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Informations about Prime Medical College, Rangpur

Prime Medical College is one of the best and largest private medical college in Bangladesh. It was established in 2008. The ideas of establishing this Medical College is to provide standard Medical Education and Health Services to the people at an affordable cost.

The objectives of the institute are :

- To promote and provide education in Medical Science and to Provide training in different discipline of medicine recognized by the postgraduate institutes and universities.
- To conduct research work on the diseases prevalent in the country.
- To conduct research on medical education with the aim of uplifting the quality and standard of medical education in the country.
- To produce and provide skilled manpower in the medical, nursing and paramedical fields.
- To provide quality medical care and heath services to the people at reasonable cost.

The first and foremost objective of establishment of this medical college is to offer MBBS degree under Rajshahi University of Bangladesh and to provide good quality medical graduates, who can fulfill the need of health care prevailing in the country.

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Editorial

Preoperative Evaluation- for best surgical outcome.

Professor Dr. Nawazesh Farid

Surgery is attempted for cure of diseases in most cases, otherwise it is done to relieve symptoms and to minimize morbidity and also mortality. Surgery either it is elective or emergency; either major or minor are involved with some risk. Preoperative evaluation can reduce those risk elements to a considerable extent[1].

Preoperative outpatient medical evaluation can decrease the length of hospital stay as well as minimize number of postponed or cancelled surgeries[2]. Implementation of necessary measures can effectively prepare higher risk patients for surgery. To provide effective benefit the physician should understand the risk associated with particular surgery and correlates that with patient's underlying acute or chronic medical problems if any.

Complications may occur in a significant number in surgical patients. In a large study it is shown to be up to 17 percent[3]. Surgical mortality and morbidity generally fall into three categories: Cardiac, Respiratory and Infectious[3,4] where percentage of infections are usually highest among the categories. The frequencies of complications are as follows:

Infections 14.3%
- Wound infection 5.1%
- Pneumonia 3.6%
- UTI 3.5%
- Systemic sepsis 2.1%

Respiratory 9.5%
- Pneumonia 3.6%
- Failure to wean from respirator in 48 hours 3.2%
- Unplanned intubation 2.4%
- Pulmonary embolism 0.3%

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Cardiac 4.5%
- Pulmonary edema 2.3%
- Cardiac arrest 1.5%
- Myocardial infarction 0.7%

Advanced age of patient is related to increased risk of surgical mortality and morbidity[5]. Again, diseases associated with increased risk of surgical complications are; respiratory, cardiac, nutritional anemia and endocrine diseases including Diabetes Mellitus[6].

Patient should ideally be evaluated few weeks before an elective surgery and that includes preoperative history (including drug history) and physical examination. Past history of any surgical procedure and patient's experience with anesthesia (if available) must be kept in attention. History of postoperative complications if any must also be noted.

Ongoing treatment of Respiratory and Cardiac element should be adjusted if necessary. Diabetic patient on Oral Hypoglycemic Drug (OHD) is to be switched over to Regular Insulin for effective control of blood sugar during surgical stress. Patient's Hemoglobin status should be evaluated and corrected preoperatively. An Albumin level <3.2 gm/dl & hemoglobin <10 gm/dl suggest increased risk of complication[7].

Renal function and electrolytes levels need to be assessed for optimal control and prevention of further deterioration. Thyroid hormone status and achievement of euthyroid state is important for early and effective recovery.

Drug dose may need to be adjusted. , Aspirin/Anti-platelets should be discontinued one week before surgery to avoid bleeding. Preferably NSAID and Mono Amino Oxidase (MAO) inhibitors is to be discontinued. Immunization status is to be documented and vaccines are updated if necessary.

A functional assessment should be performed

and physician should review the patient's social support and need for assistance after hospital discharge.

Cardiac complications are most common type of complications that can threaten surgical patient's life or prolongs hospital stay. Cardiopulmonary assessment may reveal features that warrant preoperative intervention. Evaluation of BP, heart murmur, signs of congestive heart failure and pulmonary diseases are necessary. Liver function also has to be assessed in suggested situation.

It has been observed that 60% of the cardiovascular related deaths occur due to coronary artery disease[8]. ECG should be routinely done in patients older than 40 years or if indicated from medical history. CXR (P/A view) is almost a routine[9]. Echocardiographic analysis of LV function is required in clinically suggested situations. Patients with respiratory disease may benefit from preoperative use of bronchodilators or steroids. In some cases Spirometry is required for assessment of lung function and to plan rehabilitation after surgery in the recovery stage.

For pre operative evaluation a multifactorial index score is required to estimate cardiac risk in non-cardiac surgical procedure[10]. That is-

Criteria	Point Score
History: Age >70 years	5
Myocardial infarction in last 6 months	10
Examination: S3 or raised jugular venous pressure	11
Significant aortic stenosis	3
Electrocardiogram: Rhythm other than sinus	7
>5 ventricular ectopic beats/min	7
General: Any of the following: Respiratory failure, K+ <3.0 mmol, renal failure, liver dysfunction, immobilization	3
Surgery: Abdominal, thoracic, aortic	3
Emergency	4
Total possible	53

Cacculated score is divided in four groups which represent the condition and outcome.

Groups	Total Points	Non fatal complications	Cardiac death
		(%)	(%)
I	0-5	0.7	0.2
II	6-12	5	2
III	13-25	11	2
IV	>26	22	56

Bangladesh is a thickly populated developing country. Most of the people reside in rural and urban areas. Health service network is not well developed due to financial constrain especially in the Government level. Moreover, the government sector suffers from manpower, equipment, drugs and commodity shortage. Non-government sectors provide a large extent of medical support. Unfortunately, still today the non-government sector is not under the strict supervision of the Health Ministry. Under the prevailing situation most of the operative cases don't have preoperative assessment. In the private level hospitals most operations are performed on emergency basis, not as elective case. As a result, evidence of pre and postoperative complications are much higher causing higher morbidity and mortality.

To avoid those casualties qualified surgeon, anesthesiologist and others in the surgical team should feel importance of preoperative evaluation. Physicians must have adequate knowledge on the subject matter and should be careful in providing opinion[2].

Pre-operative evaluation of patient is a dynamic process in which patient and physician are independent. This process is aimed at enhancing the outcome of surgical procedure and must be thorough streamlined, educational, and costeffective, with physician/surgeon and patient's satisfaction as the final goal[11].

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Original article

Body mass index and blood pressure indices in young medical students of Bangladesh.

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ABSTRACT

BACLGROUND: *Increased prevalence of hypertension has been reported in overweight and obese person. Adolescents are not spared from the risk of development of hypertension as currently the tendency of becoming overweight among young adults has increased.* ***OBJECTIVES:*** *To assess the body mass index and its association with blood pressure indices in young medical student.* ***METHODS:*** *For this purpose a cross sectional study was carried out on 100 young 2nd year MBBS students of both sexes from March to November 2016 in the Department of Physiology of Prime Medical College, Rangpur, Bangladesh. The height, weight, resting radial artery pulse rate and resting brachial artery blood pressures (SBP, DBP, PP and MBP) were measured by applying appropriate procedures. Statistical analysis was done by Chi-square test, one way ANOVA followed by Bonferroni post hoc test and Pearson's correlation coefficient tests, where $p<0.05$ was considered as significant.* ***RESULTS:*** *Among the study subjects 42 were male and 58 were female. Among 58 female subjects 7 (12.07%) were underweight, 32 (55.17%) were normal weight and 19 (32.76%) were overweight. The mean values were 16.41±1.48, 20.76±1.21 and 28.42±5.43 in underweight, normal weight and overweight female subjects respectively. The differences among the three groups in respect to the mean value of BMI were statistically significant ($p<0.001$). According to BMI among 42 male subjects, 8 (19.04%) were of underweight, 16 (38.10%) were normal weight and 18(42.86%) were overweight. The mean values were 17.20±0.53, 20.14±1.24 and 26.32±3.79 in underweight, normal weight and overweight male subjects respectively. Significant ($p<0.001$) differences have been observed in respect to mean value of BMI among the three groups. Again, in female subjects significant ($p<0.01$) positive correlation of BMI with SBP, DBP and MBP were observed. In male subjects the BMI showed non significant ($p>0.05$) relationships with HR, SBP, DBP, PP and MBP.* ***CONCLUSION:*** *In our study increase tendency to obesity in young medical students have been observed and increase BMI is related to increase blood pressure indices, which supports increased risk of development of hypertension in future.*

Key words: Obesity, Hypertension, Adolescent, BMI, Blood pressure indices.

INTRODUCTION

Presently one of the major global health challenges is rapid rise of non-communicable (NCDs) diseases. It is true for both developed and developing countries. 80% death has been observed in developing countries due to NCDs as a result of changes in lifestyle following rapid urbanization[1]. In 2002, WHO reported some causes of NCDs such as unhealthy diet, physical inactivity, tobacco use, harmful use of alcohol, overweight, hypertension, dyslipidemia and diabetes mellitus etc. Among these, hypertension is the most important potential risk factor for ischemic heart disease (IHD), stroke, heart and renal failure, peripheral vascular disease[2]. Increased prevalence of hypertension have been reported in overweight and obese person as a consequence of sedentary lifestyle[3,4]. Obesity is associated with sympathetic over activity which leads to development of hypertension[5].

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Children and adolescent are not spared from the risk of development of hypertension as currently the tendency of becoming overweight among young adults has increased[6]. High blood pressure has been observed among the students joining a medical college, India who were overweight and obese[7]. In another study significantly increased heart rate, systolic blood pressure and diastolic blood pressure were observed in overweight subjects[8]. It also has been reported that prevalence of medical problems such as HTN and DM has positive correlation with BMI[9].

Again, positive relationships of body mass index (BMI) with blood pressure in young adult has been observed, where overall percentage of overweight student was 16%[10].

The risk of development of hypertension increases two to six fold due to increased weight. An increase of 2-3 mmHg in systolic and 1-3 mmHg in diastolic blood pressure has been shown for each 10 kg increase in western population[11].

Like many developing nation, Bangladesh was found to have ninth highest rate of age-standardized mortality among the selected 23 low-income and middle income countries due to NCDs like CVD and diabetes[12]. These non-communicable diseases are responsible for 51% deaths in Bangladesh. The treatment of full blown NCDs is more expensive than control[13]. Incidence of becoming overweight or obese is increasing in low and middle income countries, which may be one of the predisposing factors of increased incidence of NCDs in these countries[14,15]. Globally 1.2 million children and youth age 20 died due to NCDs in 2002[16].

To the best of our knowledge few researches have been done in our country regarding obesity and hypertension in young medical student. Therefore, current study was designed to assess the body mass index and its association with blood pressure indices in young medical student.

MATERIALS AND METHODS

This cross-sectional study was conducted from March to November 2016 in a private medical college, Rangpur, Bangladesh. For this total 100 young 2nd year MBBS students of both sexes were selected. Among them 42 were male and 58 were female. Study was carried out with prior protocol approval from ethical review committee of Prime Medical College, Rangpur, Bangladesh. The subjects were selected by simple random sampling and informed written consent was taken after detailed explanation of the purpose and method of conducting the study. The height was measured to the nearest of 0.1 cm and weight was measured to the nearest of 0.5 kg with the help of medical weighing machine having height rod. The weighing machine was adjusted to '0' level before measuring weight of each subject. During the weight measurement subjects were allowed to wear light cloths only. The body nass index was calculated from height and weight by using the formula weight in kg/ height in m^2. Then male and female students were grouped in to 3 groups according to the cuff –off value of BMI[7,17,18].

After 10 minutes rest both systolic (SBP) and diastolic (DBP) blood pressures were measured by auscultatory method with murcury sphygmomanometer and stethoscope in sitting position. Pulse pressure (PP) and mean blood pressure (MBP) were calculated from systolic and diastolic blood pressures. Pulse pressure was calculated from the difference between SBP and DBP and mean blood pressure was calculated by the formula DBP+ 1/3 of PP. After measuring of blood pressure indices subjects were classified according to the seventh report of the joint national committee on prevention, detection, evaluation and treatment of high blood pressure (JNC 7)[19]. Heart rate of each subject was calculated by counting pulse rate from radial artery. All the procedures were carried out from 10 am to 12 pm.

Data were expressed as the mean±SD. Statistical analysis was done by chi-square, one way ANOVA followed by Bonferroni post hoc and Pearson's correlation coefficient tests where applicable by SPSS version 17.00 for windows. $p<0.05$ was considered as level of significance.

RESULTS

The distribution of the subjects according to BMI is shown in Table I.

Among the 100 young medical students, 42 were male and 58 were female. Of the 58 female subjects 7 (12.07%) were underweight, 32 (55.17%) were normal weight and 19 (32.76%) were overweight. Again, among 42 male subjects, 8 (19.04%) were underweight, 16 (38.10%) were normal weight and 18(42.86%) were overweight . The comparison among male and female subjects on the basis of BMI were not statistically significant ($p>0.05$).

Table I: Distribution of subjects according to BMI (N=100).

Category	Female (n=58)	Male (n=42)	Total no (%)	p value
Underweight	7(12.07%)	8 (19.04%)	15(15.0%)	
Normal weight	32(55.17%)	16 (38.10%)	48(48.0%)	0.229^{NS}
Overweight	19(32.76%)	18(42.86%)	37(37.0%)	
Total	58(100.0)	42(100.0)	100(100.0)	

Chi-square test has done for comparison. NS= not significant.
N= total number of subjects. n= number of subjects in each group.
Underweight: BMI<18.5 kg/m^2, Normal weight: BMI 18.5-22.99 kg/m^2,
Overweight: BMI≥23 kg/m^2[2,7,17,18]

In female subjects, the differences among the three groups in respect to the mean value of BMI were statistically significant ($p<0.001$), which showed lowest value in underweight subjects and highest value in overweight subjects. Mean value of HR, SBP, DBP, PP and MBP were higher in overweight than underweight and normal weight subjects but the differences among the three groups were statistically not significant ($p>0.05$) (Table II).

Table II: Distribution of young female medical students according to Mean BMI and BP indices of Prime Medical College, Rangpur(N=58).

Groups	BMI Kg/m^2	HR Beats/min	SBP mm of Hg	DBP mm of Hg	PP mm of Hg	MBP mm of Hg
Underweight (n=7)	16.41±1.48	73.14±9.37	95.71±13.97	62.85±11.12	32.85± 4.87	73.80±11.92
Normal weight (n=32)	20.76±1.21	68.12±3.95	108.75±11.84	70.62±8.40	38.12±6.44	83.33±9.19
Overweight (n=19)	28.42±5.43	72.05±7.65	109.47±9.70	72.10±8.54	37.36±4.52	84.55±8.69
Statistical Analysis						
Underweight/ normal weight	0.000***	0.399^{NS}	0.114^{NS}	0.252^{NS}	0.078^{NS}	0.180^{NS}
Underweight/ Overweight	0.000***	0.959^{NS}	0.096^{NS}	0.171^{NS}	0.133^{NS}	0.132^{NS}
Normal weight/ Overweight	0.000***	0.116^{NS}	0.970^{NS}	0.820^{NS}	0.876^{NS}	0.882^{NS}

Data expressed as mean ±SD, n= number of subjects, N=total number of female subjects.
The comparisons among groups were done by one way ANOVA (Post Hoc test) tests
***p<0.001,NS=p>0.05

In male subjects, the mean value of BMI was higher in overweight than in normal and underweight subjects and the differences among the three groups were statistically significant ($p<0.001$). In case of blood pressure indices mean value of HR was higher in normal weight subjects than under weight subjects and the differences was statistically significant ($p<0.05$). The mean values of SBP, DBP, PP and MBP were higher in overweight subjects than normal weight and underweight subjects but the differences were not statistically significant ($p>0.05$) (Table III).

Table III: Distribution of young male students according to Mean BMI and BP indices of Prime Medical College,Rangpur (N=42).

Groups	BMI Kg/m^2	HR Beats/min	SBP mm of Hg	DBP mm of Hg	PP mm of Hg	MBP mm of Hg
Underweight n=8	17.2±0.53	66.87±1.35	112.5±7.07	73.75±5.17	38.75±3.53	86.66±5.63
Normal weight n=16	20.14±1.24	71.18±6.03	118.75±20.61	77.50±5.77	41.25±20.28	91.24±8.56
Overweight n=18	26.32 ±3.79	70.61±6.14	118.33±9.23	76.66±6.85	41.66±5.14	90.55±7.34
Statistical analysis						
Underweight/ normal weight	0.000***	0.036*	0.530^{NS}	0.271^{NS}	0.882^{NS}	0.280^{NS}
Underweight/ overweight	0.000***	0.059^{NS}	0.212^{NS}	0.472^{NS}	0.240^{NS}	0.327^{NS}
Normal weight/ Overweight	0.000***	0.959^{NS}	0.997^{NS}	0.922^{NS}	0.996^{NS}	0.965^{NS}

Data expressed as mean ±SD, n= number of subjects, N= total number of male subjects.
The comparisons among groups were done by one way ANOVA (Post Hoc test) tests
***$p<0.001$,*$p<0.05$, NS=$p>0.05$

In male subjects the BMI showed positive correlation with HR, SBP, DBP and MBP and negative correlation with pulse pressure. However, the relationships were not significant ($p>0.05$).

In case of female subjects positive correlation of BMI with HR, SBP, DBP, PP and MBP has been observed, where the relationships were statistically significant ($p<0.01$) incase of SBP, DBP and MBP (Table IV).

Table IV: Correlation between BMI and BP indices among the young medical students of Prime Medical College, Rangpur (N=100).

Groups	HR (r/p)	SBP (r/p)	DBP (r/p)	PP (r/p)	MBP (r/p)
Male (n=42)	0.245/0.119	0.073/0.648	0.179/0.258	-0.05/0.975	0.143/0.366
Female (n=58)	0.231/0.081	0.364**/0.005	0.441***/0.001	0.067/0.616	0.422***/0.001

n= Number of subjects. N= total number of subjects.**$p<0.01$ ***$p<0.001$.
HR= Heart rate, SBP=systolic blood pressure, DBP=diastolic blood pressure
Pearson's correlation coefficient (r) test was done.

DISCUSSION

In our country, we are passing through epidemiological transition from communicable diseases to non communicable diseases (NCDs), which may be due to common risk factors like low intake of fruits and vegetables, low level of physical activity, tobacco use, obesity, raised cholesterol and glucose[20]. In developed and developing countries the prevalence of overweight and obesity among children and adolescent has increased significantly[21]. Physical inactivity, junk food and mechanization of life are the major contributor for increase weight in this group. Increased BMI in adolescent may lead to early development of hypertension[7,22,23].

Medical students concentrate mainly in study after they get admitted. So, there may be little scope for them to perform physical exercise or outdoor games, which may results in increase tendency to develop obesity[7].

In our study 58 female and 42 male young medical students were studied, where 32.76% female and 42.86% male were overweight. The result is in contrast with a study where 61 female and 88 male were studied, among them 20% female and 23% male were overweight[7].

In this study no significant differences has been observed regarding SBP, DBP, PP and MBP among the three groups in both female and male subjects. In contrast, P. Rajeswari et. al. demonstrated significant differences of SBP, DBP and MBP among the three groups of male subjects but in female subjects the results were similar to our findings[7]. Significantly higher SBP and DBP were also observed by other researchers in male obese subjects[24].

In our study the observed values of HR in three different groups of female subjects were almost similar and statistically not significant. Similar results have been observed by some researchers[7,25]. Whereas, another group of researchers demonstrated similar heart rates only in lean and obese subjects[24]. In contrast in male subjects we have observed significant differences in HR between normal weight and underweight subjects.

The present study correlated BMI with HR, SBP, DBP, PP and MBP in both male and female subjects. Significant positive correlation has been observed between BMI and SBP, DBP and MBP in female subjects. This finding is in contrast with a study where no significant correlations were observed among those parameters in female subjects. However, they have found significant correlation between BMI and SBP, DBP, PP and MBP in underweight male subjects[7]. Again, some researchers have demonstrated strong correlation between BMI and elevated blood pressures [22,23].

In our study non significant positive correlation between BMI and HR and PP were observed. Similar result was found by P. Rajeswari et. al. [7].

The mechanisms by which increase BMI may lead to elevated BP are poorly understood. However, several central and peripheral mechanisms that can explain the development or maintenance of high arterial pressure in obesity have been identified. Obesity causes activation of the sympathetic nervous system and the renin-angiotensin-aldosterone system that may play a role in the development of hypertension[5,26].

In obese person increased blood volume and increased stroke output leads to increased cardiac output resulting rise in blood pressure [27].

In addition, excess adiposity and increased cardiovascular sympathetic activity may have link with leptin[28]. Obesity leads to leptin resistance [29] and leptin acts on hypothalamus to increase blood pressure through activation of the sympathetic nervous system[30].

In our study the limitations were that we didn't observe the common risk factors like smoking habit, fruits and vegetables intake, alcohol consumption, low level of physical activity, raised cholesterol level etc[4,20]. Another limitation was small sample size. Again, we had measured the parameters for single time.

Further study on same study population with large sample size along with study of all the risk factors may give more conclusive findings.

CONCLUSION

In our study increase tendency to obesity in young medical students have been observed and increase BMI is related to increase blood pressure indices, which supports increased risk of development of hypertension in future.

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Original Article

Serum FSH and LH levels in Type 2 Diabetes Mellitus.

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ABSTRACT

BACKGROUND: *Type 2 diabetes mellitus represents a major public health problem worldwide. Decreased levels of serum FSH and LH levels are observed in type 2 diabetes mellitus patients that create a substantial public health burden in terms of inadequate sexual function and potential infertility.* ***OBJECTIVES:*** *To observe serum FSH and LH levels in newly diagnosed type 2 diabetes mellitus patients.* ***METHODS:*** *This cross sectional study was conducted from July 2015 to june 2016 in the Department of Physiology, Rangpur Medical College, Rangpur. For this study, total number of 100 subjects aged 35 to 45 years were selected. Among them 50 were non-diabetic healthy male subjects and 50 were newly diagnosed type 2 diabetes mellitus male patients. Serum FSH and LH were estimated by ELISA method. For statistical analysis independent sample "t" test were performed by computer based software SPSS-17.0 version for windows.* ***RESULTS:*** *Serum FSH and LH levels were significantly lower($p< 0.001$) in newly diagnosed type 2 diabetes mellitus patients.* ***CONCLUSION:*** *From this study it can be concluded that serum FSH and LH levels decreases significantly in newly diagnosed type 2 diabetes mellitus patients.*

Key word: Type 2 diabetes mellitus, serum FSH and LH .

INTRODUCTION

Diabetes mellitus is a syndrome of impaired carbohydrate, fat and protein metabolism caused by either lack of insulin secretion or decreased sensitivity of the tissues to insulin[1].

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The incidence of diabetes mellitus in the human population has reached epidemic proportions worldwide and is increasing at a rapid rate. In 2010 an estimated 285 million people worldwide had diabetes, according to the International Diabetes Federation[2]. Diabetes mellitus (DM) is the one of the most prevalent endocrine disorders in the world. Type 2 DM is more common than type1[3]. Type 2 diabetes mellitus is associated with several endocrine disorders particularly hypogonadism in men[4]. Neuropathy, vascular insufficiency and psychological problems may be involved in the pathogenesis of some phenomena such as impotence, ejaculation disorders and decreased libido[5].

Pituitary gland consist of posterior and anterior lobes. Luteinizing hormone (LH) and follicle stimulating hormone (FSH) secreted by anterior pituitary basophile cell. They are called gonadotrophins because they stimulate the gonads in male - the testes and in female - the ovaries. LH and FSH esor reproduction[6].

In men, FSH enhances the production of androgen-binding protein by sertoli cells of the testes, and is essential for spermatogenesis. Besides it regulates the development, growth, pubertal maturation, and reproductive processes of the human body. LH is necessary for proper reproductive function in the male. LH had also been called Interstitial Cell Stimulating Hormone (ICSH) which stimulates Leydig cell production of testosterone[7]. Lower level of serum FSH and LH leads to decrease formation of testosterone from testis, reulting in alterations in body composition; diminished energy, muscle strength, and physical function; reduced sexual function; depressed mood; and decreased cognitive function[8].

A recent study has demonstrated that serum LH and FSH levels are low in one-third of diabetic men[9]. Another study observed that 58% of the men with type 2 diabetes have decreased level of serum FSH and LH resulting in hypogonadotropic hypogonadism[10]. Another study reported that 42-47% of type 2 diabetes patients had decrease level of serum FSH and LH levels in type 2 diabetes mellitus[11].

A study from Egypt reported 33.2% hypogonadism in type 2 diabetes mellitus patients[12]. However, study from Sudanese Male showed that serum FSH and LH levels were increased in type 2 diabetes mellitus[8,13]. Also some studies found normal level of Serum FSH and LH levels in type 2 diabetes mellitus[14].

Epidemiological studies have reported that 30%- 50% of men with type 2 diabetes mellitus have hypogonadism due to decrease level of serum LH and FSH resulting decrease secretion of testosterone. This causes hypogonadotrophic hypogonadism and up to 75% of them have sexual dysfunction[15]. As far as our knowledge there is few studies on serum LH and FSH levels among diagnosed Type 2 Diabetes Mellitus patients in our country. Therefore, the present study has been designed to assess the status of serum LH and FSH levels in newly diagnosed type 2 diabetes mellitus patient.

METHODS

This cross sectional analytical study was conducted in Department of Physiology, Rangpur Medical College, Rangpur from July,2015 to june, 2016. A total number of 100 male subjects, aged 35 to 45 years were included in this study. Among them 50 non-diabetic apparently healthy subjects (control group I) and 50 newly diagnosed untreated type 2 diabetes mellitus patients (study group II) were included in this study. Study protocol was approved by ethical committee of Rangpur Medical College, Rangpur. All subjects were age and socio-economical condition matched. Weight and height were measured in each subject group for calculation of BMI and BMI was calculated according to WHO (Asian) criteria[16]. Newly diagnosed untreated type 2 Diabetes Mellitus patients were selected from Outpatient Department of Endocrinology, Rangpur Medical College and Diabetic Association, Rangpur. The objectives, nature, purpose and benefit of the study were explained to the subjects in details. Informed written consent were taken from all participants. All the subjects were excluded from kidney diseases, liver diseases, other chronic and acute illness.

After 8-10 hours overnight fasting all the patients were advised to be present at Department and fasting blood was collected for fasting blood sugar. Then adviced to take 75 gm of glucose and then come after 2 hours. Each time 5 ml of venous blood was drawn from medial cubital vein by sterile disposable syringe for OGTT (According to WHO criteria)[17]. Serum glucose were estimated by enzyme method[18]. Serum FSH and LH were estimated by ELISA method in the fasting state[19]. Data were expressed as mean ± SD and were analyzed by unpaired 't' test and p value < 0.05 was taken as level of significance.

RESULTS

The mean (±SD) level of weight and BMI in newly diagnosed type 2 diabetes mellitus patients were statistically significant ($p< 0.001$) than that of non-diabetic group. (Table-I).

Table I: Mean ± SD age, height, weight and BMI of the study subjects in group I and group II subjects.

Group	Age-year (L- H)	Height-cm (L- H)	Weight-kg (L- H)	BMI-kg/m^2 (L- H)
Group I n=50	40.03±3.76 (35-45)	161.99±5.53 (148.75-171.3)	61.66±6.09 (49.0-77.0)	23.73 ± 2.17 (20.13-28.70)
Group II n=50	40.40 ± 3.95^{NS} (35-45)	160.76±4.47^{NS} (144.65-170.5)	68.62±7.92*** (57.90-78.8)	26.96 ±1.98*** (22.20-32.2)

Data were expressed as mean ± SD. Unpaired 't' test were done.
Group I : non-diabetic apparently healthy subjects.
Group II : Newly diagnosed type 2 diabetes mellitus patients.
n= number of subjects.
p value< 0.05 was taken as level of significance.
Normal range of BMI # 18.5-24.9 kg/m2 (International) and for Asian >23 is overweight and >25 is obese[11].
NS= Non-significant. L= Lowest value and H= Highest value of both groups.

The mean (±SD) level of fasting serum glucose and serum glucose level 2 hours after ingestion of 75 gm glucose in newly diagnosed type 2 diabetes mellitus patients were statistically significant (p< 0.001) than that of non-diabetic group. (Table-II).

Table II : Mean ± SD serum Fasting Glucose and serum Glucose level 2 hours after 75 gm glucose ingestion in group I and group II subjects.

Variables	Group I (n = 30)	Group II (n = 30)
FBS mmol/L	4.76 ± 0.51	8.98 ± 0.60
2 hours after ingestion of 75gm glucose mmol/L	8.46 ± 1.01	18.63 ± 4.71***

Data were expressed as mean ± SD. Unpaired 't' test were done.
Group I : non-diabetic apparently healthy subjects.
Group II : Newly diagnosed type 2 diabetes mellitus patients.
n= number of subjects.
p value< 0.05 was taken as level of significance.

The mean (±SD) level of serum total Testosterone level in newly diagnosed type 2 diabetes mellitus patients were statistically significant (p< 0.001) than that of non-diabetic group (Table-III).

Table-III : Mean ± SD serum FSH and LH in group I and group II subjects .

Variables	Group I (n = 30)	Group II (n = 30)
Serum FSH (miu/mL)	7.89 ±1.92	1.57±0.19***
Serum LH (miu/mL)	8.46 ± 2.12	1.2 ±0.23***

Data were expressed as mean ± SD. Unpaired 't' test were done.
Group I : non-diabetic apparently healthy subjects.
Group II : Newly diagnosed type 2 diabetes mellitus patients.
n= number of subjects.
P value< 0.05 was taken as level of significance. Normal level of serum FSH – 1.0-10.0 U/L Normal level of serum LH- 1.0-9.0 U/L[20] .

DISCUSSION

In the present study, serum FSH and LH levels were significantly decreased in newly diagnosed type 2 diabetes mellitus patients than that of non diabetic subjects. This finding is consistent with that of some other investigators[6,21,22]. In contrast some studies found higher levels of LH and FSH levels in newly diagnosed type 2 diabetes mellitus patients[23]. Also some other researchers did not find any significant change of serum FSH and LH levels[14].

The exact mechanism of FSH and LH deficiency in diabetic is yet to be elucidated. In diabetic male patients lower levels of FSH and LH have been observed as a consequence of insulin resistance[6]. Type 2 diabetes mellitus is associated with insulin resistance and visceral adiposity. It has recently been suggested that insulin resistance and visceral adiposity resistance are pro-inflammatory states. It causes secretion of TNFα in adipose tissue. TNFα can reduce gonadotrophin (FSH and LH) secretion from anterior pituitary gland[6,24]. Again, an excessive increased in fat mass in type 2 diabetes mellitus, causes alteration in hypothalamo-pituitary-gonadal axis leading to the suppression of gonadotropin releasing hormone from hypothalamus as well as impaired secretion of gonadotropin (FSH and LH) by the pituitary gland[21].

Obesity is associated with Type 2 Diabetes Mellitus. Aromataze enzyme in fatty tissue converst testosterone to estradiol. Thus Increases level of estrogen, causing suppression of serum LH and FSH levels [6,21,25]. In obesity increased amount of leptin also released which caused leptin resistant . Leptin directly suppress the secretion of FSH and LH from anterior pituitary gland[22].

In the present study insulin resistance in type 2 diabetes mellitus may cause alteration in the hypothalamo-pituitary-gonadal axis. This may result in decrease formation of luteinizing hormone and follicle stimulating hormone in newly diagnosed type 2 diabetes mellitus. However, in our study we did not measure serum testosterone level. Measurement of this hormone along with gonadotropic hormones may give more conclusive findings.

CONCLUSION

It can be concluded from the present study that, serum FSH and LH levels significantly decreases in newly diagnosed type 2 diabetes mellitus. Therefore these hormones level should be checked in all type 2 diabetes mellitus patients.

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Original article

Study on effects of tobacco consumption on HbA_{1c}.

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ABSTRACT

BACKGROUND: *The recent decades have been a massive global increase in tobacco use. Cigarette smoking is one of the serious health problems and most avoidable cause of death in world. To know the overall glycemic control HbA_{1c} is measured.* ***HYPOTHESIS:*** *Serum HbA1c level may be increased due to tobacco chewing & smoking.* ***OBJECTIVE:*** *To assess the effects of tobacco consumption on serum HbA_{1c} level.* ***METHODS:*** *This cross sectional study was conducted from July 2015 to June 2016 in the Department of Physiology, Rangpur Medical College, Rangpur. A total number of 100 age & socioeconomic condition matched male subjects were selected, among them 50 were apparently healthy non-tobacco chewer non-smoker subjects (group A) & 50 were apparently healthy tobacco chewer smoker subjects (group B). The subjects were selected from different areas of Rangpur district. After selection of subjects 3cc of blood was taken to measure serum HbA_{1c} of the each subject. For statistical analysis Unpaired student's 't' test was performed by computer based software SPSS- 17.0 version for windows.* ***RESULTS:*** *Serum HbA_{1c} level was significantly ($p<0.001$) higher in tobacco chewer smoker subjects as compared with the healthy control subjects.* ***CONCLUSIONS:*** *Our study concludes that tobacco consumption increases the HbA_{1c} level in tobacco chewer smoker people.*

KEY WORDS: Tobacco, HbA_{1c}, oxidative stress, smoking, chewing

INTRODUCTION

Tobacco use is increasing rapidly throughout the developing world and it is one of the biggest threats to current and future health especially in male as the prevalence of smoking among men is 48.3% than women which is 20.9% in Bangladesh[1]. Therefore, tobacco-attributable deaths that will be double from 3.4 million to 6.8 million in low and middle income countries by 2030[2].

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In several studies it has been found that current smokers have higher glycated Hb concentration as compared to nonsmokers. Independent of the body size, people who smoke they have a higher transient increase in blood glucose concentration after an oral glucose challenge test. They also observed higher insulin resistance in smoker than non-smokers, suggesting a potential risk of diabetes[3].

HbA_{1c} is a biomarker for blood glucose levels of an individual however, there may be variation in HbA_{1c} level among non-diabetic individuals as oxidative stress or redox status affects HbA_{1c} level. Smoking leads to oxidative stress which is positively associated with protein glycation, reflected by HbA_{1c} levels[4]

Glycated hemoglobin (HbA_{1c}) is an early glycation product used diagnostically as a specific marker for glucose exposure for about

last 3 months as red blood cells turn over takes places for about 120 days. Therefore, HbA_{1c} has become established for monitoring of glycaemic status in diabetic patients for the said duration. HbA_{1c} relates strongly to tissue damage in diabetic patients. Since blood glucose fluctuations are minimal, within that tales place <5.7% HbA_{1c}. So it seems possible that the relatively large variation on HbA_{1c} concentration might reflect variations on redox status, and could indicate wider protein glycation[4].

Glycated hemoglobin increased by 0.12% for each 10 years of age, by 0.10% for a 5 unit increased in BMI, and by 0.065% for each 0.1 unit increase in waist–hip ratio. The greater adiposity, central obesity & lower physical activity levels were associated with increased insulin resistance & the risk of type 2 diabetes. Current cigarette smoking had a strong, graded association with increased glycated hemoglobin[5,6,7].

Study on serum HbA_{1c} level in tobacco users may increase awareness about the hyperglycemic effect of tobacco consumption and this will be helpful for prevention of developing type 2 diabetes mellitus. To the best of our knowledge no study has been done regarding HbA_{1c} level in tobacco users. So, we designed this study to observe the HbA_{1c} level in tobacco users. This study may help to increase awareness among the tobacco users about the risk developed of type 2 diabetes mellitus.

MATERIALS and MATHODS

This cross-sectional analytical study was conducted in the Department of Physiology, Rangpur Medical College, Rangpur from July 2015 to June 2016. A total number of 100 male subjects, aged 35-45 years were included in this study from different community of Rangpur district. After selection of subjects, the objectives and the procedure of the study were explained in detailed to them and their informed written consent were taken. A standard questionnaire was filled up after taking history and thorough clinical examinations.

Among the 100 subjects 50 non-tobacco chewer non-smoker subjects were included in control group and was denoted as group A & 50 tobacco chewer and smoker subjects were included in experimental group and denoted as group B. They were age and socio-economic condition matched. History of smoking average 10 sticks of cigarettes and or chewing tobacco regularly minimum 5 times in a day for five years was taken as inclusion criteria. Study was carried out with prior protocol approved by the thesis protocol review committee and ethical committee of Rangpur Medical College. Obese & known diabetic subjects and subjects with liver, kidney, heart, lungs and other diseases were taken as exclusion criteria. None had donated or received blood in last 3 months.

For calculation of BMI weight in kg & height in m2 of each subject was taken by medical weighing machine and measuring tape respectively.

All the subjects were advised to be in overnight (8-10 hrs) fasting state then to attend next day at 8.00 A.M. in the Department of Physiology of Rangpur Medical College. Three (3) ml of blood was collected from ante-cubital vein from each subject under all aseptic precaution by a disposable syringe. The needle was detached from the nozzle and blood was transferred into an EDTA tubes and immediately shake continuously for few seconds to admixture with anticoagulant of the tube and prevent coagulation for estimation of Serum Hb A_{1c}.

All data were recorded systematically in a preformed history sheet and all statistical analysis was done by computer using the software SPSS 17.0 version for windows. Serum HbA_{1c} level was compared between the groups by unpaired student's 't' test. In the interpretation of results, < 0.05 level of probability (p) was accepted as significant.

RESULTS

The mean age of control subjects (group A) was 36.60±2.14761 years and the tobacco chewer and smoker subject (group B) was 42.24±3.47915 years. The mean height was 1.68 m in group A & 1.66 m in group B and mean weight was 61.6 kg in group A & 66.3 kg in group B. The mean BMI were 21.82 Kg/m2 & 23.66 Kg/m2 in group A & group B respectively (Table I).

Table I: Distribution of subjects according to mean age, height, weight and BMI.

Groups	Age (years)	Height (m)	Weight (Kg)	BMI (Kg/m^2)
Group A (n=50)	36.60±2.14761 (35-45)	1.68	61.6	21.82
Group B (n=50)	42.24±3.47915 (35-45)	1.66	66.3	23.66

Group A: control (non tobacco chewer & nonsmoker)
Group B: experimental (tobacco chewer & smoker)
n= number of subjects.
Figures in parenthesis indicates ranges.

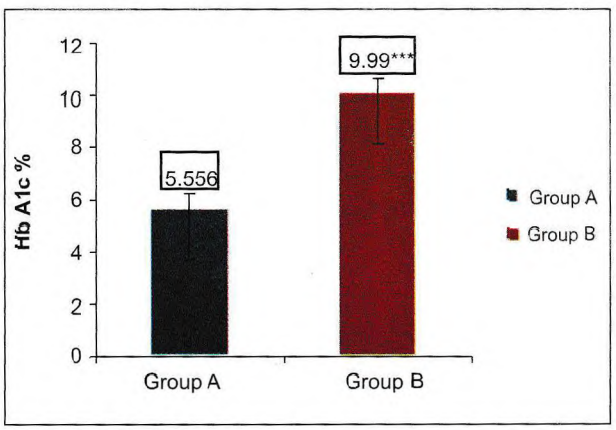
The mean ± SD serum HbA1c was 5.5560 ± 0.64243 % in group A (control) & 9.9900 ± 1.87118 % in group B (tobacco chewer & smoker). The mean serum HbA1c level was significantly ($p<0.001$) higher in tobacco chewer & smoker subjects (group B) than control subjects (group A) (Table II & Fig 1).

Table II: Mean ± SD serum HbA1c level in group A & group B subjects.

Variable	Group A (n=50)	Group B (n=50)
Serum HbA1c (%)	5.5560 ± 0.64243 (4.60 - 7.00)	9.9900 ± 1.87118*** (6.20 – 12.00)

Data were expressed as mean± SD. Unpaired student's 't' test was done.
Group A : control (non tobacco chewer & nonsmoker)
Group B : experimental (tobacco chewer & smoker)
n= number of subjects.
*** = P <0.001
Figures in parenthesis indicates ranges.

Fig-1: Bar diagram showing Mean ± SD serum HbA1c level in group A &group B subjects.



Vertical lines indicate standard deviation.

DISCUSSION

The present study was carried out to assess the serum HbA_{1c} level in tobacco chewer smoker and tobacco chewer non-smoker subjects. The parameter was also studied in age, sex and socioeconomic condition matched apparently healthy control subjects for comparison.

In this study, the mean HbA_{1c} level were significantly higher ($p<0.001$) in tobacco chewer smoker subjects than those of control subjects. Similar result was demonstrated by some authors[3]. High level of HbA_{1c} in tobacco chewer smoker subjects may be due to nicotine, which has direct toxic effect on pancreatic beta cells as well as it is associated with increased insulin resistance leading to impaired glucose tolerance. Furthermore, the antiestrogenic effect of nicotine could contribute to accumulation of visceral adipose tissue and via this mechanism, develop insulin resistance. In addition nicotine increases serum glucose and HbA_{1c} levels by increasing cortisol level and inflammation and adiponectine[3].

Moreover, cigerette smoking might induce increased permeability of the erythrocyte membrane to the passage of glucose, thus increasing HbA_{1c}. Cigarette smoking has been associated with lower arterial oxygen saturation and higher erythrocyte 2,3 – diphosphorglycerete concentrations. Again, deoxyhaemoglobin is glycated more rapidly than oxyhaemoglobin. The rate of HbA_{1c} formation is increased with elevated 2,3 – diphosphorglycerete concentrations. It was also observed that who smoke more number of cigarettes/day and for longer duration had increased HbA_{1c} level[8].

Glucose tends to bind irreversibly to a number of proteins in the body including the hemoglobin in the RBC. The binding of glucose to hemoglobin is indicated to be a non enzymatic reaction, which lasts during the entire lifespan of the RBCs. At higher levels of blood glucose, a higher amount of glucose binds to these proteins. So, HbA_{1c} or glycosylated hemoglobin level increased with increased mean blood glucose level[9].

Some author found that smokers had a higher VLDL triglyceride & lower HDL cholesterol concentration which may cause higher insulin response to an oral glucose load[10].

CONCLUSION

Our study concludes that tobacco consumption increases the HbA_{1c} level in our sample population. But exact mechanism of high level of HbA_{1c} in this group of people could not be demonstrated from this type of study estimation of serum nicotine level, HDL-cholesterol level, serum cortisol and growth hormone levels, plasma free fatty acid level, fasting serum insulin level, insulin sensitivity and insulin resistance can be done in same study population with large sample size, which may help us to know the mechanisms of increase serum HbA_{1c} level due to tobacco consumption.

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Case Report

Bronze Diabetes – A Case Report

M. A. Wahed

ABSTRACT

An 18 years old girl presented with gradual loss of weight and thinness of body, weakness and easy fatigability, loss of interest in household works, blackening of whole body, primary amenorrhea, increased micturation, increased thirst, palpitation and loss of body hairs. She was a known case of β-Thalassaemia major from 2 years of her age. She had splenectomy at 12 years of age. On examination, she was very wasted (WA< -3SD), stunted (HA< -3SD) and malnourished (BMI-14). Liver was palpable measuring 12 cm below the costal margin, firm to hard in consistency, non-tender with sharp margin. Laboratory investigations done were RBS 24 mmol/liter (normal 4.8 - 7.8 mmol/liter) with brick red urine on Benedict's test, serum ferritin level was 4250 ng/ml (normal 10-120 ng/ml) and serum iron level was 732 µgm/dl (normal 50-120 µgm/dl). She was diagnosed as a case of Bronze diabetes.

INTRODUCTION

Thalassaemia is an autosomal recessive blood disorder inherited from carrier or diseased parents to their children through defective genes. This disorder affects formation of adult heamoglobin in the red blood cells (RBC) causing weakening and destruction of RBC's in their early stage of development. This leads to mild to severe anaemia[1]. Allogenic bone marrow or stem all transfusion is the only curative treatment of thalassaemia. This is very costly, not available everywhere and out of reach of most parents[2,3,4]. Instead, almost 95% of children suffering from thalassaemia survive through on-demand blood transfusion[5]. Due to repeated blood transfusion there is increasing accumulation of iron in the blood due breakdown of transfused RBC's. Another cause of iron accumulation in thalassaemia is increased absorption of iron from intestine. When iron concentration in the blood exceeds physiological limit, excess iron molecules are deposited in the parenchymal cells of different organs. This situation is called haemochromatosis6. Mostly affected organs are liver, myocardium and pericardium, islets of langerhan's cells in pancreas, cells of thyroid gland, parathyroid gland, pituitary gland, osteobiasts and other bone forming cells leading to cirrhosis of liver, diabetes mellitus, dwarfism, hypothyroidism, hypoparathyroidism, sterility and pathological fracture. Diabetes due to haemochromatosis in thalassaemia is popularly known as Bronze diabetes. This may be either primary (type-I) or secondary (type-II) diabetes[7,8,9]. Below is the presentation of a case of Bronze diabetes from Thalassaemia in an 18 years old girl.

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The case presentation

Miss Sharmin, an 18 years old girl presented with gradual loss of weight and thinness of body, weakness and easy fatigability, loss of interest in household works, blackening of whole body, primary amenorrhea, increased micturation, increased thirst, palpitation and loss of body hairs (Fig: 1). She was a known case of β-Thalassaemia major from 2 years of her age. She was on frequent blood transfusion up to 11 years of her age. Then she developed huge hepato-splenomegaly and features of hyersplenism. She underwent splenectomy at 12 years of age. After splenectomy the need of blood transfusion was less for 2 years followed again by need of frequent blood transfusion. From 14 years of her age, she was developing gradual blackish discolouration of skin, gradual thinness of body, occasional palpitation, primary amenorrhea and failure of developing secondary sex characteristics.

She had three other sisters and no brothers. One sister (12 years) was suffering from β-thalassaemia major and was on frequent blood transfusion. The other two sisters were carriers of β-Thalassaemia. There was no consanguinity in the family but her both the parents were carrier of β-Thalassaemia. Father was a cultivator in village. The family was poor with marginal income. She was advised to take iron chelation therapy but did not take due to poverty.

On examination, she was very wasted (WA <-3SD)(WA=...), stunted (HA <-3SD)(HA=....) and malnourished (BMI-14))BMI=....). The skin was greyish black, prominent cheeck and exposure of upper molar teeth. Respiratory rate was 35 per minute but on ECG there was sinus arrhythmia. Liver was palpable measuring 12 cm. below the costal margin, firm to hard in consistency and non-tender with sharp margin. There was a long linear scar mark in abdomen indicating previous spleenectomy. She had no lymphadenopathy, no bone pain and no loss of memory. The child was admitted in Rangpur Mother and Children Hospital for further assessment and management on 15 Sept 2015.

On admission in Hospital several laboratory investigations were done. The tests with the results were - RBS 24 mmol/ liter (normal 4.8-7-8 mmol/liter) with brick red urine on Benedict's test, Hb level 8.2 gm/dl (normal 12-16 gm/dl), TLC 9000/cu.mm (normal 4000-11000/cu.mm), DLC with Neutrophils 58% (normal 40-70%), Lymphocyte 28% (normal 20-50%), Basophils 00% (normal 0-4%), Monocytes 05% (normal 2-8%), Eosinophils 07% (normal 2-8%). Total platelet count was 2,30,000/cu.mm (normal 150,000-400,000/cu.mm), serum ferritin level was 4250 ng/ml (normal 10- 120 ng/ml), serum iron level was 732 µgm/dl (normal 50-120 µgm/dl), ALT level 119 UL (normal 5-40 IU/liter), AST level 140 IU/L/ liter (normal 5-40 IU/liter), Serum alkaline phosphates was 306 units/ liter (normal 64 – 206 units/l), serum electrolyte was: sodium 133 mmol/liter, serum potassium 6.5 mmol/liter, chloride level 98 mmol/liter, HCO3 level 18 mmol/liter. Total serum protein level was 5.6gm/dl (normal 6-8.3gm/dl), serum albumin level was 2.8 gm/dl (normal 3.2-5.5 gm/dl). There were excess ketone bodies in blood and urine. Other tests were not done due to parent's unwillingness.

The nature of disease was explained to parents before initiating treatment. The parents refused to take further treatment as they were exhausted of money due to prolong illness of their two child. The patient was taken home on RISK-BOND. On telephonic contact with parents, it was confirmed that the child died 3 days later.



Fig 1: A female child with Bronze diabetes.

DISCUSSION

β-thalassaemia is a group of disorder characterized by deficient production of β-globin sub unit of hemoglobin. β-thalassaemia major needs mandatory blood transfusion to maintain adequate hemoglobin level[10]. The excess numbers of these transfused RBCs are lysed in the body of the patient leading to accumulation of iron in the body fluids. After exceeding physiological limits, iron deposits in the cells of different organs. When iron deposits in the cells of islets of Langerhan's, β-cells of pancreas begin to lose their function and production of insulin decrease in variable degree. This produces diabetes mellitus[11]. When the β-cells of the pancreas are stained with Perl's stain the cells appears grayish to blackish in color. For this reason the diabetes in thalassaemia is called

Bronze diabetes[12]. Our case was an 18 years old girl. She was suffering from β - thalassaemia major firm 2 years of her age. She was on frequent blood transfusion and she did not take any iron chelating therapy. So, there was chance of accumulation of iron in pancreatic β -cells and thereby development of Bronze diabetes. Through literature search there is no reported cases of Bronze diabetes in children in Bangladesh. Usually 1- 4% children of untreated thalassaemia develop into diabetes and in India several cases of Bronze diabetes have been reported. One of them was 18 years old boy which is consistent with our case[13,14,15,16,17]. The other clinical features of our case such as blackish discoloration of body, weight loss, primary amenorrhea, dwarfism correlates with the features of diabetes. High serum ferritin level, high blood sugar and ketone body level in serum and urine also correlates with diagnosis of Bronze diabetes[18,19,20,21].

There were a few limitations in this case study. The case could not be established as haemochromatosis because all liver function tests and liver biopsy could not be performed to establish cirrhosis which is an integral part of haemochromatosis. Type of diabetes was also not established because serum insulin level and related investigations could not be done, though in thalassaemia usually type II diabetes develops.

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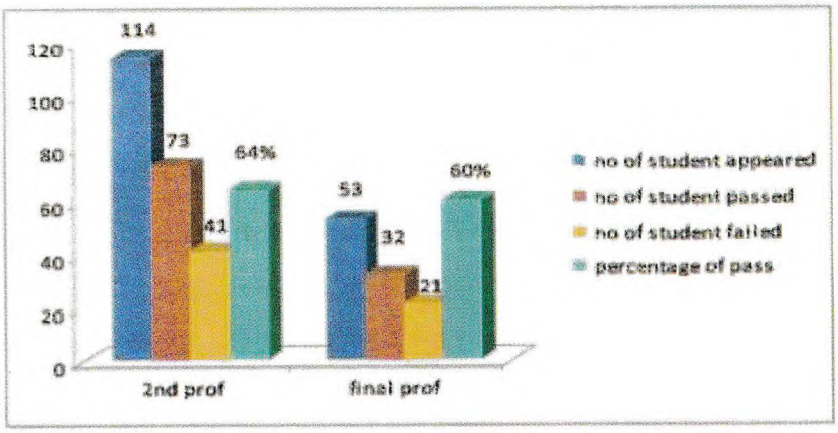
RESULTS OF PROFESSIONAL EXAMINATIONS

2nd and final Professional MBBS Examinations were held in July, 2016. The number of students appeared in; total number of students passed, total failed and percentages of pass in the 2nd and final Professional MBBS examinations are shown in the following table and figure (Table I & Figure 1).

Table I: Result of 2nd and final Professional MBBS Examinations in July, 2016.

Exam Year	exam name	no of student appeared	no of student passed	no of student failed	percentage of pass
Jul/16	2nd prof	114	73	41	64
	final prof	53	32	21	60

Figure 1: Result of 2nd and final Professional MBBS Examinations in July, 2016

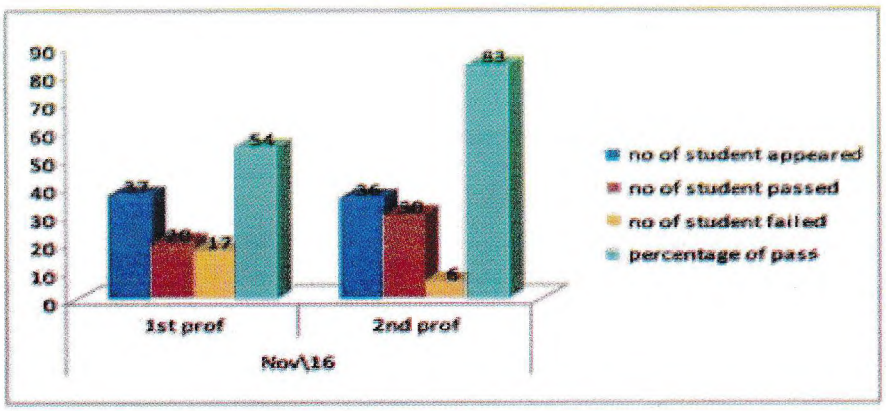


1st and 2nd Professional MBBS Examinations were held in Nov, 2016. The number of students appeared in; total number of students passed, total failed and percentages of pass in the 1st and 2nd Professional MBBS examinations are shown in the following table and figure (Table II & Figure 2).

Table II: Result of 1st and 2nd Professional MBBS Examinations in Nov, 2016.

Exam Year	exam name	no of student appeared	no of student passed	no of student failed	percentage of pass
Nov/16	1st prof	37	20	17	54
	2nd prof	36	30	6	83

Figure 2: Result of 1st and 2nd Professional MBBS Examinations in Nov, 2016.



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