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Editorial

Gut Microbiota and Health.

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Microbiota also known as 'the Hidden organ' a vast number of microorganisms, including bacteria, yeasts and viruses; coexist in various sites of the human body (gut, skin, lung, oral cavity).[1] In the gut, bacterial components of microbiota are *Firmicutes*, *Bacteroidetes*, *Actinobacteria*, *Proteobacteria*, *Fusobacteria*, and *Verrucomicrobia*, among which *Firmicutes* and *Bacteroidetes* are the major types where as *Candida, Saccharomyces, Malassezia, and Cladosporium* are the fungal organisms and viruses like phages and archaea, mainly *M. smithii* are abundant.[2] The microbiota contribute over 150 times more genetic information than that of the entire human genome.[3]

To maintain healthy condition of human as whole, gut microbiota is considered the most significant role that exhibits stability, resilience and symbiotic interaction with the host.[4] They (Microbiota) may affect human biological processes via several mechanisms by energy and nutrient extraction from food and plays crucial roles due to the versatile metabolic genes which provide independent unique enzymes and biochemical pathways.[5] Moreover, the biosynthesis of bioactive molecules such as vitamins, amino acids and lipids are also highly dependent on the gut microbiota.[6] The human microbiota also protects the host from external pathogens by producing antimicrobial substances and serves as a significant component in the development of intestinal mucosa and immune system.[7]

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Gut microbiota may vary due to age and environmental factors (like medication usage) and also varies in different anatomical parts of the GI tract.[8] In the small intestine the transit time is short and bile concentration is high, while in the colon, which has slower flow rates and milder pH, as well as larger microbial communities, especially anaerobic types are commonly observed.[8] The diversity of microbiata occurs according to age variation. At about age 3, children's gut microbiota becomes comparable to that of adults and subsequently at older age the composition of the human gut microbiota changes potentially due to dietary habit and immune system activities.[9] The decrease in the anaerobic bacteria *Bifidobacterium* is considered relevant to deteriorated inflammatory status due to its role in stimulating the immune system.[8,9]

Since the microbiota plays an important role in human well-being thus the substitution/ alteration of the normal gut flora (Dysbiosis) lead to a dysfunctional array of organisms that can promote disease states.[10] Changes in gut microbiota seem to influence the outcome of multiple inflammatory pathways in older adults and may contribute to systemic chronic inflammation.[9,10] Additionally, dysbiosis has been positively correlated with increased fat mass, proinflammatory biomarkers and insulin resistance.[11] Extrapolating out, obesity has been linked to changes in the gut biome, which is associated with increased intestinal permeability and endotoxemia.[11] Zonulin is a protein that regulates intestinal permeability.[12] Elevated levels of zonulin seem to predict inflammation and physical frailty and are found in increased levels in obese children and adults as well as in patients with type 2 diabetes, fatty liver disease, coronary heart

disease, polycystic ovary syndrome, autoimmune diseases and cancer.[12]

Organisms in the gut biome exist in a delicate ecosystem, which has immense influence over proper system-wide physiologic function.[13] Medications, especially antibiotics, will directly affect the gut microbiota.[14] Besides antibiotics, non-antibiotic drugs like osmotic laxatives, hormones, benzodiazepines, antidepressants, antihistamines and inflammatory bowel disease drugs were found to be highly relevant to the variation of gut microbiota composition as well as neurophysiology and behavior.[14] Proton pump inhibitors, metformin, statins and psychotropic medications like serotonin antagonists such as sertraline, paroxetine, and fluoxetine, which have antimicrobial activity may change the normal composition of gut microbiata.[14,15]

As the intestinal microbiota making up the human microbiome can have a profound influence on energy and immune homeostasis which result in significant metabolic and immunologic effects on the host and ultimately leading to many local and systemic diseases.[16] So, attention to paid for maintaining perfect (normal) and healthy microbiota within gut. Good attention to be paid on daily dietary habits. As diet contains components that provide energy to the host as well as microbiota can plays a significant role in the maintenance of the complex microbiome. Such as diet containing high-fat, high sugar and that are low in fermentable fiber lead to dysbiosis; while diets of low in fat and sugar and high in fermentable fibers, particularly prebiotic fiber can significantly promote proper energy homeostasis and immune response and to reduce disease risk as well as promote overall health. Dietary modification as well as treatment with pro- and prebiotic use can help maintain proper microbiota balance and promote proper energy and immune homeostasis lead to healthy well being to all.

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Original article

Clinico-Pathological Variation of Carcinoma Stomach at Different Age Group

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ABSTRACT

CONTEXT: *Carcinoma of the stomach in our country is not uncommon and shows a trend towards a relative young age at diagnosis and the majority of patients present late with advanced stage cancer. Lack of awareness of the disease, poor accessibility to health care facilities and lack of screening programs in this region may contribute to advanced disease at the time of diagnosis.* ***OBJECTIVES:*** *To evaluate clinic-pathological variation of carcinoma stomach at different age group.* ***METHODS:*** *A prospective type of observational study was done of 58 patients diagnosed with carcinoma of the stomach treated at Dhaka Medical College Hospital and others tertiary level referral hospitals from 15.12.2013 to 14.06.2014. Clinical evaluation made by detailed history regarding presenting illness, dietary pattern, personal habits. Meticulous systematic physical examination done in each case. Investigation like Endoscopy, Ultrasonography finding recorded. Operative finding like tumor size, serosal involvement, hepatic metastasis, lymph node involvement, peritoneal metastasis and ascites recorded. Data were analyzed and compared by statistical tests.* ***RESULTS:*** *A total of 58 cases were included in this study. 10 were from below 40 years (young group) and 48 were above 40 years (elderly group). Young patients had less definitive symptoms than elderly group. Pain (80% vs 71%) and vomiting (70 % vs 72%) were the most prominent symptoms in both younger and older groups. But in elderly a significant number 48 (73.8%) of cases had anorexia. Lump and visible peristalsis were present in both groups in approximately similar proportion. Histopathologically younger patients had more aggressive disease than the elderly group. The operability in carcinoma of the stomach was more in young group probably due to physical fitness of patient. In both the groups' lower part of stomach was the commonest site of malignancy. The incidence of malignancy in lower part of stomach was more in young patients. In young group tumor status was T4 in 60% and in elderly group 62.5% was in T4 stage. 50% vs 47% had lymph node involvement (N_2) in both younger and older groups.* ***CONCLUSION:*** *The incidence of carcinoma of the stomach in patients younger than 40 years was more common than Western world. Patients were presenting more with lesions in the distal stomach in our country than the Western world. Female predominance among young age group. Epigastric pain, vomiting and anemia were most common symptom in patients.*

Key words: Carcinoma of the stomach, Age groups Tumor sites, Adenocarcinoma

INTRODUCTION

Carcinoma of the stomach is a major cause of cancer mortality worldwide.[1] The incidence of carcinoma stomach exhibits significant geographic variability. Higher incidence has been reported from Japan, China and South Korea and a lower incidence have been reported from India, Pakistan and Thiland.[2] Carcinoma of the stomach is rare under age 40 years, from which point the risk gradually increases with age.[3] The mean age at diagnosis is 63 years.[4] However, less than 5% of gastric cancer cases occur in people under 40 years of age.[5] It occurs in the younger individuals with a much higher rate of mortality and morbidity.[6] Approximately 10% of young gastric cancer patients have a positive family history. Among the risk factors there is a strong link between H. Pylori infection & distal carcinoma stomach. Diet rich in salted & smoked fish & meat, consumption of high dietary nitrate increase cancer risk. Carcinoma is associated with

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cigarette smoking and dust ingestion from a variety of industrial processes.[1] The clinic-pathological features of gastric carcinoma are said to differ between young and elderly patients and it has been claimed that young patients have a poorer prognosis.[7] The initial symptoms are non-specific: epigastric pain or feeling of fullness, belching and loss of appetite. nausea, vomiting and weight loss presented later, accompanied by anemia and weakness. It is found that most young patients with gastric cancer revealed metastases at the time of diagnosis. There are principally two forms of gastric cancer in Lauren classification: intestinal gastric cancer and diffuse gastric cancer. In intestinal gastric cancer, forms polypoid tumors or ulcers that more common in elderly patients.[8] Diffuse gastric cancer infiltrates deeply into the stomach without forming obvious mass lesions. This occurs more frequently in younger patients.[9] Physical signs develop late in the course of the disease and are most commonly associated with locally advanced or metastatic disease.[10] Patients with advanced tumors may present with a palpable abdominal mass, cachexia, bowel obstruction, ascites & hepatomegaly. Concerning the anatomic location of primary lesions, the incidence in the lower third of the stomach is higher in elderly patients than in young patients.[11] Histopathologically in young patient's malignancy were more aggressive than older group. The percentage of diffuse variety was more in young group and poorly differentiated were more in elderly group.[12] Although the etiological factors and pathogenesis of gastric carcinoma are not yet fully understood.[13] Gastric cancer is difficult to diagnose in young people and is asymptomatic even in the advanced stages of the disease.[14]

Though the diagnosis of gastric neoplasm is often overlooked in young patients, symptoms observed in this age group did not differ from those in adult.[9] The most important pathological determinant to evaluate clinical and prognostic significance is the depth of penetration of stomach wall by the lesion.[15] Young patients were more likely than older patients to have advanced nodal and distant metastatic disease at presentation.

Several reports have suggested that younger patients are frequently diagnosed with advanced tumor stages and that Gastric cancer has a poorer prognosis in young in comparison to older patients.[16-19] The importance of the studies that provide insight into the clinical and pathological characteristics of patients with gastric cancer to design a strategy that will lead to earlydetection. Therefore this study analyzed the clinico-pathological variation ofcarcinoma stomach at different age group.

MATERIALS & METHODS

This is a prospective type of observational study of 58 cases of gastric cancer admitted during the period of 15.12.2013 to 14.06.2014. This study was carried out in different surgical units of Dhaka Medical College Hospital and others tertiary level referral hospitals. This study population comprised diagnosed patients of carcinoma of stomach respective of age & sex attending different surgical units of Dhaka Medical College Hospital and others tertiary level referral hospitals. As this study, case notes taken from the history sheet as per protocol were the main source of data. Detailed history of the study population was recorded with special attention to their age, occupation, socio-educational status, menstrual status, drug consumption status and the presenting complaints. Relevant important physical findings and investigations were performed in all cases and recorded. Operative finding like tumor size, serosal involvement, hepatic metastasis, lymph node involvement including group, size and number, peritoneal metastasis and ascites, histopathological finding was recorded in detail. Inclusion criteria were

patient of either sex who admitted with presentations suggestive of carcinoma of the stomach and histopathologically confirmed from tissue obtained by endoscopy and patients with carcinoma stomach who undergone operative treatment. Exclusion criteria were patient already received neo-adjuvant therapy. Patient who had concurrent any other malignancy. Patient who are unfit for any operative procedure. Patient who do not want to include in this study. Prior to commencement of this study, the Aim, objectives, risk benefits of the study was described to the patients in easily understandable local language and written consent from every patient was also taken. It was assured that all information & records will be kept confidential.

RESULTS

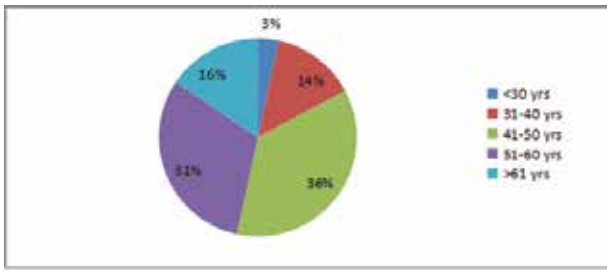

Fig 1 : Age distribution of the patients.

A total of 58 patients were included in the study.

Table I: Group distribution of the patients .

Group	Patient	Percentage
A (< 40 yrs)	10	17.24
B (≥40 yrs)	48	82.75
Total	58	100

Only 10 (17.24 %) cases were below 40 years (Group A) and 48 (82.75 %) cases were 40 years or above (Group B).

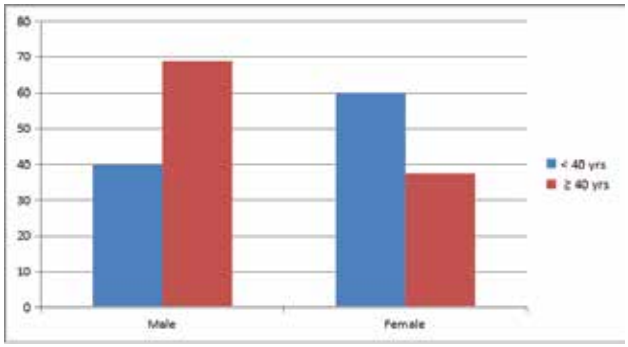

Fig 2 : Sex distribution of the patients.

Thirty seven patients were male while the rest were female. The proportion of females in the young group (60%) was significantly greater than the proportion (37.5%) in the older group.

Table II: Comparison of Clinical Presentation of two groups of patients of gastric cancer.

Symptom	Group A (n=10) No (%)	Group B (n=48) No (%)
Dyspepsia	03(30)	26(54.16)
Vomiting	07(70)	35(72.91)
Abdominal pain	08(80)	34(70.83)
Anorexia	05(50)	35(72.91)
Weakness/Weight loss	05(50)	30(62.50)
Abdominal lump	02(20)	14(29.16)
Hematemesis/Melaena	01(10)	03(06.25)

In Group A, 08 (80 %) patients and in Group B, 34 (70.83 %) patients had pain in abdomen. Vomiting was present in 70% and 72.9% cases of group A and B respectively.

Table III : Personal history of gastric malignancies

	Group A (n=10) No (%)	Group B (n=48) No (%)
Family history	1(10)	0(00)
Smoker	5(50)	28(58.33)
Alcoholic	1(10)	3(6.25)

Only one patients had family history of cancer stomach. Thirty three of the patients were smokers, either at the time or in the recent past. In group A 05 (50%) and in group B28 (58.33%) cases were smoker. Four patients were alcoholic and rest were non-alcoholic.

Table IV : Dietary habit of the patients

Type of food	Group A (n=10) No (%)	Group B (n=48) No (%)
Spicy	5(50)	18(37.5)
Salty/Preserved	1(10)	3(06.25)

Twenty three patients mentioned of taking predominantly typical spicy Bangladeshi food while four patients mentioned of salty diet. Majority of the study population was habituated to typical Bangladeshi spicy food. 05 (50 %) patients of group A and 18 (37 %) patients of group B consumed spicy food.

Table V : Relevant general examination findings of the patients

Parameter	Group A (n=10) No (%)	Group B (n=48) No (%)
Anemia	06(60)	41(85.41)
Jaundice	01(10)	02(4.16)
Dehydration	04(40)	7(14.58)
Supraclavicular LN	0(00)	02(4.16)

Table V shows in group A 06 (60%) &in group B 41 (85.4%) cases were anaemic respectively.

Table VI: Abdominal examination findings of the patients

Parameter	Group A (n=10) No (%)	Group B (n=48) No (%)
Palpable Lump	02(20)	26(54.16)
Visiable Peristalsis	02(20)	12(25)
Hepatomegaly	00	02(4.16)
Ascites	01(10)	07(14.58)

Abdominal lump was present in 02 (20 %) of group A patients and 26 (54 %) group B patients and visible peristalsis 2 (20 %) and 12 (25%) cases respectively.

Table VII: Site of lesions on upper gastrointestinal endoscopy

Tumor site	Group A (n=10) No (%)	Group B (n=48) No (%)
Proximal	02(20)	5(10.41)
Middle	01(10)	07(14.58)
Distal	07(70)	35(72.91)
Supicious Linitus Plastica	0	01(2.08)

The growth was present in the distal part of stomach in 70% of cases in group A and 72.9% in group B. 10 % patients of Group A and 14 % patients of Group B had growth in middle part of the stomach. Growth in proximal part 20% was found in group A patients and 10.4% in group B patients.

Table VIII : Abdominal ultrasonographic findings of the patient

Parameter	Group A (n=10) No (%)	Group B (n=48) No (%)
Lymphadenopathy	4(40)	11(22.91)
Ascitis	1(10)	7(14.58)
Hepatic metastasis	0	2(4.16)

Ascitis was present in 10 % of cases in group A and 15 % in group B.

Table IX: Type of surgery in patient with Ca Stomach

Procedure	Group A (n=10) No (%)	Group B (n=48) No (%)
Total gastrectomy	02(20)	04(8.33)
Distal partial gastrectomy	07(70)	17(35.41)
Palliative	02(20)	26(54.16)
Inoperable (Biopsy only)	00	01(2.08)

After preoperative evaluation, 48 patients were operated upon. 70% group A patients were treated by distal partial gastrectomy. Whereas group B patients were treated by distal partial gastrectomy in 35.58% and palliative gastrojejunostomy in 54% cases in the older group.

Table X : Laparotomy findings of the patient

Parameter	Group A (n=10) No (%)	Group B (n=48) No (%)
Ascitis	1(10)	10(20.83)
Peritoneal seedling	1(10)	8(16.66)
Location of tumor		
Upper	02(20)	5(10.41)
Middle	01(10)	07 (14.58)
Lower	07(70)	35(72.91)
Liver surface	2(20)	8(16.66)

Peritoneal involvement was present in 01(10 %) and 08(16.6%) cases of Group A and Group B respectively. Hepatic involvement was found in 02(20%) and 08(16.6%) of cases of Group A and Group B respectively.

Table XI: Grading of the resected specimen

Grade	Group A (n=10) No (%)	Group B (n=48) No (%)
Well differentiated	3(30)	4(08.33)
Moderately differentiated	2(20)	13(32.5)
Poorly differentiated	5(50)	31(64.58)

All the tumors were adenocarcinoma according to histopathology of the resected specimens. Poorly differentiated carcinoma stomach was found in 50% of group A and 64.58% of group B patients.

Table XII: Tumor Status in TNM classification in two groups of patients with carcinoma of the stomach

Tumor status	Group A (n=10) No (%)	Group B (n=48) No (%)
T1	00	00
T2	00	06(12.5)
T3	04(40)	12(25)
T4	06(60)	30(62.5)

T3 stage was present in 04 of 10 in group A (40%) and 12 of 48 (25%) of cases present in elderly (group B) patients. T4 status was present in 06 of group A (60%) and 28 (58%) of 48 cases of group B.

Table XIII: Showing difference in Nodal Involvement (as per TNM classification) in two groups of gastric cancer patients

Lymph node status	Group A (n=10) No (%)	Group B (n=48) No (%)
N_0	02(20)	05(10.41)
N_1	03(30)	19(39.58)
N_2	05(50)	23(47.91)
N_X	00	01(2.08)

N_2 stage was present 05 in group A (50%) and 23(47.91%) of cases present in elderly (group B) patients.

DISCUSSION

These demographic and clinicopathological features tended to be different between the patients aged 40 years or less and those aged over 40 years.[5] Thus, we divided our population into 2 groups according to age with a cut-off of 40 years. A total of 58 histopathologically confirmed cases were included in the present study. Among them 10 cases were included in young group & 48 cases in elderly group. In the present study the incidence of gastric carcinoma in young group was 17.24 % (10 of 58 patients). In one Jong-

Han et al[3] about 13.5 % patients were found below 40 years. Hye Won Chung et al[20] suggested about 15% of patients with gastric cancer are younger than 40 years of age. In another study Martín Gómez et al[4] it was 8.8% in aseries of 206 cases. In another study[10] a statistically significant increase in number of patients below the age of forty years was seen in cancers involving oesopageo-gastric junction in Indian subcontinent. In terms of gender, there was a significantly higher percentage of females in the young group (60%) than the older group (37.5%). In one Marita C Bautista et al[2] noted a higher female predominance among younger subjects. Hye Won Chung et al[20] observed gastric cancer increased in the relative proportion of young age compared with older especially in young females. The reason for this higher number of female patients in the younger group is not yet known. Yue-Xiang Liang et al[21], considerate that the majority of elderly patients with gastric cancer are male. Most patients in both groups were symptomatic. The distributions of the presenting symptoms in both age groups were almost similar. Though the diagnosis of gastric cancer was sometimes reserved in young patients, symptoms observed in this age group did not differ from those in older[6] similar observations was also noted in this study. Epigastric pain was the most common presenting symptom in both groups followed by weight loss. In one study Kamal E, Bani-Hani[13] revealed symptoms of gastric cancer in young are not different from those in the elderly, but owing to its relatively uncommon presentation in the young age group, the diagnosis may be delayed or less likely to be accurately made preoperatively. Epigastric pain was the most common presenting symptom in both groups (80% in the young group and 78.8% in the older group) followed by weight loss and/or anemia. Horacio López-Basave et al[14] 70% indicated that pain was the main manifestation of a disorder. In study only one patients had family history of cancer stomach in young age group. Approximately 10% of young patients with gastric cancer have a positive family history. Warner Enrique Alpízar[12] suggested gastric cancer is observed in approximately 10% of the cases. Bani-Hani[13] revealed The high frequency of a positive family history in young patients suggests an opportunity to identify a high-risk population for screening. Tobacco smoking has a positive association while increasing consumption of vegetables and dietary products has a protective effect.[1] In study thirty three of the patients were smokers either at the time or in the recent past. About 05 (50%) group A and 28 (58.33%) group B cases were smoker. Smoking was the prominent risk factors in both the groups but spicy and Salty/Preserved intake was more in younger group.[12,13,22] In study Twenty three patients mentioned of taking predominantly typical spicy Bangladeshi food while four patients mentioned of salty diet. Majority of the study population was habituated to typical Bangladeshi spicy food. 05 (50 %) younger patients and 18 (37 %) older patients consumed spicy food. Warner Enrique Alpízar[12] revealed Diets high in salt and preserved meats have been suggested to play a role in the etiology of gastric cancer. Abdominal lump was present in 02 (20 %) of young patients and 26 (54 %) of older patients, and visible peristalsis was present 2 (20 %) and 12 (25%) cases in young & older group respectively. Deodhar SD[9] reveals, intra-abdominal mass was the commonest findings. Other studies showed similar observations in different countries.[5,8,15] Ascites was present in 10% and 40.5 % cases in younger & older age group and hepatomegaly present in 04.16 % cases only. Similar observation was reported from neighboring countries.[7] Endoscopy is investigation of choice for diagnosis of gastric carcinoma. Numerous reports had demonstrated that its accuracy of diagnosis was greater than 95%.[17,23] Spiral CT scan has limited ability to identify lymph node

metastases but can detect adjacent organ invasion. Whenever possible these modalities may be used for preoperative assessment.[23] Endoscopic ultrasound has been found 80% and 68.8% accurate respectively for Tumor and Nodal status.[24-26] Pre operative assessment of nodal status therefore remains difficult and has low specificity but a combined approach might give better understanding and outcome. The proportion of the histologically differentiated type cancer increased with aging from 50% in the younger patients to 64% in the elderly. Some studies concluded that gastric carcinoma in elderly patients may principally develop as well-differentiated lesions that progress to poorly differentiated ones, whereas in younger patients, most gastric carcinoma emerges as poorly differentiated type at an early phase.[21,25] Histopathologically in young patient's malignancy were more aggressive than older group. The percentage of diffuse variety was more in young group and poorly differentiated were more in elderly group.[18,26] TNM staging was done in all the operated cases. In both the groups malignancy was in advanced state. T3 stage was present in 04 of 10 in group A (40%) and 12 of 48 (25%) of cases present in elderly (group B) patients. T4 status was present in 06 of group A (60%) and 28 (58%) of 48 cases of group B. T3 stage tumor was more in young group whereas, T4 was more common in the elderly group and was statistically significant.[17,26,27] The location of gastric cancer has changed from distal to more proximal over recent decades. While the incidence of distal gastric cancer has been decreasing in the western countries, the incidence of proximal gastric cancer has been rapidly rising.[28] In study, the frequency of upper gastric cancer was found to be 20% and 10% in younger and in older group respectively. The growth was present in the distal part of stomach in 70% of cases in young patient and 73% in older patient. Dong-Yi Kim et al[25] suggested the lower third of the stomach was the most common site of gastric carcinoma in both groups and the upper third was more frequently involved in the young patients than in the elderly patients (16.8%vs 8.3%). Marita C Bautista et al[2] suggested lower third cancer (56.0%) was the most common among all gastric cancers.

In this study, incidence of growths presenting with T3 was 40% vs 25% and T4 was 60% vs 60.25 % in younger & older group. These data are similar to those reported in another Asian series.[18,29] In Western countries and Japan, patients with early gastric carcinoma are detected more than our country due to routine upper GI endoscopy screening program which is lacking in our country. In study lymph node stage N_2 was present 05 in group A (50%) and 23(47.9%) of cases present in elderly (group B) patients. Lymph node involvement was greater in elderly group than young group of patients.[25] Peritoneal involvements were present 10 % and 16.6% cases of young and elder group respectively. Hepatic involvement was also found 20%) and 16.6% in both group respectively. The elderly and young patients had similar distributions with respect to depth of invasion, nodal involvement, hepatic metastasis, peritoneal dissemination.[14,25,30] A delay in diagnosis existed in both groups and exerted influence on patient management and prognosis.

LIMITATIONS

This study has some obvious drawbacks like short period of study and small sample size. One large volume study will be required to draw an appropriate and accurate conclusion."Older >40 years for old and up to 40 years for younger might seem inappropriate but we followed it because most of the study on Gastric cancer dealing with this kind of comparison employ the cut-off line of 40 years old and there is no thumb rule to decide the cut-off point for the age. The number of young

patients of Gastric cancer is very low as compared to older patients and because of small number of young patients there is chance of biasness present. This is not overall picture of Bangladesh. All patients in this group are not able to carry on all investigations needed such as CT scan of abdomen.

CONCLUSION

The incidence of gastric carcinoma in patients younger than 40 years was more common than Western world. Patients are presenting more with lesions in the distal stomach in our country than the Western world. The only distinct demographic aspect in young gastric cancer patients is the higher proportion of females. Some significant differences were found among clinicopathological features, histological grade and cell differentiation of Gastric cancer of young and older patients. The incidence of gastric cancer in men were higher than those in women in all age groups, we found female predominance among young age group. Epigastric pain, vomiting and anemia were most common symptom in patients. Both young and old patients with Gastric cancer usually present at an advanced stage of the disease and have poor prognosis.

RECOMMENDATION

More awareness of gastric cancer onset is required to detect cancer at early stage to treat it successfully. Patient education, health promotion, open access endoscopy and improvement of the diagnostic techniques may be the best way of improving the prognosis of Gastric cancer.

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Original Article

Evaluation of Peripheral B Lymphocytes Alteration in COVID-19 Patients with Different Severity

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ABSTRACT

BACKGROUND: *The corona virus disease 2019 (COVID-19) outbreak has posed a threat to global health. Lymphocytes are the important immune system components in controlling severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) infection.* ***OBJECTIVE:*** *This study aimed to compare the differences in lymphocyte subsets, particularly B lymphocytes among COVID-19 patients and healthy controls.* ***METHODOLOGY:*** *A total of 85 COVID-19 patients and 20 healthy controls were enrolled between March 2020 and January 2021 from Bangabandhu Sheikh Mujib Medical University. The COVID-19 patients were divided into two groups: mild-moderate (n=38) and severe-critical (n=47), according to severity. Total lymphocyte, T lymphocyte and B lymphocyte numbers were measured by flow cytometry.* ***RESULTS****: Compared to healthy individuals, the COVID-19 group had a significant decrease in both total lymphocyte and T lymphocyte percentages (P<0.001). However, the B lymphocyte percentage was increased in the COVID-19 group (P<0.001). Furthermore, the severe-critical COVID-19 group had a significant decrease in B lymphocyte count compared to the mild-moderate COVID-19 group (P<.001) and the healthy group (P<.001). However, there was no significant difference in B cell count between mild-moderate COVID-19 group and healthy group.* ***CONCLUSION:*** *Peripheral B lymphocytes were lower in severe COVID-19 patients compared to healthy individuals and those with mild symptoms. B lymphocyte immunophenotyping could be used as an indicator of COVID-19 severity.*

Key words: COVID-19, B lymphocytes, disease severity.

INTRODUCTION

In December 2019, corona virus disease 2019 (COVID-19) was first reported in Wuhan, China and then rapidly spread throughout the world.[1] Since the beginning, it has been necessary to understand the interaction between SARS-CoV-2, the causative agent of COVID-19, and the immune system of host.[2] The majority of COVID-19 patients exhibit mild to moderate symptoms, but depending on their immune responses, some patients could experience severe complications that could result in death.[3]

In viral infection, innate immunity is responsible for the initial non-specific response through neutrophils, dendritic cells, natural killer (NK) cells, and macrophages, while the adaptive immune system is responsible for the specific antiviral immunity through the T lymphocytes and B lymphocytes.[2,4,5] Natural killer cells and T lymphocytes reduce viral load by destroying virus-infected cells. Conversely, humoral immunity is controlled by B lymphocytes, which produce neutralizing antibodies.[4,5] In COVID-19, follicular helper T cells activate B

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cells. After interacting with T cells, B cells rapidly multiply and differentiate into plasma cells, and produce neutralizing antibodies and memory B cells. Memory B cells and specific antibodies enter the blood circulation to defend against viral infection and re-infection.[3,6] So, ineffective clearance of SARS-CoV-2 in COVID-19 patients largely depends on proper and sufficient humoral responses.[6]

Lymphopenia, a reduction in the total number of lymphocytes in the blood, can result from viral infections. The clinical outcome of acute viral infections can be impacted by lymphopenia.[7] In COVID-19, immune dysregulation and excessive pro-inflammatory mediator production can result in total lymphopenia mostly in severe COVID-19 cases.[5,8] Further evaluation of lymphocyte subsets has also revealed that T cell and B cell counts are altered between severe and non-severe COVID-19 cases.[9-11] Immune alteration in B lymphocytes is the prominent characteristic of COVID-19 and is strongly associated with the severity of the disease.

The purpose of the study was to evaluate the changes in lymphocyte subsets in COVID-19 patients compared to healthy individuals. Additionally, it aimed to measure and compare the levels of peripheral B lymphocytes in COVID-19 patients with varying degrees of severity and healthy individuals.

MATERIALS AND METHODS

A total of 85 RT-PCR-confirmed COVID-19 patients and 20 healthy subjects were included in this cross-sectional study from the COVID Unit of Bangabandhu Sheikh Mujib Medical University between March 2020 and January 2021. The COVID-19 patients were classified into mild-moderate and severe-critical groups.[12] Healthy subjects and patients with immunosuppressive drugs, chemotherapy and immunodeficiency disorders were excluded. All healthy controls and patients provide informed consent and the study was approved by the Institutional Review Board of BSMMU (No.BSMMU/2020/7870).

On admission, patient's venous blood was collected for complete blood count and 3ml of blood was taken in EDTA (Ethylenediamine Tetra acetic Acid) tube for flow cytometry. The complete blood count report was collected on the following day for total WBC count. Flow cytometry was performed at Department of Microbiology and Immunology, BSMMU.

For each sample, 50µl of anticoagulated blood was pipetted into a 12x75 FACS tube. Next, a 5µl mixture of AntiCD45-ECD (Energy Coupled Dye), AntiCD3-FITC (Fluorescein isothiocyanate), and AntiCD19-PE (Phycoerythrin) conjugated antibodies was added to detect CD45+ total lymphocytes, CD45+CD3+ T cells, and CD45+CD19+ B cells, respectively. The tubes were then incubated for 10-15 minutes in the dark at room temperature and 200µl of Lysing solution was added to tubes to lyse red blood cell. Following the incubation, 3ml of sheath fluid was added, and the tubes were centrifuged for 5 minutes at 300g. The supernatant was discarded, and the cells were re-suspended in 50µl of sheath fluid. Finally, the tubes were run through a precalibrated flow cytometer (Beckman Coulter Cytomics FC 500), and the data were analyzed using CXP software. For each sample, 10,000 events were counted. Statistical analysis and graphic representation of the data were performed by SPSS software version 27 and Graph Pad Prism 9.0 software. The results were expressed as medians (interquartile range) and the non-parametric test, Kruskal-Wallis test was used for multiple comparisons, while the Mann-Whitney U test was used for two-group comparisons. P-values less than 0.05 were considered statistically significant.

RESULTS

In SARS-CoV-2 infection, lymphocyte number alterations might have a possible association with pathogenic mechanisms. The percentages of total lymphocytes, T lymphocytes and B lymphocytes were compared between COVID-19 patients (n=85) and the healthy group (n=20) in Table I. The median percentage of total lymphocytes was decreased significantly in the COVID-19 group compared to the healthy group [11 (5-19) vs 29 (27-34), P<0.001]. Additionally, the COVID-19 group had a significantly lower percentage of T lymphocytes compared to the healthy group [58 (50-69) vs 70 (68-75), P<0.001]. However, the median percentage of B lymphocytes was increased in COVID-19 group [25 (17-38) vs 18 (10-20)], P<0.001].

Table I: Comparison of peripheral blood lymphocyte subsets among the study groups

Characteristics	Healthy group (n=20)	COVID-19 group (n=85)	P value
Total lymphocytes, %	29 (27-34)	11 (5-19)	<0.001
T lymphocytes,%	70 (68-75)	58 (50-69)	<0.001
B lymphocytes,%	18 (10-20)	25 (17-38)	<0.001

Group medians (IQR) are showed and P values are derived from Mann–Whitney test.

To analyze B lymphocytes in relation to disease severity, the COVID-19 patients (n=85) were divided into mild-moderate group (n=38) and severe-critical group (n=47). B lymphocyte counts were measured and compared among COVID-19 patients with different severity and healthy subjects in Figure 1. The median count of B lymphocytes was significantly decreased in the severe-critical group [154 (71.52-304.5)] compared to the mild-moderate group [323 (230.9-475), P<.001] and the healthy group [269.9 (220-453.6), P<.001]. However, there was no significant difference in B cell count between the mild-moderate COVID-19 group and the healthy group. It is important to note that these findings suggest that severe-critical COVID-19 patients have lower B lymphocyte counts compared to those with milder symptoms.

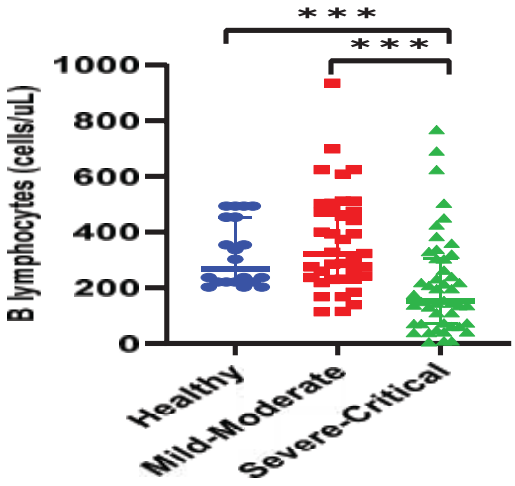

Figure 1: Absolute counts of B lymphocyte in healthy group, mild-moderate and severe-critical COVID-19 groups are showed with scatter plot graph. The longer horizontal line in graph indicates the median value for each group. * indicates P < 0.001.**

DISCUSSION

B lymphocytes are essential components of the humoral immune system. They play a crucial role in fighting viruses by producing neutralizing antibodies. Therefore, they are vital in providing protection against SARS-CoV-2. This study aimed to assess the changes in lymphocyte subsets, particularly B lymphocyte count, in patients with COVID-19.

In the present study, both the percentages of total lymphocytes and T lymphocytes were decreased in COVID-19 patients compared to the healthy group. Similar findings were reported from several previous studies,

suggesting dysregulation of immune response in COVID-19. [9,11,13,14]

The current study showed that there was a significant increase in the percentage of B lymphocytes in the COVID-19 group compared to the healthy group, which is consistent with the results of previous studies.[3,14,15] The possible cause of the relative increase in B cells percentage could be due to the significant decrease of T cells in these patients.[14,15]

Regarding severity of disease, B lymphocyte count was found significantly lower in severe-critical COVID-19 group compared to healthy group and mild-moderate group of COVID-19 patients. This finding is in agreement with several studies conducted in China.[9,10,16] Moreover, a lower count of B-cells was found to be associated with a higher risk of in-hospital death.[11] However, other studies have reported no differences in B lymphocyte count between the mild and severe groups.[17,18] A decrease in B lymphocyte levels was also observed in patients with severe acute respiratory syndrome (SARS) during the large outbreaks of atypical pneumonia in 2003.[19] B lymphocytes were significantly lower in SARS patients who died compared to those who recovered, and in those with severe disease compared to those with non-severe disease.[20]

It was hypothesized that virus can attach and penetrate into lymphocytes that express ACE2 on their surface, which may lead to a depletion of both T cells and B cells. Cell death by apoptosis, inflammatory cytokines, co-inhibitory molecules, and metabolic disorders could be the underlying reason for decreased B lymphocytes in COVID-19.[2,7] Additionally, the severity of COVID-19 is found associated with the changes in the B cell subpopulations, either immature or terminally differentiated B cells.[3]

Notably, immunotherapies that deplete B-cells, such as anti-CD20 treatment, may increase the risk of SARS-CoV-2 infection and prolong the illness. Glucocorticoid therapy can lead to a decrease in circulating B-cells by inducing apoptosis and suppressing B cell activation, proliferation, and differentiation.[21,22] However, it is important to note that a failure in B cell activation or dysfunction can result in a severe form of the disease and also reduce the efficacy of vaccination.[2]

CONCLUSION

The peripheral B lymphocyte count is significantly lower in severely critical patients compared to healthy control and moderate patients. Peripheral blood B lymphocyte count could help identifying the COVID-19 severity. To better understand the role of B lymphocytes in COVID-19 pathogenesis, it is necessary to conduct large scale study that includes follow-up, correlation of antibody titers, cytokine profiling, and analysis of B cell subset populations.

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Original article

Effect of *Tamarindus indica* on Blood Pressure of Stage II Hypertensive Patients in a Tertiary Level Hospital

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ABSTRACT

***BACKGROUND**: Hypertension is recognized as one of the major contributors to the disease burden globally. Use of polypharmacy is a common phenomenon to treat moderate to severe hypertension. The burden of drug can be lessened by concomitant use of natural herbs that are easily available around us. Tamarindus indica which is locally known as tamarind, hasa wide range of medicinal application and positive effect on cardiovascular health. **OBJECTIVE:** To see the effect of Tamarindus indica on blood pressure of stage II hypertensive patients. **METHODS:** Patients with primary hypertension stage II attended in the outpatient department of medicine of Dhaka Medical College Hospital, were enrolled in the study. Among 90 participants, random allocation was done in test and control group where 45 participants were in test group and 45 participants were in control group. The pulverized pulp of Tamarindus indica fruit at a dose of 15 mg/kg/day had been given to the test group for 8 weeks along with drugs. The control group was only on drugs. Blood pressure was recorded at weekly interval in both test and control group. The results obtained from test group had been compared with that of control group. **RESULTS:** In case of control group systolic blood pressure was 123.88±3.45 mm of Hg and diastolic blood pressure was 78.55±3.16 mm of Hg. After taking tamarind for 8 weeks, mean the systolic and diastolic blood pressure of intervention group became 122.66±5.26 and 73.66±3.26 mm of Hg respectively. Though the fruits exerted no conspicuous effect on systolic blood pressure (p=0.19), it significantly reduced the diastolic pressure (p=0.001) as confirmed by independent sample t-test at 5% significance level. **CONCLUSION:** Tamarindus indica reduced diastolic blood pressure in stage II hypertensive patients. In Bangladesh where hypertension shows a rising trend, the finding of the study definitely reveals a new dimension on the effect of fruits of Tamarindus indica on hypertension.*

Key words: *Tamarindus indica*, Hypertension (HTN), Blood Pressure (BP)

INTRODUCTION

Hypertension has become a significant health problem globally. Studies show that the prevalence of hypertension has increased by 30 times among the urban population over period of 55 years and about l0 times among the rural population over a period of 36 years.[1] Treating hypertension in proper way needs awareness and exploration of new drugs and methods along with traditional drugs. Bangladesh has a rich source of trees and natural herbs with medicinal value and can be effectively used in controlling hypertension. Use of plants and herbs in treating disease dates back to ancient times[2] and still now they are being used throughout the whole world for cure of various diseases by practitioners of folk medicine. Use of plants for purpose of treatment is popular in underdeveloped countries because of easy availability and cheapness. More recently safety and therapeutic use of medicinal plants and herbs have led to their increasing popularity in developed countries.[3] According

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to World Health Organization (WHO), over 80% of the world population relies upon traditional plants based system of medicine to provide them with primary healthcare.[4] Bangladesh possesses a rich kingdom of medicinal plants. Out of the estimated 5000 species of phanerogams and pteridophytes growing in this country more than a thousand are regarded as having medicinal properties.[5] Many of the food, vegetable, beverage, spine and ornamental plants, which grow in this country contain medicinally useful chemical constituents like phenol, coumarines, carotinoids, glucosides, flavinoids, alkaloids, xanthinesetc[6] and constitute important items of drugs or therapeutic agents of various medicinal preparations, particularly of unani and ayurvedic preparations.[7] In the last three decades, a lot of concerned efforts have been channeled into researching into local plants with blood pressure lowering effect, *Tamarindus indica* is a herb of this kind. *T. indica*is evergreen tree that can reach 24m height and 7m girth that has pale yellow and pink flowers.[8] Thailand, Bangladesh, Indonesia in Asia; Mexico, Costa Rica in America are some of the countries in which this plant is mostly encountered.[9] Every part of *T. indica* plant (root, body, fruit, leaves) not only has rich nutritional value and broad usage area in medicine but also has industrial and economic importance. According to World Health Organization report, tamarind fruit is an ideal source of all essential amino acids except tryptophan (82%).[10] Its seeds also have similar properties so it becomes an important, accessible protein source especially in countries where protein malnutrition is a common problem. According to phytochemical analysis results, *T. indica* contains phenolic compounds like catenin, procyanidin B_2, epicatechin, tartaric acid,mucilage, pectin, arabinose, xylose, galactose, glucose, uronic acid and triterpen.[11] Tamarind has wonderful anti-inflammatory, anti-cholesterol, anti-bacterial properties and were traditionally recognized long before scientific studies and research were conducted on tamarinds. Tamarind is a good source of anti-oxidants, fiber and potassium that are all significant in promoting a healthy heart. One of the major underlying causes of high blood pressure today is high intake of sodium in our diet. As much as sodium is essential in our bodies, high amounts can seriously harm body organs and result in increase in blood pressure. Adding foods rich in potassium to our diets can reverse the negative effects of sodium in our blood and normalize blood pressure. Tamarind is a rich source of potassium. A half cup of the soft brown pulp contains about 377 mg of potassium. The high potassium content of tamarind helps to reverse the negative effect of sodium in blood and normalize blood pressure. Antioxidant properties of *T. indica* has been shown in many studies.[8,11,12] Phenol rich food & beverages like red wine, grape seed, green tea & tamarind have hypolipidemic, antiatherosclerotic, antioxidant, anti-inflammatory & immunomodulatory effect. *T. indica* fruit is rich in organic acid, pectin, vitamin, minseral content, polyphenol and flavonoid content. *T. indica* fruit is rich in polyphenol and flavonoid. It shows moderate antioxidant effect. Epidemiological studies have shown that flavonoid intake from fruits & vegetables have beneficial effect on cardiovascular health. *T. indica* seed shows antioxidant effect via its flavonoid, tannin, polyphenol, anthocyanin & oligomericproanthocyanidin content.

Polysaccharides isolated from *T. indica* seed show the immunomodulatory effect via increasing phagocytosis, inhibiting leukocyte migration and decreases cell proliferation. Triglyceride decreasing effect is associated with epicatech in content of the extract. This compound increases total fatty acid, neutral and acidic sterols excreted via feces and shows its hypolipidemic effect in this way. Tamarind seed and fruit are suggested as a nutritional support in patients with high blood cholesterol levels. Moreover the high potassium and low

sodium content of tamarind helps to lower blood pressure and ensure cardiovascular health.[13] Developing counties are increasingly faced with the double burden of hypertension and other cardiovascular diseases. In our country where polypharmacy is a common phenomenon to treat moderate to severe hypertension, use of natural herbs like *Tamarindus indica* may play important role in controlling blood pressure more effectively. The aim of the study is to observe the effect of tamarind on stage II hypertensive patients.

MATERIALS & METHODS:

This prospective study was carried out in the Department of Pharmacology in collaboration with outpatient department of Medicine, Dhaka Medical College Hospital, Dhaka between July 2015 and June 2016. A total of 90 patients with primary hypertension stage II attended in the outpatient department of medicine were enrolled in the study. Informed written consent was obtained from the patients after full explanation of the process. Clinical evaluation was done by detailed history regarding presenting illness, dietary pattern and personal habits. Patients of either sex, age ranges from 25 to 60 years with primary hypertension stage II includes in this study. Patients with primary hypertension with co-morbidities like cerebrovascular disease, diabetes mellitus, chronic renal disease bronchial asthma and bleeding disorder as well as secondary hypertension excluded from study. According to Joint National Committee (JNC7) stage II HTN define as Systolic BP >160 mm of Hg and Diastolic BP >100 mm of Hg.[14] Among 90 participants random allocation of was done in intervention and control group where 45 participants were in intervention group and the rest 45 participants were in control group. The pulverized pulp of *Tamarindus indica* fruit at a dose of 15 mg/kg/daily had been given to the intervention group for 8 weeks along with drugs. The control group was only on drugs. Blood pressure was recorded at weekly interval in both intervention and control group. The results obtained from intervention group had been compared with that of control group. Data were compiled and statistical analysis was done with‘t’test. Statistical comparison of two independent percentages was done and p value of 0.05 considered statistically significant.

RESULTS:

This study was carried out to determine the effect of *Tamarindus indica* on stage II hypertensive patients. A total of 90 patients, age ranged from 25 to 60 years with a mean of 52± 8 years. Mean age of intervention group was 51±7.87 years and control group was 50±5.25 years (p=0.8317). The majority of the participants (75.55%) were from the age group of 51-60 years. The percentage of male participants was 52.22% on the other hand female participants were 47.77%. Male participants were more than female in both case. The Education level of 90 participants 31.5 % were higher secondary while 44.1 % graduated, 4.5% secondary & 0.9% illiterate. The prevalence of risk factor of hypertension shows that out of 90 participants 27.7% was suffering from obesity while 20% was sedentary worker. Number of smoker was 33.33% and 7.7% participants had positive family history of hypertension. The prevalence of alcohol and salt intake was 5.5% and 35.55% respectively. Regarding presenting symptoms, 23.33% patients’ complaints of dizziness. Other important symptoms were headache 18.88%, tiredness 13.33% but the important thing was, 41.11% `participants were symptomless. In case of control group the mean systolic blood pressure was 123.88±3.45 mm of Hg and mean diastolic blood pressure was 78.55±3.16 mm of Hg. On the other hand the mean systolic and diastolic blood pressure of intervention group were 122.66±5.26 and

73.66±3.26 mm of Hg respectively. No significant change was observed in systolic blood pressure after administration of tamarind (p=0.19). However, for diastolic blood pressure, P value for independent sample t-test was found to be p=0.001 which indicates a significant effect of tamarind to lower diastolic blood pressure.

Table I: Effect of tamarind on blood pressure (BP)

	Control group (n=45)	Interventional group (n =45)	P value
Age (yrs.)	50±5.25	51±7.87	0.831
Male	51.11%	53.33%	0.833
Female	48.89%	46.67%	0.833
Systolic BP	122.66±5.26	123.88±3.45	0.196
Diastolic BP	73.66±3.26	78.55±3.16	0.001

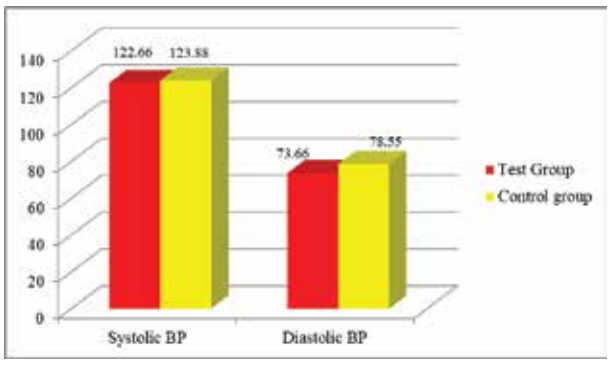

Fig. 1: Graphical presentation of Effect of tamarind on blood pressure (in mm of Hg).

DISCUSSION

Patients who are suffering from primary stage II hypertension shows persistent rise of blood pressure in which systolic blood pressure ranges from >160 & diastolic blood pressure ranges from >100 with idiopathic cause.[15] Treating hypertension has become more challenging due to presence of coexisting morbidity. Use of polypharmacy is a common phenomenon to treat moderate to severe hypertension. The burden of drug can be lessened by concomitant use of natural herbs that are easily available around us. *Tamarindus indica* which is locally known as tamarind is a herb that contains certain health benefiting essential volatile chemical compounds, minerals, vitamins and dietary fiber.[16,17] Every part of Tamarind plant not only has nutritional value but also has broad usage in the area of medicine.[17] Tamarind is a wonderful anti-inflammatory, anti-cholesterol, anti-bacterial and antioxidant agent.[18] Due to its natural anti-inflammatory properties, tamarind is very effective in treating inflammations, in the heart arteries or walls, caused by heart disease. Tamarind also has carb-fighting properties that make it a very good food to prevent cardiovascular diseases. Its anti-cholesterol properties help destroy plaque that may accumulate in the arteries surrounding the heart. The high potassium content of tamarind helps in regulation of heart beat and maintains blood pressure.[11] The data generated in the study which was undertaken among 90 participants suffering from stage II hypertension. Among these 90 participants, 45 participants were taken as control group was only on drug and the other 45 participants were taken as intervention group. Pulverized pulp of *T.indica* fruit was given orally at a dose of 15mg/kg body weight daily to each experimental volunteer of intervention group for 8 weeks. The age of the participants ranged between 25 to 60 years with mean age 52± 8 years. The mean age indicates that incidence of hypertension increases with age.[19] Oscar A et al[20] suggested in industrialized countries systolic BP rises throughout the life, where as diastolic BP rises until age 55 to 60 years. The percentage of male and female of the present study was 52.22% and 47.77% respectively. Hypertension is more prevalent in men though menopause tends to abolish this difference.[20] The rates vary markedly in different regions with rates as low as 3.4% (men) and 6.8% (women) in rural India and as high as 68.9% (men) and 72.5% (women) in Poland.[21]

Prevalence of educated people is higher in the study because health seeking behavior is more common in educated people.

In present study, most of the patient was symptom less (41.11%). Marshall et al[22] indicated that hypertension rarely accompanied by any symptom. The other participants who had symptoms, the commonest presenting symptom found in this study was dizziness (23.33%). Out of 90 patients, 23.33% patients complained of dizziness. Other important symptoms were headache (18.88%), tiredness (13.33%). Di Tullio et al [23] shows that prevalence of dizziness is more among hypertensive than headache. The prevalence of risk factor of hypertension showed that out of 90 participants 27.7% were obese and 20% were sedentary worker. Agrawal et al[24] suggested that prevalence of obesity and sedentary worker among hypertensive patient was 18% and 18.5% respectively. Most hypertensive adolescents are obese and have a family history of hypertension and obesity.[25] Obesity, which increases plasma volume and cardiac output, not only causes high blood pressure, but increases the risk of cardiovascular disease in adults.[25,26] Lack of physical activity may increase the risk of developing hypertension by 20-50%.[26] In present study, shows smoker was 33.33% and 7.7% participants had positive family history of hypertension. Agrawal et al[24] suggested that prevalence of smoker and positive family history among hypertensive patient was 16% and 7.4% respectively. The prevalence of alcohol and salt intake was 5.5% and 35.55% respectively. Agrawal et al[24] observed the prevalence of alcohol and salt intake among hypertensive patient was 9.4% and 34.2%. Substance use, including excessive alcohol intake, tobacco use, and drugs or medications with pressure effects such as steroids, oral contraceptives, cocaine, and diet pills or herbs containing stimulants, can significantly raise blood pressure levels.[27]

The data generated in this study indicates that fruits of *T.indica* has diversified effect on blood pressure in stage II hypertensive patients. Pulverized pulp of *T.indica* was found to lower the diastolic blood pressure significantly ($p<0.05$) though it had no effect on systolic blood pressure ($P>0.05$). It has been reported that long term consumption of food containing high potassium and low sodium content like tamarind helps to improve cardiovascular health. Tamarind is a rich source of potassium (628mg per 100g) as well as low sodium content (28mgper 100grm).[12] The high potassium content of tamarind helps to reverse the negative effect of sodium in blood and normalize blood pressure.[19] High potassium intake is associated with lower BP. Potassium is a chemical which helps to lower blood pressure by balancing out the negative effects of salt.[28] Tamarind seed and fruit are also suggested as a nutritional support in patients with high blood cholesterol levels.[13,29] Moreover the high potassium and low sodium content of tamarind helps to lower blood pressure and ensure cardiovascular health.[13] The finding of this study reveals a new dimension on the effect of fruits of *T.indica* on hypertension, but further study is required in larger population to quantify and qualify the issue. In our country where polypharmacy is a common phenomenon to treat moderate to severe hypertension, use of natural herbs like *Tamarindus indica* may play important role in controlling blood pressure more effectively.

CONCLUSION

Tamarindus indica reduced diastolic blood pressure in stage II hypertensive patients**.** In Bangladesh where hypertension shows a rising trend, the finding of the study reveals a new dimension on the effect of fruits of *T.indica* on hypertension.

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Original Article

Safety and Efficacy of Lateral Internal Sphincterotomy in the Management of Chronic Anal Fissure

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ABSTRACT:

BACKGROUND: *An Anal Fissure is a painful longitudinal mucosal ulcer of the anal canal which may extend from the anal verge to the dentate line. It can significantly influence the quality of life of the affected person due to its troubling symptoms and signs such as severe pain, bleeding per rectum, spasm of the internal sphincter. Lateral internal sphincterotomy (LIS) is one of the most common procedure perfomed when conservative management fails in chronic anal fissure.* ***OBJECTIVES:*** *The aim of the study is to assess the safety and efficacy of lateral internal sphincterotomy for the management of chronic anal fissure.* ***MATERIALS AND METHODS:*** *This descriptive type of observational study was carried out at department of surgery of Prime Medical Hospital, Rangpur from July, 2020 to June, 2022 in 105 patients suffering from chronic anal fissure and underwent LIS after medical management failed. Age, sex, clinical presentation, symptomatic relief of defecatory pain following LIS, post-operative complications were assessed in all patients.* ***RESULTS:*** *All 105 patients were between the 18 to 68 years of age. The mean age of the respondents was 37.32 ± 9.92 years and male to female ratio was 1: 2.28 with a slight predominance of female. Painful defecation (98%), Constipation (98%) and bleeding per anul (82%) were the most common complaints. Symptomatic relief of pain following operation was observed among all the patients at 6th week . The early complications in the present study were bleeding (0.7%), perianal infection (0.3%). In our study only 0.4%, patients showed gas incontinence, which itself got improved after some time. In our study no patient suffered from recurrence in 3 months period.* ***CONCLUSION:*** *Our study shows that lateral internal sphincterotomy is a safe surgical option for treatment of chronic anal fissure. It improves the existing symptoms rapidly and there are few post-operative complications which can be managed. Flatus incontinence may occur but it resolves with time and there is reduced chance of recurrence.*

Key words: LIS, Chronic anal fissure

INTRODUCTION

An Anal Fissure is a painful longitudinal mucosal ulcer of the anal canal which may extend from the anal verge to the dentate line.[1] About 90% of anal fissures occur in the posterior anal canal, due to reduced blood supply to the posterior midline anoderm; the sphincter tone in these patients is comparatively high so the blood supply is further compromised.[2]

Majority of the patients suffering from fissure are from young age group Although it is not a fatal condition but can significantly influence the quality of life of the affected person due to its troubling symptoms and signs such as severe pain, bleeding per rectum, spasm of the internal sphincter.[3,4]

Painful fissures are generally associated with involuntary spasm of the internal sphincter

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with high resting pressure in the anal canal. Incidence of fissure is on rise owing to stressful lifestyle and lack of fibers in diet. Lack of exercise, sleep and decreased water intake add to it.[5]

While the acute anal fissure often heals within 1–2 weeks, chronic anal fissures are less likely to heal even after 6–8 weeks of medical management.[6,7]

Morphologically chronic anal fissures are wider, deep, edges are indurated with skin tag distally and a hypertrophied papilla proximally.[8]

The American Society of Colon and Rectal Surgeons (ASCRS) guidelines recommend that for the initial nonsurgical management of anal fissure, the patient should be recommended stool softeners, high fiber diet, and warm sitz bath.[9] Application of pharmacological agents such as glyceryl trinitrate or calcium blockers, and botulinum toxin (BT) injection are other treatment strategies, which are also termed as "chemical sphincterotomy".[10–13] However, the success rate (65–75%) of this treatment strategy is significantly lower than as observed in surgical sphincterotomy.[13–15]

When pharmacologic therapy fails or fissures recur frequently and patients have raised[16] resting anal pressure, lateral internal sphincterotomy is the surgical treatment of choice.

Lateral internal sphincterotomy remains the gold standard for definitive management of anal fissures, but comes with a risk of incontinence.[17]

The aim of the study is to assess the safety and efficacy of lateral internal sphincterotomy for the management of chronic anal fissure.

MATERIALS AND METHODS

This descriptive type of observational study was carried out at surgery wards of Prime Medical Hospital, Rangpur from July, 2020 to June, 2022. Total 105 samples were taken by purposive sampling. Patients suffering from chronic anal fissure (duration more than six weeks), exposed internal anal sphincter fibers, the appearance of sentinel piles, and hypertrophied anal papilla were included in this study. Patients who were suffering from an anal abscess, anal fistulae, hemorrhoid disease, and inflammatory bowel disease were excluded from this study.

All samples were included in the study after confirming the ethical issues such as – all participants were volunteer, consent was obtained, it had been clear to them that they are free to take part or refuse any part of the study, all answers were kept confidential.

Age, sex, clinical presentation, symptomatic relief of defecatory pain following LIS, post-operative complications were regarded as various variables.

Before the surgery, medical management for all the patients was done, which included the prescription of a combination of stool softener, laxative, high fiber diet, and a warm sitz bath. LIS under sub-arachnoid block is performed when conservative treatment was failed. Post-operatively patients were monitored for complications and followed up for 3 months.

All the information's were recorded in a fixed data collection sheet. Collected data were classified, edited, coded and entered into the computer for statistical analysis. Collected data was compiled and findings were presented in the form of tables and graphs. Appropriate statistical analysis of the data was done using computer based SPSS version-22.0.

RESULTS

Table I: Distribution of patients according to age (n = 105)

Age(years)	Frequency(%)	Range(years)	Mean ±SD
≤20	2(1.91%)		
21 – 30	23(21.9%)		
31 – 40	41(39.05%)	18 - 68	37.32 ± 9.92
41 – 50	24(22.86%)		
51 – 60	13(12.38%)		
≥60	2(1.9%)		

Figure 1: Distribution of patients according to sex (n = 105)

Distribution of patients according to sex (n=105)

70%

30%

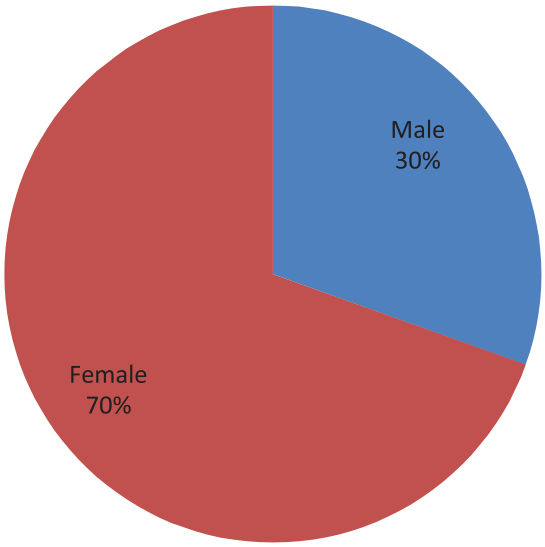

Table II: Distribution of patients according to clinical presentations(n = 105)

Clinical presentations	Frequency(%)
Pain during defecation	103 (98%)
Rectal bleeding	86 (82%)
Constipation	103 (98%)
Pruritus	22 (21%)

Table III: Symptomatic relief of defecatory pain following lateral internal sphincterotomy (n=105)

Time of follow up	Patients with pain relief (%)
1st week	69 (66%)
2nd week	82 (78%)
3rd week	96 (91%)
4th week	101 (96%)
6th week	105 (100%)
8th week	105 (100%)

Table IV: Outcome of lateral internal sphincterotomy in 3 months follow up period (n=105)

Complications	Frequency (%)
Bleeding	01 (.95%)
Infection	05 (4.76%)
Flatus incontinence	01 (.95%)
Fecal incontinence	00 (00%)
Recurrence	00 (00%)

DISCUSSION

Anal fissure is the most common anorectal painful condition. Young age group is the main sufferers. Risk factors include low fibre containing diet, less water intake, constipation etc. Longitudinal tear occurs in the posterior midline of anal canal in acute case and ulceration, hypertrophied papilla and sentinel tag present in chronic case. Acute anal fissure can be treated conservatively but operation is required for chronic anal fissure. Lateral internal sphincterotomy is the choice of operation for it's high rate of success.

In our study 105 patients were included. Among them the mean age was 37.32 ± 9.92 years which is similar to most studies [18-21], while male to female ratio was 1: 2.28 with a slight predominance of female which is comparable with studies done by Shafiq ullah et al.,[18] and Tauro LF et al.[20], showing more male patients than female[20] whereas Oh C et al., had shown equal ratio of male and female.[19]

Painful defecation (98%), constipation (98%) and bleeding per anum (82%) were the most common complaints in our study as observed in other studies[2,22-24] as well.

Pain relief in the patients was measured postoperatively. The number of patients whose pain got relieved improved consistently from the first week of the surgery (66%) to the second week (78%), fourth week (96%), and at the end of the sixth week, all the patients (100%) experienced pain relief. These results were similar to a previous study of Arujo et al., where maximum pain relief was observed at the end of the eighth week.[25] In another study, it was observed that almost all the patients had pain relief after six weeks of the surgery.[26]

The early complications in the present study were bleeding (0.95%), infection at surgical

site (4.76%) which is similar in earlier studies.[7] Other complications of LIS are anal incontinence, which is a major disadvantage of LIS.[25] In a meta analysis, it was observed that anal incontinence resolves itself in most of the patients, but in less than 2% of the patients, major incontinence (involuntary loss of feces) was observed.[27,28] In our study only 0.95%, patients showed gas incontinence, which itself got improved after some time. While success rates of the LIS procedure remain high, as judged by the successful healing of the anal fissure, there is a risk of recurrence in 1.3%–25% of the cases.[29,30] Liang et al. also obtained similar results, where the recurrence rate was only 4%[7].In our study no patient suffered from recurrence in 3 months period.

CONCLUSION

Our study shows that lateral internal sphincterotomy is a safe surgical option for treatment of chronic anal fissure. It improves the existing symptoms rapidly and there are few post- operative complications which can be managed. Flatus incontinence may occur but it resolves with time and there is reduced chance of recurrence.

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Prime Medical Journal, July 2023; 13(2): 31-34

Original article

A Comparative Study of Dissection Method of Tonsillectomy vs. Bipolar Cautery Method of Tonsillectomy

Md. Kamruzaman[1], Md. Sazedul Islam[2], Timir Debnath[3]

ABSTRACT

CONTEXT: *The tonsils are lymph nodes in the back of the mouth and top of the throat. They help to filter out bacteria and other germs to prevent infection in the body. A bacterial or viral infection can cause tonsillitis. Strep throat is a common cause. The infection may also be seen in other parts of the throat. Whenever, tonsil become enlarged, seriously infected or causes certain complications, tonsillectomy becomes essential. It can be performed with many ways including dissection method of tonsillectomy and bipolar method of tonsillectomy.[1]* ***AIM OF THE STUDY:*** *The aim of this study was to assess the advantages of dissection method over bipolar method of tonsillectomy.* ***MATERIALS AND METHODS:*** *A prospective single blinded randomized control study was conducted in the Department of Otolaryngology, Bashundhara Ad- Din Medical College Hospital, Bangladesh during the period from July 2020 to February 2023. A total of 50 admitted patients for tonsillectomy were included as the study.* ***RESULTS:*** *In this study maximum patient were 7- 18 years. The study showed males were affected more than the females. Intraoperative blood loss was more in conventional dissection method. Post operative pain was more in electrocautery method in comparison to dissection method. Duration of surgery was more in dissection method than in bipolar cautery method. Post operative bleeding was not observed in any case of this study.* ***CONCLUSION:*** *Intraoperative blood loss and duration of surgery was more in dissection method. Post operative pain was more in electrocautery method.*

Key words: Tonsillitis, Tonsillectomy, Dissection method, Cautery method.

INTRODUCTION

The tonsils are lymph nodes in the back of the mouth and top of the throat. They help to filter out bacteria and other germs to prevent infection in the body. A bacterial or viral infection can cause tonsillitis. Strep throat is a common cause. The infection may also be seen in other parts of the throat. Whenever, tonsil become enlarged, seriously infected or causes certain complications, tonsillectomy becomes essential. It can be performed with many ways including dissection method of tonsillectomy, cold dissection, cryosurgery, coblation and bipolar method of tonsillectomy.[2]

So our study was desinged to compare and find the advantages and disadvantages between dissection and electrocautery techniques of tonsillectomy among the population of Bangladesh.

METHODS

This study carried out over a period of 32 months (from July 2020 to February 2023). A total of 50 admitted patients for tonsillectomy were included as the study. All the participants were divided in two groups. In one group, there were 25 participants selected for dissection method. On the other hand, in another group, other 25 participants selected for bipolar method of tonsillectomy. Necessary permission and approval from the ethics

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committee was taken prior to the study. the patient's attendants involved in the study. A total of 50 patients of 5-18 years of age who were diagnosed with chronic tonsillitis based on history and clinical examination were identified as candidates for tonsillectomy were included in the study. The method employed to remove the tonsils on right and left side with Conventional dissection method and bipolar cautery respectively will vary alternatively in patients. Routine investigations including, complete blood count, bleeding time, clotting time and prothrombin time were done. All the procedures were performed under the general anaesthesia. For comparison of both the method all necessary data along with demographic and clinical status were collected in a predesigned questioner. The patient were followed up on 1st, 3rd, 7th, and 14th day of post operative period. All data were processed and analysed and disseminated by using SPSS version 22 programs as per need.

INCLUSION CRITERIA

Chronic tonsillitis patients between 7-18 years of age were included in the study.

EXCLUSION CRITERIA

Children with chronic tonsillitis below 7 years of age, patients above 18 years of age, bleeding disorders, suspected malignancy of tonsil, peritonsillar abscess were excluded from the study.

RESULT

As per our study 50 patients underwent tonsillectomy by conventional dissection and bipolar cautery method on right and left side alternatively under general anaesthesia. All patients were followed regularly after surgery on 1st , 3rd , 7th and 14th post operative days to assess the post operative morbidity and efficacy of both conventional and bipolar methods.

Informed written consents were obtained from The duration of surgery was more in dissection method than bipolar cautery method as shown in Table I. The mean duration of surgery, for conventional tonsillectomy was 15 minutes and 9 seconds and for bipolar cautery was 11 minutes and 36 seconds thus it took an average of 3 minutes 45 sec more to perform conventional dissection procedure compared to bipolar cautery and this difference is statistically significant, ($p<0.00001$).

The amount of intra operative blood loss on an average in conventional method was approximately 44 ml and in bipolar cautery was 23.14 ml. The difference was statistically significant ($p<0.00001$).

Table I: comparison of duration of surgery (min) and Intra operative blood loss (millilitres), (n= 50)

	Dissection method	Bipolar cautery	p-value
Intra-operative blood loss (milliliters)	44	23.14	<0.000001*
Duration of operating time (minutes)	15.9	11.36	<0.0001*

Post operative pain was assessed using VAS (Visual analogue scale) and was significantly more in bipolar cautery method as compared to the dissection method as shown in Table II. The mean pain score on day 1st, 3rd and 7th was more on bipolar cautery side as compared to dissection method and the results were statistically significant.

Table II: Comparison of post operative pain on 1st, 3nd and 7th post operative day

Post-op day pain scale (VAS)	Dissection method	Bipolar cautery	P value
1st day	2.56	2.74	<0.0001*
3rd day	3.3	4	<0.0001*
7th day	2.3	3	<0.0001*
14th day	1.32	1.34	<0.0001*

There was no post operative bleeding seen in any of the methods in this study.

DISCUSSION

Tonsillectomy is a very common surgery done worldwide by ENT surgeons. There are several existing techniques to perform tonsillectomy including- cold dissection, cryosurgery, diathermy (monopolar and bipolar) dissection, coblation and laser surgery.[3] Cold dissection and electrocautery dissection are the main and most commonly used techniques for tonsillectomy.[4]

Diathermy has the potential advantage of reduced perioperative bleeding. The major post-operative morbidity includes pain and haemorrhage.[5] Other complications include- post operative nausea and vomiting, delay to oral intake, airway obstruction with respiratory compromise, and primary or secondary and reactionary postoperative haemorrhage.

In this study duration of surgery was more in conventional dissection than bipolar cautery method. Study conducted by Leach et al also reported an increased operative time with the dissection technique.

The intra-operative blood loss was more in conventional dissection method in this study. The blood vessels were cut during the dissection method while in bipolar cautery the cauterisation of the blood vessels while dissecting occurs simultaneously. Shanmugam et al noted a decrease intra operative blood loss in bipolar cautery side. Also, Ayden also reported that intra-operative bleed was less in diathermy method than dissection method.

A study done by Nunez et al found that dissection tonsillectomy increased the amount of blood loss.[6] Pang et al Raut et al showed 5 ml blood loss on an average for bipolar diathermy method while dissection technique had an average of 115 ml.[7,8] Mofatteh et al and Beriat et al found that intra-operative blood loss was significantly lower in the bipolar method.[9,10]

In this study post-operative pain was more in bipolar cautery method. Shanmugam et al, assessed post operative pain using VAS which showed that the pain was more in the bipolar cautery side from day 0 to day 5. However, there was not much difference in post operative pain on both sides on day 6 day 7 and day 14. This could be due to more local inflammation caused by the cautery than that caused by the cold dissection method. Similar post operative pain scores were reported by Helena Silveira and Ali, Rafique A in their study.

Khan et al, Beriat et al, Moonka, Mofatteh et al, Nunez et al and Gregor et al found that post-operative pain was more with bipolar diathermy method.[8-13]

The intraoperative blood loss is more in conventional dissection method. The post operative pain is more in bipolar cautery method.

CONCLUSION

After observation and discussion of 50 cases we concluded that the clear field in tonsillar surgery which is very important is easily achieved by use of the bipolar cautery. The duration of surgical technique was significantly more in Bipolar cautery method than that in Conventional dissection method. Intra-operative blood loss was more in Conventional dissection method. No case of post operative bleeding was seen in any of the methods in this study.

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Original Article

Serum Creatinine Level and its Relation with Thyroid Profile: a Cross-Sectional Study among Newly Diagnosed Hypothyroid Patients

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ABSTRACT

CONTEXT: *Hypothyroidism is considered one of the known global public health complications affecting human kidney function.* ***OBJECTIVE****: This study aimed to analyze the effect of hypothyroidism on serum creatinine levels and the correlation between the extent of hypothyroidism and serum creatinine levels among newly diagnosed hypothyroid subjects.* ***METHODS****: The study subjects were selected from patients undergoing thyroid evaluation in Nuclear Medicine and Allied Sciences, Rajshahi from July 2018 to June 2019. Among them 60 participants were selected, 30 were hypothyroid cases and 30 were age and sex-matched controls with normal thyroid profiles (euthyroid). Recently diagnosed and untreated cases were selected. A purposive sampling technique was used to select each study subject. The blood sample was collected from non-fasting subjects. T3, T4, and TSH were assayed by RIA and IRMA techniques. Serum creatinine was measured by Jaffe's method in an alkaline medium on a semi-auto analyzer. The test of significance was calculated by using an unpaired student-t test. A p-value less than 0.05 was considered significant.* ***RESULTS****: In the present study we found the mean value of serum creatinine was significantly higher in hypothyroid patients as compared to euthyroid controls. And also there was a strong positive correlation was seen between TSH and creatinine in the hypothyroid group. Creatinine had a positive correlation with T4 ($p<0.01$) but showed a negative correlation with T3 level in hypothyroidism.* ***CONCLUSION****: This recommends that as hypothyroidism patients have significant changes in serum creatinine level it can be suggested that patients with unexplained abnormal renal function should be screened for hypothyroidism.*

Keywords: Hypothyroidism, serum creatinine, T4, T3, TSH

INTRODUCTION

Hypothyroidism is a common endocrine disorder. The number of hypothyroid patients in North Bengal is relatively high. It is endemic in some areas like Sirajganj, Bogura, Jypurhat, and Gaibandha.[1] Hypothyroidism is a clinical entity resulting from the deficiency of thyroid hormones or from impaired activity.[2] There are several aspects of the relationship between the thyroid gland and kidneys. Thyroid hormones are known to be involved in the development and function of the kidneys and conversely, kidney function can affect the concentration and metabolism of thyroid hormones.[3] The thyroid hormones play a vital role in various metabolic pathways within the human biochemical reactions and any alteration in the amount of serum thyroid hormones, directly cause metabolic disorders, in various organs and modify the normal metabolic pathways of various organs, including the kidney.[4] Long-standing hypothyroidism can cause significant changes

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in renal function such as a decrease in sodium reabsorption in the proximal tubule, impairment in the concentrating and diluting capacities of the distal tubules, a decrease in the urinary urate excretion and a decrease in the renal blood flow and glomerular filtration rate (GFR). In hypothyroidism, physiological effects include changes in water and electrolyte metabolism, alterations of renal hemodynamics, lowered renal blood flow, renal plasma flow, glomerular filtration rate (GFR), and single nephron GFR.[5] Serious hypothyroidism can also be accompanied by morphologic changes in the glomeruli such as thickening of the glomerular basement membrane, as well as increased mesangial matrix, thickening of the tubular basement membrane, and cytoplasmic inclusions in renal tubular epithelial cells.[6] Very few studies have reported the effect of hypothyroidism on renal function tests especially creatinine.[7] The concentration of serum creatinine is also distorted in hypothyroidism resulting in elevated serum creatinine concentration. There is a marked increase in creatinine as a result of decreased creatinine clearance due to decreased filtration rate and increased production of serum creatinine. In SCH (Subclinical hypothyroidism) when compared with the euthyroid group, serum creatinine was considerably raised as compared to standard. Serum creatinine values were approximately 35% higher in the hypothyroid state. Primary hypothyroidism is associated with reversible elevation of serum creatinine in both adults and children. It was observed in 55% of adults.[8] The present study was therefore designed to determine the effects of hypothyroidism on serum creatinine levels.

MATERIALS AND METHODS

It was a cross-sectional analytical type study. The study subjects were selected from patients undergoing thyroid evaluation in Nuclear Medicine and Allied Sciences, Rajshahi from July 2018 to June 2019. Among them 60 participants were selected, 30 were hypothyroid cases and 30 were age and sex-matched controls with normal thyroid profiles (euthyroid). Recently diagnosed and untreated cases were selected. A purposive sampling technique was used to select each study subject. Patients with newly diagnosed thyroid disorders in the age group of 20 to 60 years of both genders were included. Those having normal T3, T4, and TSH levels were categorized as euthyroid. Those having low T3, T4, and high TSH levels were categorized as hypothyroid with respect to the reference range. The protocol of the study was approved by the Ethical Review Committee (ERC) and Institutional Review Board (IRB) of Rajshahi Medical College. All the subjects were free from Diabetes, Hypertension, Chronic liver and renal disease, Alcoholism, and Smoking. Before recruitment, the aim, benefit, and procedure of the study were explained, and informed written consent was taken from each study subject. Thorough physical examinations of all subjects were done. The blood sample was collected from non-fasting subjects. T3, T4, and TSH were assayed by RIA and IRMA techniques. Serum creatinine was measured by Jaffe's method in an alkaline medium on semi auto analyzer. Data were analyzed by computer using the SPSS software program. The test of significance was calculated by using an unpaired student-t test. A p-value less than 0.05 was considered significant. The Pearson correlation was applied to check whether T3, T4 and TSH were correlated with renal function marker creatinine.

RESULTS

A total number of 60 subjects participated in this study. Among them 30 hypothyroidism and 30 euthyroidism were taken in this study.

Table I: Distribution of age among the respondents

Age group	Hypothyroidism (Cases)		Euthyroidism (Control)	
	No	%	No	%
20-30 years	7	23.3	6	20.0
31-40 years	14	46.7	13	43.73
Above 40 years	9	30.0	11	36.7
Total	30	100	30	100

According to Table I study population were divided into three different age groups, 20-30 years, 31-40 years and above 40 years. Among the study population 31-40 years group constituted the highest number followed by above 40 years age group in both hypothyroidism and euthyroidism. In both hypothyroidism and euthyroidism 20-30 years was the smallest group.

Table II: Distribution of gender among the respondents

Gender	Hypothyroidism (Cases)		Euthyroidism (Control)	
	No	%	No	%
Male	9	30	8	26.7
Female	21	70	22	73.3
Total	30	100	30	100

Table II represented that out of 30 Hypothyroidism, 70% were female and 30% were male. Similar results were also obtained from control group that female were more than male in case group.

Table III: Distribution of individuals basic health parameters

Variables	Hypothyroidism (n-30) (mean±SD)	Euthyroidism (n=30) (mean±SD)	P-value
Age	37.47±9.97	38.9±10.00	0.5813^{NS}
Weight	61.33±12.20	61.10±10.8	0.2823^{NS}
Height	62.00±2.94	61.6±2.42	0.5667^{NS}
BMI	25.80±4.34	25.00±3.70	0.4534^{NS}

* NS: Not Significant, SD: Standard deviation * The test of significance was calculated using unpaired-t test.

Table III showed the distribution of different health parameters, age in years, weight in kg, height in inch, and BMI in kg/m^2. Values of basic characteristics were expressed as mean±SD. Statistical analysis showed that there is no statistical differences in age, weight, height and BMI between two groups hypothyroidism and euthyroidism. The value of mean±SD of weight and BMI are little bit higher in hypothyroidism patients than euthyroidism.

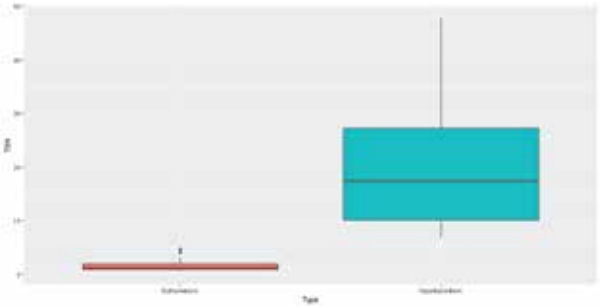

Figure 1: Box Plot of TSH between Hypothyroidism and Euthyroidism.

From figure 1, it is observed that lowest value, first quartile, third quartile and highest value of TSH were highly differed in hypothyroidism and euthyroidism group, while the median value of TSH in hypothyroidism was higher than euthyroidism group.

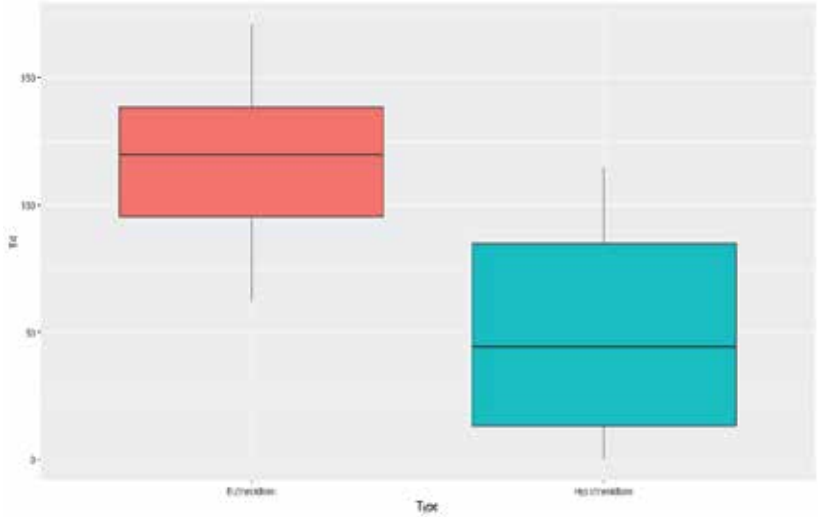

Figure 2: Box Plot of T4 between Hypothyroidism and Euthyroidism.

Figure 2, represented that lowest value, first quartile, third quartile and highest value of T_4 were highly differed in hypothyroidism and euthyroidism group and median value of T_4 in hypothyroidism is lower than euthyroidism group.

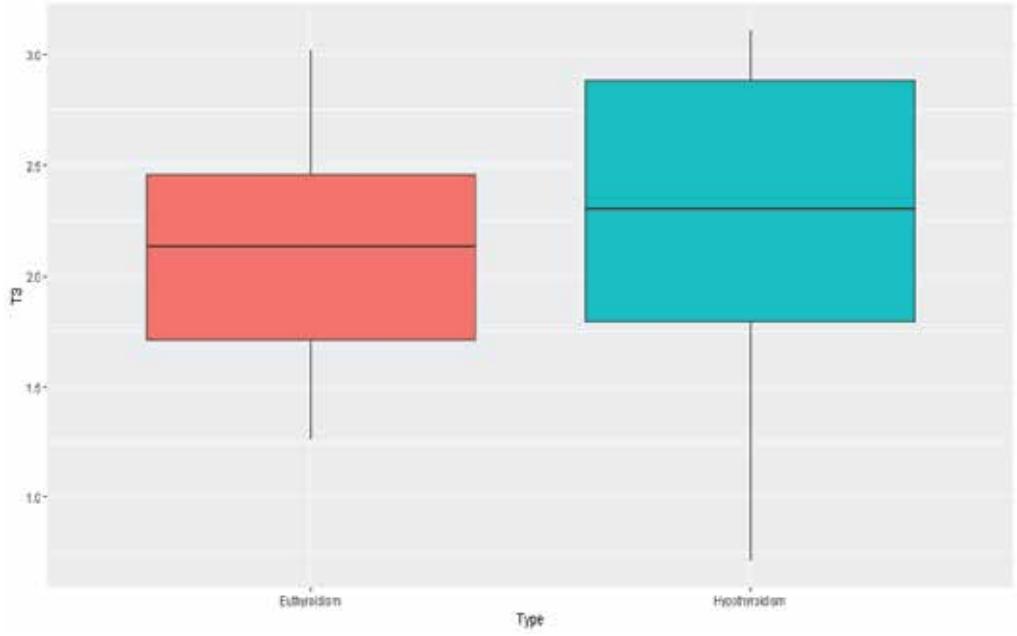

Figure 3: Box Plot of T_3 between Hypothyroidism and Euthyroidism.

From figure 3 we found that lowest value, first quartile, third quartile and highest value of T_3 were almost same in hypothyroidism and euthyroidism group. Median value of T_3 is slightly higher in hypothyroidism than euthyroidism group.

Table V: Distribution of the Thyroid Stimulating Hormone (TSH), Thyroxine (T_4) and Tri-iodothyronine (T_3) between Hypothyroidism and Euthyroidism.

Parameters	Hypothyroidism (n=30) (mean±SD)	Euthyroidism (n=30) (mean±SD)	P-value
TSH(µIU/ml)	20.27±11.7	1.50±1.05	$<0.001^S$
T_4(nmol/L)	48.96±38.0	118.57±30.1	$<0.001^S$
T_3 (nmol/L)	2.25±0.693	2.10±0.486	0.3284^{NS}

*S: Significant and NS: Not Significant.
* The test of significance was calculated using unpaired-t test.

Table V showed that the value of mean±SD of TSH, T_4 and T_3 in hypothyroidism and euthyroidism. The (mean±SD) of serum TSH level in hypothyroidism 20.27±11.7 was higher than that of euthyroidism 1.50±1.05 (µIU/ml), which was statistically significant. The value of mean±SD of serum T_4 level in hypothyroidism 48.96±38.0 was lower than that of euthyroidism 118.57±30.1nmol/L, which was also statistically significant. Again, the value of mean±SD of serum T_3 level in hypothyroidism 2.25±0.693 was slightly higher than that of euthyroidism 2.10±0.486 nmol/L, which was not statistically significant.

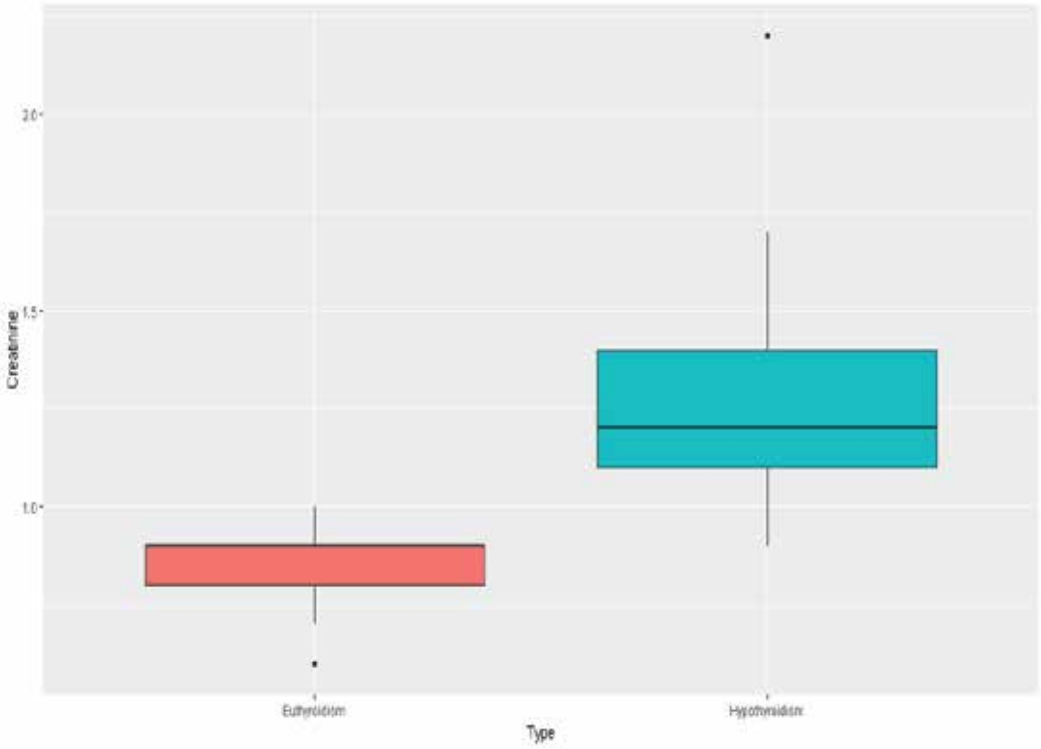

Figure 4: Box plot of Creatinine level between Hypothyroidism and Euthyroidism.

From figure 4 we observed that lowest value, first quartile, third quartile and highest value of creatinine has differed highly between hypothyroidism and euthyroidism group. Median value of creatinine is higher in hypothyroidism than euthyroidism group.

Table VI: Correlation between age and creatinine level of Hypothyroidism patients

	Age	Creatinine level
Age	1	0.341[s]
Creatinine level	0.341[s]	1
Total	30	30

* s: significant
* The test of significance was calculated using correlation coefficient test.

The value of correlation coefficient between age and creatinine level of Hypothyroidism patients was 0.341 (Table VI), which indicated that there was a significant positive observed correlation between age and Creatinine level, i.e. with the increase of age, creatinine level will also increase.

Table VII: Distribution of the Creatinine between Hypothyroidism and Euthyroidism.

Biochemical parameter	Hypothyroidism (n=30) (mean±SD)	Euthyroidism(n=30) (mean±SD)	P-value
Creatinine (mg/dl)	1.27±0.273	0.85±0.12	<0.001[S]

*S: Significant and NS: Not Significant.
* The test of significance was calculated using unpaired-t test.

The value of mean ± SD of serum creatinine in hypothyroidism and euthyroidism is 1.27±0.273 and 0.85±0.12 mg/dl respectively. The P-value indicated that there was a statistical significant difference of creatinine between hypothyroidism and euthyroidism group (Table VII).

Table VIII: Correlation between age and creatinine level of Euthyroidism

	Age	Creatinine level
Age	1	0.192[ns]
Creatinine level	0.192[ns]	1
Total	30	30

The value of mean ± SD of serum creatinine in hypothyroidism and euthyroidism was not statistical significant difference of creatinine between hypothyroidism and euthyroidism group (Table VIII).

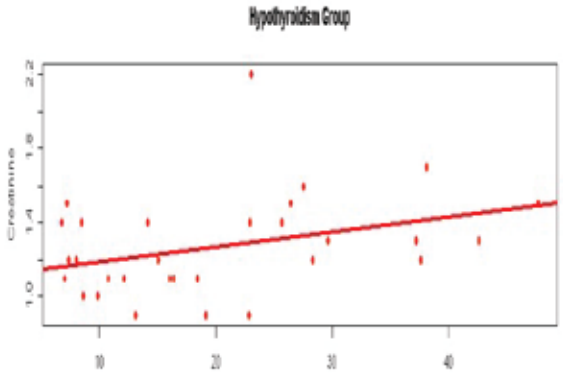

Figure 5: Scatter plot of TSH and Creatinine in hypothyroid group.

Figure 5 showed that there is a strong positive correlation between TSH and creatinine in hypothyroid group.This means that if the value of TSH level is increased, serum creatinine level is also increased & vice-versa.

DISCUSSION

Thyroid hormone is a central regulator of body functions that is metabolism and hemodynamics. The purpose of the present study was to evaluate the effect of hypothyroidism on parameters of renal function that is serum creatinine, compare it with euthyroid subjects and also to study the correlation of TSH with creatinine.

According to Table I study population were divided into three different age groups, 20-30 years, 31-40 years and above 40 years. Among the study population 31-40 years group constituted the highest number 14(46.7%) and 13(43.73%) followed by above 40 years age group 9(30%) and 11(36.7%) in both hypothyroidism and euthyroidism respectively. In both hypothyroidism and euthyroidism 20-30 years was the smallest group that is 7(23.3%) and 6(20%) respectively.

Distribution of study groups according to their gender the percentage of females was more than the percentage of males (Table II). The results of this study were similar to a study who recorded hypothyroidism was more frequent in females.[1]

In the present study there was a highly significant difference of TSH level ($P<0.001$) between cases and controls group. There was also a highly significant difference in T_4 level ($P<0.001$) due to the two same categoral. The mean value of T_3 is slightly higher in hypothyroidism than euthyroidism which is not statistically significant (Table IV).

Table V and figure 4 represent value of serum creatinine between two groups. In this study there was a highly significant increase in serum creatinine in hypothyroidism when compared to euthyroidism. But this value is within the normal reference range. The result of this study was agreed with[1,3,7,9-19] found significant increase in serum creatinine level in hypothyroidism than euthyroidism. There was also a very strong positive correlation was found between TSH and cretinine in hypothyroidism which shown in (Figure 5). Serum creatinie concentration increases in hypothyroid patients due to reduction of glomerular filtration rate because of hemodynamic changes in severe hypothyroidism.[9] In a study it was found that mean level of serum creatinine is slightly higher in hypothyroidism than euthyroidism but this value was non-significant.[20] Her selected case group was diagnosed with suffering from hypothyroidism, who might be on the L-thyroxin replacement therapy this is the possible cause of non-significant finding.

Thyroid dysfunction causes remarkable changes in glomerular and tubular function and electrolyte and water homeostasis. Thyroid hormone leads to increase in nitric oxide levels in blood vessel which causes vasodilatation resulting in increased GFR, however in hypothyroidism there is a decrease level of nitric oxide in blood vessels which increases systemic vascular resistance thus reducing renal blood flow & in turn decreases GFR thus resulting increase blood creatinine level.[18]

There was a significant but weak correlation was found between age and creatinine in hypothyroidism patient (Table VII) but non-significant in Euthyroidism (Table VIII).

One of the strength of this study was that we have included newly diagnosed and untreated both female and male patients in our study.

This type of patient selection can predict relatively accurate finding of our parameters.

One of the weaknesses of this study was that we have done cross sectional study on smaller sample size and did not supplement L-thyroxin therapy. So longitudinal study on larger sample size should be done and effect of L-thyroxin replacement therapy should be monitor to confirm our finding. Moreover, many other clinical parameters such as creatinine clearance test, serum urea level could not be collected for laboratory records which could have been correlated.

The overall results of our study presented that serum creatinine level significantly increased in cases of newly diagnosed hypothyroid patients. So a regular periodic screening needed to establish the relation needed to establish this relationship.

CONCLUSION

From the findings of the present study, it can be demonstrated that hypothyroidism was associated with significant changes in serum creatinine. There was a significant difference in plasma creatinine concentration between hypothyroid patients and euthyroid individuals. There was also a very strong positive correlation was found between TSH and creatinine. Finally, it can be concluded that hypothyroidism patients should be regularly screened and check renal serum creatinine.

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Original Article

Morphological Variations of Weight & Volume of Prostate

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ABSTRACT

CONTEXT: *The prostate is a walnut sized fibromuscular glandular organ at the base of the urinary bladder. Prostate is the site of frequent medical problems affecting elderly men, benign prostatic hyperplasia (BPH), carcinoma prostate and prostatities. In order to plan appropriate treatment strategies of prostatic disease, studies on human prostate are expected to helpful for the urologist, pathologist and sonologist for diagnosis of disease.* ***OBJECTIVES****: The objective of this study was to observe the morphological variarions of post mortem human prostate.* ***MATERIALS AND METHODS:*** *The present study was carried out on 60 (sixty) human prostate collected from dead body those were under went post mortem examination of different age groups in Bangladeshi people and collected by consecutive, convenient and exhaustive sampling technique. All the specimens were studied macroscopically by careful dissection. A descriptive study was done in the department of Anatomy in collaboration of Forensic Medicine, Sylhet MAG Osmani Medical College, Sylhet from January 2015 to December 2015. The mean weight and volume of the prostates were 20.32 (SD ± 6.34) gm & 22.12 (SD ± 9.30) cm³. In this study, the weight and volume of prostates found significant positive correlation with age.* ***RESULTS****: The weight of the prostate ranged from 7.80 gm to 31.30 gm with the mean 20.32 (SD ± 6.34) gm. The mean weight of the prostate were 11.29 gm (SD ± 2.60) (range 7.80-14.9 gm) in the age group of 10 to 20 years; 18.81 gm (SD ± 2.93) (range 14.40-24.80 gm) in the age group of 21 to 40 years and 27.08 gm (SD ± 2.73) (range 19.20-31.30 gm) in the age group of 41 to 70 years. The difference among the groups were statistically significant (F=6.755; p=0.011). The volume of the prostate ranged from 2.79 cm³ to 36.41 cm³ with the mean 22.12 (SD ± 9.30) cm³. The mean volume of prostate were 12.04 cm³ (SD ± 7.90) (range 2.79-26.73 cm³) in the age group of 10 to 20 years; 21.42 cm³ (SD ± 7.31) (range 11.34-33.98cm³) in the age group of 21 to 40 years and 28.33 cm³ (SD ± 7.42) (range 12.23-36.41 cm³) in the age group of 41 to 70 years. The difference among the groups were statistically significant (F=4.021; P=0.003).* ***CONCLUSION:*** *In the present study weight and volume of the prostates had found significant positive correlation with age.*

Key words: Prostate, Morphology, Weight, Volume.

INTRODUCTION

The prostate gland is a compact, encapsulated, pyramidal, fibro-muscular and glandular organ. It is located immediately inferior to the neck of urinary bladder, which surrounds the prostatic urethra.[1,2] It is a major accessory sex gland. It secretes thin milky fluids that constitute 30% of the semen and contains calcium, citrate ion, phosphate ion a clotting enzyme and profibrinolysin.[3] Prostatic fluid plays an important role in sperm activation, motility and viability.[4] The slightly alkaline characteristic of the prostatic fluid may be quite important for successful fertilization of the ovum.[5] From a morbid anatomical perspective, the glandular tissue may be subdivided into three distinct zones, peripheral (70% by volume), central (25% by volume), and transitional (5% by volume). The prostate is surrounded by a fibrous capsule. It is approximately 3 cm long, 4 cm wide, 2 cm in

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antero-posteriorly and weighs about 8 grams in youth.[6]

The prostate is traversed by the urethra and ejaculatory ducts and contains the prostatic utricle. The urethra travels vertically downwards through the prostate to emerge just anterior to the apex of the gland.[7] The prostatic part of the urethra consists of two segments, the proximal segment and distal segment. It is 3-4 cm in length. The proximal segment extends from the bladder neck to the superior aspect of the colliculus seminalis that is verumontanum. The dominant anatomical feature of this region is the preprostatic sphincter which extends from the base of the verumontanum to the bladder neck.[8] Contraction of the preprostatic sphincter serves to prevent the retrograde flow of ejaculation through the proximal urethra into the bladder.[7] A similar sphincter of striated muscle exists along the urethra distal to the verumontanum.[8] The proximal segment is linked anteriorly at 35° angles to the distal segment at the level of the verumontanum. A midline ridge, the urethral crest, projects into the lumen causing it to appear crescentic in transverse section from the posterior wall throughout most of the length of the prostatic urethra. The shallow depression on either side of the crest is termed the prostatic sinus, the floor of which is perforated by 15-20 prostatic ducts.[9] An elevation, the verumontanum lies at the middle of the length of the urethral crest, contains slit like orifices on each side of prostatic utricle. On both side of this orifice are the two openings of the ejaculatory ducts.[7] The prostatic utricle is a cul-de-sac, 6 mm long which runs upwards and backwards within the substance of the prostate behind the median lobe.[7] The duct of the seminal vesicle joins with the terminal expansion of the vas deferens (ampula of vas deferens) to form the ejaculatory duct. It traverse the central zone of the prostate to terminate at the verumontanum.[10] The zonal anatomy of the human prostate is clinically important because carcinomas arise mostly in the peripheral zone whereas benign prostatic hyperplasia (BPH) affects the transitional zone. The central zone surrounding the ejaculatory ducts is rarely involved in any diseases.[6] Incidence of prostatic disease increasing day by day in Bangladesh. Surgical method can be planned by the clear knowledge about size of the prostate. Prostatic androgenic activity can be assessed by observing weight of the prostate where as treatment options can be preferred by estimation of volume of the prostate. The mean transition zone volume had a higher increase rate with age than the mean total prostate volume, indicating that the enlargement of the transition zone contributed the most to the increase in total prostate volume. The growth curve equations for prostate width, height and length were also positively associated with increasing age.[11] Prostate related clinical conditions such as benign prostatic hyperplasia and prostatic cancer are frequent in our country. So in our opinion, study is not sufficient to acquire a proper knowledge about the normal gross anatomy of prostate in our country. It is observed by reviewing the existing literatures that significant variations are found among the different age group. So far it is known, still we have few published work on morphological variations of prostate between different age groups among Bangladeshi populations.

MATERIALS AND METHODS

In this descriptive study, sixty human prostates were collected from the unclaimed dead bodies by consecutive, convenient and exhaustive sampling technique and autopsy was done in the Department of Forensic Medicine in Sylhet M.A.G Osmani Medical College, Sylhet during the period from January 2015 to December 2015 meeting the inclusion criteria that, dead bodies autopsy was done within 36 hours of death and exclusion criteria of considerable sign of decomposition and

preserved in the department of Anatomy, Sylhet MAG Osmani Medical College for measurement. Particulars of dead bodies were collected from police inquest report and chalan.

Dead body was kept in supine position on the mortuary table. A longitudinal midline incision was made from the tip of the xiphoid process to the upper border of the symphysis pubis encircling the umbilicus.

Then a transverse incision was made from the xiphoid process to mid axillary line in both side. Another incision was made from the symphysis pubis to the anterior superior iliac spine along with inguinal line in both side. Then skin and superficial fascia were retracted laterally. After cutting the rectus sheath and parietal peritoneum, abdomen was opened. The entire thoracic and abdominal cavities were found exposed, following routine post-mortem examination by the forensic experts. Then urinary bladder was identified. In case of any distended urinary bladder, it was evacuated with a penile catheter in place by squeezing the urinary bladder. Then the apex of the bladder was detached completely from the anterior abdominal-wall by cutting through the median umbilical ligament with peritoneal fold and medial umbilical folds over two obliterated umbilical arteries. Both sides of the urinary bladder were made free by cutting the lateral false ligaments and posterior false ligaments with a scissor.

Fingers were pushed downwards between the bladder and the pubis till the resistance of the puboprostatic ligament was faced. This ligament was incised by the scalpel.

Then the urinary bladder along with the prostate were pushed posteriorly. Fingers were insinuated and carried away round the side of bladder and the prostate to detach them from surrounding loose areolar tissue upto the medial margin of the levator ani.

The ureters, the ducti deferentia and the seminal vesicles were traced on either side upto their termination into the urinary bladder and prostate. These were cut with the scissors at a distance from their respective organ of termination. The urinary bladder and prostate were pulled anteriorly by cutting posteriorly the reflected peritoneal folds.

Fingers were insinuated posterior to the prostate to detach it from the rectum. Fascia of Denonvilliers was separated by pulling and cutting it with the scissors. Finally the prostate was found wedged between the medial margins of levator-ani muscle and resting firmly on the fascia of the superior surface of the urogenital diaphragm.

Figure 1: Measurement of weight of the Prostate

Next, the prostate was separated by cutting through the tissues distal to its apex. In this way the prostate along with the urinary bladder, ureters, seminal vesicles and a portion of the ducti deferentia were taken out of the pelvic cavity. The prostate was washed and cleaned thoroughly and carefully. The surface of the prostate was dried with blotting paper. Then it was weighed by means of an analytical

balance (Mega digital scale, made in China) and expressed in grams.

Figure 2: Measurement of volume of the Prostate

Volume of the prostate was measured by using water displacement method. A bucket was filled with water with side channel and placed on a dissection tray. Then the examined prostate was immersed in the water as a result some water was displaced and come out through the side channel which was collected in graduated cylinder marked in milliliter. The obtained number is the volume of the prostate that is expressed in milliliter.

Prior to the commencement of the study, approval of the research protocol was obtained from the Ethical Committee of Sylhet M.A.G Osmani medical college, Sylhet and analyzed with the help of SPSS (Statistical Package for Social Sciences) Version 21.0. Quantitative data were expressed as mean and standard deviation; and comparison was done by unpaired 't' test between two groups and ANOVA test among three groups. A probability value (p) of less than 0.05 were considered statistical significant.

RESULTS

Table I shows the weight of the prostate ranged from 7.80 gm to 31.30 gm with the mean 20.32 (SD ± 6.34) gm. The mean weight of the prostate were 11.29 gm (SD ± 2.60) (range 7.80-14.9 gm) in the age group of 10 to 20 years; 18.81 gm (SD ± 2.93) (range 14.40-24.80 gm) in the age group of 21 to 40 years and 27.08 gm (SD ± 2.73) (range 19.20-31.30 gm) in the age group of 41 to 70 years. The difference among the groups were statistically significant (F=6.755; p=0.011). Figure 3 also shows correlation between age and weight of prostate (n=60)

Table-I: Distribution of weight of prostate by different age group(n=60)

Age group	Weight of prostate (gm)		
	Range	Mean	Standard deviation
Group-A (n=11)	7.80-14.9	11.29	± 2.60
Group-B (n=28)	14.40-24.80	18.81	± 2.93
Group-C (n=21)	19.20-31.30	27.08	± 2.73
*p-value		*p=0.011	

Group-A: 10 to 20 years;
Group-B: 21 to 40 years;
Group-C: 41 to 70 years.
*One way ANOVA test was applied to analyze the data

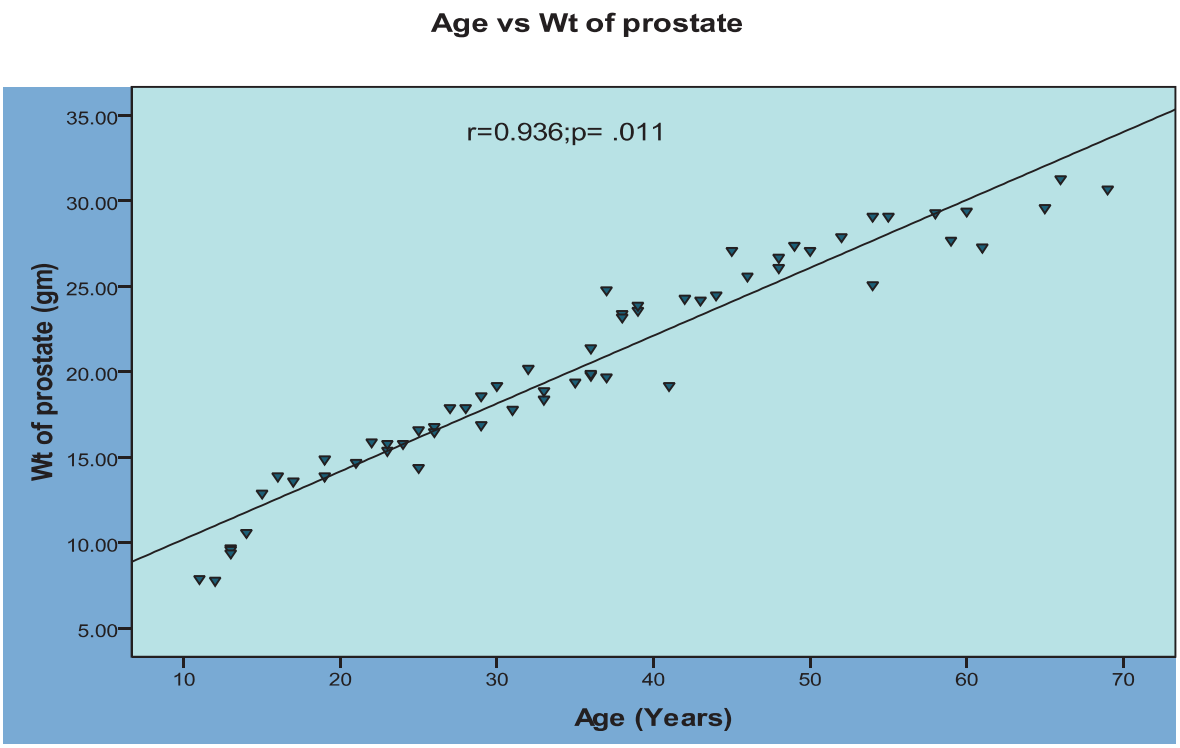

Figure 3: Scatter diagram showing correlation between age and weight of prostate (n=60)

Table II shows the volume of the prostate ranged from 2.79 cm^3 to 36.41 cm^3 with the mean 22.12 (SD ± 9.30) cm^3. The mean volume of prostate were 12.04 cm^3 (SD ± 7.90) (range 2.79-26.73 cm^3) in the age group of 10 to 20 years; 21.42 cm^3 (SD ± 7.31) (range 11.34-33.98cm^3) in the age group of 21 to 40 years and 28.33 cm^3 (SD ± 7.42) (range 12.23-36.41 cm^3) in the age group of 41 to 70 years. The difference among the groups were statistically significant (F=4.021; p=0.003). And the figure 4 also shows correlation between age and volume of prostate (n=60).

Table-II: Distribution of volume of prostate by different age group (n=60)

Age group	volume of prostate (cm^3)		
	Range	Mean	Standard deviation
Group-A (n=11)	2.79-26.73	12.04	± 7.90
Group-B (n=28)	11.34-33.98	21.42	± 7.31
Group-C (n=21)	12.23-36.41	28.33	± 7.42
*p-value		*p=0.003	

Group-A: 10 to 20 years; Group-B: 21 to 40 years; Group-C: 41 to 70 years.
*One way ANOVA test was applied to analyze the data.

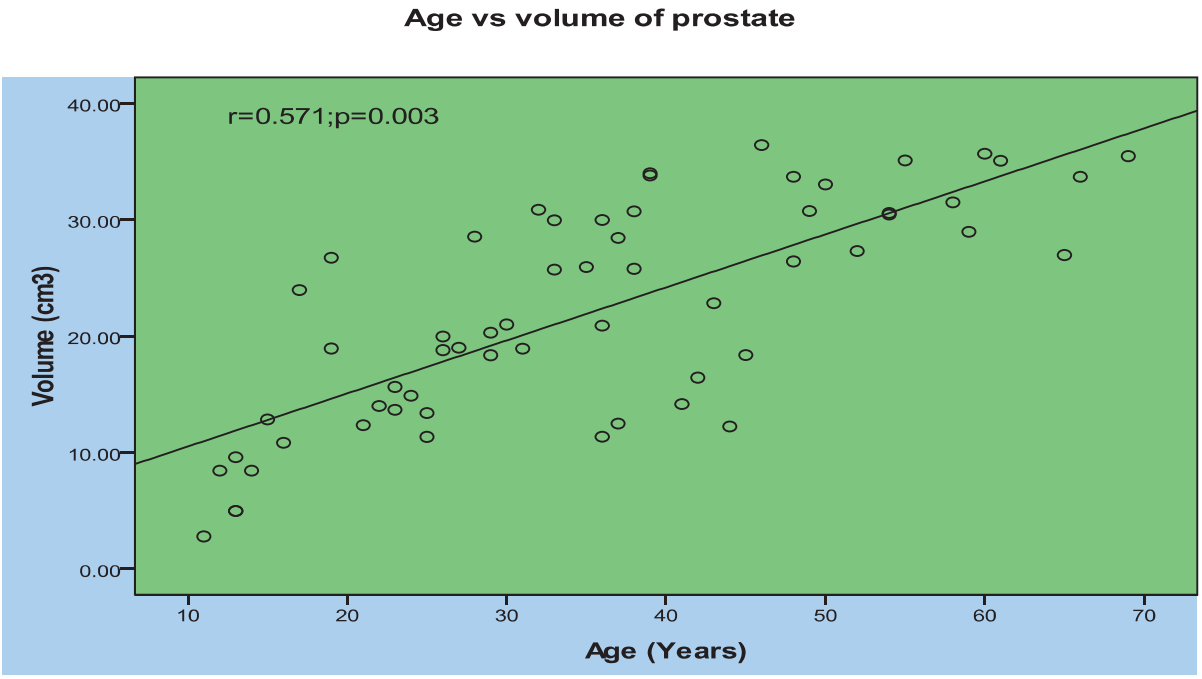

Figure 4: Scatter diagram showing correlation between age and volume of prostate (n=60).

DISCUSSION

In the present study the weight of the prostate ranged from 7.80 gm to 31.30 gm with the mean 20.32 (SD ± 6.34) gm. This result was consistent with the study of Kumar et al[12] that the mean weight of the prostate was 20 gm and with the study of Roehborn and Mc Connell[13] that the mean weight of the prostate was 18 gm. Ahmed[14] found that the weight of the prostate was ranged from 11.89 gm to 25.88 gm.

This study found that the volume of the prostate ranged from 2.79 cm^3 to 36.41 cm^3 with the mean 22.12 (SD ± 9.30) cm^3. Moore[15] found that volume ranged from 10.22 cm^3 to 13.70 cm^3. Ahmed[15] found that volume of the prostate ranged from 7.68 cm^3 to 15.40 cm^3. All these findings are compatible with study of Gearhart[16], they found that the mean prostatic volume was 20.7 cm^3. Nwadike et al[17] found that the mean and standard deviation for prostate volume were 26.6±7.576 cm^3. All these findings are lower than the present study.

CONCLUSION

In the present study weight and volume of the prostates have shown significant positive correlation with age. This is why we can tell the weight of the prostate gland is an excellent surrogate for prostate volume.

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Original Article

Psucho-social View of Violence to Woman in the Prospective of Bangladesh

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ABSTRACT:

INTRODUCTION: *Violence is an act of physical force that causes or is intended to cause harm. The damage inflicted by violence can be in many forms such as physical or verbal maltreatment, injury, sexual assault, violation, rape, offense, crime or verbal aggression.* ***EPIDEMIOLOGY:*** *Now-a-days we are observing a lot of cases of sexual violence. Day by day reporting of these cases is also increased.* ***DISCUSSION****: Sexual violence is forcing undesired sexual behavior by one person upon another. Sexual violence has a lot of ill effects on the human psyche. It causes distressing behaviors, psychiatric diagnoses and health risk behaviors.* ***MANAGEMENT:*** *A rape victim fares best when she receives immediate support and can ventilate her fear and rage to loving family members, sympathetic physicians and law enforcement officials.* ***PREVENTION:*** *Moral classes should be reintroduced into the existing busy academic schedule and children should be taught about what morality is.* ***CONCLUSION:*** *Now it is time to have some understanding about the causes of violence, psychodynamics involved and how to prevent violence.*

Key words: Sexual Violence, Psychology, Social Stigma.

INTRODUCTION

Violence is defined as "Illicit use of a substance and especially the pathological and driven or compulsive use of a substance that leads to impaired social or occupational functioning". Violence also has other definition "Mistreatment, harming or injuring another".[1] Violence can be divided into two types Internal and external. If violence is done onto self, it is called internal violence (E.g.: Substance violence). If violence is done externally, it is called External violence. (E.g., physical violence, emotional violence, sexual violence). Depending upon on different age groups violence can also be divided into - child violence, violence of men and women, Spouse violence, Geriatric violence.

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The historical analysis[2] of the status of women shows that.

- In Pre Vedic-Bangladesh, men and women were considered equal.
- In Vedic Bangladesh, as revealed by its literature, women were treated with grace and consideration.
- In post Vedic age, there was a slow but steady decline of their importance in the home and society
- In Medieval period and Pre Independence period– women were further isolated by Purdah system of female seclusion, Sati tradition of immolating the widow on the husband pyre, Dowry and child marriages. In Bangladesh's male dominated tradition and everywhere in Vedic, classical, medieval and

modern Hinduism, the paradigms in myths, rituals, doctrines and symbols are masculine. Goddess traditions encroached successfully on the territory of masculine deities[2].

Currently the role of men and women is based upon.

- Division of labor based on sex
- Satisfaction of the fundamental biopsychic drives of hunger and sex.
- Perpetuate the species through reproduction and social heritage through the handling down of traditions from generation to generation. In current era burning topic is sexual violence on women, so focusing few points regarding violence on women.

Epidemiology

- 90% of cases of sexual violence are not reported (Horner 20027).
- Prevalence - even higher, with estimates as high as one in three for women.[3]
- Rape and sexual assault are epidemic in some countries and may be used as a weapon of war to demoralize large sectors of society.

In general, sexual violence is done by strangers (22%), partners or dates (19%) and by family members (38%) (Tjaden and Thoennes 2002).[4]

Age groups

- Seen in all societies and victims can be of any age.
- Cases have been reported in which the victims were as young as 15 months and as old as 82 years,
- Women ages 16 to 24 are at highest risk.
- Place of occurrence: Violence most commonly occurs in a woman's own neighborhood, frequently inside or near her own home.

Etiology of violence

Violence is a form of aggression. Causes can be explained through various factors and models like – biological, substance violence, psychodynamics and social factors.

Biological model: Violence can be directly related to androgen levels. Other biological factors influencing are progesterone, LH, renin, Î²-endorphin, prolactin, melatonin, NE, DOP, E, ACH, 5HT, 5HIAA.[5]

Drugs and substance violence: Most common substance involved is Alcohol. Other substances are stimulants, cocaine, hallucinogens, marijuana, Barbiturate, Aerosols and commercial solvents, Opioid dependence.

Psychodynamics[6]

The violences can be categorized into separate groups.

I. Sexual sadists - who are aroused by the pain of their victims.

II. Exploitive predators - who use their victims as objects for their gratification in an impulsive way.

III. Inadequate men- who believe that no woman would voluntarily sleep with them and who are obsessed with fantasies about sex.

IV. Men for whom rape is a displaced expression of anger and rage. A woman serves as an object for the displacement of aggression that a rapist cannot express directly toward other men.

The common theme throughout is the use of violence as an Expression of power, Control, Domination.

Social factors

Women are considered men's property or vulnerable possessions, a rapist's instrument for revenge against other men. Gender stereotypes, Media and movies, Urbanization and effects on immigrants, Cultural brought up.

Sexual violence on women

Sexual violence on women can be categorized into following types.

1. Intimate partner violence (IPV).
2. Rape
3. Date rape
4. Sexual coercion – Stalking, Sexual harassment.

Intimate Partner Violence (IPV)

MC type of ongoing physical and sexual violence in adults.[7] It includes acts of physical aggression, psychological violence, forced intercourse and other forms of sexual coercion.[8] Various controlling behaviors such as isolating a person from family and friends or restricting access to information, finances, and assistance.

Rape

A man is said to commit "rape" who except in the case herein after excepted, has sexual intercourse with a woman under circumstances falling under any of the five following descriptions: Firstly: Against her will. Secondly: Without her consent. Thirdly: With her consent, when her consent has been obtained by putting her in fear of death or of hurt. Fourthly: With her consent, when the man knows that he is not her husband and that her consent is given because she believes that he is another man to whom she is or believes herself to be lawfully married. Fifthly: With or without her consent, when she is under fourteen years of age.[9] Sexual assault is a broader term that covers other unwanted sexual acts that do not include penetration. Any of these acts may include use of a weapon either as a coercive mechanism or as physically a part of the violence or assault. Highly under reported crime - An estimated four to five of ten rapes are reported.[6] Under reporting due to feelings of shame. Can occur between married partners and between persons of the same sex. Persons- single, multiple. A woman being raped is frequently in a life-threatening situation. During the rape, she experiences shock and fright approaching panic. Her prime motivation will be to stay alive. Rapists may urinate or defecate on their victims, ejaculate into their faces and hair, force anal intercourse and insert foreign objects into their vagina and rectum.

Rape trauma syndrome
Described by Burgess and Holstrom[10]

Acute stage immediately after a rape where symptoms include disorganization, denial and shock [acute stress disorder]. The *reorganization stage* occurs weeks to months later - Symptoms include anxiety (fear and avoidance), depression, emotional and social withdrawal, sleeping and eating disturbances (including nightmares), self-blame, shame, guilt, somatization, and sexual dysfunction [PTSD].

Date rape

Applied to rapes in which the rapist is known to the victim. The assault can occur on a first date or after the man and woman have known each other for many months. Victims of date rape berate themselves for exercising poor judgment in their choice of male friends and are more likely to blame themselves for provoking the rapist than are other victims.

Sexual coercion

Sexual coercion is a term used in DSM-IV-TR for incidents in which one person dominates another by force or compels the other person to perform a sexual act. Stalking & Sexual harassment.

Stalking

Stalking is defined as a pattern of harassing or menacing behavior coupled with a threat to do harm. Some stalkers continue the activity for months to years, most stalkers are men.

Sexual harassment

Sexual harassment refers to sexual advances, requests for sexual favors or verbal or physical conduct of a sexual nature all of which are unwelcomed by the victim. In more than 95

percent of cases the perpetrator is a man and the victim, a woman. Site – Workplace.

Under reporting: due to fear of retribution, being humiliated, being accused of lying and ultimately of being fired from the job.

Reactions: victims blame themselves, become depressed; other victims become anxious or angry.

Law in Bangladesh

Law of Bangladesh only targets three crimes against women.

1. Rape
2. Using force to 'outrage her modesty.'
3. Making rude sounds or gestures aimed at insulting the modesty of any woman.

Clinical manifestations of violence

The manifestations and the degree of damage depend on violence of the attack itself, vulnerability of the woman and Support system available to her immediately after the attack.

Types of responses to traumatic events[11]

There are three types of responses to Sexual violence. They are distress reactions, psychiatric diagnoses, health risk behaviors.

Distress reactions: Grief reactions, Changes in safety and travel, Sleep disturbance, altered interpersonal interactions (withdrawal, aggression, violence and family conflict), Decreased work functioning (ability to do work, ineffectiveness at job, problems with concentration and absenteeism), Somatic symptoms.

Psychiatric diagnoses[12]: Acute stress disorder, PTSD, Major depressive disorder, Substance-use disorders, Generalized anxiety disorder, Adjustment disorder, Somatoform disorders, Organic mental disorders secondary to head injury, toxic exposure, illness, psychological factors affecting physical disease (in the injured).

Health risk behaviors: Changes in alcohol use and smoking, difficulty in balancing home and work, disaster behaviors like evacuation, over dedication, adherence to medical recommendations

Management[13]

Encourage them to talk about it, listen nonjudgmentally, Validate and express support, Document, Assess the danger to your patient, Provide appropriate treatment referral and support. A rape victim fares best when she receives immediate support and can ventilate her fear and rage to loving family members, sympathetic physicians, and law enforcement officials. Rape crisis centers and telephone hot lines are available for immediate aid and information for victims.[14]

Early Psychological Treatment[15]

Initial psychological intervention should be individual, supportive, and educational in nature about the effects of trauma and rape. It is important to acknowledge with the patient that any reaction he or she might be having is acceptable and that it is normal to need support.

Pharmacotherapy

Short-term use of Benzodiazepines, SSRI or SNRI medication to treat severe anxiety.

Long term management

- Cognitive Behavioral Therapy
- Stress inoculation, Imagery Rehearsal and Prolonged Exposure
- Eye Movement Desensitization and Reprocessing[16]
- Psychodynamic Psychotherapy
- Supportive psychotherapy
- Family Support: Involvement of Family or Friends

Social support is crucial to help restore effective coping. Education of family members about potential misattributions can also help reduce the victim's experience of shame or self-blame.

PREVENTION

Moral classes: Morality (Latin word *moralitas* that means "manner, character, proper behavior"). It is the differentiation of intentions, decisions and actions between those that are good (or right) and those that are bad (or wrong). It contributes to the development of one's personality.[17] Moral classes should be reintroduced into the existing busy academic schedule and children should be taught about what morality is. Ultimately, we know the famous quote "The child is father of man". Reminding oneself of our glorious past and enriching scriptures and understanding their essence can bring back the necessary balance for us to develop and evolve into mature beings. This would not only benefit society but also the world at large. Strict laws should be made to punish them to prevent violence.

CONCLUSIONS

Physical and sexual violence and rape are all common and may be followed by serious physical and psychological disturbances. They are often unreported. A confidential, non-blaming, empathetic line of enquiry is essential for mental health professionals during short- and longer-term management of victims of violence.

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Original Article

Reduction of Shoulder Dislocation: a New Manoeuvre

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ABSTRACT

INTRODUCTION: *Shoulder dislocation comprises 60% of all major joint dislocations worldwide and a number of reduction techniques are described in the literature with varying degrees of success. An ideal method of reduction should be simple, easily reproducible, relatively painless that can be performed unassisted without sedation or anaesthesia with minimal or no further complications. We report our results of using a novel method of anterior shoulder reduction described recently in the literature that claims to fulfill most of the characteristics of an ideal method if not all.* ***OBJECTIVE:*** *We aimed to evaluate the results of this new method of shoulder joint reduction (Prakash's manoeuvre) in acute primary anterior dislocations of shoulder.* ***METHODS:*** *This prospective study was conducted in Inpatient and Outpatient department of orthopaedics in North Bengal Medical Hospital, Sirajgonj and different personal chamber from June 2017 and July 2019. All the cases of primary anterior shoulder dislocation presenting within three days of injury without any associated fracture or spine trauma with or without greater tuberosity fracture were included. The reduction was done using a novel method by Orthopaedic consultants in all cases. The need for a second reduction attempt or anaesthesia was considered a treatment failure. Time taken for reduction, pain felt during reduction and complications if any were recorded.* ***RESULTS:*** *There were 42 (73.68%) males and 15 (26.32%) females with a mean age of (37.05 ± 12.63) years. The new technique was effective in reducing a shoulder dislocation on the first attempt in 54 of the 57 dislocated shoulders (94.74%). The remaining three shoulders were reduced on second attempt by the same technique. Sedative, pre-medication or anaesthesia was not used in any case. The average time taken for the shoulder reduction was four and half minutes with a range of three to six minutes.* ***CONCLUSION:*** *This relatively painless technique of shoulder reduction is easy to acquire and practice in emergency department and surgeons may select it as their primary method for reduction of anterior shoulder dislocations.*

Keywords: Shoulder dislocation, External rotation manoeuvre, Prakash's manueuvre.

INTRODUCTION

The geometry of glenohumeral articulation permits great flexibility at the expense of intrinsic stability. This inherent instability makes the shoulder the most commonly dislocated joint in the body, which can lead to recurrent dislocations or subluxations.[1] The restraints of the glenohumeral joint are divided into static stabilizers and dynamic stabilizers. The static stabilizers consist of the glenoid fossa, the labrum, the joint capsule and glenohumeral ligaments. The dynamic stabilizers consist of the rotator cuff muscles and their tendons, the long head of the biceps and the scapular stabilizing muscles. The cartilaginous labrum circumferentially surrounds the glenoid, providing increased depth to the fossa and increasing the contact area of the glenohumeral articulation. The glenohumeral ligaments are specific thickening of joint capsule specially anterior band of the

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inferior glenohumeral ligament which is the most important soft tissue restraint to anterior dislocations.[2,3] In emergency trauma room worldwide comprising more than half of all dislocations with anterior dislocation being the commonest subvariety.[4-9] A number of reduction techniques are in vogue with varying degree of results and reproducibility; however, most of these techniques require some sort of premedication, sedation or anaesthesia.[9-12] The choice of reduction manoeuvre depends upon the surgeon or treating physicians and the environment or place of work. However, in general a manoeuvre which is relatively painless, does not require sedation or anaesthesia, without the need of an assistant, with no or minimal complications that can be easily reproducible is preferred. We were using Kocher's reduction manoeuvre for reducing anterior shoulder dislocations in our institute in most of the cases and Spaso's manoeuvre in some. However, in June 2016 we came across a relatively simple technique of shoulder reduction that was described in a journal.[13] The original author propagated it as a painless (relatively) method of reducing anterior shoulder dislocation which can be performed by a single surgeon without traction and need for sedation or anaesthesia.[13] We conducted this prospective study with an intention to evaluate the results of this new method of shoulder joint reduction (Prakash's manoeuvre) in acute primary anterior dislocations of shoulder .

METHODS

This prospective study was conducted in Inpatient and Outpatient department of orthopaedics in North Bengal Medical Hospital, Sirajgonj from June 2017 and July 2019. Data recorded included duration since dislocation, mode of injury, the time needed to complete the reduction from the start of the procedure and the number of attempts at reduction. All the demographic data including age, sex, laterality, history of previous dislocation, time since dislocation and associated fracture of greater tuberosity were noted in patient case sheet. We excluded the patients with a history of previous dislocation, associated or suspected spine injury, unconscious patients, those presenting later than a week since dislocation, fracture dislocations except for greater tuberosity fractures and hemodynamic unstable patients. Consent was taken from all the patients after explaining the new procedure. 61 patients with anterior shoulder dislocation were treated during the study period, out of which 57 patients met the inclusion criteria that constituted the study group. The results were analyzed in terms of time to reduction, pain felt during the reduction manoeuvre as noted on visual analog scale (VAS) and any iatrogenic complication. The reduction manoeuvre was done by orthopaedic practitioers in all the patients. A single attempt was allowed if more than one attempt or anaesthesia or sedative were needed that was considered as treatment failure. The principle of this method is that traction has no role in reduction of shoulder dislocations. These are purely rational and lateral translation injuries and the reduction too is performed by rotations and lateral translations. No assistant is needed and the surgeon easily and single handedly performs this procedure. The patients are made to sit on a bed with back rest or on a chair with back rest or stand against a wall to fix the scapula.

The forearm is held by the elbow and wrist and the following sequence is deployed.

a. Slow gentle external rotation until the arm is fully externally rotated. There should be no attempt at abduction or adduction. The external rotation should be done with the arm in its original position. This step is performed very gently and slowly, often taking up to a minute. The forearm acts as a long lever arm to achieve the external rotation.

b. The limb is kept in external rotation for two to three minutes by the clock. The patient is engaged in conversation so that his attention is diverted during this step, as this is the painful part. This is the most important step and performing it properly is essential for this method.

c. The limb is now slowly adducted in external rotation till the elbow comes over the body.

d. The limb is now slowly internally rotated so that the fingers touch the opposite shoulder.

The shoulder glides in majestically without any audible clicks, clunks or sounds. The average time taken for the procedure is three to four minutes (Figure 1).

Figure 1: (A) Hold elbow with one hand and forearm with the other in the position of deformity without adducting or abducting. (B) Gently externally rotate the arm until it becomes near parallel to body, this position is maintained for a minute or so. (C) Gradually adduct the limb until the point of elbow comes over the body. (D) The arm is internally rotated so that the hand touches the opposite shoulder which confirms reduction. (E) After reduction regain normal contour of deltoid.

RESULTS

Of the 57 patients 42 (73.68%) were male 15 (26.32%) were female and age was between 18 to 62 years with a mean age of (37.04 ± 12.63) years. The complete demographic profile of patients is presented in Table I. The greater tuberosity was fractured in four patients and regimental badge sign was positive in two patients at presentation. We had observed a proclivity of right shoulder (n =35) to dislocate compared with left (n =22), yielding a ratio of 1.59:1. The new technique (Prakash's Manoeuvre) was effective in locating a shoulder dislocation on the first attempt in 54 of the 57 dislocated shoulders (94.74%). The remaining three shoulders were reduced on second attempt by the same technique. Although we were able to reduce all shoulders (100%), the patients requiring a second attempt (n=3) were considered as treatment failures (5.26%). There were no iatrogenic complications as a result of reduction manoeuvre as confirmed on clinical examination and radiographs (Figure. 2). The fractures of the greater tuberosity (n=4) were found to be reduced to within acceptable limits post reduction (Figure. 3). The pain experienced during the reduction manoeuvre as noted on VAS scale ranged from 0 to 7 with a mean of 2.22 ± 1.25. Only one patient in our series had a pain score of seven on VAS. None of the patients in our series refused to continue the reduction procedure at any point. The average time taken for the shoulder reduction was four and half minutes with a range of three to six minutes.

Table I : Demographic data of patients with primary anterior shoulder dislocation

Parameter	Number (%)
Gender	
Males	42 (73.68%)
Females	15 (26.32%)
Age (years)	
Mean	37.04 ± 12.63
Range	18-62
Laterality	
Right	35 (61.40%)
Left	22 (38.60%)
Presentation	
Within 24 h	52 (91.23%)
1-3 days	05(8.77%)
Greater tuberosity fracture	04 (7.02%)

Table II: Reduction results

Reduction Number		Percentage (%)	Consideration
First attempt	54	94.74%	Successful
Second attempt	03	05.26%	Failure
Total	57		

Figure 2. Pre-reduction radiograph (A) and post-reduction radiograph (B) of a patient with anterior shoulder dislocation, showing an uncomplicated reduction.

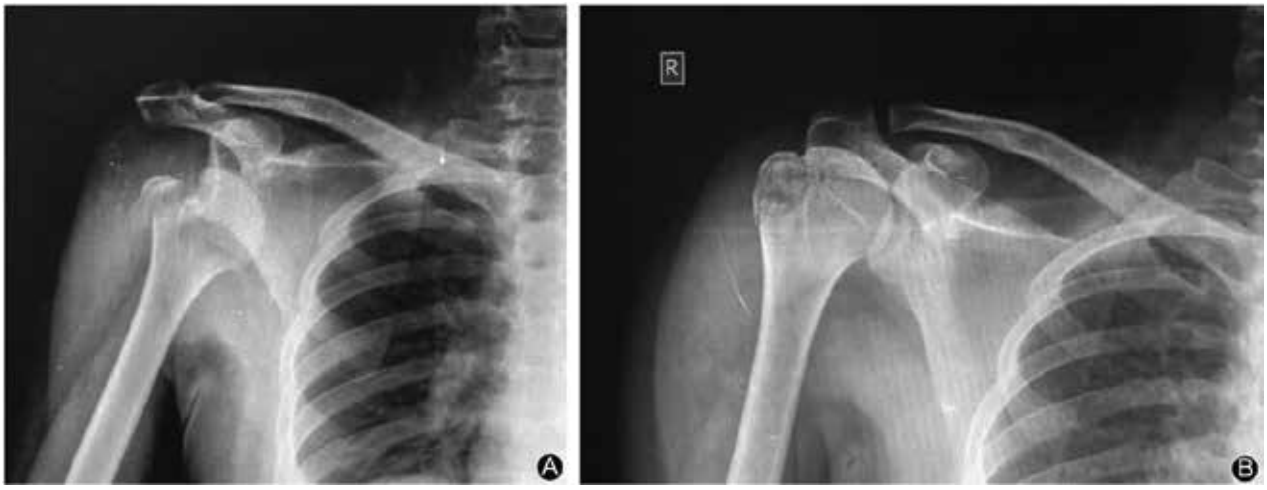

Figure 3. Pre-reduction (A) and post-reduction radiograph (B) of anterior shoulder dislocation with greater tuberosity fracture, showing greater tuberosity in acceptable reduction.

DISCUSSION

More than 50-60% of dislocations of large joints involve the shoulder (glenohumeral). Up to 90-96% of shoulder dislocations are anteroinferior.[14-20] Most dislocations can be reduced in the emergency department using simple methods. Numerous methods and procedures have been described.[15-19,21-25] and most of these require a general anaesthesia, muscle relaxation, pre medication or sedatives. The oldest known method for reduction was described by Hippocrates using traction & counter traction manoeuvres.[26] Modern variations of these traction techniques are widely used today and most of these techniques if not all are performed using analgesia and/or sedation and most require an assistant. The ideal method should be simple, easy, quick, effective, atraumatic, pain-free, require little assistance or medication, and cause no additional injury to the shoulder joint, musculoskeletal or neurovascular structures.[27,28] Till date there is no standard procedure for reduction of shoulder dislocation. The complications associated with different traction methods using excessive traction were classified by Calvert et al[29] and included upper extremity dysfunction, amputations and mortalities. The more severe iatrogenic injuries are rarely seen in clinical practice nowadays; however, neurovascular affliction is a recognized complication of contemporary traction techniques.[30] We came across a novel method of shoulder reduction claimed to be painless that can be performed single handedly without sedation or anaesthesia. The original author published the results of 147 shoulder dislocations reduced by this new technique, over a period of eleven years, achieving a success rate of 100%.[13] The exact mechanism of reduction is not fully understood. The original author believed shoulder dislocations to be rotational and translational injuries with little role of traction for reduction.[13] However, since this manoeuvre is performed in sitting position, how much and what is the role of gravity is still not known. We believe it is a novel method and a broader acceptability will generate more interest in research which will further help in delineating the exact mechanism of reduction.

It is wrongly mentioned that traction is the first and most important step of reduction. Shoulder dislocations are primarily rotation/lateral shift injuries and there is no role or traction, push, pull, counter traction, tapes or heel in the axilla,

in their reduction.[31] It is often erroneously stated that some shoulders are tricky and the practitioner must be familiar with more than one method so that if one fails, the other can be deployed.[28] All methods deploy traction in some form or the other and this is combined with rotations, translations, scapular movements, counter tractions, direct pushing in of the head etc.[32,33]

A complete review of all the methods of shoulder reduction is beyond the scope of this research article. The choice of selection of a method depends upon such factors as its simplicity, reproducibility, need for sedation or anaesthesia, number of assistant required and time taken for reduction.[11,34] Success rates for the various described procedures varies between 70-90% regardless of technique.[28] Many a times more than one technique may be required in some cases, where as 5% to 10% of cases cannot be reduced in the emergency room.[12,34] Mirick et al[35] evaluated the external rotation method and reported it to be successful in 69 of 85 (81%) patients. They found traction-counter traction method to be most frequently effective when external rotation failed. In another study evaluating Spaso's technique successful reduction could be achieved in 87.5% of patients.[36] Kuhn[37]compared the best existing evidence regarding the treatment of patients with a primary anterior shoulder dislocation and reported that little data exist to ascertain the best method and that premedication with intra-articular lidocaine has fewer complications and needs a shorter time in the emergency room than intravenous sedation with no obvious variances in success rates. The reported success rate of different reduction manoeuvres for anterior shoulder dislocation in the literature ranged from 70% to 100%.[11,36,38-41]

However, most of these studies represented the results of experienced surgeons or physicians performing the reduction manoeuvre. There is paucity of data on success rate in the relatively inexperienced hands of junior residents. In a study depicting results of scapular manipulation technique, the residents were only able to reduce 63% cases. The success rate of 100% (94.74% on first attempt) in this series was analogous to other series performed by experienced orthopaedic surgeons and emergency physicians. The high success rate in this study reflects the simplicity and reproducibility of this procedure. Though the initial results of this technique seem promising, however, there is a need to conduct randomized controlled trial to prove its effectiveness compared with other manoeuvres & whether it can become the primary method of anterior shoulder reduction.

CONCLUSION

This relatively painless technique of shoulder reduction (Prakash's manoeuvre) is easy to acquire and practice in emergency department. The method is effective in achieving reduction of acute anterior shoulder dislocations (95.08%) on first attempt in the hands of orthopaedic surgeon. The advantages of this manoeuvre and its concomitant safety may justly lead surgeons to select it as their primary method for reduction of anterior shoulder dislocations. The drawbacks of this study includes it cannot be performed in unconscious, polytrauma and spine injury patients because the reduction procedure performed with the patient on sitting or standing position, a smaller sample size and no direct comparison with other techniques. However, further studies are needed to see the results and reproducibility of this technique.

Conflicts of Interest: None

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Original Article

Comparison of the Lower Inguinal Skin Crease and Inguinoscrotal Junction Approach for the Treatment of Inguinal Hernia in Children.

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ABSTRACT

BACKGROUND: *Inguinal herniotomy is the most common operation performed by Pediatric Surgeons, mostly by the lower inguinal skin crease approach. Inguinoscrotal junction approach can be used as an alternative way which avoids tampering of inguinal canal and easy access to find out the patent processus vaginalis.* ***OBJECTIVES:*** *This study was done to compare the outcome of herniotomy for inguinal hernia through lower inguinal skin crease and inguino scrotal junction approach in normal BMI children.* ***MATERIALS AND METHOD:*** *This quasi-experimental study was conducted from July, 2018 to October, 2019 in the Department of Pediatric Surgery, Mymensingh Medical College Hospital, Mymensingh among the 60 patients with inguinal hernia who fulfilled the inclusion and exclusion criterion. History was recorded in a data collection sheet after taking informed written consent from the parents/ guardians. Proper clinical examinations, investigations were done. Patients were selected considering the inclusion criteria. Approximately 60 were selected for the study. Alternatively one patient through Lower inguinal skin crease and another through inguino scrotal junction approach were performed for each of the two consecutive patients and in this way one patient was selected for Group A (Lower inguinal skin crease, n=30) and other for Group B (Inguino scrotal junction, n=30). After the induction of general anesthesia, we made a transverse incision along the crease of inguino scrotal junction. This incision was depended through the layers of the scrotum down to the testis. When distal part of patent processus vaginalis was divided, the proximal stump of patent processus vaginalis fell back into the peritoneal cavity. The testis was placed into the scrotum. The skin was closed with a running subcutaneous 3-0 or 4-0 absorbable suture. Postoperative care by nothing per oral for 4-6 hours. Intravenous fluid, intravenous antibiotics parenteral analgesics. Patient was discharged on 1st POD after oral feeding. All patients were followed up at 1st post-operative day for immediate complication. eg: scrotal swelling. Also after one month for late complication.* ***RESULTS****: Among respondent 63.33% respondents had swelling at right side. 6.6% respondents of lower inguinal approach and 10% of inguinoscrotal junction approach showed complications. Post-operative complications were 5 scrotal swellings. In lower inguinal skin crease approach 2 scrotal swellings and in inguino scrotal junction approach 3 scrotal swellings. Statistically significant relationship was not found between overall route of surgical approach of inguinal hernia with their site and with complication.* ***CONCLUSION:*** *Inguinal herniotomy can be performed through lower inguinal skin crease or inguino scrotal junction approach without any significant difference in terms of outcome. Inguino scrotal junction approach for the treatment of inguinal hernia is well tolerated, simple, cosmetically appealing and less chance of infection due to less adipose tissue in scrotal skin.*

Key Words: Lower Inguinal Skin Crease, Inguinoscrotal Junction, Inguinal Hearnia, Children.

INTRODUCTION

The inguinal approach for the treatment of inguinoscrotal pathologies in children is the recommended standard surgical procedure. This surgical approach includes freeing the spermatic cord from the attached tissue, separating and high ligating the patent processus vaginalis (PPV). It is important to prevent vas and vessels injury when high ligating the PPV. Then, the testis is fixed to the scrotum without tension.[1,2] Inguinal exploration with a subsequent inguinoscrotal incision is the standard for the treatment of treatment of inguinal hernia.[3,4]

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*** For Correspondence**

Recently, good success rates with minimal complications were reported when herniotomy was performed via a inguinoscrotal approach.[5] Other studies also demonstrated that the inguinoscrotal approach is an alternative for the correction of inguinal hernia.[6] The advantages of this approach include minimal postoperative scarring because the incision is small, a short operative time and elimination of any risk of ilioinguinal nerve damage because the spermatic cord is not dissected. However, the postoperative risk of persistent hernia or hydrocele when PPV high-ligation is inadequate remains of concern. Testicular ascent may also develop postoperatively when the proximal attachments are not adequately separated.[7]

Protrusion of a viscus or part of a viscus through an abnormal opening in the wall of its containing cavity is called hernia. The incidence of inguinal hernia in children range from 0.8% to 4.4% and is higher in infants. Boys are affected six times more than girls with the ratio 3:1. Predominance of right sided 60%, left sided-30% and bilateral-10%. Congenital hydrocele is nothing but accommodation of fluid as a content of hernia sac. It may be communicating or noncommunicating.[8]

Inguinal hernia is one of the most common conditions in pediatric age. It arises due to patent processus vaginalis. Treatment is herniotomy in order to prevent irreducibility, obstruction and strangulation.[9] Herniotomy for Inguinal hernia can be performed through both lower inguinal skin crease and inguino scrotal junction approach. Standard surgical approach to pediatric inguinal hernia operation is lower inguinal skin crease but inguino scrotal junction approach also gives excellent access to PPV.[10]

In our study we planned to find out the result of inguino scrotal junction approach herniotomy in pediatric age group.

MATERIALS AND METHODS

This was a Quasi experimental study conducted during July, 2018 – October, 2019 at the department of pediatric surgery, Mymensingh Medical College Hospital, Mymensingh. Patient was selected for Group A (Lower inguinal skin crease, n=30) and other for Group B (Inguino scrotal junction, n=30) (16 months duration). Sample size was estimated by following formula n=z2pq/d2 and prevalence was unknown. So sample size was 384 but the time limitation we took only 60 sample. Data was analyzed by statistical package for social science (SPSS) version 20.

RESULTS

Total 60 patients were taken and they were divided according to age.

Table I: Age distribution of inguinal hernia in male children among the study population (n=60).

Groups	Number of patients	Percentage	Mean	SD
Neonate-1 year	4	6.67%		
1 year- 3 year	16	26.67%	4.07	1.80
3 year -6years	40	66.67%		
Total	60	100.0%		

Table Table I showed 3 years to 6 years age group of patients were the maximum and that of 1year to 3 years were the seconder with the mean age of 4.07±1.80.

Table II: Side of distribution of inguinal hernia among study population.

Side	Number of patient	Percentage
Right	38	63.33%
Left	22	36.67%
Total	60	100%

Table II represents that, right sided inguinal hernia were 38(63.33%) and 22(36.67%) were left sided.

Table III: Post-operative complications following herniotomy in children of the study population (n=60)

Route	Complications		Total
	Present	Absent	
Lower inguinal	2(6.6%)	28(93.4%)	30
Inguino scrotal junction	3(10%)	27(90%)	30
Total	5(8.33%)	55(91.67%)	60

In table III, complications almost absent in both procedure.

DISCUSSION

Out of 60 patients, 30 in group-A where lower inguinal skin crease and another 30 patient in group-B where inguino scrotal junction approach were performed. In this study age ranges from neonate to six years. The mean age was 4.07±1.80 years. A study was done by Bahaaeldin KH[11] showed age ranges of repair by inguino scrotal junction between 15 days to 12 years. Which is bit higher than my study which should not take consideration due to limitation of study design. In this study among the population right sided inguinal hernia 38(63.33%) and left sided inguinal hernia 22(36.67%) also this study showed right sided inguinal hernia 61.53% (n=64) left sided hernia 23.07% (n=24). Majority occurred right side which is also consistent with my study. In present study showed maximum patients 42 (70.0%) were normal weight. Post-operative complications were 5 scrotal swellings. In lower inguinal skin crease approach 2 scrotal swellings and In inguino scrotal junction approach 3 scrotal swellings. In both cases there was no wound infection. Another study done by Alp et al,[1] also revealed that 4 scrotal swellings and 2 hematoma which is

consistence with my study. Iyer et al[18] study also showed 2 scrotal hematoma but no wound infection. So this study is some extent superior than other study. But Bahaaeldin K.[11] study showed 1 case developed wound infection, Which is consistence with this study. Iyer et al[18] study showed 4 recurrence, Bahaaeldin KH[11] study showed no recurrence. But recurrence of hernia and Testicular atrophy did not show so far we cited in this study. The incision for surgical approach to pediatric inguinal pathologies including inguinal hernias has been supra pubic transverse inguinal incision. Yet alternative incision may be considered. Bianchi and squire first introduced inguino scrotal crease incision. The primary goal of the surgical treatment of communicating hydrocele in children is to ligate the PPV as cranially as possible, with no iatrogenic injury and postoperative recurrence. Inguinal incision has been accepted as a standard route in the pediatric population for the treatment of communicating hydrocele and indirect inguinal hernia[12] since the late 1980s, the inguino scrotal junction approach has been used as an alternative for the management of hernia or other inguinoscrotal pathologies.[13]

Recently published studies on scrotal orchiopexy reported that PPV could be dissected from the cord structures through the inguinal canal with the aid of the traction of the sac, and after the division, the proximal aspect of PPV invariably retracted to the internal inguinal ring.[4,7,14 -16]

The inguino scrotal junction approach avoids tampering with the inguinal canal and offers an excellent access to the PPV with minimal dissection and morbidity. Additionally, this approach eliminates the risk of damage to the ilioinguinal and genitofemoral nerves.[17]

All of these factors provide less postoperative pain, shorter hospital stay and faster healing compared to the inguinal approach. Another obvious advantage of the inguino scrotal junction approach is the excellent cosmosis. In most cases, the scar is nearly invisible.[18-21]

Koyle et al[20] al noted another advantage of the inguino scrotal junction approach, in that it allows access to the scrotal contents and removal of the distal portion of tunica vaginalis. Using inguino scrotal junction incision resulted in shorter operative times, decreased pain and improved cosmosis in our patients. To our knowledge, there are three reasonably different scrotal locations to incise the scrotum: the inguino scrotal crease, midline scrotal and transverse to rugae of scrotum.

CONCLUSION

Inguinal hernia are very common in case of children. Which need urgent attention, Evaluation and time honoured management. Immediate surgical intervention in case of hernia showed very good result with reasonable morbidity. It can be performed through lower inguinal skin crease or inguino scrotal junction approach without any significant difference in terms of outcome.

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