselOblique from above downwards	10%

Discussion

Depth, direction, site, shape, number and orientation of the wounds in relation to each other constitute an injury pattern. The stab wound is deeper than it is long or wide on the skin surface [1,2 & 5]. This means depth is the greatest dimension in case of Stab wound [6] and that is where the danger lies as it is evident in this study.

When force is delivered along the long axis of a narrow and pointed object, such as knife, dagger, sword, chisel, scissors, nail, needle, spear, arrow, screw driver into the depths of the body, it is not necessary that death will occur after a vital organ is injured but if a major blood vessel is divided in the limb, severe bleeding can lead to the ultimate fatal outcome.

The most important fact that should be in mind is the viscera of a dead body on the autopsy table are not in the same position as when the same person was alive and in standing position or was bent over in a state of emotional tension at the time of an assault.

During fight, fright and flightthe victim may be moving or changing position in a variety of postures which change by the second [1]. So, it is unpredictable as to which organ to be found injured in case of stab wound when the angulations of the track is sufficient and for this reason although the entry point is on the chest, ultimately the abdominal organ found to be injured traversing through the diaphragm and vice versa which is evident in this study. The unpredictability seems much more true as it should be in mind that the whole process of stabbing a person is not a static event, but a dynamic event as mentioned above and there are a lot of interactions between the victim and the assailant unless it is sudden surprised attack which is not uncommon. The organ just beneath the skin wound is not the organ to be ultimately injured and the oblique direction of the stab wound is a steady finding. Direction can provide valuable clue as to the relative position of the assailant and the victim. Determination of the direction relies on both the appearance of the skin wound and the track in the deep tissues [5]. More information whether there is any leverage or angulations in the middle of the track, that means changing direction without withdrawal of the weapon completely, can be found by careful anatomical dissection during autopsy examining tissues in layer by layer from the surface downwards. The damage to deep structures and organs compared with the position of the surface wound and a clear idea can be found about the direction. Attempts have made to delineate the track of a stab wound before dissection either by filling the defect with a radio-opaque fluid before taking X-rays or by filling with a plastic or even metallic substance that will harden to form a cast. In practice, these methods appear to have little advantage over careful dissection [5]. The most common direction is from left to right which obviously indicates that the assailant is a right-handed person as it is the inherent natural tendency of a right-handed person to stab from left to right direction when standing in front of the victim.

A common form of homicide is a stab wound of the chest which penetrates the heart or involving lungs [7 & 1]. Stab wound of the abdomen involving liver or stomach is another site.

An unusual site for stab wound is lower limb, even considering the defense wound. Supported by history and also other study this unusual pattern seems to be due to the posture of the victim, sudden provocation, motive to make the escape easy [3].

Sometimes the right ventricle and sometimes the left ventricle found to be penetrated but in both cases large amount of clotted blood are found in the chest cavity indicating copious bleeding from stab wound. This also indicates the absence of the muscular 'self-sealing' effect which is also supported by the absence of any treatment history and that means the death was not delayed.

The number of stab woundalong with the site is an important factor in determining the nature of the wound. The multiple numbers of wounds that are widely scattered and deeply penetrating when present on the vital site of the body such as chest, indicates about the intention of the assailant to confirm death and thus the nature of event. The multiple numbers of other wounds away from the site of fatal injury indicates that there was a struggle for a while and the event was not a surprise attack. It is said that most deaths from Stab wound are homicidal, especially when found in the inaccessible site but most of the homicidal stab woundalso may be found in the accessible site as evident in this study as well as other studies [3, 8 & 9].

For most of the stab wounds all over the world and for several decades' chest and abdomen remain the most commonsite for fatal stab wound [3, 4, 8 & 9].

The other types of wound along with the stab wound indicate not only the nature but also help to reconstruct the event. Multiple blunt force injuries like abrasion, bruise and laceration on different sites of the body indicate most of the times the resistance and the forceful restrain waiting for final blow as evident in this study. Other sharp force injury along with the stab wound indicates not only the nature of the whole event but also the intention to confirm the death, especially when the other wound is more severe in nature and severing a major vessel.

The shapes that found in this study on skin wound are spindle shape and oval shape. The spindle shaped skin defect is found mostly (80%) as it is found also frequently by the forensic pathologists where both ends of the defect appear sharply cut coming to a fine 'V' point at the extremities. The tapering and the sharpness of the blade at the edges create this spindle shape of the skin defect well known all over the world.

The weapon almost always a dagger or knife. Unfortunately, this does not necessarily indicate that a knife with two sharp edges was used, as the skin often splits behind the blunt edge to produce a symmetrical appearance [5]. On other hand the oval shaped skin defect obviously indicates the weapon of blunt edges even considering the anatomical position of the skin defect in line or across tension of Langer's lines, although there is opposite factor of skin elasticity decreasing the size of defect and contributing also to modify shape complicating the whole scenario of determining the actual shape of wound.

Another factor is the movement of the person stabbed as discussed earlier. So, the modifying factors such as Tension of Langer's lines, skin elasticity, movement of the person, angle of the direction, the thrust during withdrawal made the shape of skin defect such variable that there is much difficulty to determine the shape or size of the weapon from the skin defect. The oval shape stab wound seen in this study should not indicate that the person stabbed with a oval shaped instrument as there is no such instrument usually used as homicidal weapon but actually this appearance occurred due to a weapon with a comparatively more sharp edge and a less sharp edge along with the interaction of the other modifying factors mentioned above.

Conclusion

The stab wound is deeper than it is long or wide. This means depth is the greatest dimension in case of Stab wound and that is where the danger lies as it is evident in this study. The statement of the witness if supplied in the inquest report and medico-legal examination of the wound when not in contradiction can be a valuable evidence.

Conflict of Interests: None

Acknowledgement

Thanks and all praise to Almighty Allah, the beneficial, the merciful for providing us enough energy and patience to complete this article. Our special thanks and gratitude toProfessors, Associate professors, Assistant professors & all technical staffs of Department of Forensic Medicine, Sylhet MAG Osmani Medical College, Sylhet.

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DOI: https://doi.org/10.3329/medtoday.v31i2.41956

ORIGINAL ARTICLE OPEN ACCSESS

Free Fibular Flap in Mandibular Defect Reconstruction in Perspective of a Tertiary Care Hospital of Bangladesh

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Abstract

Introduction: *The principal objectives of reconstruction after mandible resection are to restore physiological articulation, chewing, swallowing functions and esthetics of the patient. Metal plate and bone graft are usually used to achieve this purpose.From the point of view of bone resorption and augmented exposure to infection, free vascularized fibular flap (FFF), comprising alive bone, have shown a lower infection rate and high rate of success.* **Materials and Methods:** *The study population of this clinical report included undertaking mandibular reconstruction by transplantation of a free vascularized fibular flap at the Department of Oral and Maxillofacial Surgery at the Dhaka Dental College between May 2014 to November 2014. The factors consider for studying were as following- age, sex, primary disease , period of reconstruction, mandibular defect classification, mandible resection range, height of reconstructed mandibular bone, number of locations of mandible osteotomy, vascular anastomosis and complication.* **Results:** *Primary disease comprised one was ameloblastoma, one was recurrent ameloblastoma, and another was post-surgical facial deformity. According to the CAT classification body was the most commonly observed defect. All mandibular bones were left as single barrel. There were 2 cases of primary reconstruction and 1 of secondary reconstruction. Free fibular flap ranges from 12-18 cm. No postoperative complications were seen in any case.* **Conclusion:** *Vascularized fibular flap is good choice in wide-range faults hard to fill with an iliac block graft. Further studies including greater samples of patients undertaking fibular bone transplantation are needed to comparatively investigate its merits in more detail.*

Keywords: *Mandibular defects, Reconstruction, Free Fibular Flap (FFF), Bangladesh.*

Number of Table: 01; Number of Figures: 04; Number of References: 23; Number of Correspondence: 07

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Introduction

After mandible resection impairment of functions are seen including articulation, chewing, swallowing, and esthetics. The Principal objectives of reconstruction are to restore the functions. Metal plate and bone graft are usually used to achieve this purpose. At present, a free vascularized fibular flap is the most frequently used biomaterial for this purpose. Iliac horn bone is similar to that of the mandible in ration of cortex and cancellous. Suchlike grafts are deliberated to be the most appropriate for mandibular reconstruction[1]. From the point of view of bone resorption and augmented exposure to infection, free vascularized fibular flap(FFF), comprising alive bone, have shown a lower infection rate and high rate of success[2].That's why now a day's free vascularized fibular flap is standard use in mandibular reconstruction[3,4,5].

The application of FFF in transplantation was first reported in 1975 by G IAN Taylor in Melbourne, Australia[6]. And their pioneer practice in the craniocervical region was reported in 1989 by David A Hidalgo[7].Peroneal artery and vein were trusted as the main feeding vessel[4]. It is possible to reap flap of greater than 20cm in length creating it as a convenient apparatus in the reconstruction of wide range of mandibular bone defect[4].

Osteotomies can to be performed at multiple locations and also can reap with the patient in the supine position. Postoperative complications which are associated to the site of harvest are very little. According to PubMed and Google Scholar no study has been conducted in Bangladesh regarding reconstruction of mandibular defects with free fibular flap (FFF). This delineation designates mandibular reconstruction using vascularized fibular flap at the Oral

Received: 21 May 2019 *Accepted revised version:* 19 June 2019

and Maxillofacial surgery department of Dhaka Dental College, Bangladesh. In designing of manuscript we follow the pattern of clinical report of The Bulletin of Tokyo Dental College by Yamamoto N et.al.

Materials and Methods

Patient

The study population of this clinical report included undertaking mandibular reconstruction by transplantation of a free vascularized fibular flap. All had undertaken segmental resection of the mandible at the Department of Oral and Maxillofacial Surgery at the Dhaka Dental College & Hospital over a period of 06 months, between May 2014 and November 2014.

Essential factors consideration in cases

The factors consider for studying were as following- age, sex, primary disease, period of reconstruction, mandibular defect classification, mandible resection range, height of reconstructed mandibular bone, number of locations of mandible osteotomy, vascular anastomosis and complication. Nobuharu Yamamoto considered the following factors in his study[4]. According to CAT system of Hashikawa Mandibular defect classification was carried out (Condylar Head, Mandibular Angle, mental Tubercle)[8].

The inclusion and exclusion criteria for fibular transplantation

Patients with systemic illness in whom it would have been problematic to execute surgery under general anesthesia, and those supposed of having deep vein thrombosis were excluded from the study. Informedwritten consent was taken from all patients for inclusion in this study.

Infection or necrosis of bone transplanted at the time of primary reconstruction; multiple failure of the metal plate for reconstruction; an extensive defect range in the mandible, making reconstruction by transplantation of an iliac bone block graft potentially difficult; and radiation osteomyelitis.

As per fibular flap is alive bone with blood flow, it has tough resistance to infection, creating it the most appropriate type of flap for a wide range of defects. Considering of these benefit, fibular bone grafts are nominated at our department as the primary treatment in cases of mandibular reconstruction.

CAT classification

According to Yamamoto N et al. three factors are used to determine the CAT classification. Creating total of 6 bilaterally customary points: the Condylar Head, Mandibular Angle, and Mental Tubercle. The mandibular defect is classified by a combination of these points. If a defect contains a typical point, it is classified as C, A, or T; if it contains multiple usual point, it is classified as CA, AT, or CAT. If a case includes resection at standard points, it is not included in the classification. If a fault is limited to the mandibular ramus with no typical point, it is classified as Neck; if it is restricted to the body of the mandible, it is classified as Body. According to Yamamoto N et al. the CAT classification may be summarized as follows:1) there are 14 classification patterns; 2) only bone defects are included (soft tissue defects are not addressed); and 3) classification is simple to perform (fig 1).

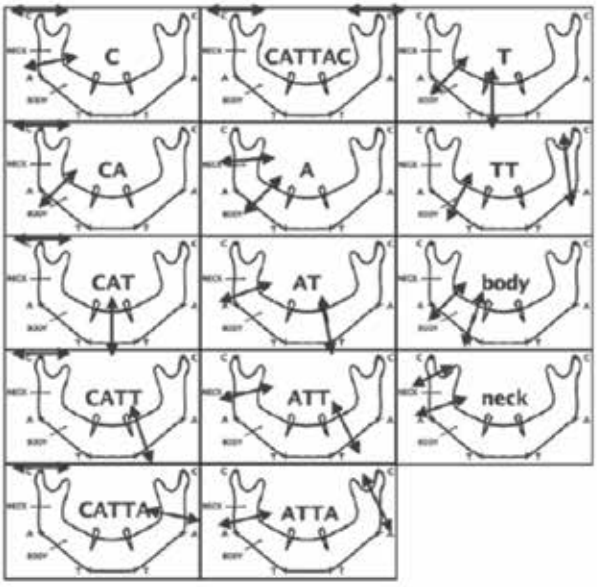

Figure-1: CAT classification (Condylar Head, Mandibular Angle, and Mental Tubercle).

Method

The principal disease, mandible resection range, and number of mandible osteotomy sites, presence or absence of postoperative complications were considered. A skin flap was also reaped during engraftment of the bone flap and assessed as an observing factor.

Mandibular defects including standard point were described as C, A, or T; defects with multiple standard points were classified as CA, AT, or CAT. If resection was performed at standard point, it was not classified as defect. Defect of mandibular ramus only was classified as Neck, while that for the body of the mandible only was classified as Body. Classification patterns are listed as C, A, T, CA, AT, ATT, CATT, ATTA, CATTA, CATTAC, Neck or Body.

The vascular anastomotic was set as in case of artery, the peroneal artery with facial artery; and in case of vein, the peroneal Vain with jugular or lingual or facial vein. Prolene (8-0) was used to ligature in all vascular anastomosis cases. All segment osteotomies were shaped with reconstruction plate.

Results

Two of the patients were men, and one was women. Age ranged from 25-26 years. Primary disease comprised one was ameloblastoma, one was recurrent ameloblastoma, and another was post-surgical facial deformity. According to the CAT classification, Body was the most commonly observed defect. The resection range of the mandible was 11-20 (mean 15.5 cm). All mandibular bones were left as single barrel. There were 2 cases of primary reconstruction

and 1 of secondary reconstruction. Subtotal mandibulectomy was done in all cases. Free fibular flap ranges from 12-18 cm; segmented osteotomy ranges from 3-5 segments. No postoperative complications were seen in any case. Patient's information summary has been shown in table I.

Table-I: Patients information summary.

Case	Age	Gender	Primary Disease	Reconstruction	Mandibular resection range	Mandibulectomy type	Fibular flap range	Segmented osteotomy	postoperative complications
1	26	M	Ameloblastoma	Primary	12cm	Subtotal	12 cm	3 segment	No
2	25	M	Recurrent Ameloblastoma	Primary	18cm	Subtotal	18 cm	5 segment	No
3	26	F	Post-operative deformity	Secondary	15cm	Subtotal	15cm	5 segment	No

Cases

Case 1 compriseda 26 years old manwithameloblastoma on right side of the mandible. His CAT classification was CATT. The mandibular defect range was 12cm; the number of mandible osteotomy sites was 4; and the height of the mandible reconstruction was single barrel. Subtotal mandibulactomy done from left canine to right Condyle (disarticulation) on 28/5/2014. Free fibular flap from right leg (12cm fibula with FHL muscle with 4X2 cm^2) is harvested by 3 segment osteotomies & shaped with reconstruction plate (20 holes without condyle) by 11 screws. Vascular anastomosis was - right peroneal artery with right facial artery; peroneal vein with right anterior jugular vein (end to end), ligature by 8-0 prolene. Relevant pictogram are shown in figure 2.

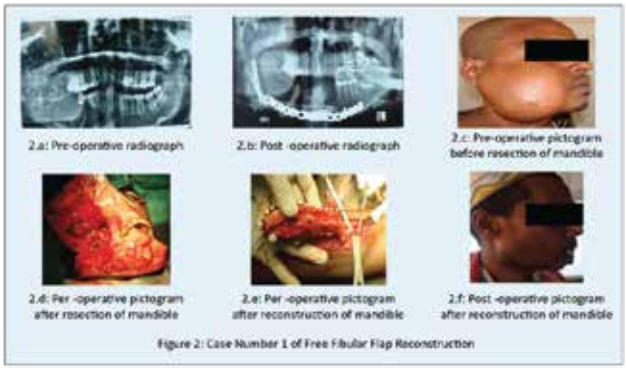

Figure 2: Case Number 1 of Free Fibular Flap Reconstruction

Case 2 compriseda 25 years old manwith recurrent ameloblastoma on right side of the mandible. His CAT classification was CATTAC. The mandibular defect range was 18 cm; and the height of the mandible reconstruction was single barrel. Subtotal mandibulactomy done from left angleto right Condyle (disarticulation) on 19/8/2014. Free fibular flap from right leg (18cm fibula with FHL muscle) is harvested by 5 segment osteotomies & shaped with reconstruction plate (without condyle) by 10 screws. Vascular anastomosis was - right peroneal artery with right facial artery; peroneal vein with right facial vein and right anterior jugular vein (end to end), ligature by 8-0 prolene. Relevant pictogram are shown in figure 3.

Figure-3: Case number 2 of free fibular flap reconstruction.

Case 3 compriseda 26 years old femalewith post-surgical facial deformity on left side of the mandible. His CAT classification was ¬TTAC. The mandibular defect range was 15 cm; the number of mandible osteotomy sites was 5; and the height of the mandible reconstruction was single barrel. Subtotalmandibulectomy done from right first molar to left condyl on 19/11/2014. Free fibular flap from right leg (15cm fibula with FHL muscle) is harvested by 5 segment osteotomies & shaped with reconstruction plate (without condyle) by 15 screws. Vascular anastomosis was - right peroneal artery with right facial artery; peroneal vein with right facial vein and right anterior jugular vein (end to end), ligature by 8-0 prolene. Relevant pictogram are shown in figure 4.

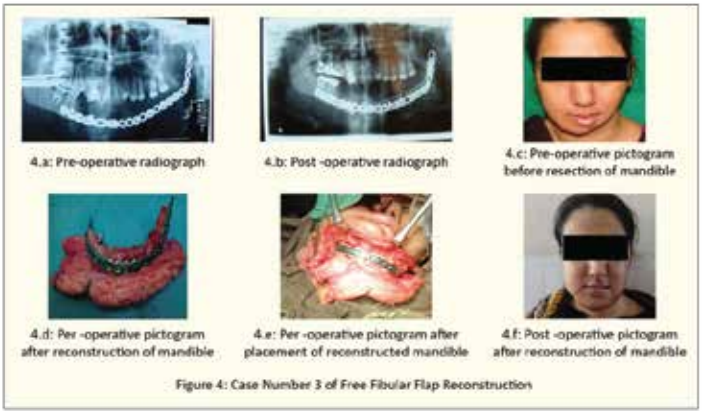

Figure 4: Case Number 3 of Free Fibular Flap Reconstruction

Discussion

According to Nagamatsu S et al. reconstruction with only a metal plate was useful as a provisional solution, but that it had long-term problems[9]. On the contrary, block transplant by free iliac bone also has drawbacks, for example limitations of the quantity of bone which can be harvested, and bone resorption after transplant[4].

Studies have recommended that this difficult can be overcome by reconstruction the mandible by vascularized osteocortical flap in combination with microvascular surgery[7,10]. The fibula is exclusively fit for mandibular reconstruction in relationships of bone length, strength, multiplicity of cortical bones, adaptability to bone formation, and disture-bance of the site of harvest[4]. Peter G. Cordeiro recommended the fibula as the principal choice in mandibular reconstruction[11].

Former studies have noted a number of other benefits with a fibular flap in this admiration. These comprise a high

engraftment ration; on experimental bone resorption; applicability in most cases up to 20cm; osteotomy of bone graft, allowing 3-dimensional conformation of mandibular bone, if the alveolar area can be reconstructed by folding into two (double barrel method); and suitability for insertion of implant[3,7]. No implants were worn to re-establish occlusion, here. This does not indicate that implants will be lined out in future patients. Conversely the conclusion will have to be made based on complete concern of both fibular height and soft tissue conditions. In this situationthe width of the attached gingival of soft tissue should also be measured.

Mandibular reconstruction has been reproduced using reconstruction plates for many years at Dhaka Dental College. It was found that betterprecision could be achieved if the bone to be transplanted was familiar in harmony with plaster moulded 3-dimensional models in order to confirm compatibility first. Fibular transplant requires a microsurgical angiostomy. The correlations between the number of fibular osteotomy sites, mandible resection range, primary disease, and fibular necrosis were also investigated. No association was observed among fibular necrosis and the number of fibular osteotomy sites or range of mandibular resection.

In our study primary disease comprised ameloblastoma, recurrent ameloblastoma, and post-surgical facial deformity. Body was the most commonly observed defect by the CAT classification. All mandibular bones were left as single barrel among these 2 cases were primary reconstruction and 1 of secondary reconstruction. Subtotal mandibulectomy from incisors to condyle was done in two cases. Vascular anastomosis was peroneal artery with facial artery and peroneal vein with Facial vein and Ant. jugular vein (end to end). No postoperative complications were seen in any case.

In the case of supplementary soft tissue defect, a fibula graft can be harvested with various reliable skin paddles[12]. which allow a one-stage reconstructive method of composite mandibular defects[13,14]. Numerous modifications of skin paddles have been described[15]. An extra benefit of the free vascularized fibula graft is the capability to have two teams working at the same time with the patient in the supine position by reducing operating time, which is related with reduced blood loss and lower rates of infection[16]. As well, the blood supply can be monitored postoperatively with an implantable Cook-Swartz Doppler probe[17,18]. The donor site morbidity of the FFF is always acceptable among different studies, and is typically avoidable with suspicious planning and appropriate technique[19].

One difficulty of the free fibula flap is the height difference between the native mandible and the transplanted fibula, particularly at the anterior segment. The 'double-barreling' of the fibula is a practical modification with good aesthetic and functional outcomes[20, 21].The 'double-barreling' of the fibula enables instant osseointegrated dental implantation[22]. Preoperative virtual surgery planning using 3D technology has shown convincing improvements in postoperative outcomes[23].

According to Yamamoto et al. when a fibular transplant is performed in a patient with radiation osteomyelitis of the mandible, a number of steps will have to be taken further along. These comprise: 1) performing the surgery after improvement of infection of the mouth and neck;2) selecting appropriate postoperative antibiotics that are effective against osteomyelitis and performing drainage more strictly; and 3) displaying caution when selecting a blood vessel for anastomosis outside the exposure field.

Conclusion

The results of the current study suggest free vascularized fibular flap is good choice in wide-range faults hard to fill with an iliac block graft. Further studies including greater samples of patients undertaking fibular bone transplantation are needed to comparatively investigate its merits in more detail.

Conflict of Interests: None

Acknowledgement

In designing of manuscript we follow the pattern of clinical report of The Bulletin of Tokyo Dental College by Yamamoto N et.al. The faculties of oral & maxillofacial surgery of Dhaka dental college &hospital. The authors wish to declare no conflict of interest with regard to this paper.

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ORIGINAL ARTICLE OPEN ACCSESS

A Clinicopathological Study of Solitary Thyroid Nodule

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Abstract

Introduction: *Common presentation of thyroid disorders is solitary nodule. A discrete swelling in an otherwise impalpable gland is termed as solitary nodule of thyroid. The majority of solitary thyroid nodules are benign. The incidence of malignancy is 10-20%, being more common in females with a mean age of 35 years.The object of the study was to identify the incidence of malignancy in solitary nodule thyroid which emphasizes on the early diagnosis and adequate treatment.* **Materials and Methods:** *The study was carried out in the department of ENT and Head-Neck Surgery of Rangpur Medical College Hospital, Rangpur and Shaheed Ziaur Rahman Medical College Hospital, Boruga in 50 patients with solitary thyroid nodule from July 2013 to June 2015.* **Results:** *The solitary thyroid nodules were seen in 1.76% of surgical admissions. The mean age of the incidence of solitary thyroid nodule is 35 years. The incidence of malignancy in solitary thyroid nodule is 18.51%. The solitary thyroid nodules were frequent in females than males in the ratio of 6.71:1.* **Conclusion:** *It is concluded from the present study that a remarkable proportion 10% of solitary thyroid nodules was malignant with females preponderance which emphasizes on the early diagnosis and adequate treatment.*

Keywords: *Solitary thyroid nodule, Malignancy, Age, Sex, Incidence.*

Number of Tables: 06; Number of References: 19; Number of Correspondences: 04

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Introduction

Thyroid swellings are common clinical problem throughout the world [1]. These are also common clinical problem in Bangladesh. Many patients with various thyroid disorders from different parts of the country attend in various hospitals [2]. It is prevalent predominantly in adult females. The incidence of endemic goiter in our country was 10.5% irrespective of age and sex. The male and female percentage were 7.21% and 12.37% respectively [2]. The endemicity varies from district to district in Bangladesh [3].

A significant proportion of solitary thyroid nodules may turn into malignancy, which demands significant medical attention.

The incidence of carcinoma in cold solitary thyroid nodules is about 15 – 20% and 80% or more are benign[4]. Though available diagnostic tool give some clue regarding exact type of lesion, it is very difficult to determine the type of pathology without performing histopathological examination. Fine needle aspiration cytology has a high diagnostic accuracy [5].

The importance of solitary thyroid nodule lies in the significant risk of neoplasia compared with other thyroid swellings. Other than neoplasm it may also be cyst, thyroiditis or colloid degenerations etc[6]. The object of the study was to determine the frequency of malignancy in solitary thyroid nodulewhich emphasizes on the early diagnosis and adequate treatment.

Materials and Methods

Study was conducted in the department of ENT and Head- Neck Surgery of Rangpur Medical College Hospital, Rangpur and Shaheed Ziaur Rahman Medical College Hospital, Bogura, during the period of July 2013 to June 2015. The case records of 50 solitary thyroid nodules were analyzed. The diagnosis of solitary thyroid nodules was based on details history, clinical examination and relevant investigations such as thyroid functions tests (serum T_3, T_4 TSH level), ultrasonogram, isotope scanning and fine needle aspiration cytology (FNAC). Indirect laryngoscopic examination/video laryngoscopic examination to check the mobility of vocal cords was done before and after surgery. All the patients were operated and the specimen was studied.

Patient below the age of 10 years, pregnant females, those with history of radiation exposure to neck and those with family history of thyroid cancer were excluded from the study.

Results and Observation

Age of the patients ranged from 10 years to 60 years. But most of the patients were aged in between 3rd and 4th decade. Out of 50 cases,

Received: 11 April 2019 *Accepted revised version:* 30 May 2019

76% (38 patients) were female and 24% (12 patients) were male. Female to male ratio was 3.16: 1. Most of the cases (60%) were from middle socio-economic status (Table-1).

Table -I: Age, Sex and Socio-economic status of the subjects (n=50).

Parameter	Distribution	Number of subjects	Percentage
Age	0-10 yrs	1	2%
	11-20	4	8%
	21-30	21	42%
	31-40	17	34%
	41-50	6	12%
	51-60	1	2%
Sex	Female	38	76%
	Male	12	24%
Socio-economic Status.	Poor	13	26%
	Middle class	30	60%
	Rich	7	14%

The minimum age of the subjects was 10 years and maximum was 60. Butthe youngest and the oldest both of the subjects in the study had been suffering from malignant thyroid disease (Table I).

Table –II: Presenting symptoms (n=50).

Symptom	No. of patients	Percentage
Thyroid swelling	50	100 %
Cervical lymphadenopathy	3	6 %
Hoarseness of voice	1	2 %

All of the patients presented with visible or palpable swelling in front of neck. Among them 6% presented with cervical lymphadenopathy and 2% with Hoarseness of voice (Table II).

Table –III: Consistency of nodule (n=50).

Consistency	No. of patients	Percentage
Firm	41	82
Hard	5	10
Cystic	4	8

Most of the nodules (82%) were firm in consistency, 10% were hard and minimum (8%) were cystic. Hardness of the nodules might be due to malignancy (Table III).

Table – IV: Sonological findings (n=50).

Findings	No. of patients	Percentage
Solid	39	78%
Cystic	11	22%

High resolution ultrasonogram is an unique tool for diagnosing physical characteristics of thyroid gland. By using this tool clinically undetectable thyroid nodule can be categorized (Table IV).

Table-V: FNAC findings (n=50).

Diagnosis	No. of patients	Percentage
Colloid nodular goiter	32	64%
Colloid degeneration	5	10%
Monomorphic adenoma	1	2%
Adenomatusgoitre.	1	2%
Follicular epithelial cell	6	12%
Papillary carcinoma	2	4%
Not conclusive	3	6%

Cytological diagnosis is highly accurate, minimally invasive preoperative diagnostic tool. In this study it was not conclusive in only 6% (3) cases, but other finding was conclusive as histopathological reports (Table-V).

Table – VI: Histopathology (n=50).

Diagnosis	No. of patients	Percentage	Type of tumor
Multi nodular goiter.	19	38%	Benign
Simple nodular goiter.	12	24%	
Multinodular goiter with cyst formation.	7	14%	
Follicular adenoma	6	12%	
Multi nodular goiter with thyroiditis	1	2%	
Papillary carcinoma	3	6%	Malignant
Follicular carcinoma	2	4%	

Histopathology is an important tool for confirmation of the disease. In this study 90% of thyroid nodules ware benign and 10% ware malignant (Table-VI).

Discussion

Thyroid swellings are common clinical problem in our country [1,2]. Most of thyroid swellings are multi-nodular but a good percentage is solitary thyroid nodule. Thyroid nodules are 3-4 times more frequent in women than men. A nodule may be adenoma, cyst, multinodular goiter, thyroiditis and thyroid cancer. This study was planned to determine the frequency of malignancy in solitary thyroid nodule which emphasizes on the early diagnosis and adequate treatment.

The age distribution of the current study reveals that most of the patients were between 21-30 years (42%) which is similar to others [2,7]. The youngest subject of the study was10 years male patient which was papillary carcinoma. The oldest subject was 60 years femalepatient, a case of follicular carcinoma [2].

Sex distribution shows majority of the patients were female 76% whereas 24% were male. Female to male ratio was 3.17: 1 and most of the patients were from non endemic areas [8]. Here we may recall the findings of Kilopatricet al. who found a female to male ratio of 14:1 in non endemic areas, which approaching unity (1:1) in endemic areas[9]. There are other two series of two different workers. One shows female and male ratio 2:1[2], another shows 1.63:1[3].

Though there is no close relationship between patients with thyroid disease and socio-economic status, the average socio-economic group having higher incidence 60% followed by poor group 22% (Table-I). The cause is not exactly known, it might be related to illiteracy, superstitions and fear of surgery.

Regarding presenting complaints we have found that all of the patients with neck swelling present in variable durations. It is also evident that goiter with cervical lymphadenopathy and hoarseness of voice can be present with malignant conditions [10]. Current study detected three cases with cervical lymphadenopathy and one case with hoarseness of voice along with goiter which were diagnosed as malignancies (Table-II). Multi nodular goiter or simple nodular goiter with large swellings may be associated with difficulty in respiration or rarely in deglutition which is mostly due to pressure on trachea or oesophagus [11].

In the study 41 nodules were firm in consistency out of 50 nodules and there were 5 hard nodules (Table-III). Again out of 5 hard nodules 3 were malignant and other 2 were benign multi nodular goiter. Here hardness is not conclusive but an important indicator for malignancy. It is supported by various authors [12,13].

All solitary thyroid nodules are not a single clinical entity [5]. So it is very difficult to comment regarding the nature of solitary nodule purely on the basis of clinical ground [14]. But hoarseness of voice, hard irregular nodule, palpable cervical lymph node, extreme of ages and male sex are always suspicious for malignancy in solitary nodule [5].

Investigations are essential to establish preoperative physical, functional status and cytopathological nature of solitary thyroid nodule [15]. All patients of this study have done thyroid hormone profile and show values within normal limit. On isotope scanning of thyroid gland those nodules which are non- functioning or hypo functioning (cold) are selected for study. Ultrasonography is used to establish physical characteristics and to exclude clinically undetectable nodule of a dominant nodular goiter [16]. On clinical examination 46 nodules were solid and 4 were cystic. In ultrasonography 39 were solid and 11 were cystic (Table-IV). Fine needle aspiration cytology (FNAC) is very important, highly specific, most sensitive, minimally invasive preoperative diagnostic tool [5, 6]. In this study, shows 3 FNAC were not conclusive, 47 FNAC were conclusive (Table-V). FNAC diagnosis of this studywas supported by postoperative histopathological reports.

On high resolution ultrasonography and post-operative histopathological study 22% (11 cases) were diagnosed as cystic lesions associated with various pathology. 10% to 25% of solitary were thyroid nodules [17]. In the study cystic lesion were mostly associated with multinodular goiter (14%). 5 cases (10%) were proved to be carcinoma of which 2 cases (4%) were follicular carcinoma and 3 cases (6%) were papillary carcinoma (Table-VI). According to other studies 10% to 20% of cold solitary thyroid nodules are malignant [5, 7, 18, 19].

Conclusion

Solitary thyroid nodules are more common in females but more worrisome in males due to the increased incidence of malignancy. FNAC is a very useful procedure for pre operative assessment of solitary thyroid nodule, but malignancy can be still come as a surprise in postoperative histopathological examination. Combined opinion on the nature of the thyroid nodule should be done based on history, clinical examination, ultrasound features and FNAC. Definitive diagnosis is possible only with excision and postoperative histopathological examination of the nodule. It is concluded that as significant proportion of solitary cold thyroid nodules was malignant, so, it is essential to emphasizes on the early diagnosis and adequate treatment.

Conflicts of Interests: None.

Acknowledgement

I would like to thanks the following personals who have inspired me and giving consent support for preparing the article.

1. Director, Rangpur Medical College Hospiral, Rangpur.

2. Director, Shaheed ZiaurMahman Medical Colege Hospital, Bogura.

3. Dr. Md. Jakir Hossain.

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DOI: https://doi.org/10.3329/medtoday.v31i2.41958

ORIGINAL ARTICLE OPEN ACCSESS

Role of Common Addictive Habits on Hypovitaminosis D among Bangladeshi People

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Abstract

Introduction: *Hypovitaminosis D is a silent but very devastating health issue throughout the world. Some common addictive habits in our country play important role on the issue. The objective of this study was to determine the role of common addictive habits on hypovitaminosis D among the clients attending specialized hospitals.* ***Materials and Methods:*** *This cross-sectional study was conducted among 264 respondents attended Armed Forces Institute of Pathology (AFIP), Dhaka Cantonment for estimation of 25(OH) D within the period of July 2017 to June 2018. Data were collected by face-to-face interview, reviewing with Vitamin D level of the participants from laboratory with the help of a semi-structured questionnaire and checklist respectively. Data were checked, and analyzed with the help of SPSS version 23.* ***Results:*** *Among the respondents, majority (68.56%) were female. The mean ±SD age of the respondents was 48.23 ± 14.05 years. The mean± SD level of 25(OH)D was 50.01± 29.93 nmol/L. Among the males, it was 50.86±28.61 nmo/L and 49.60±26.19 nmol/L among the female. The proportion hypovitaminosis D was 84.84% and a mare difference was found among male and female respondents (84.5% and 85.5% respectively. Smokers (43.88±13.01 nmol/L) were found with lower level of vitamin D than non-smokers (50.88±28.08 nmol/L) ($p<0.05$).The respondents having habit of chewing betel nut showed lowerlevel of 25 (OH) D than those does not practice that (51.63±18.07 Vs 46.12±13.01 mmol/L).* ***Conclusion:*** *The proportion of hypovitaminosis D was too high. Effective measure to be taken at all level to overcome the nutritional disorder.*

Keywords: *25 (OH) D, Smoking, Betel nut, Sun shine.*

Number of Tables:04; Number of Figures: 02; Number of References: 19; Number of Correspondences; 04

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Introduction

Despite of ample amount of sunshine in Bangladesh vitamin D deficiency is present in a sizeable share of general population which in itself seems to be a paradox[1]. This sub-continent receives a plenty of sunshine all year round and thus people in India should not lack vitamin D. On the contrary, epidemiologic studies from different parts in India reported higher than 70% prevalence of vitamin D deficiency in all age groups, including toddlers, school children, pregnant women and their neonates and adult males[2]. Leading more of an indoor life due to urbanization underlies one of the causes of such deficiency in children brought up in well off families.

With the advance of development and technological improvement it is fact that life expectancy is increasing day by day. Bangladesh is also achieving that in a higher scale. With the age people are suffering from various physical problem. Issues originated from vitamin D deficiency is also playing serious role in our daily life. Though many of our population are suffering from different types of problem including unusual pain, there are very less study conducted on this topic in Bangladesh. A high prevalence of vitamin D deficiency, low dietary intake of calcium was observed in premenopausal Bangladeshi women of both high and low socioeconomic status. Their lifestyle largely confining them to the home and the traditional clothing that Bangladeshi women wear exposes very little of their skin to sunlight. Under these conditions women in different groups are at risk of developing vitamin D deficiency[3].

Assessment of vitamin D is based on measurement of serum 25(OH)D. Vitamin D deficiency is typically defined as circulating 25 (OH)D concentrations less than 20 ng/mL (50 nmol/L). In this state, the subsequently low ionized calcium concentration stimulates PTH secretion, which eventually leads to increased 25(OH)D synthesis[4]. An insufficient exposure to sunlight is a

Received: 09 May 2019 *Accepted revised version:* 09 June 2019

major cause of vitamin D deficiency. Other causes are sunscreen sun protection., dark skin, body mass index (BMI) greater than 30, malabsorptive conditions, and use of a wide variety of medications including antiretroviral drugs. Geographic latitude, time of the day for sunlight exposure, seasonal fluctuations and age also determine the vitamin D levels[5].

Materials and Methods

A cross sectional study was carried out to identify the sociodemographic determinants of Hypovitaminosis D. A total of 264 young adults were enrolled during July 2017 to June 2018 and were recruited from biochemistry lab of Armed Forces Institute of Pathology (AFIP) Dhaka cantonment. Information on sociodemographic factors including education and income were obtained by self-reported questionnaires. Cut off point of hypovitaminosis D was set as 75 nmol/L. Data were analyzed by SPSS version 23. Statistical tests were done by chi square test, One-way ANOVA and t Test in specific issues.

Food and addictive factors of Hypovitaminosis D

Common food -Very few foods in nature contain vitamin D. The flesh of fatty fish (such as salmon, tuna, and mackerel) and fish liver oils are among the best sources[6]. Small amounts of vitamin D are found in beef liver, cheese, and egg yolks. Vitamin D in these foods is primarily in the form of vitamin D3 and its metabolite 25(OH)D3[7]. Some mushrooms provide vitamin D2 in variable amounts[8]. Mushrooms with enhanced levels of vitamin D2 from being exposed to ultraviolet light under controlled conditions are also available[6].

Smoking- Several hypotheses have been put forward concerning the mechanisms by which smoking affects bone, the main focus being on the anti estrogenic effect. Smokers are lean[9], have an early menopause[10], and have reduced levels of circulating oestrogens due to an increased hepatic turnover[11]. All these factors contribute to a reduced exposure to estrogen, resulting in an increased early bone loss.

Other lifestyle factors are regarded as more prevalent among smokers compared to nonsmokers such as less physical activity, increased alcohol intake, associated nutritional deficiencies, all of which might play a role. A direct toxic effect of tobacco smoking on bone cells is also a possibility[12]. Other hormonal systems, glucocorticoids, pituitary, and thyroid hormones, may be affected by smoking[13]. Parathyroid hormone (PTH) and vitamin D metabolites are crucial in the regulation of calcium homeostasis and bone metabolism. An effect of smoking on PTH or 25-hydroxyvitamin D (25OHD) levels has only been investigated in few studies[14].

Betel nut-Areca nut has diverse effects on the digestive system and metabolism of food in the human body. It leads to lowering of plasma cholesterol by up to 25% due to inhibition of intestinal acetyl co-enzyme acyltransferase (ACAT) and pancreatic cholesterol esterase (pACE), resulting in decreased cholesterol absorption[15]. Areca nut users have aggravated effects of Vitamin D deficiency due to the powerful effect of increased expression of 25(OH)ase, leading to decreased serum calcitriol as areca nut has an independent effect on 25(OH)ase[16].

Results

The result was based on a sample of 264 adult persons reported to Armed Forces Institute of Pathology (AFIP) under Dhaka cantonment. The data releted to addictive habits were recorded and then analyzed through SPSS version 23. Table I shows gender and menopausal state of the respondents About gender, 68.56% were female and rest were male. Among the female respondents 90 (49.72%) has developed their menopause and rest 91 (50.28%) were in reproductive age group.

Table-I: Some demographic data of the respondents.

Variable	Group	Frequency	Percent
Gender	Male	83	31.44
	Female	181	68.56
Menopausal state (F)	Menopause	90	49.72
	Non menopause	91	50.28

Habit of smoking by the respondents

Among the respondents 241 (91.20%) were nonsmoker and remaining 23 (8.80%) were found smoker (Figure – 1).

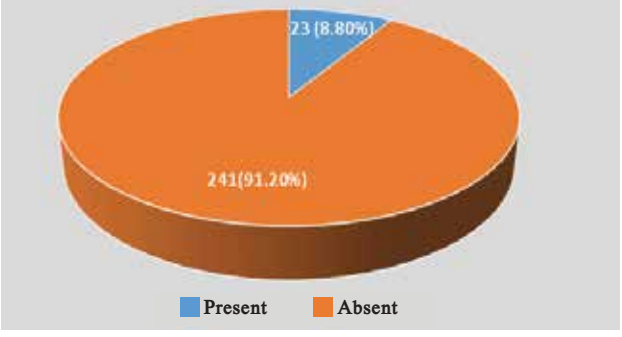

Figure-1: Distribution of respondents by their habit of smoking (n=264).

Habit of chewing betel nut among the respondents

Among the respondents 231 (87.50%) did not chew betel nut and only 33 (12.50%) had habit of chewing betel nut (Figure-2)

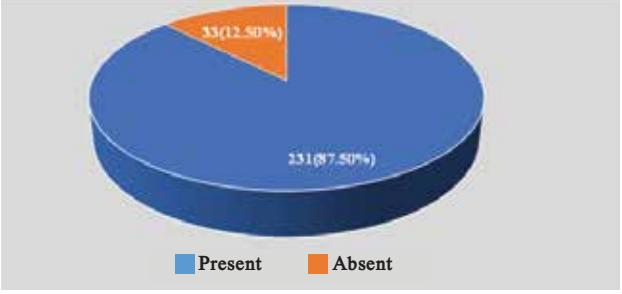

Figure 2: Distribution of the respondents by chewing betel nut (n=264).

Table II shows a strong relation between smoking and chance of having

hypovitaminosis D. Among the smokers the proportion of hypovitaminosis D was 91.3% (21 out of 29) and among non-smokers it was 84.1% (201 out of 239). This association was statistically significant ($p<0.05$).

Table-II: Distribution of hypovitaminosis D by habit smoking (n=264).

	Presence of hypovitaminosis D		
State of smoking	**Present**	**Absent**	**Test of significance**
Smoking	21(9.38%)	2(10.0%)	χ^2=4.521
Not smoking	203(90.62%)	38(90.0%)	df=1
Total	224(100.0%)	40(100.0%)	p= 0.019

Table III shows a strong relation between taking of betel nut and chance of having hypovitaminosis D. Among those who did not take betel nut their hypovitaminosis D level was 83.5% (193 out of 231). But the persons who used to take betel nut at any amount their proportion was 93.9% (31 out of 33). Those were mainly female populations. This association was statistically significant ($p<0.01$).

Table-III: Distribution of hypovitaminosis D by habit of chewing betel nut (n=264).

	Presence of hypovitaminosis D		
Chewing betel nut	**Present**	**Absent**	**Test of significance**
Yes	31(13.84%)	2(5.0%)	χ^2=6.769
No	193(86.16%)	38(95.0%)	df=1
Total	224(100.0)%	40(100.0%)	p= 0.003

Table IV shows that the mean level of vitamin was clearly different between two groups of same variable. Respondents bearing habit of chewing betel nut showing less vitamin D than those who do not chew that. Mean vitamin D level was lower among the smoker than that of non-smokers.

Table- IV: Relation of addictive habit with mean vitamin D level (n=264).

Variable		Frequency (%)	Mean± SD vit D (nmol/L)	t Score	p Value
Habit of chewing betel nut	Present	33(12.5%)	44.12±13.01	-2.519	0.012
	Absent	231(87.5%)	51.63±28.07		
Habit of smoking	Present	23(8.71%)	43.88±13.01	-1.977	0.049
	Absent	241(91.29%)	50.88±28.08		

Discussion

The present study found 23 (8.71%) as smoker. Among the smokers the proportion of hypovitaminosis D was 91.30% (21 out of 23) and among the non-smokers the proportion was 84.23 (203 out of 241).

Regarding mean value of vitamin D among two groups, there was some differences in serum 25 (OH)D level. The mean±SD level of 25 (OH)D among the smokers was 46.23+ 13.11 nmol/L and that of non-smokers was 51.02 + 18.88 nmol/L (t, $p<0.05$)[17] by their study in Athens recommended that smokers had a significantly higher risk of vitamin D deficiency. A cross sectional study was carried out in Copenhagen from June 2012 to May 2014 on sociodemographic determinants of hypovitaminosis D. It was revealed that smoking was associated with higher RR=1.33 (1.02,1.73) for vitamin D deficiency/insufficiency compared with non-smokers[18].

In this study 33 respondents were found having practice of chewing betel nut. Among those proportion of hypovitaminosis D was remarkably high. The study shows a strong relation between taking of betel nut and chance of having hypovitaminosis D. Among those who did not take betel nut their hypovitaminosis D level was 83.5%. But the persons who used to take betel nut at any amount their proportion was 93.9%. They were mainly female populations. This association was statistically significant ($p<0.01$). More previous studies have suggested that chewing betel nut may aggravate vitamin D deficiency[19], since compounds present in betel nut may increase expression of the enzyme 24-hydroxylase, which catalyzes conversion of 1, 25 $(OH)_2$ vitamin D to the relatively inactive 24, 25 $(OH)_2$ vitamin D.

Conclusion

Smoking and Areca nut are the addictive substance consumed in many parts of the world by people of all the age groups also not so uncommon among the people of Bangladesh. Apart from being carcinogenic to the oral cavity, pharynx, esophagus, liver and uterus, it has many diverse effects on the human body affecting almost all the organs. Women who consume areca nut regularly have more incidences of low birth weight and preterm deliveries. Thus, it is evident that these two addictive habits are harmful and affects the whole human body, and its use must be tightly regulated for the welfare of the society.

Conflict of Interests: None.

Acknowledgement

The author respectfully thanks to Professor Md Emdadul, MBBS, M Phil who guided him in thesis work throughout the time. Lt Col Lubna Naznin, MBBS, FCPS, DCP of AFIP, Dhaka Cantonment helped a lot regarding laboratory report of 25 (OH)D level and guiding him in various aspects.

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ORIGINAL ARTICLE OPEN ACCSESS

Relation of Hypothyroidism on BMI and Dyslipidemia

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Abstract

Introduction: Hypothyroidism is a common medical disorder in the general population especially in women. Over-weight, obesity and dyslipidemia are major public health problem in both developed and developing countries. The present study is an effort to determine the association between hypothyroidism with body mass index (BMI) and dyslipidemia. ***Materials and Methods:*** This is a cross sectional descriptive type of observational study of 100 cases of primary hypothyroidism in the age group 15-75 years of both sexes from February 2018 to January 2019 in CMH, Momenshahi. BMI was measured by weight in kg/ height in m^2 and lipid profiles were analyzed by semi-automated biochemistry analyzer. Data was analyzed by X-cel. ***Results:*** Among 100 cases mean BMI were 28.51±4.52, 75 cases (75%) obese, 16 (16%) over-weight, 8 (8%) normal. Mean serum cholesterol, Triglyceride (TG), high density lipoprotein (HDL) and low density lipoprotein (LDL) are195.1±44.57, 164.49±83.87, 40±3.91 and 122±41 mg/dl respectively. ***Conclusion:*** Here data statistically showed primary hypothyroidism is significantly correlated with high BMI and serum cholesterol, TG, LDL levels were also significantly correlated to this disorder. But HDL is not correlated with primary hypothyroidism.

Key words: Primary hypothyroidism, Body mass index (BMI), Triglycerides (TG), High density lipoprotein (HDL), Low density lipoprotein (LDL), Cholesterol.

Number of Figures: 05; Number of Table: 01; Number of References: 32; Number of Correspondences: 04

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Introduction

Thyroid disorders are common in the general population, with hypothyroidism being the predominant disorder in the adult population[1,2]. Thyroid hormone plays a very key role in energy homeostasis and is directly involved in glucose[3] and lipid metabolism[4,5]. The spectrum of presentation ranges from fatigue or mild forgetfulness to a severe impairment of consciousness termed myxedema coma[6].

Over weight and obesity are major public health problems in both developed and developing countries[7]. A number of large epidemiological studies proved that mortality increases with obesity[8-10]. Weight reflects health and nutritional status and adjusted for height is a useful tool to predict fitness and Body Mass Index (BMI = weight in kg / height in $meter^2$) is a useful proxy measure of adiposity.

Though thyroid stimulating hormone levels were progressively increased according to the severity of obesity and were positively correlated with body mass index (BMI)[11] yet the opposite suggestion had also been put forwarded that TSH was not correlated with BMI[12]. Thyroid function significantly affects lipoprotein metabolism as well as some cardiovascular risk factors thus influencing overall CVD risk[13-15]. Indeed, hypothyroidism is a common cause of secondary dyslipidemia[16-17].

The aim of the present study was to investigate the correlation of hypothyroidism with BMI and dyslipidemia.

Materials and Methods

This was a cross sectional descriptive type of observational study of hypothyroidism patients where a total of 100 were studies during February 2018 to January 2019. All those patients were seen in medical outdoor department of Combined Military Hospital (CMH) Momenshahi. A detailed history and clinical examination were carried out in a predesigned case report form.

Blood collection and sample preparation

After 12 hours overnight fasting venous blood was taken from patients of hypothyroidism with dry disposable syringe and needle under taking all aseptic precaution. Serum FT4, TSH were measured by chemiluminescence immune assay by ELECSYS 1010. Patients with TSH over 6 µ IU/ ml and above were considered are to be having hypothyroidism.

Body mass index (BMI) was measured by height in kg/ m^2. BMI more than 23 and 25 were considered as overweight and obese respectively in this study. Fasting lipid profiles were carried out

Received: 09 May 2019 *Accepted revised version:* 09 June 2019

by semi-automated biochemistry analyzer.

Inclusion criteria are patients of both sexes attending OPD in CMH, age limit from 13 to 70 years and presented with suspected case of hypothyroidism.

Exclusion criteria are hepatitis including liver cirrhosis, hepatotoxic drug intake, associated any debilitating illness and pregnant women.

Results

Fig-1: Pie chart showing 95% are female and 5% are male.

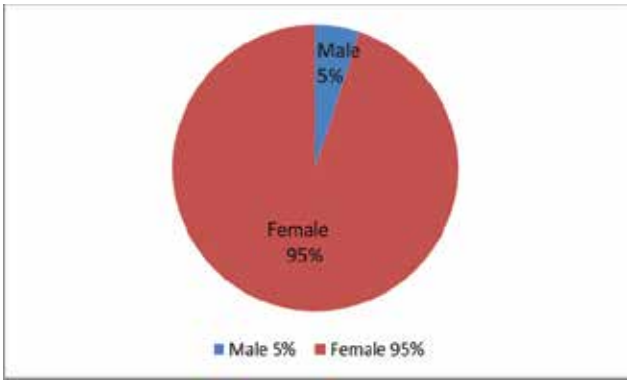

Fig-1: Sex Variation (n=100).

Fig-2: Bar chart showing age of presentation. <15 yrs only 1(1%), 16-25 yrs 11(11%), 26-35 yrs 56(56%), 36-45 yrs 26(26%), 46-55 yrs 3(3%), 66-75 yrs 1(1%). Minimum age of presentation 13 yrs and maximum 70 yrs.

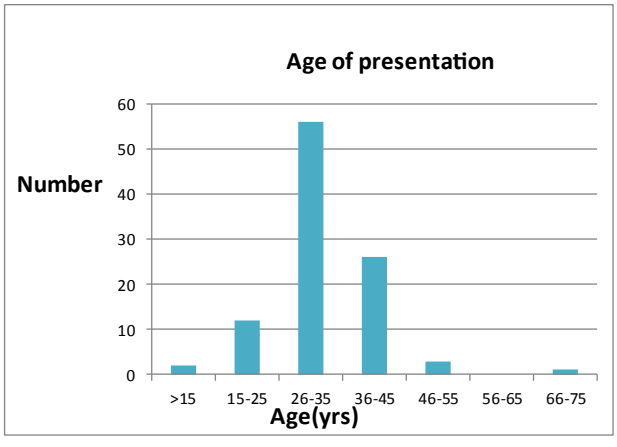

Fig-2: Presentation of Different age group (n=100).

Fig-3: Bar chart showing clinical presentation of hypothyroidism patients. Most of the patients (18%) presented with vague symptoms like general weakness, 15% with menstrual irregularity, 14% with weight gain. Other presentations are thyroid swelling(11%), subfertility(10%), leg swelling(8%), body ache (8%), incidental finding(5%), abortion(4%), cold intolerance(2%), decreased libido(2%), alopecia(1%), whitish spots(1%) and recurrent syncope (1%).

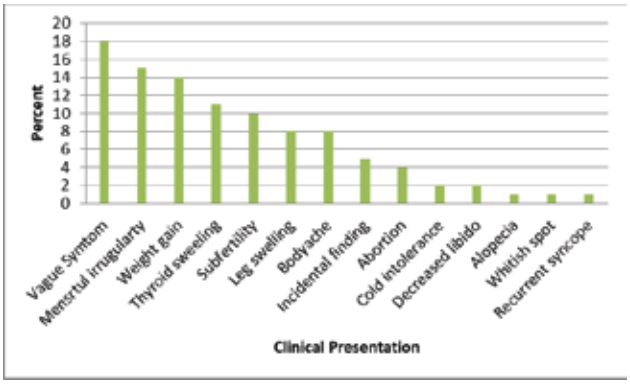

Fig-3: Clinical presentation of hypothyroidism.

Fig-4: Barr chart showing mean level of cholesterol, TG, HDL and LDL 195.14±44.57, 164.49±83.87, 40± 3.91 and 122±41.72 respectively (in mg/dl) which is much more higher than mean level of general population.

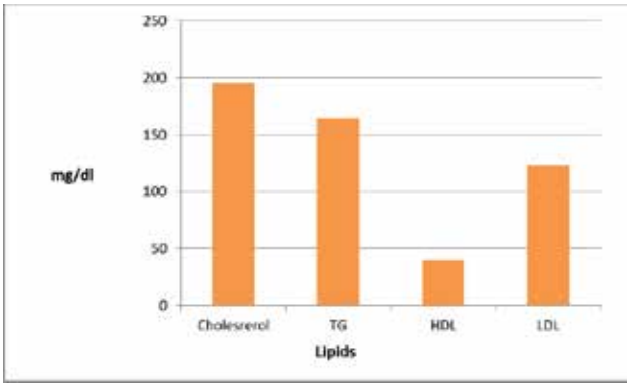

Fig-4: Mean level of lipid profile (F).

Fig-5: Pie chart showing out of 100 cases 75(75%) are obese, 17(17%) over weight, 8(8%) normal and no underweight.

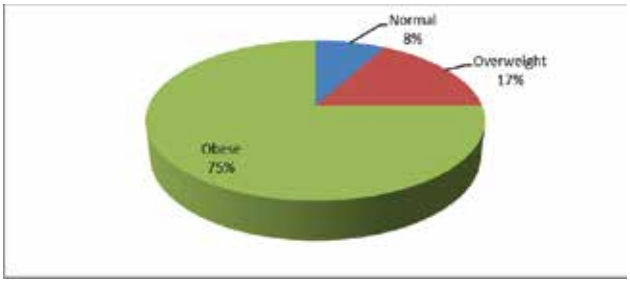

Fig-5: BMI Status (n=100).

Table-I: showing mean, minimum and maximum height, weight and BMI. Mean height, weight and BMI were 1.53±.07 m, 66.93±10.76 kg and 28.51±4.52 respectively.

Table- I: Height, Weight & BMI (n=100).

	Height ±SD	Weight ±SD	BMI±SD
Mean	1.53±.07 m	66.93±10.76 kg	28.51±4.52
Min	1.244 m	45 kg	18.14
Maximum	1.778 m	95 kg	39.57

Discussion

World health organization (WHO) has recommended classification of body weight that include degree of underweight and gradation of excess weight or overweight that are associated with increased risk of some non-communicable diseases[18,19] BMI is calculated as weight in kilogram divided by height in meters squared (kg/ m^2) and it is easy to obtain[20]. For Asian people cut-off point of BMI is little lower than international standard. For Asian BMI more than 23 is considered as overweight and more than 25 is considered as obese.

In our study out of total 100 patients no underweight case is seen. BMI in normal range was 8 (8%), overweight 17 (17%) and obese 75 (75%). Prevalence of overweight and obese in Bangladesh is 17%, out of them 4% are obese only[21].

In the present study we have found that high BMI is significant in hypothyroidism patients (with z value 19.70 and p value 0.000 which is < 0.005) and positively associated in both sexes.These findings are similar to the findings of A Nyrnes et al [22] and G. Lacobellis et al[23].

In our findings among hypothyroidism patients obese are 75% which is much more than the prevalence of obesity in Bangladesh. Hypothyroidism is a risk factor for obesity, in spite of that other factors may be responsible for this high percentage of obesity. Study was conducted among Armed Forces personnel and their family members intake more calorie than general population of Bangladesh. Beside that in our study group maximum are female usually having more BMI than male.

Thyroid disorder especially hypothyroidism is more common in female[24]. Though our female male ratio much higher than other findings[25]. This can be explained by the sample we have taken from Armed Forces personnel and their family members. The male are recruited after proper medical check-up but their wives are not.

Thyroid hormones play an important role in regulating body weight, lipid metabolism and insulin resistance all of these cause increase BMI. The recent discovery of leptin, a peptide hormone produced by adipose tissue, has led to a renewed interest in the pathophysiology of obesity; some studies have focused on the relationship between leptin and energy expenditure as well as thyroid function[26].

The level of leptin is directly correlated to the amount of adipose tissue and leptin has been reported to stimulate the biosynthesis of TSH in vitro. Furthermore, there is synchronicity between secretion of leptin and TSH both in children[27] and adults[28]. In our findings mean cholesterol, TG, LDL were 195.14±44.57, 132.5±35.3 and 122.98±41.72 mg/dl which were significantly correlated with hypothyroidism (p value 0.0002, 0.000 and 0.000 respectively). On the contrary serum HLD level was 40±3.91mg/dl which is not significantly correlated with hypothyroidism. Thyroid hormones are involved in both lipogenesis and lipolysis[29]; an effect that possibly is mediated by affecting local nor adrenalin level and or adrenergic post receptor signaling[30].

This high level of lipid may be due to reduction in the hepatic LDL receptors, and a decreased hepatic cholesterol catabolism by the T3-regulated 7-alpha-hydroxylase enzymes[31]. On the other hand, hypothyroidism is associated with increased oxidation of LDL particles. Such modification of LDL particles can impair their receptor-mediated uptake causing accumulation[32].

Conclusion

The results of present study confirmed the correlation between hypothyroidism and BMI. Overweight and obesity are interlinked to high TSH level. It is also confirmed that fasting serum cholesterol, TG and LDL levels were significantly correlated with primary hypothyroidism. While treating hypothyroidism patients clinician should always care about dyslipidemia and high BMI also.

Conflict of Interests: None.

Acknowledgement

The authors are grateful to Md Jamal Hossain, Assistant Professor, Agriculture Statistics, Bangladesh Agricultural University who has given support for preparing the article.

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ORIGINAL ARTICLE

OPEN ACCSESS

Determination of the Prevalence of the Common Dermatological Conditions in Elderly Population Attending a Tertiary Care Hospital

Md. Saidur Rahman*[1], Md. Abdul Mannan[2], Md. Anower Hossain[3], Md. Tozammel Hoque[4], A K M Ahsan Habib[5]

Abstract

Introduction: *Skin disorders are common in elderly people. Systemic diseases promote the development of dermatological conditions. Various systemic diseases contribute to the presence of cutaneous disorders, indicating the possibility that a skin abnormality may sometimes be the first and only symptom of a much more serious medical problem. The aim of the study to determine the frequency of skin diseases in elderly patients.* ***Materials & Methods:*** *This was a cross-sectional study and non-probability convenient sampling technique was used. Patients were recruited from attending the Dermatology Out-patient Department of SZMCH during the study from January'2018 to July'2018. Patients included in the study having skin diseases aged between 60-80 years, including all those who were diabetic and hypertensive because diabetes and hypertension are the most common comorbid conditions among these elderly patients. Patients were included having skin diseases including pruritus, dermatitis, xerosis, eczema, psoriasis, scabies, bacterial infection, and fungal infections.* ***Results:*** *More than half (53.0%) patients belonged to age 71-80 years. Three fourth (75.0%) patients had pruritus followed by 37(37.0%) had dermatitis, 24(24.0%) had xerosis, 23(23.0%) had eczema and 12(12.0%) had bacterial infections. Pruritis, dermatitis, eczema and bacterial infections were statistically significant ($p<0.05$) among three groups. Conclusion: More than half of the patients belonged to age more than 70 years of age. Most common (three fourth) skin patients had pruritis, followed by more common skin patients were found dermatitis, xerosis, eczema and bacterial infection. Pruritis, dermatitis, eczema and bacterial infections were statistically significant in different age groups.*

Keywords: *Dermatological conditions, Elderly population, Tertiary care hospital.*

Number of Tables: 03; Number of References: 12; Number of Correspondences: 05

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Introduction

Skin disorders are common in elderly people. Systemic diseases promote the development of dermatological conditions[1]. Aging is a permanent and active process which affects all organs of the body, including skin. The texture of the skin decreases with age i.e. structural and physiologic transformation that arise as a natural result of intrinsic aging in addition with the effects of a lifetime of on-going cumulative extrinsic damage and environment insult (e.g. overexposure to solar irradiation) can produce a marked vulnerability to dermatologic disorders in the elderly[2]. Geriatric health care has absorbed a worldwide attention, but few statistical studies were carried out about skin diseases in this age group. 30 years ago, the American HANES survey demonstrated that the frequency of skin disorders increases with age so that at the age of 70 some 70% had a significant skin condition and many others had multiple skin problems[3]. The integrity of the skin declines with age i.e. structural and physiologic changes that occur as a natural consequence of intrinsic aging combined with the effects of a lifetime of ongoing cumulative extrinsic damage and environment insult (e.g. overexposure to solar irradiation) can produce a marked susceptibility to dermatologic disorders in the elderly[4]. Neurological and/or systemic diseases, health and hygiene, socioeconomic status, climate, color of skin, gender, nutrition, culture, and personal habits, such as smoking or drinking, etc., may also contribute a role in the genesis of cutaneous conditions in the elderly population[5], such as xerosis,

Received: 07 May 2019 *Accepted revised version:* 11 June 2019

fungal infections, psoriasis, scabies, dermatitis, photosensitivity, purpura, uneven pigmentation, comedones[6]. Demographic aging is now well established. Thus, skin diseases in the elderly will continue to become an increasingly important public health issue[7].

Materials and Methods

This was a cross-sectional observational study and non-probability convenient sampling technique was used. Patients were recruited from attending the Dermatology Out-patient Department of SZMCH during the study from January'2018 to July'2018. Patients included in the study had skin diseases aged between 60-80 years, including all those who were diabetic and hypertensive because diabetes and hypertension are the most common comorbid conditions. Patients were included having skin infections including pruritus, dermatitis, xerosis, eczema, psoriasis, scabies, bacterial infection, fungal infections. Patients who were unwilling and having any systemic disease such as chronic liver disease, thyroid dysfunction, parkinson's disease, stroke and chronic renal failure were excluded on the basis of history, examination and previous investigations. Patients aged 60 years and above belonging to either sex with skin diseases presenting in outpatient department were included in this study. Diagnosis of cutaneous diseases was made on history and clinical examination. Any cutaneous diseases with onset before 60 years of age were excluded on the basis of history, examination and previous investigations. The questionnaire included data on the demographic profile, type of skin diseases and cause of skin diseases, age, gender, occupational and socioeconomic status. Data was entered and all analysis was conducted on SPSS (Statistical Package for Social Sciences) Version 20. Descriptive statistics were calculated for continuous variables of age with mean ± SD. For categorical variables frequency and percentages were calculated. Data was presented in tables. Chi square was used to compare age and gender with skin diseases, p-value <0.05 was considered statistically significant.

Results

More than half (53.0%) patients belonged to age 71-80 years. The mean age was found 68.5±7.0 years with range from 61 to 82 years. Majority (58.0%) patients were male and 42(42.0%) patients were female. Male female ratio was 1.4:1. Almost two third (61.0%) patients were from rural area and 39(39.0%) were of urban area (Table I). Three fourth (75.0%) patients had pruritus followed by 37(37.0%) had dermatitis, 24(24.0%) had xerosis, 23(23.0%) had eczema and 12(12.0%) had bacterial infections (Table II). Pruritus, dermatitis, eczema and bacterial infections were statistically significant (p<0.05) among three groups (Table III).

Table-I: Demographic profile of the study population (n=100).

	Number of patients	Percentage
Age (year)		
61-70	36	36.0
71-80	53	53.0
>80	11	11.0
Mean ±SD		68.5±7.0
Range		61-82
Sex		
Male	58	58.0
Female	42	42.0
Residence		
Rural	61	61.0
Urban	39	39.0

Table-II: Skin diseases of the study population (n=100).

Skin diseases	Number of patients	Percentage
Pruritus	75	75.0
Dermatitis	37	37.0
Xerosis	24	24.0
Eczema	23	23.0
Bacterial infections	12	12.0
Fungal infections	10	10.0
Psoriasis	7	7.0
Scabies	6	6.0
Skin cancer	4	4.0

Table-III: Association between skin diseases with age (n=100).

Skin diseases	Age 61-70 years (n=36)		Age 71-80 years (n=53)		Age >80 years (n=11)		p value
	n	%	n	%	n	%	
Pruritus	30	83.3	41	77.4	4	36.4	0.006[s]
Dermatitis	17	47.2	12	22.6	8	72.7	0.002[s]
Xerosis	9	25.0	12	22.6	3	27.3	0.933[ns]
Eczema	14	38.9	9	17.0	0	0.0	0.009[s]
Bacterial infections	9	25.0	3	5.7	0	0.0	0.010[s]
Fungal infections	6	16.7	4	7.5	0	0.0	0.187[ns]
Psoriasis	3	8.3	2	3.8	2	18.2	0.217[ns]
Scabies	2	5.6	3	5.7	1	9.1	0.900[ns]
Skin cancer	1	2.8	2	3.8	1	9.1	0.641[ns]

s= significant, ns= not significant

p value reached from chi square test

Discussion

In present study it is observed that more than half (53.0%) patients belonged to age 71-80 years. The mean age was

found 68.5±7.0 years with range from 61 to 82 years. Majority (58.0%) patients were male and 42(42.0%) patients were female. Male female ratio was 1.4:1. Almost two third (61.0%) patients were rural area and 39(39.0%) were urban area. In Kalar et al[2] study found all patients with skin diseases aged between 60-65 and over 65 years. Mponda K and Masenga study observed age ranges 55–99 years, median age of 67.5 years were seen[8]. Reszke et al.[1] study also be reported that the mean ± standard deviation (SD) age of all participants was 76.1 ± 6.1 years (range:65–92 years). Whereas women (59.1%) and 81 men (40.9%) were examined. Chowdhury et al[9] have showed the mean age of presentation was 67.7± 6.08 year. Most of the patients (61%) belonged to age group 60-69 year followed by 33% between 70-79 year and 6% were of 80 years and above. There were 110 males and 90 females with male: female ratio was 1.2:1.

In this study three fourth (75.0%) patients had pruritus followed by 37(37.0%) had dermatitis, 24(24.0%) had xerosis, 23(23.0%) had eczema and 12(12.0%) had bacterial infections. In the study of Chowdhury et al[9] observed that the most common presenting and associated complaint was pruritus and it was present in almost 74% of this population. Eczematous condition were the most common presenting disorder (39%), followed by infection (38%), pigmentary disorders in 26%, papulosqamous in 18% and immunobullous disorders in 5% cases. Among the eczematous conditions asteatotic dermatitis (20%) was most common followed by seborrheic dermatitis (15%). Thapa et al[10] where eczema (35.8%) was most common and in Khawar et al[11] eczema (40%).was after scabies, fungal infections were dominant (13.6%) in both age groups. Similar to Thapa et al.[10] pruritus, dermatitis, eczema and bacterial infections were statistically significant ($p<0.05$) among three groups. Kalar et al.[2] shown that in the < 60 years of age group, the frequency of diseases in decreasing order was found as follows: scabies (15.5%), fungal infections 13.6%, eczema 6.4%, pruritus 5.9%, bacterial infections and contact dermatitis 5.5%, psoriasis 5%. In the > 60 years of age group: scabies 8.6%, fungal infections 5.9%, eczema and xerosis 3.6%, contact dermatitis 2.6%, viral infections 2.3%. Darjani et al[12] study revealed that the most frequent diseases of erythematosquamous diseases were defined as dermatitis (16.6%), psoriasis (12.3%), lichen planus (5.45%) and pilaris rubra pityriasis (1.1%). Fungal infections (tinea, candidiasis) were the most common infectious diseases (8.2%) followed by viral infections (herpes zoster) (4.5%) and infestations (scabies) (4.3%). The most common precancerous lesion was actinic keratosis (24.3%). BCC by 8.8% was the most prevalent skin carcinoma. Skin tag (48.8%) and seborrheic keratosis (8%) were the most common benign neoplasm and 69% of patients with skin tag were females. Pruritus was the common problem in other dermatological diseases (22%). Pruritus in 60–69 years group 20.8%, 70–79years group 22.9% and ≥80 years 26%. Dermatitis in 60–69 years group 16%, 70–79 years group 13.8% and ≥80 years 28.3%. Xerosis in 60–69 years group 12%, 70–79 years group 9.7% and ≥80 years 15.2%. Fungal infections in 60–69 years group 8%, 70–79 years group 6.9% and ≥80 years 13%. Psoriasis in 60–69 years group 14.4%, 70–79 years group 9% and ≥80 years 10.9% Scabies in 60–69 years group 4%, 70–79 years group 3.5% and ≥80 years 8.7%.

Conclusion

More than half of the patients belonged to age more than 70 years of age. Various systemic diseases contribute to the presence in present study which were three fourth pruritus followed by more common were found dermatitis, xerosis, eczema and bacterial infection. Pruritis, dermatitis, eczema and bacterial infections were statistically significant in different age groups.

Conflict of Interests: None.

Acknowledgement

Patients who willingly participated in this study, other Professors and fellow colleagues with technical staffs of the Department of Dermatology & Venereology of Shaheed Ziaur Rahman Medical College Hospital, Bogura along with Mr. Shamim Miah, Senior Scientific Officer, Bangladesh Medical Research Council, Mohakhali, Dhaka, Bangladesh.

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https://doi.org/10.1155/2013/193205
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DOI: https://doi.org/10.3329/medtoday.v31i2.41961

ORIGINAL ARTICLE OPEN ACCSESS

Lifestyle Pattern and Knowledge about Diabetes Mellitus

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Abstract

Introduction: *The aim of the present study was to assess the pattern of lifestyle and knowledge about diabetes mellitus among type 2 diabetic patients at two tertiary level hospitals in Mymensingh.* **Materials and Methods:** *A descriptive, cross sectional study was conducted from July 2015 to December 2015 among 300 patients attending at Medicine outpatient department of the Community Based Medical College Hospital and Endocrine outpatient department of the Mymensingh Medical College Hospital after obtaining requisite consent from the patients. Data were collected through the interviewing of the patients. The collected data were entered into the computer and analyzed by using SPSS version 20.1. The study was approved by the institutional ethical committee.* **Results:** *In a pool of 300 type 2 diabetics, Most of the patients (57.3%) belonged to the middle age group 41-60 years. More than half of the respondents were female (n=223, 74.3%). 97% patients were found to have knowledge about timing of dose regimen. Majority of patient's (35.7%) knowledge about hypoglycemia was poor. The rate of adherence to diet was 51%. The rate of adherence to exercise was 68.3%.* **Conclusion:** *Majority of type 2 DM patients displayed optimal level of diabetes knowledge. There was a high rate of non adherence to diet and exercise recommendations by patients suffering from type 2 diabetes mellitus. So continuous patient education and awareness program are required.*

Keywords: *Lifestyle pattern, Diabetes mellitus.*

Number of Tables: 02; Number of Figures: 02: Number of References: 10; Number of Correspondences: 05

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Introduction

Diabetes mellitus is the chronic disorder emerging as a major world health problem which increases the rate of morbidity and mortality. It is associated with abnormal carbohydrate, protein and lipid metabolism. The prevalence of diabetes mellitus is growing rapidly worldwide and is reaching epidemic proportions[1]. It is estimated that there are currently 422 million people with diabetes worldwide and this number is set to double in the next 20 years[2]. Because of the progressive nature of the disease, an evolving treatment strategy is necessary to maintain both fasting and postprandial glycemic control. Diabetes care aims at improving the quality of life of patients with type 2 diabetes through good glycemic control, lifestyle modification, and diabetes education [3]. Regular physical activity plays a significant role in diabetes management. Through regular physical exercise, the need for insulin injections or oral medications can often be reduced. Regular physical activity also helps with weight loss as well as controlling blood cholesterol and blood pressure. Healthy dietary pattern has a beneficial effect on human health and regarding the treatment of type 2 diabetes mellitus. Healthy dietary pattern will help to control: Blood glucose levels, blood fat cholesterol and triglycerides and blood pressure. There is no cure for diabetes. However, Type 2 diabetes can be prevented by changes in the lifestyles of high-risk subjects [4]. Diabetes education is the cornerstone of diabetes care. Improved training of the primary health care providers and patients with diabetes is therefore beneficial [3].

Materials & Methods

A descriptive, cross sectional study was conducted from July 2015 to December 2015 among 300 patients attending at medicine outpatient department of the Community Based Medical College Hospital and Endocrine outpatient department of the Mymensingh Medical College Hospital after obtaining requisite consent from the patients. Purposive sampling was adopted for collecting data. The study was approved by the institutional ethical committee. The interviews were held directly in the corridor just outside the Outpatient Department. The relevant information was entered into the predesigned proforma to know the pattern of lifestyle and knowledge about diabetes mellitus among type 2 diabetic patients. The collected data were entered into the computer and analyzed by using SPSS (version 20.1)

Received: 15 April 2019 *Accepted revised version:* 16 June 2019

Results

The age structures of the patients have been categorized in years into three groups. Overall 77 (25.7%) patients were in ≤ 40 years old while 172 (57.3%) patients were 41-60 years old, 51 (17.0%) patients belong to > 60 years' age group. Total numbers of patients both male and female were 300. It comprised of 77 (25.7%) male and 223 (74.3%) female in outpatient. Out of 300 patients, 197 patients came from urban area and 103 patients from rural area. Out of 300 patients, 152 (50.7%) were illiterate, 72 (24.0%) had primary education, 25 (8.3%) had junior education, 21 (7.0%) had secondary education, 15 (5.0%) had higher secondary education and 15 (5.0%) had tertiary education (Table-I).

Table-I: Demographic characteristics of the study population (n=300).

Parameters	Number	Percentage
Age of the patients		
≤ 40 years	77	25.7
41-60 years	172	57.3
> 60 years	51	17.0
Total	300	100.0
Sex		
Male	77	25.7
Female	223	74.3
Total	300	100
Residence		
Urban	197	65.7
Rural	103	34.3
Total	300	100
Educational status		
Primary	72	24.0
Junior	25	8.3
Secondary	21	7.0
Higher secondary	15	5.0
Graduated	15	5.0
Illiterate	152	50.7
Total	300	100.0

According to figure-1, 153 patients (51%) maintained diabetic diet chart regularly.

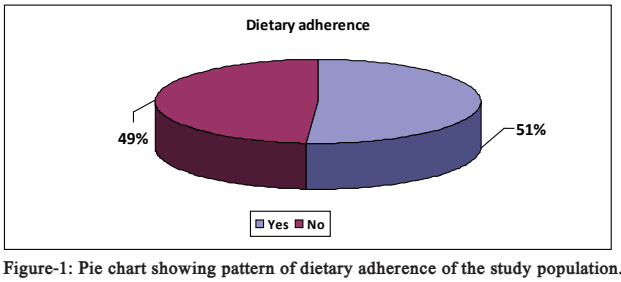

Figure-1: Pie chart showing pattern of dietary adherence of the study population.

According to figure-2, 205 patients (68.3%) took physical exercise regularly.

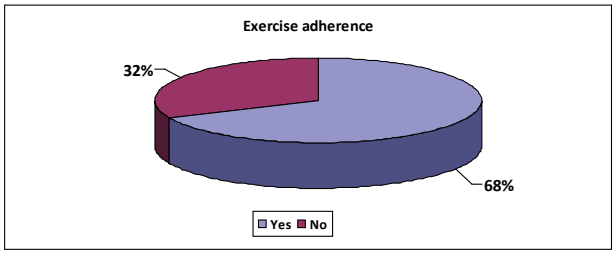

Figure-2: Pie chart showing pattern of exercise adherence of the study population.

291 patients (97%) were found to have knowledge about timing of dose regimen. 107 patients (35.7%) knew the actions to take in case of hypoglycemia (Table-II).

Table-II: Distribution of patient's knowledge on various aspect of DM (n=300).

Knowledge on	Number	Correct response (Percentage)
Knowledge about timing of dose regimen	291	97.0
Measure to take in case of hypoglycemia	107	35.7

Discussion

This study showed that diabetes mellitus is more prevalent in female patients than in male patients. Similar results were obtained in the study conducted by Alam et al. (2014), Mann et al. (2009) and Abebaw et al. (2016) [5,6,7]. This study also found a higher prevalence of diabetes was among middle aged patients, with a high percentage (57.37%) in the age group of 41-60 years. This result correlates with the study of sajith et al. (2014) [1]. In the present study, type 2 DM is more common in urban people (34.3%).Our study findings are also similar to the study conducted in Bangladesh by Akter et al. (2014) [8]. In our study, majority, 214 (71.3%), of the participants were housewives and service holder, 27 (9.0%). This present study correlates with the study of Abebaw et al. (2015) but the percentage is not same [7]. In their study they observed that majority, 98 (34%), of the participants were housewives and government employee, 50 (17.4%). In this study, 97% patients were found to have knowledge about timing of dose regimen which is higher than the number (90%) reported by Shrestha et al. (2013) study [9]. In this study 35.7% patients knew the action to take in case of hypoglycemia which is lower than the number (100%) reported by Prasad [10]. In the present study the rates of adherence to diet and exercise were 51% and 68.3% respectively. This study results are not consistent with the results of the sajith et al. (2014) study. In their study they observed that 3.81% and 32.29% respectively of all patients were belonging to dietary and exercise adherence [1].

Conclusion

Type 2 diabetes mellitus being a chronic disorder requires multiple therapeutic approaches including dietary and lifestyle modifications. There was a high rate of non adherence to diet and exercise recommendations by patients suffering from type 2 diabetes mellitus at Mymensingh, Bangladesh. Majority of type 2 DM patients displayed optimal level of diabetes knowledge. We strongly feel that there is a need to design and develop individualized diabetes educational program that could help in diabetes management and improvement of quality of life.

Conflict of Interests: None.

Acknowledgement

The authors are grateful to the entire staff of the medical outpatient department of the Mymensingh Medical College Hospital and Community Based Medical College Hospital, Mymensingh for their cooperation and support during the study period.

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ORIGINAL ARTICLE OPEN ACCSESS

Knowledge about Anemia among Pregnant Women in Tertiary Hospital

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Abstract

Introduction: *To evaluate knowledge about anemia among pregnant women visiting in OPD for antenatal care.* **Materials and Methods:** *A cross sectional study was conducted in tertiary hospital Dhaka, from outdoor patient department of gynecology and obstetrics, to assess the knowledge about anemia among pregnant women and also to find out the percentage and type of anemia. A total 396 pregnant women were interviewed and information were collected by pre designed data collection sheet using various parameters. Interviews conducted by direct questionnaire, blood samples were collected at same setting.* **Results:** *The mean age was 25.92±5.05, highest number 39.65% were age group 21-25 years, 28.79% were age group -30 years, 15.91% were age group 31-35 years, 11.36% were found age group <20 years. Regarding antenatal visit during pregnancy, 25.8% pregnant women visited in 1st trimester, 46.7% pregnant women visited in second trimester, and 27.5% in 3rd trimester. Also 11.11% patients had anemia in first trimester, 39.39% anemic in 2nd trimester, 14.39% pregnant women anemic in third trimester and 35.10% had normal findings. And 67% pregnant woman's had knowledge about ANC 32% had no knowledge.* **Conclusion:** *In this cross sectional study it was found that poor knowledge about anemia and less iron intake is the main cause for anemia during pregnancy.*

Keywords: *Anemia, Iron deficiency, Serum ferritin level.*

Number of Tables: 03; Number of Figures: 03; Number of References: 21; Number of Correspondences: 04

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Introduction

In pregnancy anemia in pregnancy is the major public health issue in worldwide now a day. WHO assessments that more than half of pregnant women in the world have hemoglobin level indicative of anemia (<11.0 gm/dl). The prevalence of anemia may however as high as 56% or 61% in developing countries. Cases of anemia still high in pregnant women have low consciousness about the importance of anemia prevention and the danger of less iron supplement [1].

Pregnant women are mostly suffering from deficiency anemia in our country Bangladesh. This is the demand for iron and other vitamins increased due to physiological burden of pregnancy. Folate deficiency is a minor component contributing to anemia[2]. Folate deficiency may be marked by co-existing iron deficiency. Vitamin B12 deficiency & thalassemia major are usually associated with infertility. Detoriorus effects occur in mother as well as baby as a result of anemia, which is multifactorial as a community like ours. Multiparity, poor socio-economical, educational status & lack knowledge are the principal reasons for a high prevalence of anemia in our population [3].

Microcytic hypochromic anemia resulting from iron deficiency is the most frequent from anemia (76%), followed by folate deficiency (20%) and combined folate and iron deficiency 20% [4].

Globallyanemia is a major cause of morbidity and mortality, mainly in the developing countries, correction of these continues is an insurmountable challenge[5]. Iron folate supplement of pregnant women prevent a deterioration of the anemic condition during the increased physiological burden of pregnancy [6].

Current knowledge indicates that iron deficiency anemia in pregnancy is a risk factor for preterm delivery and subsequent low birth weight, and possibly for inferior neonatal death. For women who enter pregnancy with reasonable iron stories. Iron supplements improve iron status during pregnancy and for a considerable length of time post preterm, thus providing some protection against iron deficiency in the subsequent pregnancy. Mounting evidence indicates that maternal iron deficiency in pregnancy reduce fetal iron stores, perhaps well in the first year of life [7]. As most pregnant women sufficing from deficiency anemia, dietetic advice should be given with due consideration to socio-economic condition, food habits & tests of individual consideration to the socio-economic condition, food habits & test of individual. Supplementary iron therapy is needed for all pregnant mothers form 16 weeks on wards. Above 10gm of Hb, 1 tab of ferrous sulfate containing 60 mg of elemental iron is enough [8,9].

Received: *28 April 2019* ***Accepted revised version:*** *09 June 2019*

Oral iron is gold standard of treatment of mild to moderate iron deficiency anemia.

Total body iron content in normal adult caries from 3-5gm Hemoglobin iron constitutes approximately 60-70% of total body iron. Storage iron occurs in two forms a) ferritin and b) hemosiderin. Patient with Hb level 9 gm or less should be subjected to full hematological investigation [10].

To ascertain the type of anemia in pregnant mother peripheral blood flim estimation is also helpful. Abundant presence of small pale staining cells with variation in size (anisocytosis) and shape (poikilocytosis) suggest microcytic hypo chromicanemia, reticulocyte may be slightly raised. There is also evidence indicating that preeclampsia & eclampsia occurs more frequently in patients with iron deficiency. In a report of over 54,000 pregnancy in the Cardiff area of south wales, the incidence of low birth weight, prematurity & perinatal mortality was found to increase when maternal hemoglobin concentration was in anemic range <104 g/l before 24 weeks of gestation.

There are marked physiological changes in the composition of the blood in healthy pregnancy, mainly to combat the risk of hemorrhage at delivery. Plasma volume and red blood cell mass increased by 50% and 18-25% respectively, resulting in dilutional decrease in Hb concentration called the physiological anemia of pregnancy, maximum at 32 weeks of gestation. Pathological anemia of pregnancy, maximum at 32 weeks of gestation. Pathological anemia is due to iron deficiency [11].

In Bangladesh, two different surveys have estimated the anemia prevalence among pregnant women to be 50% & 59%. I these surveys blood samples are analyzed only to measure hemoglobin concentration. It is estimated that in 1980, the global prevalence of anemia was over 30%. 1.3 billion out of the global population of 4.4 billion. Of this 1.2 billion lived in developing countries. About half of the pregnant women of the world are anemic. Prevalence of anemia (Hb 10 gm/dl) is highest among pregnant women in developing countries. In South East Asian countries 75% pregnant women are anemic. In Bangladesh percentage is 53%.

Our country is a developing country, women become pregnant with preexisting anemia because of lack of knowledge, low socio-economic condition, and they are not aware about anemia & not frequently take prenatal care. So an anemic woman is therefore at increase jeopardy[12]. So, our main goal was to wasto evaluate the knowledge of pregnant women about anemia in tertiary hospital.

Objective

General objective:

- To evaluate the knowledge about anemia among pregnant women for antenatal care.

Specific objective:

- To assess percentage of anemia in pregnant women in different trimester.
- To determine types of anemia
- To identify treatment about anemia among pregnant women.

Materials and Methods

This was a cross sectional study. This study was conducted at the outdoor department of obstetrics and gynecology of tertiary hospital, Dhaka from February 2010 to August 2010. Sample size was determined by using the following formula:

$$n=z^2pq/d^2$$

where n= 384.16

total case =385

here n = the desired sample size

z=the standard normal deviate, usually set at 1.96 corresponds to the 95% continence level.

P= the proportion in the target population estimated to have a particular characteristics and desire accuracy at 50%.

D= degree of accuracy desired, usually set at 0.05.

Inclusion criteria are normal pregnant women in all trimester andpregnant mother without pregnancy complication.

Exclusion criteria are patients with APH or other obstetrical emergency, patients with eclampsiaand patients with medical disorder.

Method of collection of blood samples:

Maintaining all ascetic precaution 6ml of venous blood was drawn from the antecubital vein of each pregnant women in the sitting position. 2ml of the blood was taken in EDTA tube for HB% and peripheral blood film 4ml of blood was immediately transferred into clear dry test tube and was centrifuged within one hour of collection. The serum thus obtained was stirred at 70^{o}C until assayed.

Data collection and analysis:

Data will be collection in predesigned data collection sheet using various parameters. Interviews conducted using direct questionnaire and all information will be noted in pre from data collection sheet. Data were compiled and appropriate statistical package for social science (SPSS). P value <0.05 was taken as minimum level of significance.

Results

In table-1 shows age distribution of the pregnant women where maximum (39.65%) pregnant women belongs to 26-30 age group,whereas only 11.36% pregnant women belongs to ≤ 20 age group. The following figure is given below in detail:

Table-I: Age distribution of the pregnant women.

Age in years	Number	%	Mean±SD
≤20	45	11.36%	
21-25	157	39.65%	
26-30	114	28.79%	25.92±5.05
31-35	63	15.91%	
36 and above	17	4.29%	

Data was expressed as Mean±SD

SD= standard deviation

% = percent

In figure-1 shows knowledge about antenatal care among pregnant women where 67.42% pregnant women had knowledge about ANS. The following figure is given below in detail:

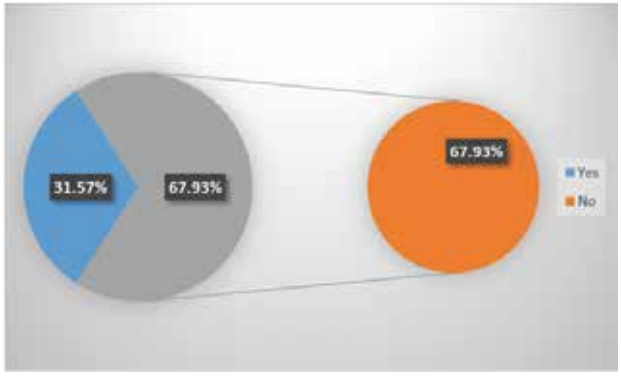

Figure-1: Knowledge about anemia during pregnancy in pregnantwomen.

In figure-2 shows knowledge about of pregnant women about correction of anemia by taking iron tablet during pregnancy where 396 women were intermixed among them only 26.8% knew daily iron tab intake during pregnancy helps to correct anemia. but maximum 73.2% had no knowledge. The following figure is given below in detail:

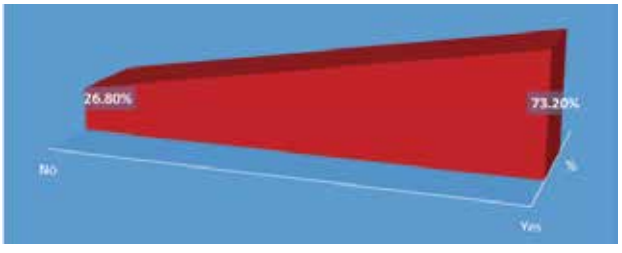

Figure-2: Knowledge about of pregnant women about correction of anemia by taking iron tablet during pregnancy

In table-II shows knowledge about correction of anemia taking anti helminthic where total 396 women only 4.8% knows that anti helminthic drug helps to correct anemia. The following table is given below in detail:

Table-II: Knowledge about correction of anemia taking anti helminthic.

Correction of anemia taking anti helminthic	Number	%
Yes	19	4.8%
No	377	95.20%

% = percent

In figure-3 shows knowledge of pregnant women about effect of anemia on fetus where only 20% of pregnant women had knowledge about the effect of anemia. The following figure is given below in detail:

Figure-3: Knowledge of pregnant women about effect of anemia on fetus.

In table-III shows hemoglobin level of pregnant women where 41.16% were mildly anemic, 22.22% were moderately anemic. The following table is given below in detail:

Table-III: Hemoglobin level of pregnant women.

Hemoglobin level of pregnant women	Number	%	Mean±SD
Severe	6	1.52%	
Moderate	88	22.22%	
Mild	163	41.16%	10.51±1.20
No anemia	139	35.10%	

Data was expressed as Mean±SD

SD= standard deviation

% = percent

Discussion

A total 396 students are the interviewed for this study, for the highest number (46.7%) visited in 2nd trimester, 27.5% were in third and 25.8% in third trimester. A survey of pregnant women in Nigeria found that women in tertiary hospital for antenatal care, higher percentage in (63.5%) women registered in 2nd trimester of pregnancy in our country due to lack of knowledge about ANC, women's attending tertiary hospitals during third trimester mostly, or when delivery is impending[13].

In this study a total of 396; Among pregnant mother 64% pregnant women were anemic, indicating that anemia in pregnancy still a major problem in our country, although other study found that specially in rural area Bangladesh, the prevalence of anemia among pregnant women was 50%[11]. In rural area in some NGO works for prevention of anemia by iron supplementation. In other countries in the south Asian region the Anemia prevalence in pregnant women is reportedly higher. One national estimate in India is 87%[14]. From the plains of Nepal, prevalence of anemia was 73%[15]. In Sri-Lanka 65% pregnant are anemic[16].

In this study maximum pregnant women (39.6%) who were interviewed are in age group between 21-25 years. 28% were

in age group between 26-30 years. One study found that one hundred pregnant women was attended Gynae and obs OPD of railway hospital. Mean maternal age recorded was 30.24±6.15 years (maximum 42 years and minimum 20 years)[2].

Among the pregnant women visited, 65% were house wife, 22% were garments worker, and 10% were service holder. As in tertiary hospitals in urban area, low economic status group patients are more visited, so, in this study service holder pregnant women were visited only 10%, and 58% pregnant women's had low family income (1000-5000).

So anemia in pregnancy is common in our country, because of low socioeconomic status, women's had poor dietary status, which makes micronutrients deficiency and anemia.

Education and knowledge is important to prevent anemia in pregnancy, illiteracy, ignorance detoriorus effect on mental health. Although tertiary hospital visited illiterate pregnant women were 19.7%, 37.63% were educated in primary level.

ANC helps to early diagnosis of anemia in pregnancy, in this study maximum 67% pregnant women had knowledge about, what is antenatal care, but 32% had no knowledge about this, ANC improve pregnant women's knowledge of its benefits. A study in Indonesia, an experimental design with 60 pregnant women from 10 cluster villages is used in this study. The intervention group received the new approach to ANC, while the control group received routine ANC. The findings show that the improvement of knowledge in the intervention group significant particularly in the knowledge about healthy pregnancy (p=0.012), pregnancy complications (p=0.01), safe birth (p = 0.01) and taking care of the newborn (p=0.012). The improvement of knowledge was significantly influenced by the respondent's educational back ground (p=0.002) and socio-economic status (p=0.027). This study in Indonesia, recommends that the new approach to ANC be considers educating pregnant women regarding safe birth and it is considered as one of the strategies that may be adopted to reduce maternal mortality[19].

Ideally the pregnant mother should attend the clinic once a month during the first 7 months; twice a month during the next two months; and there after once a week. In the study 37% pregnant women had good knowledge that frequent ANC visit is necessary, but due to poor socio economic factor, poor transportation application is also poor.

Maximum 67% pregnant women had no knowledge about anemia in pregnancy. So case of anemia is still high because most women have low consciousness about the important of anemia prevention, a similar study in community health and nutrition Research Laboratory, a bivariate analysis resulted that, knowledge, attitude, practice and the number of pregnancy were significantly associated with anemia. Using logistic linier model indicated that the lower knowledge about anemia in pregnant women will be increased risk five times more than higher and the worse practice about anemia preventive pregnant women increase anemia risk six times more than good practice[20]. Most of the gravid women not aware about symptoms of anemia, only 31% had knowledge about the symptoms of anemia, remaining 66% had no knowledge.

There is very high prevalence of anemia during pregnancy in Delhi, probably due to very low frequency of meat eating in India[21].

In this study maximum 73% of pregnant women had poor knowledge that anemia can be corrected by changing diet, also 73.2% pregnant women do not know that, taking of iron tab during pregnancy helps to prevent anemia and only 26.8% knows daily intake iron is necessary during pregnancy. Pregnancy is probably the greatest physiological challenge to human body, iron requirements are very high in pregnancy, it is several times higher than other periods, so prevalence of iron deficiency is common in our country. Considering the daily iron requirement and bioavailability of food iron absorption, the recommended daily allowances of iron have been set 15 mg per day. For normal women and 38 mg for pregnant women prophylactic iron supplements, in a dose of 65mg of elemental iron per day from 20 weeks on words is sufficient to prevent iron deficiency anemia in mother[21].

Many study showed that iron deficiency has been the most dominant factor in the causation of anemia inpregnency[10].

Present study also revealed that, knowledge of anti helmithic drugs taking to prevent anemia is very poor, About 38% of the women had ascariasis and three women (1%) had Hook worm infestation. Hook worm infestation malaria and HIV infection have been shown to be associated with severe Anemia and iron deficiency in Bangladesh. Detection of worm infestation may be improved by including stool examination for every pregnant women. Anti-helminthic therapy could be given to infested women before conception as a public health strategy to improve iron store[16]. In present study maximum 79% had no knowledge about the effect of Anemia on fetus.

Among 396 pregnant women interviewed, almost 92% had no knowledge of benefit to treating anemia.

On the basis of Hb estimation, mild anemia was found maximum (67%), moderate anemia was (31%) and severe case of anemia was only 1%. Another study in India, found that of 1150 women, 96% were anemic (89.8% mildly anemic, 5.3% severely anemic[21].

Another study of rural Bangladesh, the anemia was mild in 28%, moderate 22% and none of them had severe anemia[9].

On assessing the type of anemia by peripheral blood flim, found that microcytic hypochromic anemia was highest (64%), normocytic anemia 7% and 28.8% had normal findings microcytic hypochromic anemia resulting from iron efficiency is the most frequent from anemia (76%)[3].

Conclusion

From our result, we can conclude that serum ferritin level study among pregnant women indicates that, iron deficiency anemia is a common problem in pregnancy. So, to prevent deficiency anemia during pregnancy, adequate iron supplementation should be given to pregnant women from the first trimester. Also further study is needed for better outcome.

Conflicts of Interests: None.

Acknowledgment

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

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https://doi.org/10.3109/00016348009156379

DOI: https://doi.org/10.3329/medtoday.v31i2.41963

ORIGINAL ARTICLE OPEN ACCSESS

Depression among Nurses in Pabna Mental Hospital, Pabna

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Chowdhury Rakibuzzaman [3], Nahreen Rahman [4]

Abstract

Introduction: *Every day, nurses experience a great deal of stress. They face problems at work, people relying on them for their care, and also tons of responsibilities piling up at home. Psychological stress is common in hospital ward and associated with depression. Only few studies are done concerning mental health of Nurses in Bangladesh. The study was carried out with a view to find out the prevalence of depression among nurses at Mental Hospital, Pabna, Bangladesh.* ***Materials & Methods:*** *A cross sectional, questionnaire-based survey was carried out among the 125 nurses of Mental Hospital, Pabna. The studywas conducted between January to February 2019. The depression levels were assessed using Zung depression scale. Nurses were asked to complete the questionnaire and then the depression levels calculated.* ***Result:*** *The overall prevalence of depression among the nurses was 4.13 percent. The prevalence of depression was 4.5 percent among female nurses versus 2.94 percent in male nurses.* ***Conclusion:*** *The prevalence of depression is seen especially innurses. So, attempts should be made to alleviate the stressors.*

Keywords: *Depression, Nurse, Zung depression scale.*

Number of Tables: 02; Number of References: 23; Number of Correspondences: 04

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Introduction

Depression is one of the most commonly diagnosed mental disorders. According to the World Health Organization (WHO), about 300 million people suffer from depression worldwide, which represents one of the leading causes of disability and global burden of diseases [1]. Nurses are known to be the victims of tremendous mental stress. The personal and social sacrifice they have to make in order to maintain a good patient care result in a highly stressful environment puts them under a lot of stress. Depression imposes a considerable economic burden on the society; therefore, prevention plays an important role in saving resources and improving quality of life [2]. By 2030, depression is expected to become the second cause of disability and co-morbidities in developing countries[3], profoundly impacting people's performance and quality of life. Furthermore, an anticipation of age-of-onset is expected [4]. From an etiopathogenetic standpoint, hereditary genetic and biochemical causes can cause depression, disturbing communication between nerve cells [5]. Social and family problems and employment conditions can be among the causes of depression [6]. This disease severely impairs familiar and social sphere, as well as professional working, leading, in some cases, to suicide [7]. Doctors, nurses, and other hospital service providers are among a group at high risk for developing depression. Doctors, nurses, and other hospital service providers are among a group at high risk for developing depression [8]. It is estimated that depression has a greater impact on job performance than chronic diseases, such as arthritis, blood pressure, backache, and diabetes [9]. Nursing is among occupational groups at high risk for depression due to harsh working conditions [10]. Several studies have examined the prevalence of depression among nurses. In 2 studies conducted in the USA, the prevalence of depression was reported to range from 18% to 41% [11,12]. However, only few studies are done in nurses of Bangladesh. Thus, we carried out a 20 questionnaire based cross sectional study to find out the prevalence of depression in nurses.

Materials and Methods

The Study was a descriptive cross sectional study conducted at Mental Hospital, Pabna, Bangladesh during the period of January 2019 to February 2019. 125 nurses were included in the study after randomized sampling. The recruited nurses were informed about the purpose of study and explained about the general instructions.Informed consent was taken prior to the study. The nurses were allowed to respond in their own time and privacy. The participation was entirely voluntary. The study was approved by the Research Ethical Committee. Then they were

Received: 09 April 2019 *Accepted revised version:* 30 May 2019

given the questionnaires which comprised of personal data, Zung Depression Inventory & stress inducing factors.

• Personal Data: This included age, sex, religion and home district.

• Zung Depression Scale: It is a 20 itemed self rated questionnaire which assess the level of depression symptoms[13]. It has already been used in primary care and community settings and as a screen for depression[14]. It contains 10 positive questions for e.g. "I eat as much as I used to" and 10 negative questions for e.g. "I notice that I am losing weight". Answers thus obtained are scored between one to four for each question with a total score ranging from 20 to 80. A score less than 50 were considered to represent a case with no depression while a score ≥50 was considered to represent a case with depression.

• Stress inducing factors: After in-depth literature review and peer consultation, five most important stress inducing factors were selected. The nurses were asked to strike the factors they thought to be important from the following.

a) Hospital stress

b) Relationships problem

c) Hectic lifestyle

d) Future concerns

e) Familial problem

Data were analyzed by using SPSS software (Version: 16) and then the results were interpreted.

Results

Out of the 125 questionnaires distributed to nurses 121 were returned completed, giving a response rate of 96.8 %. Out of the 121 respondents, 87 were females and 34 males. The mean age of study subjects was 35.67 years and a range of 26 to 55 years. Overall prevalence of depression in nurses was found to be 4.13 %. The incidence of depression was found to be more among female nurses versus male nurses which is shown in table.

Table - I: Distribution of the respondents by sex of the nurses.

N=121	Total	Percentage (%)
No. of depressed Male	1	2.94
No. of depressed Female	4	4.5

Table -II: Distribution of the respondents by stress inducing factors.

Factor	Total	Percentage (%)
Hospital stress	5	4.13
Relationships problem	4	3.3
Hectic lifestyle	4	3.3
Future concerns	5	4.13
Familial problem	3	2.4

Discussion

The response rate of 96.8 % renders an adequate sample of population studied to fulfill the objectives of the study. The findings show the prevalence of depression (4.13%) in Mental Hospital, Pabna (Table-I). In another study conducted in China, the prevalence of depression among nurses was 38%[15]. Also in two studies conducted in Taiwan, the prevalence was 52.5% and 27.7%, respectively[16,17]. Canada, France, and the USA reported a prevalence rate of 10% to 40%[18,19,20,21].Various factors, such as differences in personality, cultural, social, and working conditions may explain differences in the prevalence of depression among nurses in different countries around the world. Moreover, different methodological designs and different tools used for assessing depression could play a role in explaining these discrepancies.In our study,the prevalence of depression was found to be less in the nurses.This finding could be due to less hospital,familial and relationship stress (Table-II). In Bangladesha rural community-based study showed an overall prevalence of psychiatric disorders as 16.5%; notably, half of the sufferers had depressive disorders (8%) and a third had anxiety disorders (5%) [22]. On the other hand, another study on females in a rural setting reported 16.4% had mental disorders with depression being the single most common disorder (8.9%) [23]. In table no: I, we found that a gender difference regarding the association with depression was noted where female nurses reported a higher. This gender variation in depressive status in nurses could be the reflection of usual trend of high prevalence of depression in females as in the general population. However, the study has been able to throwsome light about the mental health of nurses.There were several limitations to the study. Our study only included 125 respondents due to unavailability. Other stressors were not assessed.

Conclusion

The results revealed a picture of the prevalence of depression in nurses in a mental hospital in Bangladesh. They should be supported by counseling. By identifying the symptoms of depression and the stress inducing factors at an early stage hopefully the psychological morbidity among nurses can be prevented and the ones in morbid state can be helped to seek the professional.

Conflict of Interests: None.

Acknowledgement

The authors would like to thank nurses of Mental hospital, Pabnafor their participation in the study. Also special thanks to Dr. Masud Rana Sarker, Psychiatrist and Professor Dr.Tanmoy Prokash Biswas, Director for his valuable analysis and advice on statistics and verifying the whole manuscript.

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DOI: https://doi.org/10.3329/medtoday.v31i2.41964

ORIGINAL ARTICLE OPEN ACCSESS

Outcome of Laparoscopic Deroofing of Renal Cyst- Our Experience

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Abstract

Introduction: *To evaluate the outcome of laparoscopic deroofing of renal cyst for the management of symptomatic renal cyst.* ***Materials & Methods:*** *This study was performed on 32 patients having symptomatic renal cyst at the Department of Urology, Shahid Sheik Abu Naser Specialized Hospital, Khulna and two other private hospitals in Khulna from January 2015 to December 2017. Patients having cyst size less than 5cm, previous abdominal surgery and sepsis were excluded from this study. Transperitoneal approach was adopted in all cases. All patients were diagnosed by ultrasonography and computed tomography to determine the Bosniak classification of the cyst. Pain and cyst recurrence were assessed during the follow-up.* ***Results:*** *Thirty-two patients (mean age=52.9±12 years) with large renal cyst (mean size=35±13) were included. All procedures were completed successfully, with no major intraoperative complications. The mean (range) operative duration was 56 (35–125) min, affected by the site and number of cysts unroofed. All patients were symptom-free except one, who had a recurrent large cyst, anteriorly located, and who underwent open cyst deroofing.* ***Conclusion:*** *Laparoscopic deroofing of symptomatic renal cysts should be the standard of care, especially after failed percutaneous aspiration, with reduced postoperative pain, short hospital stay and cost effective. It is feasible with conventional laparoscopic instruments and gives a better cosmetic outcome.*

Keywords: *Renal cyst, Laparoscopic decortication.*

Number of Tables: 01; Number of References: 10; Number of Correspondences: 03

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Introduction

Renal cysts are common and can represent a manifestation of an inherited or acquired disorder. Simple cysts are rare in childhood, but increase in frequency during adulthood[1]. The increasing incorporation of imaging into urological practice has produced a corresponding increase in the detection of renal cysts [2] .

The indications for surgical intervention for renal cysts are pain, infection, hypertension, haemorrhage, collecting-system obstruction, or the risk of malignancy. The treatment options for symptomatic cysts include aspiration with or without instillation of sclerosing agents, percutaneous resection, and open or laparoscopic deroofing[3].

Laparoscopic management has become the standard of care because it is minimally invasive, cosmetically acceptable and has a high success rate in terms of cyst recurrence[4]. We present our experience in treating symptomatic renal cysts by laparoscopic deroofing, considering the morbidity and clinical outcome.

Materials and Methods

Between January 2015 and December 2017, 32 patients (22 males and 10 females) underwent laparoscopic renal cyst deroofing, with 5 of them having recurrent cysts after percutaneous aspiration. The mean (range) age of the patients was 46 (17–65) years. Eleven patients had right renal cysts, 12 had left renal cysts. The mean (range) size of the cysts was 10.8 (8–16) cm. Transperitoneal approach was used in all patients. The patients' demographic data are summarised in Table I.

The main presenting symptoms were renal pain in all patients, urinary tract obstruction in two, with microscopic haematuria due to lower polar cysts obstructing the upper ureter. After detecting the cysts with abdominal ultrasonography, CT with a renal-mass protocol was used and showed Bosniak type I or II cysts in all cases. Small unsymptomatic simple cysts (<5 cm) and renal cysts of higher grade

Received: 12 May 2019 *Accepted revised version:* 20 June 2019

(type IIF, III and IV Bosniak classification) were excluded. Urine analysis with culture and sensitivity was assessed in all patients, and urine cytology was assessed in those with haematuria.

The timeline of the procedures conforms to the development of our laparoscopic experience. All patients were operated via transperitoneal approach. After induction of anesthesia, patients were in flank position with no flexion of the operating table. The procedure was performed through 3 ports, a 10 mm camera trocar inserted 2 fingerbreadth lateral and superior to the umbilicus, and 2 additional 5 mm working ports inserted a handbreadth superior and inferior to the camera port. A fourth port was added in some patients, usually those with anterior upper-pole cysts. After reflection of the colon, the cyst was identified and it appeared in most cases as a blue dome, which was then dissected and its edge was delivered. The cyst contents were aspirated by a percutaneous needle under laparoscopic guidance, and the aspirate was sent for cytological analysis. The roof of the cyst was then excised with endoscissors and submitted together with several 'bites' from the floor of the cyst for a histopathological examination. The cyst edge was sealed by electrocautery, and the perirenal fat was placed over the base of the cyst. Finally, a tube drain was left and the wounds were closed.

Results

All procedures were completed successfully, with no major intraoperative complications and no blood transfusions needed. The mean (range) operative duration was 56 (35–125) min. There was a gonadal vessel injury in one patient that was secured. Oral feeding started 24 h after surgery but was delayed to 48 h in two patients (8.7%) due to a mild ileus that resolved spontaneously. There was a low-grade fever in three patients (13.0%). There were no urinary leakages or retroperitoneal collections.

For postoperative analgesia we used ketorolac, with a mean (range) dose of 25.2 (0–60) mg daily. The tube drain was removed 1–2 days after surgery. The hospital stay was 2–5 days and the return to normal activity was at 1–3 weeks.

Percutaneous aspiration under laparoscopic guidance showed a clear fluid, with negative cytology in all cases. No malignancy was detected on histopathological examination of the cyst walls. The patients were followed up for 6–12 months, with a clinical assessment for pain, and by abdominal ultrasonography. All patients were symptom-free, with no urinary tract obstruction. Early in our laparoscopic experience there was a recurrence in one patient who had an anterior upper-pole cyst of 7 cm in diameter, which was managed by open surgical deroofing because of extensive peritoneal adhesions. The various complications are also summarized in Table I.

Table-I: Demographic profile and outcome among cases (n=32).

Parameters	Variables	n (%)
Gender	Male	22(68.75)
	Female	10(31.25)
Side of Cyst	Right	18(56.25)
	Left	14(43.75)
Presentation	Renal pain	32 (100)
	Obstruction	2 (6.250)
Mode of Surgery (Laparoscopy)	Transperitoneal	32 (100)
Complications, by grade	II, Gonadal vessel injury	1 (3.125)
	I, Fever	3 (9.375)
	I, Ileus	2 (6.250)
	II, Perinephric haematoma	1 (3.125)

Discussion

Laparoscopic cyst deroofing is an effective and durable treatment for symptomatic renal cysts, as assessed over a long-term follow-up. Its minimal invasiveness and greater success rate favour it over other treatments[5].

The percutaneous aspiration of simple renal cysts is an easy and safe procedure, and can be used to ascertain if cyst decompression results in the resolution of pain, and if not, then to justify further more invasive treatment; however, it is associated with high rate of recurrence. The percutaneous instillation of sclerosing agents into simple renal cysts is associated with success rates of 75–97%, with a complication rate of 1.3–20%[6]. In the present study we included 5 patients with a recurrence after percutaneous aspiration. The percutaneous resection of renal cysts also has been advocated. The long-term results showed a 30% recurrence rate and 20% residual cysts[7].

Some authors recommended that retrograde pyelography should be used just before the start of the laparoscopic procedure, especially in those with parapelvic and parenchymal cysts, to assess cyst communication with the collecting system, and possibly an injection with methylene blue via a ureteric catheter for a final check at the end of the maneuver. However, we think that this is not mandatory and we did not use this in our series where there were no significant complications[8].

The retroperitoneal approach reduces the risk of hypercarbia, hypothermia, postoperative ileus, inadvertent intra-abdominal organ injury and hernia formation, compared to the transperitoneal approach, which was not adopted in this study[9].

Cysts can recur, possibly due to incomplete handling or

incomplete excision of the cyst wall. To decrease the possibility of recurrence, the renal cyst wall should be completely excised if possible. If it is not possible to excise the cyst wall completely, the perinephric fat should be tucked into the cavity [10]. We report one case of recurrence, which was managed by open surgical deroofing.

For urologists, the retroperitoneal approach is preferable and familiar, hence many surgeons started retroperitoneal approach. But in this study we used transperitoneal approach, as it provides a wide working space, can be applied bilaterally in the same session, and is more cosmetically acceptable.

Conclusion

In conclusion, the laparoscopic deroofing of symptomatic renal cysts should be the standard of care, especially after failed percutaneous aspiration or decortication. It is feasible with conventional laparoscopic instruments and has a better cosmetic outcome.

Laparoscopicderoofing of renal cyst is a safe and effective approach to treat such disease. It has less morbidity, less hospital stay and better patient compliance. It should be considered as the treatment option of treating renal cysts.

Conflict of Interests: None.

Acknowledgement

We are highly grateful to Director, Department of Anesthesiology and operation theatre stuff of Shahid Sheikh Abu Naser Specialized Hospital, Khulna for their cordial help.

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DOI: https://doi.org/10.3329/medtoday.v31i2.41965

ORIGINAL ARTICLE OPEN ACCSESS

Study on TT Vaccination Status of Female Students of Khulna

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Abstract

Introduction: *The purpose of giving the TT vaccine to women of childbearing age and to pregnant women is to protect them from tetanus and to protect their newborn infants against neonatal tetanus.* **Materials and Methods:** *A descriptive cross-sectional study was done on January, 2017 to find out the TTvaccination status of students of Khulna Government Pioneer Girls College, Khulna. During scheduled time period. Data were collected from 100 respondents selected by purposive type of convenient sampling by face to face interview using a prepared mixed type of questionnaire.* **Results:** *Among total respondent's majority 36(36%) were belonged to 17-19 years of age group. People of our country nowadays more aware of TT vaccination as 97 (97%) of our total respondents had knowledge about TT vaccination. Achievement in TT vaccination coverage has been impressive throughout the country in recent years. It has also been reflected in our study, we had 84(84%) coverage and 55 (42%) of our respondents had completed their vaccination (5doses). Establishment and improvement of infrastructure of government health organizations 70(83.33%) of our study population received vaccination in government organization. Acceptance of TT vaccination has increased to a satisfactory level.In our study TT vaccination coverage was maximum (85.51%) in upper class and only (71.43%) in lower class respondents.* **Conclusion:** *Despite high knowledge, completion of recommended doses of TT vaccine was not guaranteed due to stock-outs coupled with detrimental cultural and religious beliefs.That is why large scale study is needed to find out TT coverage among women of reproductive age group (15-49 years) of Bangladesh which can ensure the real scenario as well as factors related to this.*

Keywords: *Tetanus toxoid, Vaccination, Knowledge.*

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Introduction

Tetanus Toxoid (TT) is administered to women of reproductive age (15-44 years) to protect them from tetanus and their newborn babies from neonatal tetanus. Neonatal tetanus is a grave disease caused by a bacterial pathogen transmitted during the childbirth usually in an unhygienic condition[1,2]. A woman needs a total of 5 TT doses for lifelong protection from tetanus and all the doses should be administered according to the WHO-recommended schedule. Since only one TT dose does not offer any protection, a woman needs at least two doses TT vaccine (TT1 and TT2), to get some protection [3, 4]. Females are more exposed to the risk of tetanus, especially during unsafe home delivery or abortion by untrained birth attendance and suffer from "puerperal tetanus". Neonates typically contact the disease during birth, when delivered in unhygienic conditions, especially when the umbilical cord is managed by unclean instruments and substances like ashes, soil or cow dung[5, 6]. In Bangladesh two major vulnerable groups for tetanus; pregnant women and neonates reside in rural part of the country. Tetanus Toxoid is an ongoing vaccination program under EPI in Bangladesh and the target population of this program is women of reproductive age. Success of the program results decrease in mortality of bother and newborn from tetanus[7]. Since it is difficult to ensure clean deliveries in the developing countries like Bangladesh, immunization of mother against tetanus has been a more reliable method to prevent neonatal tetanus and postpartum tetanus. The Government of Bangladesh launched EPI programme on 7th April, 1979 with special global agenda to immunize all the women of reproductive age [8, 9].

Materials & Methods

A descriptive type of cross sectional study was carried out on TT vaccination status of students of Khulna Government Pioneer Girls College, Khulna from June 2017 to October 2017. A total number of 100 respondents of adolescent girls were included. A pretested mixed type of questionnaire was used to collect and record the necessary information. After collection data were verified, edited for its

Received: 05 May 2019 *Accepted revised version:* 20 June 2019

consistency. The data were compiled, tabulated and processed in the computer according to the key variables. Data was processed and analyzed manually and by Computer. Data were presented by bar diagram and pie chart.

Results

This table shows that mean age of the respondents was 19.79 (SD±2.42) years. Among 100 respondents 36 (36%) belonged to 17-19 years age group.

Table-I: Distribution of respondents according to their ages.

Age (Year)	Number	Percentage %
17-19	36	36
20-22	35	35
23-25	29	29
Total	**100**	**100**

The diagram(figure-1) shows that 69 (69%) of the respondents belonged to middle class family, 24 (24%) upper and only 7 (7%) belonged to lower class family.

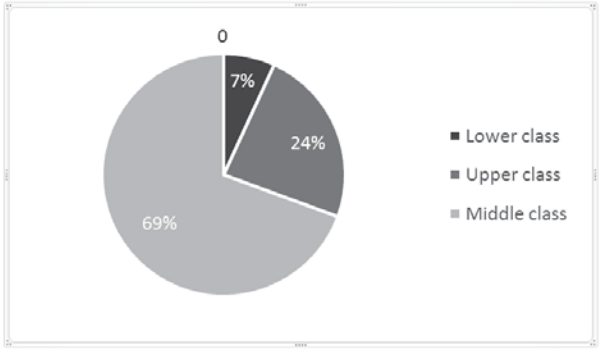

Figure-1: Socioeconomic status of the respondents.

Diagram (figure-2) shows that 84 (84%) respondents had received TT vaccine.

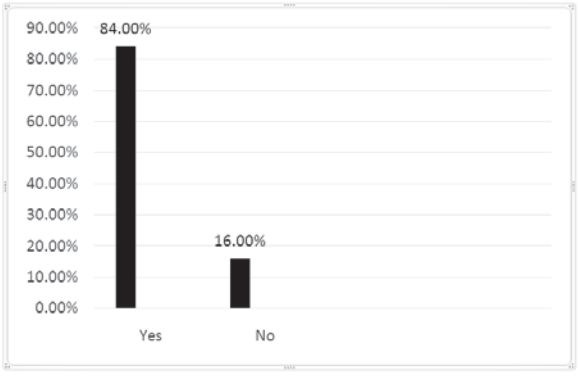

Figure-2: TT vaccination coverage of respondents.

Diagram(figure-3) shows that only 55 (55%) respondents were completely immunized, whereas 16 (16%) of the respondents were unimmunized.

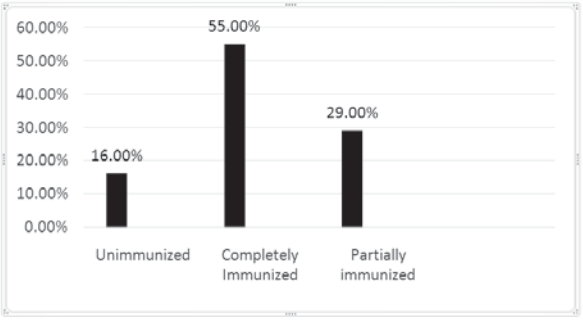

Figure-3: Distribution of respondents according to Immunization status.

Discussion

A descriptive type of cross sectional study was conducted on "TT vaccination status of students of Khulna Government Pioneer Girls College, Khulna with a view to evaluate the level of knowledge about TT vaccination and immunization status among respondents.There were 100 study population selected conveniently and the data were collected with a prepared mixed type questionnaire by face to face interview and then were analyzed manually according to the objectives of the study. Among the total 100 respondent's majority 36 (36%) were in the age group of 19-21 years [Table I], 27(27%) were degree 1st year student and only 8 (8%) were degree 2nd year student [Table II]. 69 (69%) respondents belonged to middle class family[Figure 1]. 97(97%) of the respondents heard about TT vaccine. 84 (84%) of respondents had received TT vaccine [Figure 2]. All these findings represented the findings of the survey conducted by Farzana Sobhanet al[12]. Among 100 respondents, 29 (29%) were partially and 55 (55%) were completely immunized [Figure 3]. So, we see that a good percentage of respondents had already got themselves vaccinated despite of living in rural area. These findings were very close to the findings of Bangladesh Maternal Mortality and Health Care Survey in 2010, which found 90.0% women received TT1 vaccine followed by 37.0% crude vaccination coverage and 31.0% valid vaccination coverage among the women of Chittagong hill tracts[10]. Among the vaccinated respondents, 55 (42%), 12(14%), 6(7%), 6 (7%) and 5 (6%) completed 5, 4,3,2,1 dose respectively. These findings were much better than the findings of survey of the Perry H. Weierdach R, Hossain, Islam R 1995, which found among the respondents 85% had received one or more TT vaccination.Only 11% of women of reproductive age had obtained the complete series of five TT vaccinations[11]. Almost all 70 (83.33%) of the respondents received vaccination from government hospitals whereas only 4(4.767%) from private practitioners. Maximum respondents 74 (88%) had no adverse events following immunization. Among 10 respondents 4 (40%) of the

respondents suffered from fever, 3 (30%) suffered from allergic reaction. The survey reveals that 59 (85.51%) the respondents coming from, middle class family received TT vaccination. This percentage in upper class was satisfactory 20 (83.33%) and lower class was 5 (71.43%) [Table II]. So, we see that respondents from middle class family are much more conscious regarding TT vaccination. Among 16 non immunized respondents 14 (87.5%) mention the reason of not taking vaccine as lack of awareness, though at of this 4 (100%) were HSC 2nd year students, 2 (12.5%) of the respondents mentioned the cause as cultural barrier who can only put signature [Table III].

Conclusion

Eradication of tetanus, there is no alternative to TT vaccination. From our survey, we have got a satisfactory TT vaccination status. But still there is a group of people those are totally ignorant about it and some have idea about it though they do not conscious about the vaccination. Some of the respondents start vaccination at their early reproductive period or during pregnancy but they do not continue dose schedule which is very frustrating. For appraisal of a wide range of coverage of vaccination, our government should more concerned about the health care delivery system and other non-government organizations, donor agencies and most importantly mass media can play a great role in this respect.

Conflict of Interests: None.

Acknowledgement

Thanks to Almighty Allah, that by His endless grace, I have been able to complete this Study successfully. I must express my gratitude to my dearest brother Assistant Professor Dr. Heera Laal Roy, Department of Biochemistry, Khulna City Medical College, Khulna, for hisinspiration, suggestions and valuable advices throughout the whole period of our study. I am also thankful to all lecturer of Community Medicine of Khulna City Medical College for their kind help and valuable advices.

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DOI: https://doi.org/10.3329/medtoday.v31i2.41966

REVIEW ARTICLE OPEN ACCSESS

A Short Review on Anti-diabetics for Uncontrolled Type 2 Diabetes Mellitus

Hussain Ahmad [*1], Md. Abu Nayeem Chowdhury [2]

Abstract

Introduction: *This article reviews the treatments available for patients with T2DM, with an emphasis on agents introduced within the last decade. Materials and Methods: This review is based on a search of Medline, the Cochrane Database of Systemic Reviews, and citation lists of relevant publications. Subject heading and key words used include type 2 diabetes mellitus, prevalence, current diagnosis, and current treatment. Only articles in English were included.* ***Materials & Methods:*** *Screening and diagnosis is still based on World Health Organization (WHO) and American Diabetes Association (ADA) criteria which include both clinical and laboratory parameters. No cure has yet been found for the disease; however, treatment modalities include lifestyle modifications, treatment of obesity, oral hypoglycemic agents, and insulin sensitizers is still the recommended first line medication. Other effective medications include non-sulfonylurea secretagogues, thiazolidinediones, alpha glucosidase inhibitors, and insulin. Recent research into the pathophysiology of type 2 DM has led to the introduction of new medications like glucagon-like peptide 1 analogoues: dipeptidyl peptidase-IV inhibitors, inhibitors of the sodium-glucose cotransporter 2 and 11ß-hydroxysteroid dehydrogenase 1, insulin-releasing glucokinase activators and pancreatic-G-protein-coupled fatty-acid-receptor agonists, glucagon-receptor antagonists, metabolic inhibitors of hepatic glucose output and quick-release bromocriptine.* ***Discussion:*** *: Screening and diagnosis is still based on World Health Organization (WHO) and American Diabetes Association (ADA) criteria which include both clinical and laboratory parameters. No cure has yet been found for the disease; however, treatment modalities include lifestyle modifications, treatment of obesity, oral hypoglycemic agents, and insulin sensitizers is still the recommended first line medication. Other effective medications include non-sulfonylurea secretagogues, thiazolidinediones, alpha glucosidase inhibitors, and insulin. Recent research into the pathophysiology of type 2 DM has led to the introduction of new medications like glucagon-like peptide 1 analogoues: dipeptidyl peptidase-IV inhibitors, inhibitors of the sodium-glucose cotransporter 2 and 11ß-hydroxysteroid dehydrogenase 1, insulin-releasing glucokinase activators and pancreatic-G-protein-coupled fatty-acid-receptor agonists, glucagon-receptor antagonists, metabolic inhibitors of hepatic glucose output and quick-release bromocriptine.* ***Conclusion:*** *Metformin remains the first choice of treatment for most patients. Other alternative or second-line treatment options should be individualized depending on the characteristics of each patient.*

Keywords: *Type 2 diabetes mellitus, Diagnosis, Management, Newer drugs.*

Number of Figures: 03; Number of References: 35; Number of Correspondences: 02

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Introduction

Diabetes is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of different organs, especially the eyes, kidneys, nerves, heart, and blood vessels [1]. For decades, the diagnosis of diabetes was based on plasma glucose criteria, either the fasting plasma glucose (FPG) or the 2-hr value in the 75-gm oral glucose tolerance test (OGTT)[2]. Recently, an International Expert Committee recommended that HbA1c (threshold ≤6.5%) as a third option to diagnose diabetes mellitus (International Expert Committee, 2009) and ADA include this criteria in 2010 [3].

Epidemiology of Diabetes Mellitus:

Diabetes mellitus (DM) has growing worldwide at an alarming rate. The highest increase is projected to be found in the urban population in developing countries. The International Diabetes Federation (IDF) most recently estimates that, 8.3% of adults - 382 million people around the world have diabetes in 2013, and the number of people with diabetes is set to rise beyond 592 million less than 25 years.Yet,175 million (46%) of cases currently undiagnosed, a vast amount of people with diabetes are progressing towards complications. Around 32 million people die in each year are attributable to complication of diabetes. A further 316 million people with impaired glucose tolerance are at high risk from the disease-an alarming number that is set to reach 471 million by 2035 [4].

It is clear that diabetes is an ever growing endemic with no end. Centers for Disease Control and Prevention (CDC) reported that nearly 26 million Americans have diabetes. Diabetes affects 8.3% of Americans of

Received: 04 February 2019 *Accepted revised version:* 05 March 2019

all ages, 11.3% of adults aged 20 years and older, and 25% of persons age 65 and older. In 2010 about 215,000 people younger than 20 years had diabetes (type 1 or type 2) in the United States [5]. WHO termed diabetes as an emerging epidemic, is the 7th leading cause of death in the USA. WHO reported that approximately 560 million people worldwide will have diabetes by 2030. According to this report, Bangladesh has 8.4 million (10% of adult population) with diabetes in 2013 and the number is expected to increase to a staggering 11.1 million by 2030[6].

Bangladesh is among the top 10 countries in number suffering by type-2 diabetes. The other countries suffering by diabetes are India, China, USA, Indonesia, Japan, Russia, Brazil, Italy and Pakistan. The prevalence of IGT in Bangladesh is 8.5% of adult population, which will rise to 8.8% by 2025 [7]. Increasing age and higher BMI were significant risk factors following both IGT and OGTT.

Types of Diabetes mellitus: Diabetes mellitus is classified on the basis of etiology and clinical presentation into four types: type-1diabetes, type-2 diabetes, gestational diabetes, and other specific types.Type-1 diabetes results from β-cell destruction, usually leading to absolute insulin deficiency.Type-2 diabetes results from a progressive insulin secretary defect on the background of insulin resistance.Gestational diabetes mellitus (GDM) is diabetes diagnosed during pregnancy that is not clearly overt diabetes.Other specific types of diabetes due to other cause, e.g., genetic defects in β-cell function, genetic defects in insulin action, disease of the exocrine pancreas (such as cystic fibrosis), and drug or chemical-induced such as in the treatment of HIV/AIDS or after organ transplantation) [8].

Aetiology: The cause of type 2 diabetes mellitus appears to involve complex interactions between environmental and genetic factors. The disease may develop when a diabetogenic lifestyle (i.e., excessive caloric intake, inadequate caloric expenditure, obesity) is superimposed on a susceptible genotype. The body mass index (BMI) increases the risk for diabetes varies with different racial groups. For example, persons of Asian ancestry are at increased risk for diabetes at lower levels of overweight as compared with persons of European ancestry [9]. Hypertension and pre-hypertension are associated with increased risk of developing diabetes in whites than in African Americans [10]. In addition, low birth weight may predispose some individuals to develop type 2 diabetes mellitus [11].

About 90% of patients of type-2 diabetes mellitus are obese. However, a large, population-based prospective study has shown that an energy-dense diet may be a risk factor for the development of diabetes independent of baseline obesity [12].

Major risk factors: The major risk factors for type 2 diabetes mellitus are the following: (i) Age greater than 45 years; (ii) Weight greater than 120% of desirable body weight; (iii) Family history of type 2 diabetes in a first-degree relative (e.g., parent or sibling); (iv) Previous impaired glucose tolerance (IGT) or impaired fasting glucose (IFG); (v) Hypertension (BP>140/90 mm Hg) or dyslipidemia (HDL cholesterol level <40 mg/dL or triglyceride level >150 mg/dL); (vi) History of gestational diabetes mellitus or of delivering a baby with a birth weight of over 9 lb; (vii) Polycystic ovarian syndrome (which results in insulin resistance); (viii) Genetic influences; and (ix) Depression [13].

Pathophysiology: Diabetic Mellitus is a metabolic disorder characterized by inability to regulate blood glucose. Several pathogenic processes are involved in the development of diabetes. These range from autoimmune destruction of the β-cells of the pancreas with consequent insulin deficiency to abnormalities that result in resistance to insulin action. The basis of the abnormalities in carbohydrate, fat, and protein metabolism in diabetes is deficient action of insulin on target tissues. Deficient insulin action results from inadequate insulin secretion or diminished tissue responses to insulin at one or more points in the complex pathways of hormone action. Impairment of insulin secretion and defects in insulin action frequently coexist in the same patient, and it is often unclear which abnormality, if either alone, is the primary cause of the hyperglycemia [2]. A simplified scheme for the pathophysiology of abnormal glucose metabolism in type 2 diabetes mellitus is depicted in the figure no. [1].

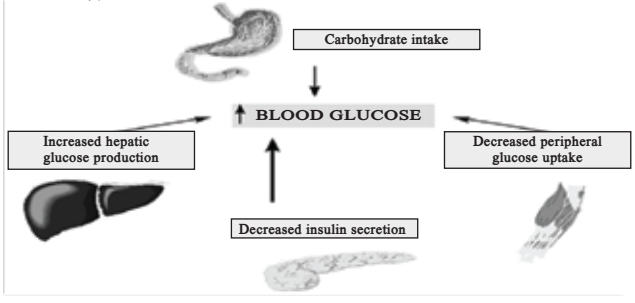

Figure-1: Simplified scheme for the pathophysiology of type 2 diabetes mellitus [13]

Presentation of DM: Symptoms of marked hyperglycemia including polyuria, polyphagia, polydipsia, weight loss, blurred vision and generalized weakness are typical features of diabetes mellitus. Impairment of growth and susceptibility to certain infections may also accompany chronic hyperglycemia. A short list includes non-healing wound infection, infertility or repeated pregnancy loss, undue fatigability, purities vulvae etc[7]. Acute, life-threatening consequences of uncontrolled diabetes are hyperglycemia with ketoacidosis or the non-ketotic hyperosmolar syndrome[2].

Diagnosis: The American Diabetes Association current criteria for the diagnosis of diabetes[8]:

• An HbA1c level of 6.5% or higher; the test should be performed in a laboratory using immunoassay (by Boronate affinity assay) method that is certified by the National Glycohemoglobin Standardization Program (NGSP) and

Diabetes Control and Complications Trial (DCCT), or

• A fasting blood glucose (FBG) level of 126 mg/dL (7.0 mmol/L) or higher; fasting is defined as no caloric diet intake for at least 8 hours before giving blood,and estimated by 'Glucose Oxidase' method, or

• A two-hour post prandial blood glucose level of 200 mg/dL (11.1 mmol/L) or higher during an oral glucose tolerance test (OGTT).

The test should be performed as described by the World Health Organization, using a glucose load containing the equivalent of 75 gm glucose dissolved in 250ml of water drinking 5-10 min, or

• A random blood glucose of 200 mg/dL (11.1 mmol/l) or higher in a patient with classical symptoms of hyperglycemia (i.e., polyuria, polydipsia, polyphagia, weight loss) or hyperglycemic crisis.

The American Association of Clinical Endocrinologists, (2010) however recommends that HbA1c be considered an additional optional diagnostic criterion rather than a primary criterion for diagnosis of diabetes [14].

If hyperglycemia is absent, then HbA1c, FBG, and OGTT results should be confirmed by repeat testing. The ADA recommends repeating the same test for confirmation, since there will be a greater likelihood of concurrence. However, the diagnosis of diabetes is also confirmed if the results of 2 different tests are above the diagnostic thresholds [2].

If a patient has 2 different tests and the results are discordant, the test that has a result above the diagnostic threshold should be repeated. A second abnormal result on this test will confirm the diagnosis [15].

In asymptomatic patients whose random blood glucose level suggests diabetes (>140 mg/dL), an FBG or HbA1c level should be measured. FBG level of 100-125 mg/dL is considered an impaired fasting glucose (IFG), and FBG level of less than 100 mg/dL is considered as a normal fasting glucose.

Complications of diabetes: Patients with long-standing diabetes are risk of developing a variety of complications. 25% of people with type-2 diabetes have evidence of diabetic complications at the time of initial diagnosis. Acute complications of DM are diabetic ketoacidosis, hypoglycaemia, hyperosmolar non ketotic coma and lactic acidosis [16].

Chronic complications of DM are:

1. Micro-vascular: (a) Retinopathy (b) Nephropathy (c) Peripheral neuropathy.

2. Macro-vascular: (a) Cerebrovascular disease (b) cardiovascular disease (c) peripheral vascular disease.

3. Others: Gastrointestinal; (a) gastroparesis, diarrhoea (b) genito urinary- uropathy, sexual dysfunction. (c) Dermopathy (d) Infections (e) Cataract glucoma (f) Periodontal disease [17].

Among the various complications, diabetic neuropathy is relatively early and common complication affecting approximately 30% of diabetic patients [18].

Management of Diabetes mellitus:The goals of management of patients with diabetes mellitus are to eliminate symptoms and to prevent the development of complications. Reduction of microvascular complication (i.e., eye and kidney disease) is accomplished through control of hyperglycemia and blood pressure; and that of macrovascular complication (i.e., cardiovascular, cerebrovascular & peripheral vascular disease), through control of dyslipidemia and hypertension, smoking cessation, aspirin therapy, metabolic and neurologic risk reduction and control of hyperglycemia [13]. An ideal plan of management includes (i) appropriate goal setting, (ii) dietary and exercise modifications, (iii) medications. (iv) appropriate self-monitoring of blood glucose (SMBG) level, (v) regular monitoring for complications, and (vi) Laboratory assessment [13].

Ideally, blood glucose should be maintained at near-normal levels (preprandial levels of glucose (72-126) mg/dL and hemoglobin A1c [HbA1c] levels <7%). However, focus on glucose alone does not provide adequate treatment for patients with diabetes mellitus. Treatment involves multiple goals (i.e, glycemic status, lipid profile and blood pressure)[13].There is no cure of diabetes, rather the traditional treatment as diet control, regular exercise & drug therapy - would control glucose metabolism.

A lot of drugs are using to control diabetes. It becomes difficult to control type 2 diabetes nowadays although we have many drugs. This article reviews the treatments available for patients with T2DM, with an emphasis on agents introduced within the last decade.

Materials and Methods

This review is based on a search of Medline, the Cochrane Database of Systemic Reviews, and citation lists of relevant publications. Subject heading and key words used include type 2 diabetes mellitus, prevalence, current diagnosis, and current treatment. Only articles in English were included.

Pharmacological Therapy: Early initiation of pharmacological therapy is associated with improved glycemic control and reduced long-term complications in type 2 diabetes. Drug classes used for the treatment of type 2 diabetes include the following:

1) Oral anti-diabetic agent

2) Injectableanti-diabetic agent – Insulin

Oral anti-diabetic agent may be classified as:

a) Insulin Secretagagues:

i. Sulfonylurea-

• 1st generation –Tolbutamide, Chlorpropamide.

• 2nd generation – Glibenclamide, Glipizide, Gliclazide, Glimepiride.

ii. Nonsulphonylureas-

• Meglitinide analogue – Repaglinide.

• D-phenyl-alanine derivatives – Nateglinide

b) Insulin sensitizers

i. Biguanide – Metformin

ii. Thiazolidinediones – Pioglitazone, Rosiglitazone

c) Alpha-glucosidase inhibitors– Acarbose

d) Incretin based therapy:

i. Dipeptidyl peptidase IV inhibitors - Sitagliptin, Vildagliptin, Saxagliptin and Linagliptin

ii. Glucagon like peptide-1(GLP-1) analogues – exenatide, (Subcutenious rout), Liraglutide [7,19].

e) Na-glucose co-transporter-2 inhibitor in renal tubles – Dapagliflozine.

Injectable agents (Insulin) may be classified as:

a) Conventional: Short acting (regular insulin), intermediate acting (NPH, lente), and long acting (ultralente)

b) Analogues: rapid acting analogues (aspart, lispro, glulisine), long acting analogues (glargine, detemir, degludac)

c) Pre-mixed insulin (conventional and analogues) [20].

Mechanism of action of different Oral anti-diabetic drugs:

Mechanism of different oral anti-diabetic agent describes briefly in the Figure no. 2. Insulin secretogogues – like sulfonylureas, meglitinides, and phenylalanine derivatives – stimulate more Insulin secretion; and Biguanides acts against Insulin resistance and enhance Insulin activity. They both thus prevent blood glucose level to be raised in type 2 diabetic patient. Thiazolidinediones enhance peripheral glucose uptake, mostly by the skeletal muscles. And alpha-glucosidase inhibitors prevent well absorption of carbohydrate from the intestine.

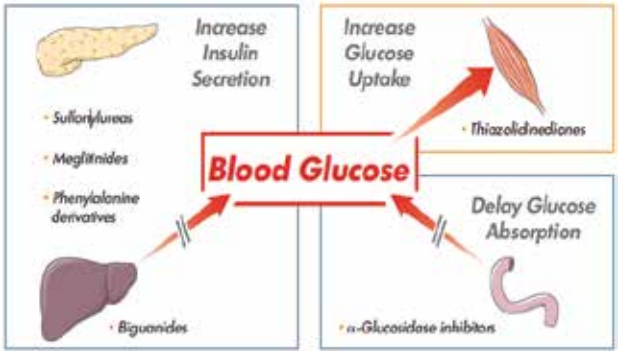

Figure-2: Mechanism of action of different OADs [21]

Doses and duration of Gliclazide for treatment of diabetes mellitus:

Daily total dose of Gliclazide is 40-320 mg, dosing schedule is 1 to 2 times/day and duration of action is 12-24 hours [20].

Indication: Type 2 diabetes mellitus patient [20].

Advantage: Potent; reduce pre- and post-prandial BG (Blood glucose) [7].

Disadvantage: Hypoglycemia,Gastro-intestinalup set, Weight gain [20].

Limitation: Impaired hepatic and renal function [20].

Pharmacokinetics of metformin: Only route of administration is oral; well absorbed from G.I.T.Maximum duration of action: 24 hours; t½ is 1.5 -3hours hour. It is not bound to plasma protein; not metabolized in liver; and excreted unchanged by the kidneys [20].

Mechanism of action of metformin: Metformin acts by reduction of hepatic glucose production, enhancement of insulin sensitivity and increasing glucose uptake by peripheral tissues [20].

Doses and duration of Metformin for treatment of diabetes mellitus: Total daily dose of metformin is 500-2550 mg, dosing schedule is 2-3 times/day and duration of action is 8-12 hours [20].

Indication of Metformin: Patient with Type 2 diabetes mellitus, gestational diabetes mellitus, pregnant patient with existing type2 DM, Polycystic ovarian syndrome [20].

Advantage: Improves insulin sensitivity, weight reduction, reduce pre- (mostly) and post-prandial blood glucose, favorable effects on lipid profile [7].

Disadvantage: G.I.T. upsetsinclude Anorexia, Nausea, Vomiting, Diarrhoea, lactic acidosis [20].

Limitation: Impaired renal and hepatic function [20].

Insulin in type 2 DM: Due to progressive nature of type 2 DM, many individuals require insulin to optimize glycemic control over time as oral hypoglycemic agents fail to achieve targets. This failure termed as primary and secondary OHA failure[7]. The incidence of secondary drug failure, as published in literature is 0.3% to 30% [22]. So, alternative treatment option is needed for controlling blood glucose level. Recently introduced incretin based therapies has been opened new hope for glycemic control in DM treatment [23].

Incretin and incretin based therapies for Diabetes treatment: Incretins are local hormones that are released after ingestion of a meal and augment the secretion of insulin. These hormones are Gastric inhibitory polypeptide (GIP) and Glucagon-like peptide-1 (GLP-1) [24]. Current research suggests that GLP-1 (glucagon-like peptide-1) is the most important. Because GLP-1 stimulates insulin secretion only under hyperglycemic conditions, there is minimal risk of hypoglycemia; GLP-1 is also associated with increased satiety, possibly because it reduces the rate of gastric emptying. People with type 2 diabetes have reduced circulating levels of GLP-1 but retain their ability to respond to this hormone. Thus, it is possible to improve glycemic control through administration of exogenous GLP-1[25]. Unfortunately, under normal physiological conditions, GLP-1 and GIP are rapidly degraded by the enzyme system DPP-IV and therefore are not themselves viable as pharmacological agents [23]. Agents that act as incretin mimetic, such as exenatide and liraglutide, and DPP-4 inhibitors, such as sitagliptin, vildagliptin, linagliptin and saxagliptin, improve glycated hemoglobin levels either as monotherapy or in combination with other agents. Importantly, these agents either lead to weight loss or are weight neutral and are associated with a low risk of hypoglycemia—properties that further contribute to their clinical utility. Although DPP-IV inhibition has been

associated with an enhancement of beta-cell survival and neogenesis in streptozotocin-treated diabetic rats, this effect has not yet been demonstrated in humans. This exciting possibility undoubtedly will be evaluated in humans as a potential agent or class of agents for the prevention of type 2 diabetes [25].

Pharmacology of Sitagliptin: Sitagliptin is a new oral hypoglycemic (anti-diabetic drug) of the new dipeptidyl peptidase-4 (DPP-4) inhibitor class of drugs. This enzyme-inhibiting drug is to be used either alone or in combination with metformin or a thiazolidinedione for control of type 2 diabetes mellitus [7]. Sitagliptin (previously identided as MK-0431) was the first commercialized orally active, potent and selective inhibitor of DPP-4. It is currently available as single agent or in fixed-dose combination with metformin. According to in vitro studies, sitagliptin is not an inhibitor of CYP isozymes CYP3A4, 2C8, 2C9, 2D6, 1A2, 2C19 or 2B6, and is not an inducer of CYP3A4. Based on these results, sitagliptin is considered unlikely to cause interactions with other drugs that utilize these pathways. Sitagliptin is not extensively bound to plasma proteins. Therefore, the propensity of sitagliptin to be involved in clinically meaningful drug–drug interactions mediated by plasma protein binding displacement is very low [26].

Pharmacokinetics of Sitagliptin: Sitagliptin is absorbed effectively from the small intestine. It circulates in primarily in unbound form; not appear to undergo extensive metabolism and nor do they affect the hepatic cytochrome oxidase system. The primary route of excretion of radioactivity was via the kidneys, with a mean value of 87% of the administered dose recovered in urine. Mean faecal excretion was 13% of the administered dose. Parent drug was the major radioactive component in plasma, urine and faeces, with only 16% of the dose excreted as metabolites (13% in urine and 3% in faeces), indicating that sitagliptin was eliminated primarily by renal excretion and lower doses should be used in patients with reduced renal function [26].

Pharmacodynamics of Sitagliptin: Gut hormones or incretins (e.g. glucagon like peptide1 /GLP1 and glucose dependent insulinotropic polypeptide/GIP) lower blood glucose by:

1. Increasing insulin secretion by glucose-dependent manner.
2. Slowing gastric emptying and reduced appetite.
3. Decreasing glucagon secretion.

Incretin hormones are rapidly inactivated by the DPP-4 enzyme. Sitagliptin inhibit DPP-4 enzyme and thereby prolong incretin activity[27]. Its mechanism of action schematically presented in the figure no. 3.

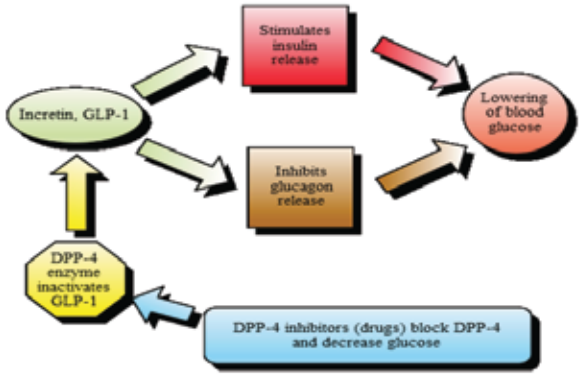

Figure-3: Mechanism of action of DPP-4 inhibitors [27]

Doses and duration of Sitagliptin for treatment of diabetes mellitus: Recommended dose is 100 mg once daily, duration of action is 24 hours [28].

Indication of Sitagliptin: Sitagliptin used as monotherapy and as add-on therapy to either of two other types of oral diabetes medications, metformin or thiazolidinediones in type 2 DM patient [28].

Advantage: Weight loss, decreased pre and post prandial blood glucose, may associated with increase beta cell mass and survival [7].

Disadvantage: Upper respiratory tract infection (Nasopharyngitis), may cause pancreatitis, may cause GIT upset28.Sitagliptin & vildagliptin are two compounds of the DPP4 inhibitor class that have been approved in various countries [28].

Pharmacology of Insulin glargine: Insulin glargineis a long-acting analog of human insulin that is produced following two alterations of human insulin. Two arginine residues are added to the C terminus of the B chain, and an asparagine molecule in position 21 on the A chain is replaced with glycine [29].

Insulin glargine is a clear solution with a pH of 4.0, which stabilizes the insulin hexamer. When injected into the neutral pH of the subcutaneous space, aggregations occurs, resulting in prolonged, but predictable, absorption from the injection site. Owing to insulin glargine's acidic pH, it cannot be mixed with short-acting insulin preparations (i.e., regular insulin, aspart, or lispro) that are formulated at a neutral pH [29].

In clinical studies glargine has a sustained peakless absorption profile, and provides a better once-daily 24-hour insulin coverage than NPH insulin. Evidence from clinical trials also suggests that glargine has a lower risk of hypoglycemia, particularly overnight compared to NPH insulin. Glargine may be administered at any time during the day with equivalent efficacy and does not accumulate after several injections. Glargine has been shown in clinical studies to normalize fasting (post absorptive) glucose levels following once-daily administration in patients with type 2 diabetes [29].

Sometimes, splitting the dose of glargine may be needed in very insulin-sensitive type 1 diabetes patients to achieve fasting (basal) glucose levels in the target range and avoid hypoglycemia. Unlike traditional insulin preparations that are absorbed more rapidly from the abdomen than from the arm or leg, the site of administration does not influence the time–action profile of glargine. Similarly, exercise does not influence glargine's unique absorption kinetics, even when the insulin is injected into a working limb [29].

Glargine binds with a slightly greater affinity to IGF-1 receptors as compared with human insulin. However, this slightly increased binding is still approximately two log scales lower than that of IGF-1. Controversy currently exists whether glargine insulin is associated with an increased chance of malignancy or an acceleration of underlying malignancy, but most feel that the available evidence is circumstantial and not sufficiently convincing to change prescribing patterns [29].

Discussion of safety and efficacy of using the agents using multi drug approach in uncontrolled type 2 diabetic patients: Aschner et al., (2012) conducted a comparative, parallel, randomized, open label trial of 6 months. In this 6 month study 732 patients with uncontrolled type2 diabetes patients treated with metformin were enrolled. Then insulin glargine (n=250) was given in one group subcutaneously at a dose of 0.2 unit/kg body weight; while in another group, sitagliptin (n=265) was given at a dose of 100 mg once daily as add on therapy. At the end of 6 month period they concluded that insulin glargine was better in the achievement of optimum glycemic control in type 2 diabetes patients inadequately controlled by metformin [30].

Arechavaleta et al., (2011) conducted a study to evaluate the efficacy and safety of adding sitagliptin 100 mg daily or glimepiride (starting dose 1 mg/day up to 6 mg/day) to the treatment regimen of patients with type 2 diabetes mellitus with inadequate glycemic control on metformin monotherapy. They concluded that the addition of sitagliptin or glimepiride led to similar improvement of glycemic control after 30 weeks. Sitagliptin was generally well tolerated as compared to glimepiride. But treatment with sitagliptin was associated with a lower risk of hypoglycemia and weight loss while glimepiride was associated with weight gain [31].

A 24 weeks, single blind study was conducted to assess the efficacy and safety of the sitagliptin (100 mg/day) added to ongoing metformin therapy who had inadequately glycemic control with metformin (≥1500 mg/day) alone. They found sitagliptin with ongoing metformin therapy was efficacious and well tolerated in patients with type 2 diabetes [32].

Nauck et al., (2006) conducted a study to compare the efficacy and safety of sitagliptin (100 mg qd) versus glipizide 5 mg/day (up tritrated to a potential maximum up to 20 mg/day) in patients with type 2 DM and inadequately glycemic control on metformin monotherapy. After 52 weeks of study they concluded that, the addition of sitagliptin compared with glipizide provided similar HbA1c lowering efficacy. Sitagliptin was well tolerated with a lower risk of hypoglycemia related to glipizide and with weight loss compared with weight gain with glipizide [33].

Sitagliptin has been studied as monotherapy and with other OHA. Aschner et al., (2006) studied sitagliptin as monotherapy on glycemic control in patient with type 2 DM. In this randomized, double blinded, placebo controlled study 741 patients (baseline HbA1c [A1C] 8.0%) were randomized to sitagliptin 100 mg or 200 mg or placebo for 24 weeks. After the end of the study period they stated that once daily sitagliptin monotherapy improves glycemic control in the FBG, 2 hours Postprandial, HbA1c and was well tolerated in patients with type - 2 diabetes[30].

Sudhakaran et al., (2011) conducted a 24 weeks study on type 2 DM patients whose glycemia was not controlled adequately (HbA1c >6.5) with OADs (either alone or combination). Then sitagliptin at a dose of 100 mg once daily was added in addition to existing therapy in one group and insulin glargine as add on therapy in another group. At the end of the treatment period of 24 weeks they observed that sitagliptin significantly reduced HbA1c and FBG in comparable to insulin glargine. Moreover, insulin glargine caused weight gain (0.7kg) whereas sitagliptin caused small weight loss [0.3 kg] [34].

The efficacy and safety of sitagliptin as monotherapy were evaluated in Chinese, Indian and Korean patients with type 2 DM inadequately controlled by diet and exercise. In this randomized, placebo-controlled, double-blind, 18 week trial 530 patients received sitagliptin 100 mg once daily or placebo. In this study, sitagliptin monotherapy for 18 weeks significantly improved glycemic control and was well tolerated in patients with type-2 diabetes from China, India and Korea [35].

Conclusion

Lifestyle modifications and metformin are the cornerstone of the initial management of T2DM, there is an increasing array of second and third-line pharmacological agents for this condition. At present there are different families of oral and injectable drugs, available for the treatment of T2DM. These include sulfonylureas, meglitinides, insulin, TZD and alpha-glucosidase inhibitors, and recently with the addition of RA-GLP1 receptor agonists, iDPP4 and iSGLT2. Moreover, insulin analogues that better simulate endogenous insulin secretion have been developed. Metformin remains the first choice of treatment for most patients. Other alternative or second-line treatment options should be individualized taking into consideration patient characteristics as degree of hyperglycaemia, presence of co-morbidities, and patient preference and ability to access treatments; and properties of the treatment such effectiveness and durability of lowering blood glucose, risk of hypoglycaemia, effectiveness in reducing diabetes complications, effect on body weight, side effects and contraindications. Although it does not appear that in the

near future cure diabetes, novel safety and effective agents that will improve the quality of life of T2DM patients, are developing.

Conflict of Interests: None.

Acknowledgement

The authors thanks to Dr. K. M. Hafizur Rahman, Lecturer, Department of Pharmacology & Therapeutics, Sylhet Women's Medical College, for his technical support in preparing this article.

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CASE REPORT OPEN ACCSESS

A Case Study of Achalasia of Cardia

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Abstract

Introduction: *Achalasia is a benign idiopathic disorder caused by progressive neuronal degeneration in the mesenteric plexus of Auerbach, which causing non-relaxing, hypertensive lower esophageal sphincter (LES) and aperistalsis of the esophageal body. This functional damage is irreversible and the treatment of esophageal achalasia is mainly palliative.* ***Case Report:*** *Our patient is a 55 years old lady presents with progressive dysphagia, regurgitation, chest pain and weight loss.* After clinical examination and relevant investigations, she was diagnosed as a case of achalasia of cardia of oesophagus. ***Discussion:*** *She was prepared for Heller's myotomy with antireflux procedure. Operative procedure was done under general anaesthesia.* ***Conclusion:*** *Postoperative recovery was good. The patient is asymptomatic, general condition improved and found healthy on follow up after one year.*

Keywords: *Achalasia, Laparoscopic myotomy.*

Number of Figures: 02; Number of References: 05; Number of Correspondences: 04

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Introduction

Achalasia is a benign idiopathic disorder caused by progressive neuronal degeneration in the mesenteric plexus of Auerbach, which causing non-relaxing, hypertensive lower esophageal sphincter (LES) and aperistalsis of the esophageal body[1]. This functional damage is irreversible and the treatment of esophageal achalasia is mainly palliative. The most recognized clinical features of the disease are progressive dysphagia, regurgitation, chest pain, and weight loss[2]. Repeated aspiration pneumonia can be one of the clinical presentations. Achalasia is also a risk factor for the development of esophageal carcinoma, with 140-fold increased risk of cancer compared to general population[1].

Case Report:

A 55 years old lady, presented with progressive dysphagia for 6months, she complained of difficulty in swallowing food since 6 months ago, started with solid food. Besides, she also had loss of appetite and loss of weight (10 kg over the last 2 months).There was no significant past surgical history. She is a housewife and non-smoker. Clinically she was pale, dehydrated, heart rate 80/min (regular) and blood pressure 120/80mmHg. Her weight was 45kg. There was no leg edema. Abdominal examination was unremarkable except for mild tenderness over epigastric region. Lungs were clear with no crepitation bilaterally. Other systemic examinations were unremarkable.

Her haemoglobin level was 12.9 g/dl; white cell count was 7,700/dl. Serum sodium was 138 mmol/L, potassium level was 3.5mmol/L. Oesophago-gastric-duodenoscopy (OGDS) revealed residual food particles accumulated at the lower esophagus, with dilated lower esophagus and generalized whitish lesions (Fig. 1).

Figure-1: Oesophagial candidiasis.

There was also severe gastritis with bile reflux and mild duodenitis.

Biopsy of the lower esophagus reported as there is scattered yeast like fungal bodies with budding are seen with positive PAS and GMS staining.

Received: 22 May 2019 *Accepted revised version:* 22 June 2019

She was initially started with proton pump inhibitor (Pantoprazole). Nystatin suspension was added to treat the fungal esophagitis. Barium swallow x- ray of oesophagus (Fig. 2) showing bird's beak appearance, which strongly suggest that the patient is suffering from achalasia of cardia.

Figure-2: Barium swallow x-ray of oesophagus showing Bird' beak appearance.

After initial management, patient was taken for operative procedure. Laparotomy was done under general anaesthesia, stomach and oesophagus were mobilized, oesophagialmyotomy with anterior fundoplication (Heller-Dor's operation) was done.

Post-operative recovery was good. The general condition of the patient was gradually improving. Follow up after one year; she was healthy, having no complication and regain about five kilogram of body weight.

Discussion

There are currently four modalities for the treatment of achalasia, which including pharmacological therapy, endoscopic Botulinum toxin A (Botox) injection, pneumatic dilatation and surgical myotomy[3].

Pharmacological therapy, which include isosorbitedinitrate and calcium channel blockers are generally is consideredonly in patients who are not candidate for surgery or other treatment modalities.

Endoscopic pneumatic dilatation of the LES may be the most effective treatment for achalasia non-surgically. However, it can lead to LES incompetence and gastroesophageal reflux in some cases, and the most severe complication is esophageal perforation[4].

The advantage of surgical myotomy is that disruption of the muscular fibers is accomplished under direct vision. An additional procedure –anti-reflux procedure can be added during the same setting. We have done open laparotomy, then mobilization of lower oesophagus and stomach followed by a long incision at lower oesophagus (myotomy). Anterior fundoplication was done as an anti-reflux procedure.

The introduction of a laparoscopic approach (minimally invasive) has regained primacy[5].

A recent meta-analysis suggested that good clinical efficacy combined with low morbidity has established laparoscopic myotomy as a definitive, safe, and effective alternative in the treatment of achalasia.

Laparoscopic myotomy is less invasive than open surgery,but is expensive and the results depend mainly on the surgeon's expertise.

Nevertheless, we strongly suggest that endoscopic treatment is advisable with frequent follow-up before surgical treatment commenced[3].

Conclusion

Open surgical procedure gives good result even in long term follow up. But laparoscopic myotomy is the preferred and recommended method in the management of achalasia.

Laparoscopic myotomy with partial fundoplication is superior to other treatment methods because of its excellent efficacy and safety, and also prevent acid exposure in the distal esophagus. Open surgical procedure can be performed where laparoscopic facility as well as expert personal is not available.

Consent:

Prior informed consent was obtained from the patient for publication of this case report and any accompanying images.

Conflict of Interests: None.

Acknowledgement

The authors gratefully acknowledge Dr.Md.Ridwanul Islam MBBS for helping with valuable suggestions and documentations.

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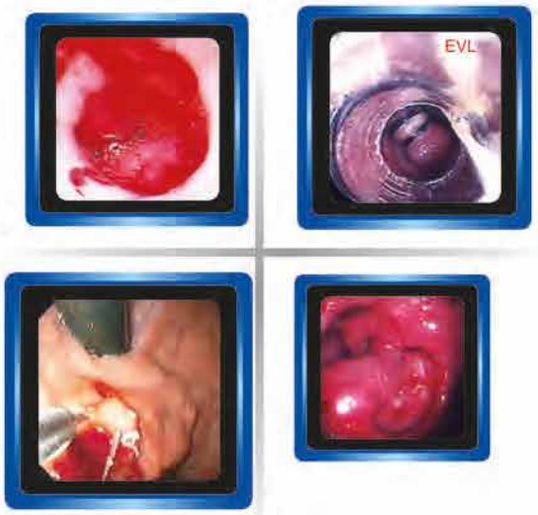

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