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Editorial

"Integrated Teaching"-A Burning Issue in Medical Education in Bangladesh

The term "Integration" originates from the Latin word "integer," which means coordinating different actions to ensure harmonious functioning. The human body, where various systems work synchronously and with full integration, offers an excellent example of integration. In education, integration refers to the organization of teaching matters and bridging connections to interrelate or unify subjects that are typically taught separately.[1] In many developed and developing countries, such as India, Nepal, Sri Lanka, Indonesia, and Malaysia, an integrated student-centered competency-based curriculum has already been established, emphasizing new modules such as communication skills, ethics, and behavioral science. Whereas current medical education in Bangladesh imparts knowledge in a disorderly manner, preventing students from developing the skills to investigate, analyze, and perceive patients as a whole.

To improve the quality of education, and to better understand diseases, diagnosis, and patient management, integrated teaching is the need of the hour. Integrated teaching reduces fragmentation of medical courses, prevents repetition and waste of time, and promotes interdepartmental collaboration and rationalization of teaching resources.[2] The old concept of pre-clinical science, including Anatomy, Physiology, and Biochemistry, has been replaced with an integrated Medical Curriculum (IMC). The basic concept of IMC focuses on problem-based learning (PBL), which is accepted by most medical schools worldwide. PBL is a student-centered pedagogy where students learn through the experience of solving an open-ended problem found in trigger materials. It allows for the development of other distinct skills and attributes, including knowledge acquisition, enhanced group collaboration, and communication.[3]

Global economic and trinational connections, as well as rapid changes in technology, are pushing education towards integration. To establish integrated teaching, effective change management, an in-depth review of the curriculum, commitment from faculty, departments, and individuals, and the development of teams and structures to support planning and implementation are vital. However, there are many problems in medical education in Bangladesh, such as an excessive number of medical schools, content overload in the MBBS program, a lack of adequately trained teachers, a lack of accountability, and enormous political interference.[4] Therefore, the effectiveness of integrated teaching is dedicated to its mode of implementation, and training of faculties for newer

methods of integration plays a crucial role in efficient integrated teaching.[5] Integration is the backbone of newer curriculum, which is a key of hope in medical education in Bangladesh.

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- Title page
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May be structured with subheadings of Background Objective, Materials and Method, Results, Conclusion. Not mandatory for review articles and case reports.
Should not exceed 250 words.
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States the purpose of the article and summarizes the rational of the study.
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Presented in sequence in the text, tables and illustrations.
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J. Dhaka National Med. Coll. Hos. 2023; 29 (01): 07-11

Original Article

To Observe The Diversity Of The Clinical Presentation Of Chronic Calculus Cholecystitis

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Abstract

Background: Chronic calculus cholecystitis is an inflammatory disease which affects the gallbladder wall, accompanied by presence of gallstones in the gallbladder lumen, and reveals as biliary pain. Early and accurate diagnosis allows prompt treatment and reduces morbidity and other complications.

Objectives: To observe the diversity of the demographic and clinical presentation of diagnosed chronic calculus cholecystitis.

Methods: This is a descriptive type of observational study which was conducted at Department of Surgery, Dhaka National Medical College Hospital, over a period of 12 months from 6th December 2017 to 5th December 2018. Total 150 patients of chronic calculus cholecystitis with laboratory profile, ultrasonography proven in Surgery Department of Dhaka National Medical College Hospitals were included. Comparison was done by tabulation and graphical presentation in the form of tables, pie chart, bar diagrams etc.

Results: In this study, the maximum number of patients (33.33%) was between 31-40 year age group, mean age of the patient was 42.5 ± 12.94 years. Out of 150 cases (73%) cases were female and (27%) were male. Female–male ratio was 2.75:1. Large numbers of respondents came from urban area 93 (62%), followed by rural area 57 (38%). Total 54 patients were obese among them male 11(27.5%) and female 43 (39.09%). Overweight patient found 51 among them 13(32.5%) were male and 38(34.54%) were female. Nutritional status was normal in 32 patients. Maximum numbers of female patients 65 (59.09%) had history of taking oral contraceptive pill during their reproductive period.Large number of respondents were house wife (41.33%) followed by service holder (20%). Socioeconomically 77(51%) comprising the major percentage of the patients is in middle class, which is followed by poor class 46(31%) and remaining are upper class 27(18%).The highest percentage has complained of upper abdominal pain in 80%. Among them 40.66% (61/150) patients had dull aching type. Most of the patients had complaint of flatulent, dyspepsia 78.66% (118/150). Many patients also had complaints of fatty food intolerance 64.66% (97/150). Although 20% patient was asymptomatic.

Conclusion: Chronic calculus cholecystitis is a common problem in surgical practice. Patient may present with variable demographic presentation and upper abdominal pain along with flatulent, dyspepsia is the most common symptom. For early diagnosis accurate history taking, clinical examinations and investigations are vital.

Keywords: Chronic calculus cholecystitis, ultrasonography.

Introduction

Chronic calculus cholecystitis is one of the most frequent conditions requiring surgical attention and it is usually associated with multiple complications if left untreated. Chronic cholecystitis almost always arises in the setting of cholelithiasis. Patients may have a history of recurrent upper abdominal pain or biliary colic, although some patients may be asymptomatic. Microscopically, there is evidence of chronic inflammation within the gallbladder wall.[1] Factors that may increase the risk or susceptibility to gallbladder disease include gender, ethnicity, medical history, family history, and diet and nutrition.[2] Gallstones (cholelithiasis) are the most common cause of biliary

tract disease in adults, afflicting 20-30 million persons in North America. Approximately one-fifth of men and one-third of women will eventually develop cholelithiasis. In Canada, calculous disease of the biliary tract is also a major health hazard, accounting for about 130,000 admissions to hospital and 80,000 cholecystectomies annually.[3] Gallstones are hard, pebble-like structures that obstruct the cystic duct. The formation of gallstones is often preceded by the presence of biliary sludge, a viscous mixture of glycoproteins, calcium deposits, and cholesterol crystals in the gallbladder.[4] In the U.S., most gallstones consist largely of bile supersaturated with cholesterol.[5,6] This hypersaturation, which results from the cholesterol concentration being greater than its solubility percentage, is caused primarily by hypersecretion of cholesterol due to altered hepatic cholesterol metabolism.[5,7] A distorted balance between pronucleating (crystallization-promoting) and antinucleating (crystallization-inhibiting) proteins in the bile also can accelerate crystallization of cholesterol in the bile.[4-7] Mucin, a glycoprotein mixture secreted by biliary epithelial cells, has been documented as a pronucleating protein. It is the decreased degradation of mucin by lysosomal enzymes that is believed to promote the formation of cholesterol crystals.[7] Loss of gallbladder muscular-wall motility and excessive sphincteric contraction also are involved in gallstone formation.[5] This hypomotility leads to prolonged bile stasis (delayed gallbladder emptying), along with decreased reservoir function.[4,7] The lack of bile flow causes an accumulation of bile and an increased predisposition for stone formation.[4,5] Despite the availability of many imaging techniques to demonstrate the presence of gallstones, clinical judgment ultimately determines the association of symptoms with cholelithiasis and its complications.[8]

Materials & Methods

A hospital based descriptive type of observational study was conducted over a period of twelve months from 6th December 2017 to 5th December 2018 in the Department of Surgery, Dhaka National Medical College Hospital after obtaining requisite consent from the patients. Patients clinically diagnosed as chronic calculus cholecystitis with laboratory profile, ultrasonography proven in Surgery Department of Dhaka National Medical College Hospitals were enrolled for this study. The collected data were entered into the computer and analyzed by using SPSS (version 20.1).

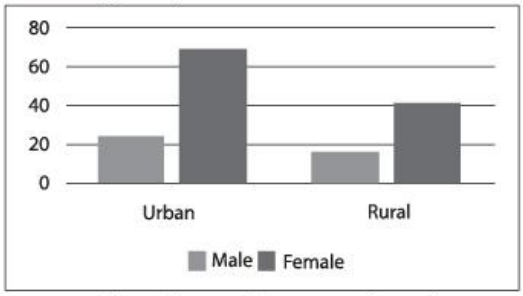
Results

Table-I: Age and sex distribution of the patients (n=150)

Age (years)	Frequency		Total
	Male (n= 40	Female (n= 110)	
21-30	2(1.33%)	12(8.00%)	14(9.33%)
31-40	12(8.00%)	38(25.33%)	50(33.33%)
41-50	4(2.66%)	30(20.00%)	34(22.66%)
51-60	11(7.33%)	21(14.00%)	32(21.33%)
61-70	8(5.33%)	7(4.66%)	15(10.00%)
71-80	3(2.00%)	2(1.33%)	5(3.33%)

Maximum numbers of female patients 38(25.33%) were in age group between 31–40 years. Study shows that female patient was predominant.

Figure-I: Distribution of patients according to residence (n=150)



Large numbers of respondents came from urban area (93), followed by rural area (57).

Figure-II: Distribution of patient according to sex (n=150)

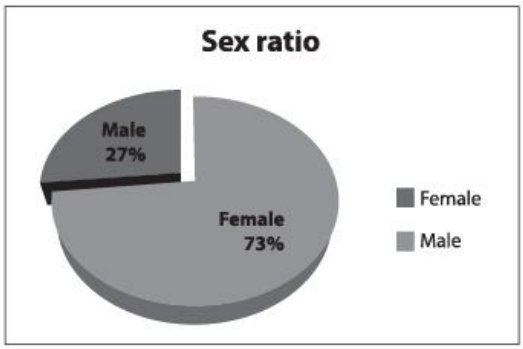


Table-II: Distribution of patients according to nutritional status (n=150)

Nutritional status BMI= weight in kg/height in meter²	Male	Female	Total (n=150)
Underweight ≤ 18.4	2(5%)	11(7.33%)	13(8.66%)
Normal (18.5-24.9)	14(35%)	18(16.36%)	32(21.33%)
Overweight (25-29.9)	13(32.5%)	38(34.54%)	51(34%)
Obese ≥ 30	11(27.5%)	43(39.09%)	54(36%)
Total	**40**	**110**	

Total 54 patients were obese among them male 11(27.5%) and female 43 (39.09%). Overweight patient found 51 among them 13(32.5%) were male and 38(34.54%) were female. Nutritional status was normal in 32 patients.

Table-III: Distribution of the patients according to occupation category (n=150)

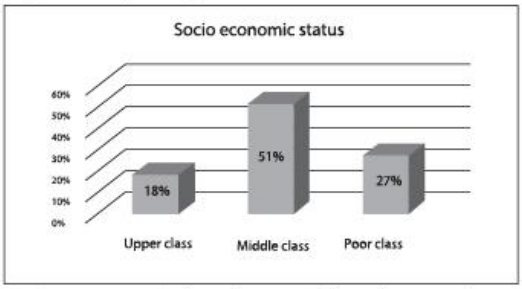
Occupation	Frequency	Percentage
Service holder	30	20.00
Business	21	14.00
Daily worker	17	11.33
House wife	62	41.33
Unemployed	15	10
Student	5	3.33

Large number of respondents were house wife (41.33%) followed by service holder (20%).

Figure-III: Distribution of female patient according to history of oral contraceptive pill taking

65 patients among 110 female had taken oral contraceptive period for variable duration

Figure-IV: Socioeconomic status of the study population (n=150)



Socio economically the middle class 77(51%) comprising the major percentage of the patients.

Table-IV: Distribution of patients by clinical presentation (n=150)

Symptoms/Sign:	Frequency	Percentage
A. Symptoms:		
1. Asymptomatic:	30	20
2. Upper abdominal pain:	120	80%
Dull aching:	61	40.66%
Moderate colicky:	54	36%
Severe colicky:	05	3.33%
3. Fatty food intolerance:	97	64.66%
4. Flatulent, Dyspepsia:	118	78.66%
5. Fever:	10	6.66%
Low grade:	10	6.66%
High grade:	00	00
6. Jaundice:	00	00%
7. Itching:	00	00%
8. Anorexia:	03	2%
9. Weight loss:	00	00%
B. Signs:		
1. Tenderness at right upperquadrant:	17	11.33%
2. Palpable gall bladder / rt upper abdominal lump	00	00%

The highest percentage has complained of upper abdominal pain in 80%. Among them 40.66%(61/150) patients had dull aching type.

Discussion

In this study, the maximum number of patients (33.33%) was between 31-40 years age group, mean age of the patient was 42.5 ± 12.94 years. Out of 150 cases (73%) cases were female and (27%) were male. Female-male ratio was 2.75:1. Study shows that female patients predominant. Large number of respondents came from urban area 93 (62%). According to nutritional status of the patients, total 54 (36%) cases found obese. A study in Bangladesh, total 1,019 persons (316 males and 703 females) were examined. Age of them varied from 18 to 80 years with mean age of 37.22 years. Both male and females of age below 40 years were more affected. Gallstone disease was found more commonly among housewives and middleclass people.[10] Another study in Bangladesh revealed out of 300 patients 254 (84.88%) were female (male: female = 1:5.52), age range 28 to 79 years.[11] In a study in Karachi, Pakistan nearly 85.4% of the participants were female. The mean±S.D. for age was 43.8±9.59. In that study, all of patients were from low socioeconomic status.[12] Gallstones and associated diseases were more common in women within 4th to 5th decade, with a maximum number of patients being 41 to 50 years.[11] Maximum number of female patients, 65 (59.09%) out of 110 had history of oral contraceptive pill taking for variable duration during their reproductive period. Significantly higher incidence of gallstones found in patient taking oral contraceptives than without contraceptives which is similar to a study conducted in Bangladesh.[13] There is increased association of gallstones in younger people (< 50 years old) with metabolic syndrome and obesity.[14]

In this study the highest percentage has complained of upper abdominal pain in 80%. Pain was dull aching type in 40.66% (61/150), moderate colicky in 36% (54/150) cases & 3.33% (5/150) had severe upper abdominal colicky pain. Most of the patients had complaint of flatulent, Dyspepsia 78.66% (118/150). Many patients also had complaints of fatty food intolerance 64.66% (97/150). Few patients had low grade fever 6.66% (10/150). On clinical examinations, tenderness at right upper quadrant was found in 11.3% (17/150). Although. Murphy's sign was negative in all patient. Liver wasn't palpable.Gallstones are present in approximately 8% of the population and many people have small gallstones without experiencing any symptoms. Only 10- 20% of these people will develop symptoms. The most common symptoms of gallstones and cholecystitis include: sudden severe pain in the upper part of right side of abdomen, (biliary colic) just below the rib cage, pain that radiates to right shoulder or back, pain that prevents from breathing deeply, tenderness at abdomen when it is palpitated. In cases, where there is already inflammation of the gall bladder (cholecystitis) these additional symptoms might occur: nausea; vomiting; and/or fever.[15]

Conclusion

Chronic calculus cholecystitis is a common surgical problem and poses diagnostic and therapeutic challenge. It is more common among obese female housewives who had history taking oral contraceptives. Early diagnosis of chronic calculus cholecystitis is not always easy. Presentation may vary from asymptomatic to severe upper abdominal colicky pain. The decision to observe the patient until the diagnosis becomes obvious or to operate early to prevent unwanted complication represents a serious dilemma for surgeons.

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J. Dhaka National Med. Coll. Hos. 2023; 29 (01): 12-19

Original Article

Correlation of Clinical, Radiological and Histopathological Pattern of Bronchial Carcinoma

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Abstract

Background: Lung cancer was the most commonly diagnosed cancer as well as the leading cause of cancer death in males in 2008 globally Lung cancer is one of the most deadly tumours known. It is accurately found by many radiographic testing methods occasionally initiated for an unrelated ailment. In light of new histology guided therapeutic modalities and lung cancer genetic categorization, histological characterisation of lung cancer has risen in prominence. The study was carried out to evaluate the correlation of clinical, radiological and histopatholgicalpattern of bronchial carcinoma.

Methods: This observational cross sectional study was carried out in the Department of Medicine (Respiratory wing) Bangabandhu Sheikh Mujib Medical University (BSMMU) and National Institute of Chest Disease (NIDCH) during the period of September 2011 to February 2012. A total of 60 admitted patients with a clinical, radiological and histological diagnosis of bronchial carcinoma were enrolled in the study. Complete sociodemographic characteristics, smoking status, radiological, and histopathological characteristics of the tumor were recorded in the study. CT scan of the chest was done in the majority of the patient. CT-guided FNAC and US guided FNAC tissue sampling from lung lesions followed by histopathological examination was done to diagnose the appropriate tumor type. After collecting the data, the statistical analyses were performed using the licensed version of Statistical Package for the Social Science Version 23 (SPSS-23). The p value <0.05 was considered as statistically significant.

Results: Out of 60 cases, majority 27 (45.0%) patients were belonged to age 51 to 60 years with mean age was 58.4±10.2 years Male: female ratio was 4.1. Three fourth (75.0%) of the patients were smoker. Almost three fourth (73.3%) were right sided lesion and 26.7% were left sided lesion. In x-ray findings, 35.0% was found effusion followed by 31.7% consolidation, 15.0% consolidation & effusion (15%), 10.0% collapse & consolidation and 8.3% collapse. Squamous cell carcinoma (50.0%) was the most common histological pattern of bronchial carcinoma followed by adenocarcinoma (45.0%) and small cell carcinoma (5.0%). Diagnostic procedure of bronchial carcinoma was bronchoscopy & biopsy (15.0%), followed by CT guided FNAC (50.0%), US guided FNAC (5.0%), pleural biopsy (5.0%), lymph node biopsy (20.0%) and pleural fluid (5%). Significant association was found between cough, chest pain, face & neck swelling and histological type ($p<0.05$). Physical findings such as anaemia, clubbing, palpable lymph node, features of SVC obstruction, feature of consolidation, features of pleural effusion, features of collapse and hepatomegaly were significantly associated with histological type ($p<0.05$). Regarding X-ray findings, consolidation, fffusion and collapse & consolidation were significantly associated with histological type ($p<0.05$).

Conclusion: The results of this study showed that some correlation of clinical presentation with radiological and histopathological pattern of bronchial carcinoma. In this study found association found between histological type with cough, chest pain, face and neck swelling, anaemia, clubbing, palpable lymph node, features of SVC obstruction, consolidation, feature of pleural effusion and

collapse and hepatomegaly. This study also found association between histological type with following radiological findings such as consolidation, effusion and collapse & consolidation.

Key words: Bronchial carcinoma, clinical presentation, radiological,histopatholgoical findings.

Introduction

Lung cancer is most common and serious health problem worldwide. All over world it accounts for 13% of all new cancer cases and 19% of cancer related deaths.[1] At the end of the 20th century, Bronchogenic Carcinoma had become one of the leading causes of preventable death. It was a rare disease at the start of that century, but exposures to new etiologic agents and an increasing life span combined to make lung cancer a scourge of the 20th century. Lung cancer is the most common malignancy worldwide and is the leading cause of cancer deaths in men and women.[2] Lung cancer was the most commonly diagnosed cancer as well as the leading cause of cancer death in males in 2008globally. Among females, it was the fourth most common diagnosed cancer and the second leading cause of cancerdeath. Lung cancer accounted for 13% (1.6 million) of the total cases and 18% (1.4 million) of the death in 2008.[3]

In Bangladesh, a new study suggests that lung cancer cases have been on the rise, experts attributing this to an increase in smoking and air pollution. According to the latest Hospital Cancer Registry Study, there is a reportedly near 200% risein the country's lung cancer cases in just three years. A total of 5,887 people with lung cancer were admitted to the National Institute of Cancer Research and Hospital (NICRH) from January 2015 to December 2017. In 2014, the figure was 1983,which indicates a nearly 200% rise in cases in just three years.[4]

Majority of patients having lung cancer had direct exposure to smoking. Squamous cell carcinomas and small cell carcinomas shows significant association with smoking.[5] Occupational exposures and air pollution approximately accounts for 2% to 9% of lung cancers. Approximately 85% patients with lung cancer are symptomatic at presentation. In remaining patients, lung cancer is diagnosed by various radiological methods initiated for an unrelated health problem and histopathological examination.[6]

Lung cancer is caused by mutations, causes abnormalproliferation of the mutated cells, and the formation of atumor. Previously, lung cancer was broadly classified intonon-small cell lung cacer (NSCLC) and small cell lung cancer (SCLC). The availability of newer histology-guided targeted molecular therapies for lung cancer has made this classification inadequate. So, histopathological and genomic characterization of lung cancer has now become the topic ofinterest.[7] Targeted therapy or immunotherapy is mainly basedon subtype analysis for mutation. Another changing trendhas been observed in the morphological variety, with adenocarcinoma becoming equal to or even over taking squamous cell carcinoma sometimes in some Asian and most Western countries.[8]

Bronchial carcinoma fall into four major histological types: Viz. Squamous cell carcinoma, small cell carcinoma, large-cell carcinoma and adenocarcinoma. These four types account for about 95% of all cases of primary lung cancer.[9] Common cell types of bronchial carcinoma are small cell lung carcinoma (SCLC) – (20%) and non small cell lung carcinoma (NSCLC)- (8%). Among NSCLC, Squamous cell carcinoma (35%), large-cell carcinoma (15%) and adenocarcinoma (20%).[10] Although squamous-cell carcinoma has for many years been the most common histological type, adenocarcinoma has been increasing in incidence over last 20 years.[10]

In patients with metastatic disease the diagnosis can often be confirmed by needle aspiration or biopsy of affected lymph nodes, skin lesion, liver or marrow. CT scan of brain, radio nuclide bone scanning, liver ultrasound. Bone marrow biopsy can be reserved for patients with clinical, hematological or biochemical evidence of tmoursspead to such site.[11] Our observation is to expertise about correlation of clinical presentation and different radiological and histopathological pattern of bronchial carcinoma. So that we can optimally manage the cases of bronchial carcinoma associated with high mortality and morbidity.

Materials and methods

This observational cross sectional study was carried out in the Department of Medicine (Respiratory wing) Bangabandhu Sheikh Mujib Medical University (BSMMU) and National Institute of Chest Disease (NIDCH) during the period of September 2011 to February 2012. A total of 60 admitted patients with a

clinical, radiological and histological diagnosis of bronchial carcinoma were enrolled in the study. Patients age >20 years both gender and clinical and histological findings of bronchial carcinoma were enrolled in the study. Age <20 years, patients present with typical features of pneumonia like abrupt onset, duration <7 days, high fever, rusty sputum, neutrophillic leucocytosis, gm(+)ve, or gm(-) ve, organisms, on sputum examination, patients presented with clinical features of tuberculosis like low grade fever, night sweating , cough with sputum , chest X-ray P/A view –patchy opacities with or without cavitations ,sputum – acid fast bacilli (+)ve, tuberculin test(+)ve and when detailed history, clinical examination and roentgenographic findings and histology raised the possibility that the lung cancer is a secondary one as opposed to primary tumor were excluded from the study. Complete sociodemographic characteristics, smoking status, radiological, and histopathological characteristics of the tumor were recorded in the study. The performance status of patients was documented using the Eastern Cooperative Oncology Group scale (ECOG). CT scan of the chest was done in the majority of the patient. CT-guided FNAC and US guided FNAC tissue sampling from lung lesions followed by histopathological examination was done to diagnose the appropriate tumor type. After collecting the data, the statistical analyses were performed using the licensed version of Statistical Package for the Social Science Version 23 (SPSS-23). Chi square test was used for categorical variables as shown cross tabulation. The p value <0.05 was considered as statistically significant.

Results

Out of 60 cases, majority 27 (45.0%) patients were belonged to age 51 to 60 years. The mean age was 58.4±10.2 years with ranging from 38 to 82 years. Male patients were predominant 48(80.0%) and 12(20.0%) patients were female. Male: female ratio was 4.1. Half (50.0%) of the patients were cultivator and 30(50.0%) were come from middle class family (Table-I). 75.0% patients were smoker & ex-smoker and 25.0% were non-smoker (Figure-I). Almost three fourth (73.3%) were right sided lesion and 26.7% were left sided lesion. In x-ray findings, 35.0% was found effusion followed by 31.7% consolidation, 15.0% consolidation & effusion (15%), 10.0% collapse & consolidation and 8.3% collapse (Table-II). Regarding histopathological findings, squamous cell carcinoma (50.0%) was the most common histological pattern of bronchial carcinoma followed by adenocarcinoma (45.0%) and small cell carcinoma (5.0%) (Table -III). All (100.0%) patients was found cough in squamous cell carcinoma, 21(77.8%) in adenocarcinoma and 3(100.0%) in small cell carcinoma. Three (10.0%) patients was found chest pain in squamous cell carcinoma, 6(22.2%) in adenocarcinoma and 3(100.0%) in small cell carcinoma. Six (22.2%) patients was found face & neck swelling in adenocarcinoma and not found in squamous cell carcinoma & small cell carcinoma respectively. Which were statistically significant (p<0.05) among three groups (Table-IV). In relation to anaemia (p=0.0.04), clubbing (p=0.001), feature of consolidation (p= 0.025) and features of collapse (p=0.036) in squamous cell carcinoma and not found in small cell carcinoma. Palpable lymph node (p=0.017), features of SVC obstruction (p=0.017) in relation to adenocaricnoma. Features of pleural effusion (p=0.001) in relation to adenocarcinoma and small cell carcinoma. Hepatomegaly (p=0.001) in relation to small cell carcinoma (Table-V). 16(53.3%) patients was found consolidation in squamous cell carcinoma, 3(11.1%) in adenocarcinoma and not found in small cell carcinoma. Eighteen (66.7%) patients was found effusion in adenocarcinoma, 3(100.0%) in small cell carcinoma and not found in squamous cell carcinoma. Six (20.0%) patients was found collapse & consolidation in squamous cell carcinoma and not found in adenocarcinoma & small cell carcinoma respectively. Which were statistically significant (p<0.05) among three groups (Table-VI).

Table-I: Demographic characteristics of the study population (n=60)

	Frequency	Percentage
Age (years)		
30-40	3	5.0
41-50	15	25.0
51-60	27	45.0
61-70	9	15.0
>70	6	10.0
Mean±SD	58.4	±10.2
Sex		
Male	48	80.0
Female	12	20.0
Occupational status		
Service	10	16.7
Business	8	13.3
Cultivator	30	50.0

	Frequency	Percentage
Housewife	12	20.0
Socio-economic status		
Lower	27	45.0
Middle	30	50.0
Higher	3	5.0

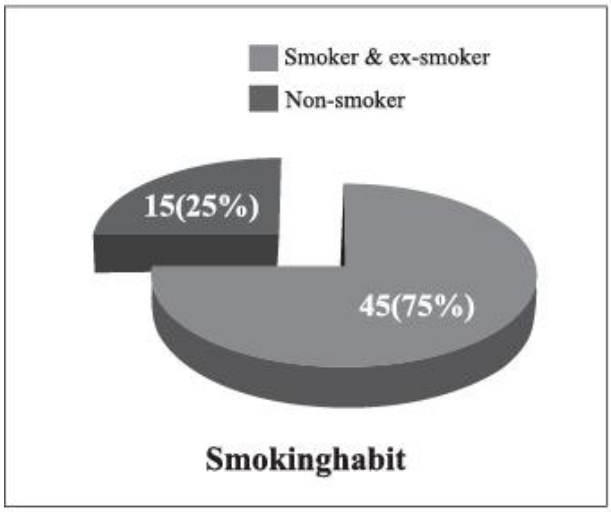

Figure-I: Smoking habit of the study population

Table-II: Radiological findings of the study population (n=60)

	Frequency	Percentage
Site of lesion		
Right	44	73.3
Left	16	26.7
X-ray findings		
Consolidation	19	31.7
Collapse	5	8.3
Effusion	21	35.0
Collapse & consolidation	6	10.0
Consolidation & effusion	9	15.0

Table-III: Histological type of the study population (n=60)

	Frequency	Percentage
Squamous cell carcinoma	30	50.0
Adenocaricnoma	27	45.0
Small cell carcinoma	3	5.0

Table-IV: Association of pulmonary symptoms and histological type of bronchial carcinoma (n=60)

Pulmonary symptoms	Histological type			p-value
	Squamous cell carcinoma (n=30)	Adenocaricnoma (n=27)	Small cell carcinoma (n=3)	
Cough	30 (100.0%)	21 (77.8%)	3 (100.0%)	0.017s
Dyspnoea	15 (50.0%)	15 (55.6%)	3 (100.0%)	0.251ns
Wheeze	12 (40.0%)	12 (44.4%)	0 (0.0%)	0.329ns
Chest pain	3 (10.0%)	6 (22.2%)	3 (100.0%)	0.001s
Haemoptysis	6 (20.0%)	3 (11.1%)	0 (0.0%)	0.487ns
Fever	18 (60.0%)	21 (77.8%)	3 (100.0%)	0.174ns
Loss of weight	27 (90.0%)	24 (88.9%)	3 (100.0%)	0.831ns
Loss of appetite	27 (90.0%)	21 (77.8%)	3 (100.0%)	0.329ns
Horseness	3 (10.0%)	0 (0.0%)	0 (0.0%)	0.206ns
Face & neck swelling	0 (0.0%)	6 (22.2%)	0 (0.0%)	0.017s

s= significant, ns= not significant

p value reached from chi square test

Table-V: Association of physical findings and histological type of bronchial carcinoma (n=60)

Physical findings	Histological type			p-value
	Squamous cell carcinoma (n=30)	Adenocaricnoma (n=27)	Small cell carcinoma (n=3)	
Anaemia	15 (50.0%)	6 (22.2%)	0 (0.0%)	0.038s
Clubbing	27 (90.0%)	15 (55.6%)	0 (0.0%)	0.001s
Palpable lymph node	0 (0.0%)	6 (22.2%)	0 (0.0%)	0.017s
Features of SVC obstruction	0 (0.0%)	6 (22.2%)	0 (0.0%)	0.017s
Feature of consolidation	12 (40.0%)	3 (11.1%)	0 (0.0%)	0.025s
Features of pleural effusion	3 (10.0%)	24 (88.9%)	3 (100.0%)	0.001s
Features of collapse	6 (20.0%)	0 (0.0%)	0 (0.0%)	0.036s
Hepatomegaly	0 (0.0%)	0 (0.0%)	3 (100.0%)	0.001s

s= significant

p value reached from chi square test

Table-VI: Association of X-ray findings and histological type of bronchial carcinoma (n=60)

X-ray findings	Histological type			p-value
	Squamous cell carcinoma (n=30)	Adenocaricnoma (n=27)	Small cell carcinoma (n=3)	
Consolidation	16 (53.3%)	3 (11.1%)	0 (0.0%)	0.001s
Collapse	5 (16.7%)	0 (0.0%)	0 (0.0%)	0.065ns
Effusion	0 (0.0%)	18 (66.7%)	3 (100.0%)	0.001s
Collapse & consolidation	6 (20.0%)	0 (0.0%)	0 (0.0%)	0.036s
Consolidation & effusion	3 (10.0%)	6 (22.2%)	0 (0.0%)	0.329ns

s= significant, ns= not significant
p value reached from chi square test

Discussion

Now a days, majority of cancer deaths are due to lung cancer.[12] Endobronchial lung biopsy is an effective and less invasive procedure useful for diagnosis of lung cancer. Lung cancer is a serious health problem and the leadingcause of cancer-related deaths worldwide. This reflectsdisparities in demographic variables, socioeconomic status, and geographic variations. That's why it is very much required to correlate epidemiology and clinico pathological profile for a better understanding of tumor biology, prevention, and control.

The age of the patients was ranging from 38 to 82 years with means age of 58.40(±10.20) years (mean ±standard deviation) table shows the distribution of age group., Forty -five percent of the patients were in the age group of 51 to 60 years, 25.0% were in the age group of 41 to 50 years, 15.0% were in 61-70 years, 10.0% were >70 years and 5.0% were in the age group of 30 to 40 years. Akl et al.[13] described that the incidence declined before the age of 40 with 5.9% of cases and after the age of 70 with 7.7% of cases, and no cases were found before age of 26 years, indicating that bronchogenic carcinoma was less common in these age groups. In a study done by Sarfrazet al.[5] reported that the majority of the cases, 67 (83.75%) were between 50 to 80 years with mean age of lung carcinoma patients were 59.9 years. This showed that lung cancer mostly occur in older age. Age group in the present study is comparable to the study conducted by Mandal et al.[14] which show that age ranged between 39 to 85 years

In this study out of 60 patients 48 (80.0%) patients were male and 12(20.0%) patients were female. Male: female ratio was 4.1: Similarly, Sarfraz et al.[5] revealed that 67 (83.7%) were males and 13 (16.3%) were females. Male to female ratio was 5.15:1.Aklet al.[13] obtained that male patients were predominant 82.2% and female was 17.8%. The sex ratio reported in various Indian studies ranged from 4.2:1 to 7:1.[15-17]

In this study 75.0% percents of the patients were smoker and ex-smoker and 25.0% were non-smoker. Thirty –five percent of the patients used 05 to 10 sticks/day, 25.0% of the patients used 11 to 20 sticks/day, 05.0% of the patients used 21 to 30 sticks/day, 10.0% of the patients used 30 to 40 sticks/day and another 25.0% were non smoker. Sixty percents of the patients used to smoke 31-30 yrs, 20% of the patients used to smoke 11-20 yrs, 13.3% of the patients used to up to 10 years and 6.7% of the patients used 31-40 yrs.Sarfraz et al.[5] described that seventy one (88.75%) patients were smokers. The smoker to non-smoker ratio was 7.8:1. The smoker to non-smoker ratio in the study was 7.8:1 which is comparable with the study by Rawatet al.[17] and Khan et al.[19] the risk of lung cancer development is 20-40 times higher in lifelong smokers compared to non-smokers.[20]

In this series cough (90.0%) was the most frequent pulmonary symptoms of bronchial carcinoma, followed by dyspnoea (55.0%), wheeze (40.0%), chest pain (20.0%) and haemoptysis (15.0%). This finding was similar to the study of Spiro et al.[21] where 60.0% patients of bronchial carcinaoma were presented as dyspnoea. Sarfraz et al.[5] study showed that the commonest symptom was cough present in 87.5% patients. This is comparable to various other studies.[17,22,23] Chest pain was present in 46.25% patients in over study. This is also comparable to various studies.[23,23] Various studies have reported haemoptysis in 11% to 24% lung cancer patients.[18,24] Akl et al.[13] reported that cough was the most common symptom (347 patients; 85.9%) and was followed by dyspnea (276 patients; 68.3%), expectoration (270 patients; 66.8%), chest pain (241 patients; 59.7%), hemoptysis (142 patients; 35.1%).

In this study it has been observed that 73.3% were right sided lesion and 26.7% were left sided lesion. In x-ray findings, 35.0% was found effusion followed by 31.7% consolidation, 15.0% consolidation & effusion (15%), 10.0% collapse & consolidation and 8.3% collapse. Sarfraz et al.[5] reported that right lung was most commonly involved 37 (67.3%) cases. Mass lesion was the most common radiological finding in 37 (67.3%) cases followed by collapse in 11 (20%) cases. Albasri[25] also observed that the right lung was involved in 53.9% of the cases, whereas the left lung was the most common site in 21.2% of the cases. In 24.9% of the cases, the side was not recorded.

In this study squamous cell carcinoma (50.0%) was the most common histological pattern of bronchial carcinoma, followed by adenocarcinoma (45.0%), small cell carcinoma (5.0%) and no any large cell carcinoma was found. Sarfraz et al.[5] revealed that squamous cell carcinoma was found to be the most common type of carcinoma lung and was found in 40 (50%) patients,

followed by small cell carcinoma which was present in 12 (15%) patient. Gupta et al.[17] also found that most common location of small cell carcinoma was central (50%). Adenocarcioma most commonly manifests as peripheral mass or a malignant pleural effusion. In present study adenocarcinoma constituted 5.45% of lung cancer, mostly present in upper zone (66.7%) and most commonly associated with pleural effusion. This is comparable with the study conducted by Rawat et al.[18] which observed that adenocarcinoma commonly manifested as peripheral mass or a malignant pleural effusion. In the cell type distribution reported by Radzikowska et al.[26] squamous cell carcinoma had the highest cell type incidence (52.1%) followed by small cell carcinoma (20.8%) while adenocarcinoma represented only 11.3% of the cases. According to Shetty et al.[27] study, squamous cell carcinoma also presented 44.5% of cases followed by adenocarcinoma (18.5%) and small cell carcinoma (17.2%). Albasri[25] reported that there were 66 (47.8%) cases of adenocarcinoma (AC), 35 (25.3%) cases of squamous cell carcinoma (SCC), 12 (8.7%) cases of neuroendocrine tumor (NET), 11 (8%) cases of metastatic carcinoma, 5 (3.6%) cases of lymphoma, 3 (2.2%) cases of sarcomatoid carcinoma, 3 (2.2%) cases of adenosquamous carcinoma, and 3 (2.2%) cases of large cell carcinoma. Another study done by Akl et al.[13] showed that most common histopathological cell type was squamous cell carcinoma (37.4%), followed by adenocarcinoma (29.5%), small cell carcinoma (14.9%), large cell carcinoma (7.2%) and undifferentiated carcinoma (11.1%).

Diagnostic procedure of bronchial carcinoma was bronchoscopy & biopsy (15.0%), followed by CT guided FNAC (50.0%), US guided FNAC (5.0%), pleural biopsy (5.0%), lymph node biopsy (20.0%) and pleural fluid (5%). Aklet al.[13] reported that bronchoscopic biopsy was positive in 107 of 151 patients (70.9%) of the squamous cell carcinoma cases. The cases of bronchogenic carcinoma that was diagnosed by CT guided biopsy were 86 cases (21.3% of all cases).

This study observed that all (100.0%) patients was found cough in squamous cell carcinoma, 21(77.8%) in adenocarcinoma and 3(100.0%) in small cell carcinoma. Three (10.0%) patients was found chest pain in squamous cell carcinoma, 6(22.2%) in adenocarcinoma and 3(100.0%) in small cell carcinoma. Six (22.2%) patients was found face & neck swelling in adenocarcinoma and not found in squamous cell carcinoma & small cell carcinoma respectively. Which were statistically significant ($p<0.05$) among three groups.

Present study observed that relation to anaemia ($p=0.0.04$), clubbing ($p=0.001$), feature of consolidation ($p= 0.025$) and features of collapse ($p=0.036$) in squamous cell carcinoma and not found in small cell carcinoma. Palpable lymph node ($p=0.017$), features of SVC obstruction ($p=0.017$) in relation to adenocaricnoma. Features of pleural effusion ($p=0.001$) in relation to adenocarcinoma and small cell carcinoma. Hepatomegaly ($p=0.001$) in relation to small cell carcinoma. Sarfraz et al.[5] reported that pleural effusion was observed in 12 (21.8%) cases, most of them having squamous cell carcinoma.

In this study observed that 16(53.3%) patients was found consolidation in squamous cell carcinoma, 3(11.1%) in adenocarcinoma and not found in small cell carcinoma. Eighteen (66.7%) patients was found effusion in adenocarcinoma, 3(100.0%) in small cell carcinoma and not found in squamous cell carcinoma. Six (20.0%) patients was found collapse & consolidation in squamous cell carcinoma and not found in adenocarcinoma & small cell carcinoma respectively. Which were statistically significant ($p<0.05$) among three groups. Sarfraz et al.[5] also noted that adenocarcinoma was most commonly associated with pleural effusion. Akl et al.[13] reported that pleural effusion was more frequent with adenocarcinoma, as 51% of cases that presented with pleural effusion were adenocarcinoma and this may be due to that most of adenocarcinoma located peripherally and it can cause pleural invasion. The cases of bronchogenic carcinoma that was diagnosed by CT guided biopsy were 86 cases (21.3% of all cases). Most cases that were diagnosed by FNAB (FNAB done under CT) was adenocarcinoma (38 patients; 44.2%), followed by squamous cell carcinoma (36 patients; 41.9%), while only 5 cases (5.8%) of the small cell carcinoma, 3 cases (3.5%) of the large cell carcinoma and 4 cases (4.7%) of the undifferentiated carcinoma were diagnosed by CT guided biopsy.

This study was conducted in a tertiary hospital only and may not reflect the actual situation of the country. This was a observational cross sectional study and sample size was small, may not give the actual conclusion.

Conclusion:

The results of this study showed that some correlation of clinical presentation with radiological and

histopathological pattern of bronchial carcinoma. In this study found association found between histological type with cough, chest pain, face and neck swelling, anaemia, clubbing, palpable lymph node, features of SVC obstruction, consolidation, feature of pleural effusion and collapse and hepatomegaly. This study also found association between histological type with following radiological findings such as consolidation, effusion and collapse & consolidation. Early detection and early treatment to reduce the morbidity and mortality associated with lung cancer in addition to imparting awareness on harmful effects of smoking and how to prevent the disease in general population is the need of this region. Furthermore, a longitudinal study using large sample size should be conducted to find out the magnitude of the lung cancer in our country.

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Original Article

Frequency of Obesity and Dyslipidemia in The Patients with Hypothyroidism

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Abstract:

Background: Hypothyroidism is a common endocrine disorder resulting from deficiency of thyroid hormone. Thyroid hormones have regulatory function on different metabolism in human. Hypothyroidism can lead to changes in lipid profile and BMI of people. The objective of the study was to evaluate the frequency of obesity and dyslipidemia in hypothyroid patients.

Objective: To evaluate the frequency of obesity and dyslipidemia in hypothyroid patients.

Materials and Methods: This was an observational cross-sectional study among purposively selected 96 patients diagnosed as hypothyroidism at Medicine and Endocrinology Department of Dhaka National Medical College & Hospital from August 2017 to September 2018. Analysis was done using the analytic software SPSS version 21.0.

Results: Age of the patients ranged from 21 to 60 years with a mean of 39.2±9.5 years. Majority of the patients were female (86.5%) and housewives (71.9%), belongs to middle class society (89.6%), age of the highest number of the patients were in 31-40 years of age group (37.5%). In the study, TSH (59.4%), FT3(87.5%) and FT4(86.5%) level was within normal range, categorized as subclinical hypothyroidism 86.5% of patient. BMI found as obese in majority of the patient, among them category I obesity, category II obesity and category III obesity were 46.9%, 32.3% and 5.2% respectively. Laboratory test results for lipid profile showed majority of the patient had desirable level of total cholesterol (62.5%), triglyceride level higher than normal level includes High level of triglyceride (33.3%) and Hypertriglyseridemic (39.6%). LDL cholesterol level was higher in more than half of the better outcome of patients comprising Near/above optimal, Borderline high, High and Very high. Majority (71.9%) of them had normal level of HDL cholesterol.

Conclusion: Subclinical hypothyroidism is more prevalent in the patients. Higher proportion of them have elevated level of triglyceride and LDL cholesterol. Obesity is more common in hypothyroidism patients. Proper management of dyslipidemia and obesity is recommended for the patients with hypothyroidism.

Keywords: Hypothyroidism, Obesity, Dyslipidemia.

Introduction

Hypothyroidism is a common endocrine disorder resulting from deficiency of thyroid hormone. It usually is a primary process in which the thyroid gland is unable to produce sufficient amounts of thyroid hormone.[1,2] Hypothyroidism may be either subclinical or overt. Subclinical hypothyroidism is defined as an elevated serum TSH level, usually above 10 mIU/L, associated with normal total or T4 and T3 values. An elevated TSH, usually above 10 mIU/L, in combination with a subnormal free T4 characterizes overt hypothyroidism.[3] The frequency of hypothyroidism increases with age. Hypothyroidism is most prevalent in elderly populations, with 2-20% of older age groups having some form of hypothyroidism.[4] The Framingham study found hypothyroidism in 5.9% of women and 2.4% of men older than 60 years'.[5] Overt hypothyroidism increases the TC and LDL-C.[6] It is characterized by hypercholesterolemia and a marked increase in LDL because of a decreased fractional clearance of LDL by a reduced number of LDL receptors in the liver. However, the controversy persists regarding the lipids level in

subclinical hypothyroidism and its clinical significance. Thyroid dysfunction is associated with changes in body weight and composition, body temperature, and total and resting energy expenditure independently of physical activity. Thyroid function tests in people who are morbidly obese may differ from those in a comparable group of lean people, with a serum TSH that is higher in the obese, but with no tendency of FT3 and FT4 in serum to be low in the obese. On the contrary, FT3 and also in some studies FT4 in serum tends to be higher in obese people. The pattern has been most clearly observed in overweight children and adolescents, where the frequency of underlying thyroid disease in the population is much lower than in adults.[7]

Materials and Methods

This was an observational cross-sectional study. The patient was selected by purposive sampling method. Duration of the study was from November 2017 to September 2018. The study population was the patients with diagnosed Hypothyroidism by medicine consultant at Medicine Department and registered endocrinologist at Endocrinology Department of Dhaka National Medical College & Hospital (DNMC&H), Dhaka, Bangladesh. A total Number of 96 patients were included in this study.

Results

Table-I showed the socio-demographic characteristics of the respondents. The patients age ranged from was 21 years to 60 years with a mean of 36.2±9.5 years. Largest number of the patients were from 31-40 years of age group (37.5%) followed by 21-30 years (35.4%). The male female ratio was 1:6.38.

Table-I: Socio-demographic characteristics of the respondents. (N=96)

Characteristics	n	Percentage (%)
Age in years		
21-30 yrs.	34	35.4
31-40 yrs.	36	37.5
>40 yrs.	26	27.1
Mean ±SD	36.20±9.496	
Sex		
Male	13	13.5
Female	83	86.5

Table-II showed that about two-third of the patients were already suffering from hypothyroidism (74.0%) and remaining one-third were newly diagnosed (26,0). The highest proportion of patients was suffering from hypothyroidism for 1-3 years (41.7%) followed by more than 3 years (32.3%).

Table-II: Personal history of hypothyroidism. (N=96)

Personal history	n	Percentage (%)
Previous history of hypothyroidism		
Yes	71	74.0
No	25	26.0
Duration of hypothyroidism in years		
New diagnosed	25	26.0
1-3	40	41.7
>3	31	32.3
History of taking drug for thyroid dysfunction management		
Yes	71	74.0
No	25	26.0

Table-III showed that only 8.3% patients had family history of thyroid dysfunction and others did not have any family history (91.7%) of thyroid dysfunction. No known case of family history of dyslipidemia among the respondents. Majority (69.8%) of the patients did not know about their family history of dyslipidemia.

Table-III: Family history of thyroid dysfunction and dyslipidemia. (N=96)

Family history	n	Percentage (%)
Family history of thyroid dysfunction		
Yes	8	8.3
No	88	91.7
Don't know	0	0.0
Family history of dyslipidemia		
Yes	0	0.0
No	29	30.2
Don't know	67	69.8

Table IV showed that highest (59.4%) of the patients had normal TSH level, FT3 level of the majority (87.5%) of the patients was normal and majority (81.3%) of them had normal level of FT4

Table-IV: Thyroid function test. (N=96)

Thyroid function test	n	Percentage (%)
TSH		
Normal (0.2 -4.5 mIU/L)	57	59.4
Elevated (> 4.5 mIU/L)	39	40.6
Mean ±SD	4.68±3.44	
Free T3		
Normal (0.16 – 0.4 ng/dl)	84	87.5
Low (< 0.16 ng/dl)	12	12.5
Mean ±SD	0.24±0.067	
Free T4		
Normal (0.7 – 1.63 ng/dl)	83	86.5
Low (<0.7 ng/dl)	13	13.5
Mean ±SD	1.04±0.37	

Table-V showed that majority (62.5%) of the patients had total cholesterol level within desirable level. Hypertriglyseridemic was found in highest (39.6%) of the patients. Optimum LDL cholesterol was found in highest (44.8%) of the patients followed by near/above optimal level (30.2%). Majority (71.9%) of them had normal level of HDL cholesterol.

Table-V: Serum lipid profile of the respondents. (N=96)

Serum lipid profile	n	Percentage (%)
Total cholesterol		
Desirable: <200 mg/dL	60	62.5
Borderline high: 200-239 mg/dL	25	26.0
High: >239 mg/dL	11	11.5
Mean ±SD	197.44±38.39	
Triglyceride		
Normal: <150 mg/dL	26	27.1
High: 150-199 mg/dL	32	33.3
Hypertriglyseridemic:200-499 mg/dL	38	39.6
Very high: >499 mg/dL	0	0.0
Mean ±SD	184.96±53.93	
LDL cholesterol		
Optimal: <100 mg/dL	43	44.8
Near/above optimal: 100-129 mg/dL	29	30.2
Borderline high: 130-159 mg/dL	16	16.7
High: 160-189 mg/dL	6	6.3
Very high: >189 mg/dL	2	2.1
Mean ±SD	184.96±53.93	
HDL cholesterol		
Normal: ≥40 mg/dL	69	71.9
Low: <40 mg/dL	27	28.1
Mean ±SD	43.87±8.48	

Table-VI showed that there was no association between category of hypothyroidism and BMI.

Table-VI: Association between category of hypothyroidism and BMI. (N=96)

Category of hypothyroidism	BMI				Chi-square value	Degree of freedom (df)	P-value
	Frequency	Category-I Obesity	Category-II Obesity	Category-III Obesity			
	n(%)	n(%)	n(%)	n(%)			
Overt hypothyroidism	1 (7.7)	6 (46.2)	4(30.8)	2(15.4)	3.608	3	0.307
Subclinical hypothyroidism	14(16.9)	39(47.0)	27(32.5)	3(3.6)			

Table-VII showed that there was no association between category of hypothyroidism and total cholesterol.

Table-VII: Association between category of hypothyroidism and total cholesterol. (N=96)

Hypothyroidism Category	Total cholesterol			Chi-square value	Degree of freedom (df)	P-value
	Desirable	Boarder line high	High			
	n(%)	n(%)	n(%)			
Overt hypothyroidism	11(84.6)	0(0.0)	2 (15.4)	5.295	2	0.071
Subclinical hypothyroidism	49(59.0)	25(30.1)	9 (10.8)			

Table-VIII showed that there was no association between category of hypothyroidism and triglyceride.

Table-VIII: Association between category of hypothyroidism and triglyceride. (N=96)

Category of hypothyroidism	Triglyceride			Chi-square value	Degree of freedom (df)	P-value
	Normal	High	Hypertriglyceridemic			
	n(%)	n(%)	n(%)			
Overt hypothyroidism	4 (30.8)	3 (23.1)	6 (46.2)	0.714	2	0.700
Subclinical hypothyroidism	22 (59.0)	29 (30.1)	32 (10.8)			

Discussion

Thyroid disorders are among the most common endocrine disorders and usually alter lipid metabolism. In our study subclinical hypothyroidism is more

common than overt hypothyroidism. It is being diagnosed more frequently with great awareness than overt hypothyroidism these days. In our study, mean age of the hypothyroid patients was of 36 years that has similarity with the study of Sharma et al.[8] and less than what was found by Sadariya et al.[9] suggesting that more patients of hypothyroidism seeking healthcare is around 40 years of age group. As at this age group of people are more prone to cardiovascular complications and other problems. In the study, hypothyroidism patients comprise 86.5% women and 13.5% men, male to female ratio was 1:6.[10] which had similar male to female ratio of 1:7 as a previous study[10] which shows that hypothyroidism is more common in women than in men. One of the most common causes of hypothyroidism in women is the autoimmune disease called Hashimoto's disease, in which antibodies gradually target the thyroid and destroy its ability to produce thyroid hormone, pregnancy and menopause are other factors those increases the prevalence of hypothyroidism in female.[12] Majority of the respondents in the study were suffering from subclinical hypothyroidism. Pirich et al.[13] reported an incidence of 1.1% for newly diagnosed subclinical hypothyroidism and no case of overt hypothyroidism. Hypothyroidism and obesity frequently co-existed in varying degree of severity. Hypothyroidism leads to increased body weight by increasing mucin deposits in skin and other organs and by salt and water retention. Subtle elevation of TSH is associated with measurable deficiency in resting energy expenditure and increased body weight.[14] In the present study the mean total cholesterol value was 197 mg/dL, which had similarity with some other studies found higher level of total cholesterol.[15] The mean serum triglyceride value was 185 mg/dL, majority of the patient in present study had higher level of triglyceride.

Conclusion

The study demonstrates that subclinical hypothyroidism is more prevalent in relation to overt hypothyroidism. A higher proportion of patients have elevated level of lipid especially triglyceride and LDL cholesterol. Obesity is also very common among the hypothyroidism patients. Therefore, it may be a good practice to screen patients with hypothyroidism for evidence of dyslipidemia and obesity. More studies are required to find out the actual scenario of obesity and lipid profile among the hypothyroid patient and find out the correlation and association.

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Original Article

Anemia of Inflammation & Health-Related Quality of Life in Chronic Kidney Disease

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Abstract:

Background: Anemia is a common comorbidity of chronic kidney disease (CKD). As the diseased kidney loses its ability to produce the erythropoietin essential to the production of hemoglobin, anemia ensues. Anemia is observed in the course of chronic kidney disease (CKD) and it is associated with diminishing the quality of a patient's life. Moreover, it enhances morbidity and mortality and hastens the CKD progression rate.

Objective: To analyze the health-related quality of life (HRQOL) in anemic CKD patients with the effects of anemia and inflammation

Methods: This cross-sectional study was conducted in the Department of Nephrology, (Dhaka national medical college and hospital), Dhaka, for 2 years; from January 2018 to December 2019. A total of 50 subjects fulfilling the inclusion criteria were enrolled as study subjects.Data were processed and analyzed using the software SPSS (Statistical Package for Social Sciences) version 11.5.

Result: Among the study subjects, most patients (30, 60.0%) belonged to the age group of > 55 years, followed by 15 (30.0%) patients were from 50-55 years of age and the rest 5 (10.0%) patients were from 45-50 years of age. About 60% of the patients were male and 40% were female in this study.Concerning the degree of anemia, most of the patients (25, 50.0%) suffered from severe anemia followed by 17 (34.0%) patients had moderate anemia, and the rest 8 (16.0%) patients had mild anemia.According to extent of CKD, most of the patients (25,50.0%) had stage 5 CKD (ESRD), followed by 15 (30.0%) patients had stage 3 CKD, and the rest 10 (20.0%) patients suffered from stage 4 kidney disease. Among the patients who had stage 3 kidney disease, 8 (16.0%) patients had mild anemia, followed by 4 (8.0%) patients had moderate anemia, and the rest 3 (6.0%) patients had severe anemia. Among the patients with stage 4 CKD, 6 (12.0%) patients had moderate anemia and 4 (8.0%) patients had severe anemia. Among the patients who had the end-stage renal disease (ESRD) or stage 5 CKD, 7 (14.0%) patients had moderate anemia and 18 (36.0%) patients had severe anemia.Considering inflammatory parameters according to the degree of anemia, the neutrophil count was <6000 U/L, 6000-6500 U/L, and 6500-7500 U/L in mild, moderate, and severe anemia respectively. Lymphocyte count was <5000 U/L, 5000-5400 U/L, and 5000-5500 U/L in mild, moderate, and severe anemia respectively. CRP (mg/dl) level was 0.9- 2 in mild anemia, 5-40 in moderate anemia, and 10-50 in severe anemia.

Conclusion: This study highlighted the profound impact of CKD on health-related quality of life (HRQOL) and potential areas that can be targeted for therapeutic intervention. Furthermore, this study showed, chronic diseases can lead to an inflammatory process which ultimately results in anemia through various mechanisms. Moreover, early identification and correction of anemia may improve the quality of life.

Keywords: CKD, ESRD, Anemia, Inflammation.

Introduction

The annual mortality rate associated with cardiovascular diseases (CVD) in chronic kidney disease (CKD) patients is approximately 9%, which is almost

10–20 times higher than in the general population.[1] International guidelines define this condition as decreased kidney function shown by a glomerular filtration rate (GFR) of less than 60 mL/min/ 1.73 m^2, or markers of kidney damage, or both, of at least 3 months duration, regardless of the underlying cause. The best available indicator of overall kidney function is GFR.[2] Most patients with chronic kidney disease eventually become anemic.[3] Many factors contribute to declining hemoglobin as CKD progresses, but impaired production of erythropoietin by failing kidneys is a central cause. Hepcidin-mediated iron restriction also contributes to anemia by downregulating both intestinal iron absorption and the release of stored iron for erythropoiesis. The core components of anemia management remain erythropoiesis-stimulating agents (ESA) and iron supplementation.[4] Hemoglobin levels in individuals with chronic kidney disease fluctuate frequently above or below the recommended target levels within short periods even though the calculated mean hemoglobin remains within the target range of 11 to 12 g/dl.[5] Inflammation causes an increase in the production of hepcidin, which is a potent mediator of anemia of chronic diseases. Anemia in chronic kidney disease is mainly due to erythropoietin deficiency but these patients often have a chronic inflammatory state.[6] Inflammation is an immune response to injury and infection. The inflammatory process causes hypoferremia as an acute-phase response to fight against infection. It involves the secretion of cytokines to regulate iron redistribution, creating hypoferremia that delays pathogen growth, thereby causing the invaders to be engulfed by phagocytes. The manifestation of the pro-inflammatory process in a spectrum results in variation in hepcidin levels and the magnitudes of anemia phenotype. Anemia of chronic disease (ACD), therefore, is caused by a complex interplay of proinflammatory cytokines which induce dysregulation in iron homeostasis, erythroid progenitor cell differentiation, erythropoietin synthesis, and red cell longevity, all culminating in the pathogenesis of anemia.[7] Several studies noticed a progressive decline in HRQOL with worsening renal function. Furthermore, HRQOL was found to decline over time, with the main predictors of this decline being age, co-morbidities, and changes in hemoglobin and albumin levels.[8] This study aimed to analyze the health-related quality of life (HRQOL) in anemic CKD patients with the effects of anemia and inflammation.

Material & Methods

This cross-sectional study was conducted in the Department of Nephrology, Dhaka National Medical College and Hospital(DNMC), Dhaka, for 2 years; from January 2018 to December 2019. A total of 50 subjects fulfilling the inclusion criteria were enrolled as study subjects.Written consent was obtained from each subject.Patients older than 44 years & who had given consent to participate were included in the study. Patients who had other chronic diseases except for CKD. & who did not give consent were excluded from the study. A structured questionnaire (research instrument) was developed containing all the variables of interest. All patients underwent necessary laboratory investigations. Data were processed and analyzed using the software SPSS (Statistical Package for Social Sciences) version 11.5. For all analytical tests, the level of significance was set at 0.05, and $p < 0.05$ was considered significant. Prior permission was taken for this study from the Ethical Committee of Dhaka National Medical College and Hospital, Dhaka, Bangladesh.

Results

Among the study subjects, most patients (30, 60.0%) belonged to the age group of > 55 years, followed by 15 (30.0%) patients from 50-55 years of age and the rest 5 (10.0%) patients were from 45-50 years of age. [Table-I] About 60% of the patients were male and 40% were female in this study.[Figure-I] Concerning the degree of anemia, most of the patients (25, 50.0%) suffered from severe anemia followed by 17 (34.0%) patients had moderate anemia, and the rest 8 (16.0%) patients had mild anemia. [Table-II] According to extent of CKD, most of the patients (25,50.0%) had stage 5 CKD (ESRD), followed by 15 (30.0%) patients had stage 3 CKD and the rest 10 (20.0%) patients suffered from stage 4 kidney disease. [Table-III] Among the patients who had stage 3 kidney disease, 8 (16.0%) patients had mild anemia, followed by 4 (8.0%) patients had moderate anemia and the rest 3 (6.0%) patients had severe anemia. Among the patients with stage 4 CKD, 6 (12.0%) patients had moderate anemia and 4 (8.0%) patients had severe anemia. Among the patients who had the end-stage renal disease (ESRD) or stage 5 CKD, 7 (14.0%) patients had moderate anemia and 18 (36.0%) patients had severe anemia. [Table-IV] Considering inflammatory parameters according to the degree of anemia, the neutrophil count was <6000 U/L, 6000-6500 U/L, and 6500-7500 U/L in mild, moderate,

and severe anemia respectively. Lymphocyte count was <5000 U/L, 5000-5400 U/L, and 5000-5500 U/L in mild, moderate, and severe anemia respectively. CRP (mg/dl) level was 0.9-2 in mild anemia, 5-40 in moderate anemia, and 10-50 in severe anemia. [Table-V]

Table-I: Distribution of age of the study subjects. (N=50)

Age (years)	Percentage	Percentage %
45-50	05	10.0
50-55	15	30.0
>55	30	60.0

Figure-I: Distribution of subjects according to sex. (N=50)

Table-II: Distribution of patients according to the degree of anemia. (N=50)

Degree of anemia	Percentage	Percentage %
Mild	08	16.0
Moderate	17	34.0
Severe	25	50.0

Table-III: Distribution of respondents according to the degree of CKD. (N=50)

Stage of CKD	Percentage	Percentage %
Stage 3	15	30.0
Stage 4	10	20.0
Stage 5 (ESRD)	25	50.0

Table-IV: Distribution of patients according to eGFR and degree of anemia. (N=50)

eGFR	Degree of anemia		
	Mild (%)	Moderate (%)	Severe (%)
Stage-3 (30-59 ml/min)	8 (16.0)	04 (8.0)	03 (6.0)
Stage-4 (15-29 ml/min)	0 (0.0)	06 (12.0)	04 (8.0)
Stage-5 (<15 ml/min)	0 (0.0)	07 (14.0)	18 (36.0)

Table-V: Distribution of inflammatory parameters according to the degree of anemia. (N=50)

Inflammatory parameters	Mild anemia	Moderate anemia	Severe anemia
Neutrophil count (U/L)	<6000	6000-6500	6500-7500
Lymphocyte count (U/L)	<5000	5000-5400	5000-5500
Total WBC count (U/L)	<11000	11500-1200	12000-15500
CRP (mg/dl)	0.9-2	5-40	10-50

Discussion

Among the study subjects, most patients (30, 60.0%) belonged to the age group of > 55 years, followed by 15 (30.0%) patients from 50-55 years of age and the rest 5 (10.0%) patients were from 45-50 years of age. About 60% of the patients were male and 40% were female in this study which was found similar to other studies.[9,10] Concerning the degree of anemia, most of the patients (25, 50.0%) suffered from severe anemia followed by 17 (34.0%) patients had moderate anemia, and the rest 8 (16.0%) patients had mild anemia in this study. Another study showed various extents of anemia in patients with chronic disease.[11] According to extent of CKD, most of the patients (25,50.0%) had stage 5 CKD (ESRD), followed by 15 (30.0%) patients had stage 3 CKD, and the rest 10 (20.0%) patients suffered from stage 4 kidney disease.Among the patients who had stage 3 kidney disease, 8 (16.0%) patients had mild anemia, followed by 4 (8.0%) patients had moderate anemia, and the rest 3 (6.0%) patients had severe anemia. Among the patients with stage 4 CKD, 6 (12.0%) patients had moderate anemia and 4 (8.0%) patients had severe anemia. Among the patients who had the end-stage renal disease (ESRD) or stage 5 CKD, 7 (14.0%) patients had moderate anemia and 18 (36.0%) patients had severe anemiain the present study.According to another study, Anemia was twice as prevalent in people with CKD (15.4%) as in the general population (7.6%). The prevalence of anemia increased with stage of CKD, from 8.4% at stage 1 to 53.4% at stage 5. A total of 22.8% of CKD patients presented with anemia.[12] Considering inflammatory parameters according to the degree of anemia, the neutrophil count was <6000 U/L, 6000-6500 U/L, and 6500-7500 U/L in mild, moderate, and severe anemia respectively. Lymphocyte count was <5000 U/L, 5000-5400 U/L, and 5000-5500 U/L in mild, moderate, and severe anemia respectively. CRP (mg/dl) level was 0.9-2 in mild anemia, 5-40 in moderate anemia, and 10-50 in severe anemia, which was quite similar to a study conducted by another author.[13] Another author stated,

inflammation has been found in ~35 to 65% of hemodialysis patients with CKD.[14] Another study stated that ESRD patients with NLR ≥ 3.5 had significantly higher TNF-α levels when compared with patients with NLR < 3.5.[15] According to a study, up to 40% of all anemias worldwide can be considered AI (Anemia of Inflammation) or combined anemias with important AI contributions, which, in total, account for >1 billion affected individuals.[16] An association between raised NLR and increased concentrations of pro-inflammatory cytokines was reported in a study. The association between the leukocyte ratios and outcomes in various critically ill patients has also been reported in that study. It was suggested that the ratios may be predictive of patients' response to inflammatory insult, with neutrophils increasing due to stress and lymphocytes decreasing in the population due to apoptosis.[17] Regarding the quality of life in CKD patients with anemia, a study stated that, maximal improvement in HRQOL occurred in the range of 10.0–12.0 g/dL, with blunting of the beneficial effects at higher levels. Although the favorable effect of anemia correction on HRQOL is well recognized, the endeavor to identify optimal hemoglobin targets that limit the adverse outcomes in patients persists.[8]

Conclusion

Anemia of chronic disease (as in CKD) is caused by a complex interplay of proinflammatory cytokines which induce dysregulation in iron homeostasis, erythroid progenitor cell differentiation, erythropoietin synthesis, and red cell longevity, all culminating in the pathogenesis of anemia. This study highlighted the profound impact of CKD on HRQOL and potential areas that can be targeted for therapeutic intervention. Furthermore, this study showed, chronic diseases can lead to an inflammatory process which ultimately results in anemia through various mechanisms. Moreover, early identification and correction of anemia may improve the quality of life.

Recommendation

More studies in multiple centers with a large sample size will be needed to get robust data for all components of HRQOL in CKD and to demonstrate the components which are responsible for anemia of inflammation in chronic kidney disease. Early identification and correction may improve the overall well-being of patients. Clinical trials are required to demonstrate whether treatment interventions benefit HRQOL in this high-risk population.

Limitations of the Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Original Article

Subarachnoid Fentanyl as Adjuvant to Hyperbaric BupivacainePrevents Perioperative Shivering Among Parturient Undergoing LUCS Under Spinal Anaesthesia- A Prospective Study

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Abstract:

Background: Post Spinal Anaesthesia Shivering (PSAS) is one of the most common problems during spinal anaesthesia. Shivering is being treated with some drugs.

Objective: To evaluate the efficacy of intrathecal fentanyl in prevention of shivering in patients undergoing LUCS under spinal anaesthesia.

Methodology: This prospective study was done among 60 patients of ASA I and II divided into two groups of 30 each. Group A was given a combination of 10 mg (2 mL) of hyperbaric 0.5% bupivacaine with 25 µg (0.5mL) fentanyl intrathecally and group B was given only 10 mg (2 mL) of hyperbaric 0.5% bupivacaine. Shivering was observed in both groups for 3 hours.

Results: Among the 30 patient of group A only 3 patients (10%) developed shivering whereas among the 30 patient of group B 18 patients (60%) developed shivering. So the incidence of shivering in Group A was significantly lower than Group B.

Conclusion: Intrathecal fentanyl is effective in decreasing the frequency of perioperative shivering in parturient undergoing LUCS under spinal anaesthesia.

Key Words: Intrathecal Fentanyl, LUCS, Shivering, Spinal anaesthesia.

Introduction

Spinal anaesthesia is a popular & preferred technique for caesarean section due to its safety profile. Although it is linked with some adverse effects such as hypotension, bradycardia, nausea & vomiting.[1,2] Among them shivering is one of the common complication in spinal anaesthesia and its incidence is around 56.7%.[3] Shivering increases oxygen consumption, lactic acidosis, carbon dioxide production and cardiac workload.[4] It is an unpleasant experience which leads to patient discomfort and interfere with electrocardiography and pulse oximetry monitoring.[5,6] Prevention has always been preferred over cure. Different drugs have been used for prevention of shivering e.g, intrathecal dexmedetomidine, intrathecal Imeperidine, intravenous Tramadol etc. but all of them have some adverse effect on mother and baby.[7,4]

Fentanyl, a synthetic opioid analgesic, is very popular for its rapid onset and shorter duration of action following intrathecal administration.[8,9] Intrathecal administration of 10-40 µg Fentanyl along with Bupivacaine has been found to be very effective in minimizing shivering during and after cesarean section without increasing serious adverse effects.[9-13]

The aim of our study was to evaluate the effect of intrathecal fentanyl (25 µg) as adjuvant to hyperbaric Bupivacaine on incidence of perioperative shivering during spinal anesthesia for cesarean section. The severity of shivering and side effects of fentanyl (nausea, vomiting, itching and hypotension) were also investigated.

Methods:

This prospective randomized clinical trial was performed in Dhaka National Medical College Hospital, Dhaka from June 2022 to December 2022. This clinical trial was approved by the institutional ethics committee. Informed written consent was taken from 60 healthy women based on American Society of Anesthesiologists classification system (ASA Physical

status I and II) scheduled for elective term cesarean section under spinal anesthesia. Patient with contraindication to spinal anesthesia (coagulopathy, infection in the spinal site, patient refuse, and increased intracranial pressure), previous history of allergic reaction to the local anesthetics, fentanyl and pethidine were excluded. This 60 parturient were randomly divided in two groups, A (bupivacaine + fentanyl) & B (only bupivacaine) group, each having 30 patients.

Patients were monitored by pulse oximetry and noninvasive blood pressure every three minutes, and venous access was obtained in the upper limb with a 20G catheter. Patients were preloaded with 500 mL intravenous Ringer's lactate at room temperature immediately before the spinal anesthesia. Axillary temperature of patients were measured by digital thermometer with the arm held close to the body. The ambient temperature was maintained at 22-24°C. Spinal anesthesia was performed in sitting position at L3-L4 with a 25G Quincke (B.Braun Germany) spinal needle. A combination of 10 mg (2mL) of hyperbaric 0.5% Bupivacaine with 25 µg (0.5mL) fentanyl was administered intrathecally in group A and only 10 mg (2 mL) of hyperbaric 0.5% Bupivacaine was administered intrathecally in group B. Subsequently, patients were placed in the supine position with lateral deviation of the uterus to the left using a wedge under the right hip. Supplemental oxygen was given via a nasal cannula at the rate of 3 lit/min during the operation. After blockade, hydration with 10 mL/kg/hr of Ringer lactate was maintained. Sensory analgesia was evaluated by pinprick before the start of surgery. After birth, 1 g of Ceftriaxone and 10 units of oxytocin in 500 ml of Ringer lactate were administered by infusion.

To determine the incidence of shivering, the scale proposed by Crossley and Mahajan was used.[14] 0 = no shivering; 1 = One or more of the following: piloerection, peripheral vasoconstriction, peripheral cyanosis with no other cause, but no muscular activity; 2 = visible muscular activity confined to one muscle group; 3 = visible muscular activity in more than one muscle. Perioperative side effects such as hypotension (SBP <30% from baseline or <80 mmHg), bradycardia (HR <60 bpm), oxygen desaturation (SpO2 <90%), respiratory depression (RR <12 bpm) and hypothermia (temperature <35°C) and itching were recorded and treated accordingly. Observation of both groups was done for 3 hours.

Results:

Sixty parturient were involved in this study. There were no significant differences in age, BMI, NPO time, surgical time, perioperative IV fluid, height of sensory block or body temperature between the two groups prior to anesthesia. The total incidence of shivering in Group A was significantly lower than Group B (3 of 30 patients, 10% in group A and 18 of 30 patient, 60% in group B). Almost all shivering patients started shivering in the first hour after spinal anesthesia. During the operation, there was a little bit difference in the incidence of Bradycardia or vomiting between the two groups but 5 patients of group A develop pruritus. Hypotension develops in only 6 patients of group A and 12 patients of group B. None developed respiratory depression.

Table-I: Demographic characteristics of patients among groups

	Group- A Bupivacaine + Fentanyl) (n= 30)	Group- B (Only Bupivacaine) (n= 30)
Age (years)	26.4± 6.3	25.7±5.7
Weight (kg)	65.3± 10.5	66.2 ± 11. 0
Gestational age (weeks)	39.2 ± 1.1	39.3 ± 1.0
ASA I/II	26/4	25/5
Duration of surgery (min)	52.5 ± 15.1	51.3 ± 14.9
Perioperative IV fluid (ml)	1550 ± 272	1600 ± 220

Table-II: Frequency of Shivering

Shivering	Group- A Bupivacaine + Fentanyl) (n= 30)		Group- B (Only Bupivacaine) (n= 30)	
	Number	%	Number	%
Present	3	10	18	60
Absent	27	90	12	40

Table-III: Comparison of side effects among groups

	Group- A Bupivacaine + Fentanyl) (n= 30) Number	Group- B (Only Bupivacaine) (n= 30) Number
Bradycardia	2	3
Hypotension	6	12
Nausea and Vomiting	3	5
Respiratory depression	0	0
Pruritis	5	0

Discussion:

The actual mechanism of shivering under spinal anesthesia is not clear. The factors that decrease

the core temperature such as sympathetic blockage which results in peripheral vasodilatation, increased cutaneous blood flow, and subsequently increased heat loss via the skin,[15] decreased operating room temperature, rapid IV infusion,[16] the direct effects of cold anesthetic solutions upon thermo sensitive structures within the spinal cord.[17] Shivering increases metabolic heat production. In addition to heat rising, there is marked increase in oxygen consumptions and carbon dioxide production with potential risk of complications in patient with cardiovascular or pulmonary impairment.[18] Many pharmacological agents have been used for the prevention and treatment of shivering. Intrathecal dexmedetomidine, meperidine and intravenous drugs including magnesium sulfate, clonidine, opioids, physostigmine, ondansetron and ketanserin has been suggested for treatment of shivering.[19]

Fentanyl is a highly ionized, lipophilic μ receptor agonist that provide faster onset of action (5-10 minutes) but, with shorter duration of action (4-6 hours). When it is administered intrathecally, the unionized component is rapidly transferred into the spinal cord and affect afferent thermal inputs at the spinal cord and reduction of shivering occurs.[20] Our study results also manifested that the addition of 25μg fentanyl to hyperbaric bupivacaine for spinal anesthesia in patients undergoing cesarean section, reduces the incidence and severity of perioperative shivering. It is shown that fentanyl can reduce the intensity and severity of shivering up to 3 hr after spinal anesthesia.

Our result is similar to the results presented by Sadegh A et al.[20] & Techanivate et al.[21] They performed their study on 80 & 60 patients respectively and found that frequency of shivering was significantly less in fentanyl group.

Chow et al.[22] demonstrated that addition of even 1.25 μg fentanyl reduces the incidence of shivering in TURP under spinal anaesthesia.

Though SafaviM et al.[23] demonstrated that there is no significant difference between intrathecal fentanyl and intrathecal meperidine for reducing shivering, but their study used 20 μg fentanyl added to 3 ml of bupivacaine 0.5%.

The incidence of pruritis with the administration of opioid into the subarachnoid space was not uncommon. In our study 5 patients of group A developed pruritus. Similar investigations were also found by other researchers.[24,12] On the contrary, some studies had shown non-signified pruritis who received less than 25 μg of intrathecal fentanyl.[25,26] One of the possible mechanism might be that none of these studies have measured pruritis as the main outcome.

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Conclusion

From this study we can conclude that intrathecal administration of fentanyl is very useful to reduce the frequency of shivering among parturient undergoing LUCS under spinal anaesthesia, without increasing any side effect.

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Original Article

Profile of individuals with cardiomyopathy patients

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Abstract:

Objective: To find out the socio-demographic and clinical profile of patients with cardiomyopathy in a tertiary care teaching hospital in Bangladesh.

Methods: A descriptive, cross sectional study was conducted from July 2022 to December 2022 among 50 patients attending at Cardiology Outpatient Department of the Cumilla Medical College Hospital after obtaining requisite consent from the patients. Data were collected through the interviewing of the patients. The collected data were entered into the computer and analyzed by using SPSS (version 20.1) to know the socio-demographic and clinical profile of patients with cardiomyopathy in a tertiary care hospital. The study was approved by the institutional ethical committee.

Results: In a pool of 50 cardiomyopathic patients, 26 (52%) patients belong to 61-70 years old. More than half of the respondents were male (n=31, 62%). Overall, 33 (66%) patients have ejection fraction (LVEF) >25% while 17 (34%) patients have ejection fraction (LVEF) <25%. Pedal edema was the most commonly associated findings (66%) with cardiomyopathy followed by hypertension (46%), diabetes mellitus (42%) and dyslipidaemia (38%)

Conclusion: Present study concluded that most of the patients of cardiomyopathy were male and belonged to age 61-70 year age group.

Keywords: Cardiomyopathy patients, Ejection Fraction.

Introduction

Cardiomyopathies are defined as diseases of the myocardium associated with cardiac dysfunction. They are classified as dilated cardiomyopathy, hypertrophic cardiomyopathy, restrictive cardiomyopathy, and arrhythmogenic right ventricular cardiomyopathy.[1] Dilated Cardiomyopathy (DCM) is a disease of the heart muscle characterized by enlargement and dilation of one or both of the ventricles along with impaired contractility defined as left ventricular ejection fraction (LVEF) less than 40%. By definition, patients have systolic dysfunction and may or may not have overt symptoms of heart failure. This disease process can be classified as either primary or secondary DCM. Primary DCM is considered idiopathic and the diagnosis can only be made after excluding secondary causes. In most cases DCM is progressive, leading to heart failure and death. Without a transplant, the survival rates are poor.[2] Hypertrophic cardiomyopathy (HCM) is a genetic disorder that is characterized by left ventricular hypertrophy unexplained by secondary causes, and a non-dilated left ventricle with preserved or increased ejection fraction. It is commonly asymmetric with the most severe hypertrophy involving the basal interventricular septum. In the majority of patients, HCM has a relatively benign course. However, HCM is also an important cause of sudden cardiac death, particularly in adolescents and young adults. Mutations in over a dozen genes encoding sarcomere-associated proteins cause HCM. MYH7 and MYBPC3, encoding -myosin heavy chain and myosin binding protein C, respectively, are the two most common genes involved, together accounting for about 50% of the HCM families.[3] Restrictive cardiomyopathy (RCM) is a heterogeneous group of diseases characterized by restrictive left ventricular pathophysiology, i.e. a rapid rise in ventricular pressure with only small increases in filling volume due to increased myocardial stiffness. More precisely, the defining feature of RCM is the coexistence of persistent restrictive pathophysiology,

diastolic dysfunction, non-dilated ventricles, and atrial dilatation, regardless of ventricular wall thickness and systolic function. Beyond this shared haemodynamic hallmark, the phenotypic spectrum of RCM is wide. Restrictive cardiomyopathy (RCM) has been considered the least common form of heart muscle disease.[4] Arrhythmogenic right ventricular cardiomyopathy/ dysplasia (ARVC/D) is an inherited myocardial disease characterized by fibro fatty replacement of the right ventricular myocardium, and associated with paroxysmal ventricular arrhythmias and sudden cardiac death (SCD). It is currently the second most common cause of SCD after hypertrophic cardiomyopathy in young people <35 years of age, causing up to 20% of deaths in this patient population. This condition has a male preponderance and is more commonly found in individuals of Italian and Greek descent.[5] In many patients the diagnosis of a cardiomyopathy is made after the onset of heart failure symptoms, atrial or ventricular arrhythmias, or a stroke. These complications of the underlying cardiomyopathy represent major causes of cardiovascular morbidity and mortality and frequently result in referral for echocardiography. Echocardiography provides an assessment of systolic and diastolic function as well as an estimation of left and right heart filling pressures. In addition, specific echocardiographic features allow the clinician to determine more accurately the aetiology of the cardiomyopathy. Integration of clinical and echocardiographic features now allows for a better assessment of both immediate risk and long term prognosis in patients with a cardiomyopathy.[6]

Materials & method

A descriptive, cross sectional study was conducted from July 2022 to December 2022 among 50 patients attending at Cardiology Outpatient Department of the Cumilla Medical College Hospital after obtaining requisite consent from the patients. Data were collected through the interviewing of the patients. The collected data were entered into the computer and analyzed by using SPSS (version 20.1) to know the socio-demographic and clinical profile of patients with cardiomyopathy in a tertiary care teaching hospital. The study was approved by the institutional ethical committee. Purposive sampling was adopted for collecting data. The interviews were held directly in the corridor just outside the Outpatient Department.

Result

The table shows that the age structures of those patients have been categorized in years into five groups. Overall, 4 (8%) patients were in 40 years old while 10 (20%) patients were in 41-50 years old. 5 (10%) patients belong to 51-60 years age group while 26 (52%) patients belong to 61-70 years old. 5 (10%) patients belong to > 70 years age group (Table-I).

Table-I: Age distribution of the study population (n=50)

Parameters	Number	Percentage
Age of the patients		
≤ 40 years	4	8
41-50 years	10	20
51-60 years	5	10
61-70 years	26	52
>70 years	5	10
Total	50	100

Total numbers of patients both male and female were 50. Male cardiomyopathy patients (62%) were more than the female patients (38%) at the Cardiology outpatient department. (Figure-I)

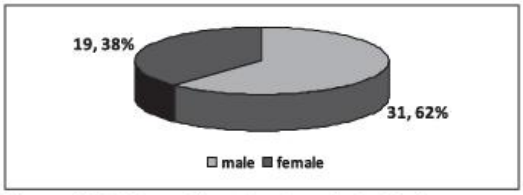

Figure-I: Pie Chart Showing Sex of the Patients

LVEF (left ventricular ejection fraction) of cardiomyopathy patients have been categorized into two groups. Overall, 33 (66%) patients have ejection fraction (LVEF) >25% while 17 (34%) patients have ejection fraction (LVEF) <25% (Figure-II)

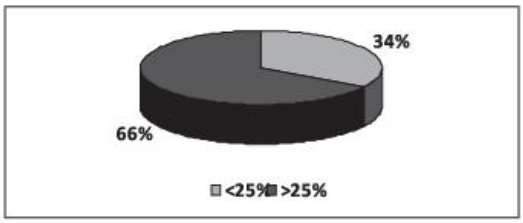

Figure-II: Pie chart showing LVEF of the cardiomyopathy patients (n=50).

Pedal edema was the most commonly associated findings (66%) with Cardiomyopathy followed by hypertension (46%), diabetes mellitus (42%) and dyslipidaemia (38%) (Table-II)

Table-II: Prevalence of Common systemic findings associated with cardiomyopathy patients (n=50)

Common findings	Present	Absent
Pedal edema	33 (66%)	17 (34%)
Hypertension	23 (46%)	27 (54%)
Diabetes mellitus	21 (42%)	29 (52%)
Dyslipidaemia	19 (38%)	31 (62%)

Discussion

A total of 50 patients were interviewed during the study period. This study showed that cardiomyopathy was more prevalent in male patients than in female patients. Similar results were obtained in the study conducted by Menyar et al.[7] This study revealed a higher prevalence of cardiomyopathy among 61-70 age group patients. A study done in Bangladesh by Hoque et al.[8] also found similar result. In our study pedal edema was the most commonly associated findings (66%) with cardiomyopathy followed by hypertension (46%), diabetes mellitus (42%) and dyslipidaemia (38%). Mansour et al.[9] conducted a study in Egypt about cardiomyopathy patients. In their study they stated that about 25% cardiomyopathic patients had diabetes and 17% patients had hypertension.

In our study, 33 (66%) patients have ejection fraction (LVEF) >25% while 17 (34%) patients have ejection fraction (LVEF) <25%. Dr. Vikant Verma and Dr. Shailja Chauhan conducted a study in india about socio-demographic characteristics of cardiomyopathy patients. In their study they stated that about 18 patients (52.94%) have ejection fraction (LVEF) <25% and 16 patients (47.05%) have ejection fraction (LVEF) >25%.10

Conclusion

It can be concluded that most of the patients of cardiomyopathy were male and belonged to age 61-70 year age group. Pedal edema, hypertension, diabetes mellitus and dyslipidaemia were the common systemic findings associated with cardiomyopathy. Introducing preventive and early diagnostic programs may have an impact on reducing the mortality and morbidity rates of cardiomyopathy. Routine baseline echocardiography study is recommended in families with consanguineous marriages and a history of cardiomyopathy.

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Conflict of interest: None

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Original Article

Serum homocysteine level in preeclampsia in a tertiary level hospital of Bangladesh

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Abstract:

Background: High concentrations of homocysteine (Hcy) are supposed to be a potential risk factor for endothelial dysfunction characterized by preeclampsia (PE).

Objectives: To determine the association of serum homocysteine (Hcy) with PE.

Methods: This cross-sectional study was conducted in the Department of Biochemistry, Dhaka Medical College, from July 2018 to June 2019. Thirty diagnosed case of preeclampsia and thirty apparently healthy pregnant women were selected according to the selection criteria from indoor and outpatient Department of Obstetrics and Gynaecology, Dhaka Medical College Hospital. Homocystine levels of all study subjects were estimated. The results were compared between these two groups.

Results: Mean serum homocystine (Hcy) level in pregnant women with PE was 13.74± 3.69 µmol/L and that of normal pregnancy was 5.89 ±1.70 µmol/L ($p < 0.001$). Serum Hcy level in severe PE (16.04 ±3.26µmol/L) was also significantly higher ($p < 0.001$) compared to mild PE (10.73 ±1.20 µmol/L). Serum Hcy level showed a significant positive relation ($r=0.85$, $p<0.001$) with PE.

Conclusion: Serum Hcy is increased in PE in comparison to healthy pregnancy. We suggest the assessment of serum Hcy in all pregnant women as a part of antenatal checkup.

Keywords: Preeclampsia, Pregnancy, Homocysteine.

Introduction

The biochemical changes in the blood during pregnancy are associated with various complications of pregnancy such as PE, a hypertensive disorder complicating 5-8% of all pregnancies and is an important cause of severe morbidity and mortality among mothers and infants.[1,2,3]

PE has been identified for developing hypertension, ischemic heart disease and cerebrovascular accident in later life.[4] Furthermore, it is associated with fetal growth restriction, low birth weight, preterm birth, respiratory distress syndrome, and admission to a neonatal intensive care unit.[5]

Homocysteine (Hcy) concentration has been studied as a risk factor for endothelial dysfunction and vascular disease.[6] Level of maternal serum Hcy normally decreases with gestation either due to physiological response to the pregnancy, increase estrogen, hemo-dilution from increase plasma volume or increased demand for methionine by both the mother and fetus.[7] Had the Hcy increased, it has the potential to be associated with PE.[8]

PE is a public health threat in both developed and developing countries and is the 3rd leading cause for maternal mortality.[9,10] It is also a primary obstetrical cause for one of four perinatal deaths.[11] An estimated 50000 women worldwide die annually from PE. Though this incidence has been reduced in developed countries, it is still responsible for 20% of maternal mortality in developing countries like Bangladesh.[12] So, we aimed to determine the association of maternal serum homocysteine and PE, which could lead us to follow the etiopathogenesis and to initiate preventive measures of the adverse maternal and fetal outcome in later life.

Materials and Methods

This cross sectional comparative study was conducted from July 2018 to June 2019 in the Department of Biochemistry, Dhaka Medical College, Dhaka. Thirty diagnosed cases of preeclamptic patients and thirty

apparently healthy pregnant women attending in the indoor and outpatient department of Obstetrics and Gynaecology, Dhaka Medical College Hospital, Dhaka, were enrolled in this study. We explained the purpose of the study in details to each subject. After taking written informed consent from each mother when fulfilled the criteria we collected the data in a pre-designed data collection sheet including particulars of the patients, history and relevant investigations. Pregnant women with possible confounding variables like chronic hypertension, overt or gestational DM, kidney disease, liver disease, seizure, any chronic illness, receiving any anti folate drugs (antiepileptic, methotrexate) were excluded from the study.

After all aseptic precaution 5 ml of venous blood sample was collected from each study subject in a disposable plastic syringe and immediately transferred to a dry clean test tube which was allowed to clot at room temperature and clear serum was separated after centrifuging at 3000 rpm for 10 minutes into a sterile Eppendorf tube and the separated serum was used for biochemical assay or was stored at -20°C if the analysis was delayed. All the biochemical tests were performed in the Department of Biochemistry, BSMMU, Dhaka. After collection of all samples, serum was used for the measurement of Hcy level, measured by Chemi-luminescent Microparticle Immune Assay (CMIA) technology.

We defined PE as a blood pressure (BP) of 140/90 mm Hg or above on two consecutive measures 4 hours apart. When the serum Hcy was above 15mmol/L, we considered it as hyperhomocysteinemia.[13]

All the data were entered in SPSS after meticulous checking. Continuous variables were expressed as mean ± SD and assessed between groups of patients by unpaired t-test. Categorical variables were compared using Fisher's exact test or Chi-square test and were presented as absolute frequencies with percentages. Correlation was done by Spearmans correlation coefficient test. All p values were two-tailed with significance level < 0.05 at 95% confidence interval (CI).

Results

The base line parameters (age, gestational age, BMI and blood pressure) were measured and outcome variable (serum homocysteine) was estimated.

Table-I shows baseline demographic and para clinical characteristics of the study subjects. There was no significant difference between PE and normal pregnancy group in terms of age, gestational age and BMI reflecting homogeneity between groups. There were significant differences between groups in terms of systolic and diastolic blood pressure.

Table-I: Baseline demographic and para clinical characteristics of the study subjects. (n=60)

	Preeclampsia (n=30) Mean± SD	Normal (n-30) Mean± SD	p-value
Age (years)	25.20 ± 3.47	26.43 ± 4.07	0.212
Gestational age (weeks)	29.60 ± 2.14	29.60 ± 3.04	1.000
BMI (kg/m2)	24.86 ± 0.94	25.06 ± 0.71	0.364
SBP (mm of Hg)	158.17 ± 15.00	118.67 ± 9.37	<0.001
DBP (mm of Hg)	108.17 ± 12.70	77.17 ± 6.78	<0.001

Figure-I shows simple Bar diagram where mean serum homocysteine level of PE and normal pregnancy was 13.74 µmol/L and 5.89 µmol/L respectively.

We checked the serum homocysteine level of both groups of patients. About 33.3% pre-eclampsia patients had hyperhomocysteinemia where apparently healthy pregnant women had no hyper-homocysteinemia.

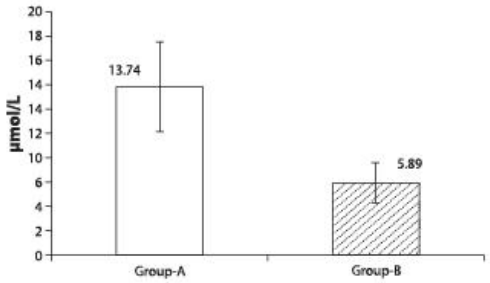

Figure-I: Simple Bar diagram showing mean serum homocysteine level of group-A (Preeclampsia) and group-B (Normal pregnancy).

Discussion

In the present study, the mean age of PE and normal pregnancy was 25.20 ± 3.47and 26.43 ± 4.07 years respectively. The mean ± SD of gestational age was 29.60± 2.14 and 29.60± 3.04 weeks in PE and comparison group respectively. The mean ± SD of BMI was 24.86 ± 0.94 and 25.06 ± 0.71 in PE and normal pregnancy respectively. No statistical differences were found between two groups in terms of age, gestational age and BMI.

The age of healthy group with PE group was homogeneously distributed as was the distribution

of gestational age and BMI. Similar result was also found in the other researcher's study.[14] The systolic BP and diastolic BP was higher in PE patients compared to healthy pregnant.

The mean ± SD of systolic BP was 158.17 ± 15 and 118.67 ± 9.37 mmHg in group-A and group-B respectively. In this study, the mean ± SD of systolic BP was significantly (p 0.001) higher in PE group in comparison to that of normal pregnancy group. The mean ± SD of diastolic blood pressure was 108.17± 12.70 and 77.17± 6.78 mmHg in PE and normal group respectively. In this study, the mean ± SD of diastolic BP was significantly (p 0.001) higher in PE in comparison to that of normal group.

Serum homocysteine was increased in PE patients (13.74 ±3.7 µmol/L) than that of healthy patients (5.89 ±1.70) µmol/L). Homocysteine increases due to increase of the oxidant activity and decrease the antioxidant concentrations in PE. Khosrowbeygi and Ahmadvand found higher homocysteine (14.05 ±1.43µmol/L) level in PE against lower value (6.38 ±0.3µmol/L) in normal pregnancy.[15] Other researchers also found significantly increased serum homocysteine level in PE than normal pregnant women.[16] But Bobic et al.[17] didn't find any difference in serum homocysteine level between PE and normal pregnancy. This dissimilarity might have occurred due to different methodology, variation in nutritional status in study subjects or excess trans placental transfer of homocysteine. However, many other studies done by other authors also found significantly increased serum homocysteine level in patients with PE.[18,6,8,14]

The positive relationship between serum Hcy and PE (r= 0.85, p<0.001) conforms to the hypothesis that homocysteine is related with PE in pregnancy. Shahbazian et al.14 showed the similar positive correlation between serum Hcy and PE in their study.

Conclusion

This study established the relationship of higher level of homocysteine in PE compared with normal pregnancy. We suggest the measurement of serum homocysteine in all pregnant women as a part of antenatal checkup. Cohort study with large sample size could be carried out in all level of hospitals in Bangladesh for better understanding of the association of serum homocysteine in PE.

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Original Article

Evaluation of the Results of Fixation of Femoral Shaft Non-union with Implant failure by Ilizarov External Fixator Method

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Abstract

Background: The Ilizarov operation is a type of external fixation procedure used in orthopedic surgery to lengthen or reshape limb bones as a limb-sparing technique to treat complex and/or open bone fracture, and in cases ofinfected non-union bones that are not amendable with other techniques. It is named after the orthopedic surgeon Gavriil Abramovich Ilizarov from the Soviet Union, who pioneered the technique.

Objective: To find out the effectiveness of Illizarov external fixator for implant failure and non-union of femoral shaft fracture with implant failure.

Method: This prospective study of Evaluation of the result of fixation of femoral shaft non-union with implant failure by Ilizarov External fixator was carried out during the period of January 2019 to December 2021 atDepartment of Orthopedic Surgery in Dhaka National Medical College and Hospital, Dhaka. In total 10 patients with femoral shaft fracture non-union were selected as the study population. Mean age of the patients was 40 years. Majority of the patients were male. Among 10 cases 8 were found injury was high energy trauma due to motor vehicle accident and there was a preponderance of fracture on the right side. Removal of previous implant refer shinning of fracture ends, reduction and fixation under C-Arm.

Result: In our study total 10 participants 8 male (80%) and 2 female (20%). So, male dominance was observed in this study. We found the highest 5 participants had injury from road accidents, 3 Sports injuries and rest only 2 from general falls. There is no intra-operative complication. As for the post-operative complications local pain with motion and local edema were seen in 4 cases, and painful tenting of skin in 6 cases. Delayed complications included Pin tract infection in 3 patients, restricted knee motion and shortening of limb 2 patients, Superficial wound infection 2 cases. Deep wound infection and Delayed union 1 patients. In this study results, 7 patients (70%) were excellent, 2 patients (20%) were good' 1 patient was fair.

Conclusion: The present study we found some good features of using Ilizarov induced method in the treatment of femoral shaft non-union facture with implant failure.

Keywords: Femoral shaft, Non-union, Ilizarov External Fixator.

Introduction

The femur is the largest and heaviest bone in the body.[1] It transmits a person's body weight to tibia while standing has an anterior bow. Shaft of femur is mostly smoothly rounded except posteriorly broad rough line, linea aspera exists providing aponeuroticattachment to adductors on thigh. Especially prominent at the middle third of shaft where it has medial and lateral lips.[2] Femoral shaft fractures defined as a fracture of the diaphysis occurring between 5 cm distal to the lesser trochanter and 5 cm proximal to the adductor tubercle. High energy injury frequently associated with life threatening conditions. The femoral shaft is circumferentially padded with large muscle. Despite advances in surgical technique. Fracture fixation alternatives and adjusts to healings femoral non-union continueto be significant clinical problem, femoral fractures may fail to unite because of the injury, damage

to the surrounding soft tissue inadequate initial fixation and demographic characteristics of the patients. The management of femoral shaft fracture non-union was revolutionized by Ilizarov external fixator techniques by orthopedic surgeon Gavriil Abramovich Ilizarov from the Soviet Union, who pioneered the technique. The excellent clinical result in wide dissemination of the technique.[3] The study was done to determine the union status, time of union of Ilizarov external fixator with implant failure and non-union of femoral shaft, to find out difficulties and complication during operation, to find out complication after operation, to find out functional outcome including range of motion of both hip and knee joint.

Materials and Methods

This prospective study was under taken to evaluate the result of fixation of femoral shaft non-union with implant failure by Ilizarov external fixator.The study was carried in the Dhaka National Medical College and Hospital, Dhaka from January 2019 to December 2021.

Sampling method

Purposive sampling method was followed of as per inclusion and exclusion criteria.Selection was done on the basic of history, Clinical examination and radiological evaluation at the outpatients department (OPD) of Dhaka National Medical College and Hospital.

Inclusion criteria: Age about (>20 years), Implant failure, Non-union of femoral shaft.

Exclusion criteria: Recent facture, Infected non-union, Open fracture, Non-union of femoral neck and trochanter fracture, Non-union of T-Y intercondylarfracture, Pathological fracture, Children's fracture.

Clinical procedure

1. Clinical Assessment

A completes history of the selected cases was taken with particular emphasis to the time and mechanism of injury, past treatment, and was assessed to ruleout any co-existing disease (Diabetes Mellitus, Hypertension, collagen tissue disorder). This was followed by a through general and physical examination to exclude any associated injuries. A detailed local examination was the carried out with particular attention to, Attitude of limbs and deformity, Limbs length discrepancies, Mobility of the fracture fragments, Signs of active infection, Discharging sinus,Joint Status to hip and knee, Neurovascular status, Any associated injuries.[4]

2. Radiological Assessment

A good quality antero-posterior and lateral view of the involved femur including hip and knee joint was taken fracture configuration, status of the previous implant, status of union was assessed.

3. Laboratory Investigation

Complete Blood count,Blood grouping,Urine for R/E and M/E,Random blood sugar,Blood urea, CRP,X-ray chest P/A view, ECG.[5]

4. Pre-operative preparation

Pre-anesthetic checkup,[6] hours NPO before operation,[5] Selection of appropriate size of Ilizarov ring, rods, bar.[6]

Ring size Measurement and apply procedure

Pre-operative measurements of patient's thigh, diameter and length was done to estimate of Ring and length of Rods (Bar) of Ilizarov frame.[6] In all cases 3rd generation cephalosporins were started 1 hours before surgery.All the 10 patients were operated under spinal anesthesia.All operation patients were placed in the supineposition over fracture table with traction of both lower limb.Assembly of the frame was done during surgery. Distance between the rings was adjusted according to the fracture anatomy.[7] Fracture with minimal comminution and length loss less than I cm was usually managed with a four ring frame, more complex fracture needed more number of rings. Wires were fixed to the rings with ring fixator bolt after tensioning up to 90-110 kg using a dynamometer. The rings were kept 2 finger breadths from skin all around. Reduction was checked with C-arm image intensifier on the table and adjustments done according at the same setting.The pin tract wounds were dressed by povidone iodine solution (10%) and covered with pad. Pin site was cleaned everyday with spirit or povidone iodine (10% solution). When clot and crust was present, weak solution of hydrogen peroxide (H_2O_2) was applied to remove it. When pin tract wound was inflamed or discharge was present, oral antibiotics were given. Partial weight bearing with axillary crutch was allowed as soon as the patient could tolerate the pain. The frame and wire was checked whenever the patients complained of pain, stability. Tension of the wire was checked and retensioning was done as per need. Check X-ray was taken on first or second postoperative day and reduction was checked). Knee and hip stiffness was prevented by active and passive movement. The patients was followed up an interval of 2 weeks for a minimum period of 8 weeks, there after every months

for 3 months and subsequently 3 monthly till a period of 1 years. Cheek radio graphs were taken on the next day and then at 6th week, 12th weekand 36th week. The patients were assessed clinically for the range of movement of the knee and hip respectively, pain at the fracture site, anterior knee pain, infection, muscular atrophy, clinical union, difficulty in walking and performing daily routine.[8] Frames were removed after clinico-radiological union. The fracture was regarded to be united (1) if the patient could walk without support after loosening the frame crossing the fracture site and not tender at fracture site (2) if there was no mobility at fracture site after loosening the frame and (3) radiologically, if there was enough callus across the fracture site and obliteration of the fracture line. The frame was removed at the outpatient's department or in the operation theatre once the fracture was united. At the end of follow-up period, the results were grouped into excellent (7), good (2), fair (1) and poor (0).

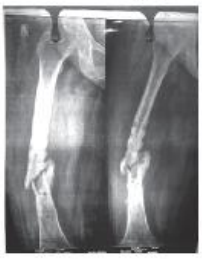

Fig-I: Pre-operative x-ray of thigh (B/V)

Fig-II:Post-operative X-ray of thigh showing Ilizarov external fixator

Fig-III: post operative picture of lower limb showing Ilizarov external fixator

Result

In our study among total 10 participants 8 male (80%) and 2 female (20%). So, male dominance was observed in this study. Mean age of the patients was 40 years.

Fig-IV: Gender distribution of participants (n=10)

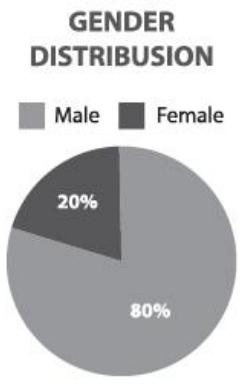

Table-I: Distribution in mode of injury (n=10)

Mode of injury	Frequency	Percentage
Road Accident	5	50%
Sports injury	3	30%
General Fall	2	20%
Total	**10**	**100%**

In analyzing mode of injuries, we found the highest 5 participants had injury from road accidents, 3 Sports injuries and rest only2 from general falls. The duration or treatment will the fixation was 12-23 week (average 16 weeks). From patients wore long legs back slab for an additional period of 4 week. The operation time ranged from 90 minutes to 120 minutes (Mean 102±4 minutes). The Ilizarov external fixator was withdrawn when there was clinic-radiological union. The duration of treatment with the fixation ranged from 12 to 23 week (Mean 16 ± 3 weeks). The time to union varied from 12 to 28 weeks (average 24.5 weeks).

The complication in fracture shaft of femur non-union with Ilizarov ring fixator were broadly divided into intra-operative, post-operative and delayed complications. There is no intra-operative complication. As for the post-operative complications local pain with motion and local edema were seen in 4 cases, and painful tenting of skin in 6 cases. Delayed complications included Pin tract infection in 3 patients, restricted knee motion and shortening of limb 2 patients, Superficial wound infection 2 cases. Deep wound infection and Delayed union 1 patients.

Table-II: Results of the Patients series (n=10)

Grading	Number of patients	Percentage
Excellent	7	70%
Good	2	20%
Fair	1	10%
Poor	0	0%
Total	**10**	**100%**

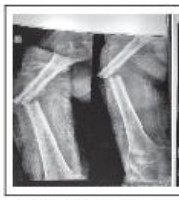

Fig-V: Pre-operative x-ray of thigh (B/V)

Fig-VI: Post-operative X-ray of thigh showing Ilizarov external fixator

Fig-VII: Post operative picture of lower limb showing Ilizarov external fixator

Discussion

There are many methods for stabilizing of femoral shaft non-union with implant failure. The problems are attributable mainly to the injury of skin, soft tissue and severity of bone damage. In this study, the age of the patients ranged from 20 years to > 65 years with mean as of 40 years. In our study, there were 80% male 20% female. The sex incidence of male was 8 (80%) and that of females were 2 (20%). Period between admission and Ilizarov ring fixation varied from 2 to 12 days with the average of 7 days in generally. It is generally agreed that Ilizarov ring should be applied as soon as the general physical condition allowed. In our study we found, heights 5 participants had injury from road accidents, 3 sports injury and rest only 2 from general falls. The average operating time varied from 90 minutes to 120 minutes. The partial weight bearing on crutches was started on the very next day or on the third day and full weight bearing after 2-3 weeks. In our study, the patients were discharged from the hospital on an average on the 5th post-operative day. The average duration of hospital stay in this intervention was 12 days. In this study, the duration of treatment will the fixation was 12-23 weeks (average 16 weeks, patients were long leg back slab for and additional period of 4 weeks. In this study, the Ilizarov external fixator was removed after on average 16±3 (ranging from 12-22 weeks). In our series, the average time of Clinico-Radiological union was 24 weeks (ranging from 21-28 weeks). Weight bearing to some degree, stimulates bone healing. The current concept of fracture healing was based on two variables namely blood supply and stability. In the present study, there were 3 cases of pin tract infection, manifested by pain, erythema and small purulent discharge around the pin sites which was controlled by oral antibiotic within 10 days. In this study, restricted knee motion and shortening of limb 2 patients, deep wound infection and delayed union 1 patient. The aim of this study was to evaluate the Ilizarov Technique in the treatment of non-union femoral shaft fracture with implant failure. We found some positive features of Iliazrov in treating non-union femoral shaft fracture with implant failure through this study.

Conclusion

To treat the cases of femoral shaft non-union facture with implant failure is a difficult task for the physicians. In our study we found some good features of using Ilizarov induced method in the treatment of femoral shaft non-union facture with implant failure. But to bring out more potential findings we would like to recommend for conducting more studies in severalplace in similar arena of the treatment procedure.

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Case Report

A case study of death due to burn

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Abstract:

Injuries due to burns are known to have a very high mortality rate. Burn injuries occur due to a variety of thermal, electrical, mechanical products and can be accidental, suicidal or even homicidal in nature. As the inquiry and research are limited to identifying patterns and causes for burns, the accurate originator and mechanisms are not clearly known. Herein we are going to discuss a case report of 18 years unmarried female was the victim of accidental burn in domestic affair when she was preparing breakfast in the kitchen for her family.

Key words: Burn, Injury, Thermal Death.

Introduction

Thermal death are those which result from the effect of systemic and/or localized exposure to excessive heat and cold.[1] Burn injuries have been a major cause of concern since prehistoric days to the present era of modern medicine.[2] The general belief that burn usually occur at the two extremes of age, indicating the accidental nature of infliction does not hold true as reported by Martin A Crore et al[3] and LPH Leenan et al[4] who described involvement of mean age of 30 and 28 years,respectively.[5] Fire and burn injuries are second only to motor vehicle accident as the leading cause of death in children of ages 1-4 years in US. Severe burns are considered the most catastrophic injury a person can survive, resulting in disfigurement, pain, emotional stress and tremendous economic cost. Burn are injuries to the tissue caused by heat, friction, electricity, radiation or chemicals.[6] A scald is a type of burn injury caused by application of hot liquids or gases, i.e. moist heat. Application of water of 50˚c at vulnerable part will cause scald.[7,8] The usual circumstances under which a person sustains burn injuries are catching of fire by clothes worn by victim while doing household chores like cooking on a gas stove or kerosene oil stoves.[9]

Etiological factors of fire injury

1. Faulty installation of fire suppression system in industry.
2. Careless throwing of un-burnt portion of a cigarette butt.
3. Carelessness in kitchen during cooking.
4. Playing with fire matches by children.
5. Faulty electric wiring in house and office building.
6. Stock piling flammable chemical materials in warehouses.
7. Faulty gas cylinder in CNG vehicles.
8. Household faulty LPG cylinders.
9. Carelessness in during job.
10. Enmity between rivals.

Classification of burn: Du puytrens classification

(a) 1st degree burn: In this burn, affected part is red and erythematous.

(b) 2nd Degree burn: The epidermis is involved. There is blister contain serous fluid,rich in protein and chloride. These are very painful and if extensive;also produce hypovolemic shock.

(c) 3rd Degree burn: The epidermis is completely destroyed with involvement of dermis. This variety is extremely painful.

(d) 4th Degree burn:Total destruction of true skin.

(e) 5th Degree burn: The depth of the lesion extends upto the subcutaneous tissue.These are less painful.

(f) 6th Degree Burn: The lesion extend deeper than the subcutaneous tissues, involving the muscles and bones. Painless due to destruction of nerve endings. Heals with much difficulty with contracture formation.

Modern[10] or Clinical[11] Classification:

a) Superficial burn: Involving epidermis

b) Deep burn: The lesion involves the whole depth of the true skin and deeper.

The estimation of body surface area involved: To estimate the body surface area involved, "Rule of Nines", given by Alexander Wallace, is practice clinically for calculating the amount of fluid. For calculating the approximate percentage of body surface area involved in children in practice "Rule of Five" is simpler. For calculating percentage in case of scattered burn injuries, 'Palm Rule' has been found handy.[12]

Mechanism of death in fires

Interference with respirationowing to a reduction in environmental oxygen &/or the production of CO and other toxic substances.

Inhalation of heat leading to laryngospasm, bronchospasm and so-called Vagal inhibition and cardiac arrest.

Exposure to extreme heat and shock

Trauma

Exacerbation of pre-existing natural disease due to burns.[13]

Case presentation

The history was given by police and father of the deceased as follows:

The case was referred from Shahbagh Thana GD No-635 dated 12/06/2017. The deceased Asma Akhter, 18 years age,daughter of Md. Shahbuddin Hawlader, Vill-Dalalpur, P/S Borhanuddin, Dist- Bhola.

According to the statement of deceased father she was working in kitchen to prepare breakfast on 11/05/2017 at 7.30 am, accidentally fire caught on her clothes of the body but she could not realize immediately due to extreme cold weather. When she felt, fire caught severely on her body. She started shouting. The house owner rushed there immediately and took her to the bathroom and poured water on her body then she was taken to Bhola Sadar hospital, was treated there primarily with in travenous fluid, analgesic, antibiotic, silver sulphadiazine and oxygen.

After some while her condition was deteriorated and then she was transferred to Dhaka Medical College Hospital and admitted at burn unit, bed no. F-06, Room No.-206, 1st floor. But she died at 06:45PM on 12/06/17. Sub-Inspector of police Mr.Azizur Rahman prepared her inquest report and the body was identified by Md. Ramzan Ali, constable no-11220 on 13/06/2017 at 9:30 AM in DMC Morgue. The body was received at 10:30 AM and postmortem was performed at 11:05 AM on 13/06/2017 after completing PM Examination the body was sutured and reconstructed properly and handed over to legal authority.

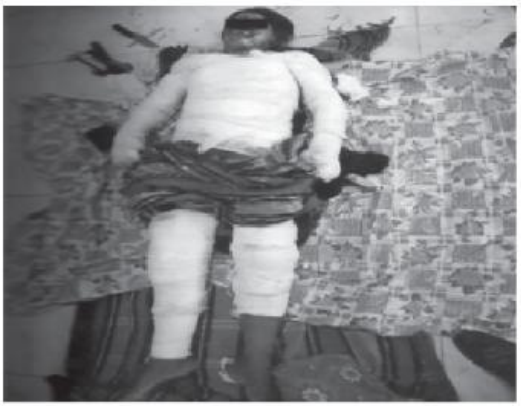

Figure-I: Photography of extensively burned body of the deceased female with whole bodycovered with surgical bandage.

Generalexaminations

Body-built-average

Body length (crown-heel) –150 cm;

Rigor Mortis- was full blown &found all over the body

Mouth was closed

Eyes were closed

External injury Burn of various degrees was present from face to toe on both sides covering anterior and posterior aspects. According to the "Rule of Nines" about 80% of the total body surface area was found burnt. Here, calculation of "Rule of Nines"- Head and neck 9%; each upper limb 9%; front of each lower limb 9%; back of each lower limb 9%; front of chest 9%; back of chest 9%; front of abdomen 9%; and 9% for back of abdomen 99% of the body. The remaining one percent is for the external genitalia.

Internal examination

Head:-

- Scalp - Normal
- Skull - Intact
- Meninges - were healthy
- Brain –was edematous and congested
- Mouth and Tongue - Oral mucosa was congested. The victim had got 32 teeth, 16 in each jaw.

Neck:-

- Larynx and Trachea were congested contain carbon soot particles.

Chest:-

- Lungs were edematous, congested and on cut section-serosanguinous fluid came out.

Pericardium, Heart and Blood vessels: - The pericardium was healthy, the coronary arteries were patent. Myocardium was unremarkable. There was no incompetency of the heart valves. There were post mortem clots in all heart chambers.

Abdomen:-

- Stomach –Congested and contained liquid food materials.
- Liver –Liver was congested and the gall bladder Contain bile
- Kidneys - Were congested
- Pancreas - Congested
- Spleen - Was soft and flabby
- Urinary bladder - was healthy and empty

Organs of generation-Uterus was non pregnant

Cause of death

In my opinion death was due to hypovolemic shock followed by burn wound (80%) which was ante mortem.

Discussion

Prior to given opinion about the cause of death we have to consider the following factors:

i) Identification of the deceased
ii) The cause and mechanism of death
iii) Circumstances of death.
iv) Interpretation of spurious wounds in burns
v) Volitional activities of the victim
vi) Category of hurt

Identification of the deceased

The question of identification may arises when the identification of the deceased may not be possible by simple procedure like finger print, then the others laboratory procedure could be considered, like DNA profiling from denture, bones etc. In this case identification of the deceased was not problem because body was not disfigured. The deceased was identified by her father.

The cause and mechanism of death

The deceased had not any natural disease nor any injury supporting assault. Therefore death was not due to natural disease or other method of violence.

The victim did not die immediately following burn. Therefore, death was not due to neurogenic shock resulting intense pain.

There was no edema of the larynx or epiglottis to such a level that may cause air way obstruction.

Following extensive burn, there was profuse plasma loss from the burnt surface which may lead to hypovolemic shock. In such a case the victim may die within 48 hours.

As a complication of burn, sepsis is the most important factor in deaths occurring four to five days or longer after burning.

Circumstances of death

In this case no motive was found because victim had not any domestic worries, disappointment in love or suffering from any form of acute or chronic disease

In this case, there was no history of threatened to victim by anyone or throwing of petrol on the body of victim. So homicidal burn injury was excluded.

Accidental burn are common in cases like epileptic patient and children and very old person.

In this case, clothes catches fired when the victim was preparing her family breakfast.

Interpretation of spurious wounds in burns

Heated skin contracts markedly and splits often appear. This may lead inexperienced observers to suspect that ante mortem wound have been inflicted, the fire being used to cover up a criminal offence.[14] In this case no such heat rupture wound was found. This case was clean cut burn.

Volitional activities of the victim

With the clothes and the body surface burning, the victim could shout and run to some distance. She could have talked as her vocal apparatus was not damaged and she was not unconscious.

Category of hurt

This victim had 80% (approx.) of total body surface burnt. It is considered necessarily fatal injury

Conclusion

Here in this case as per inquest report I found that the victim was burned when she was working at kitchen. She was under treatment at burn unit in the hospital. According to the circumstantial evidence there was not

any reason of suicide and no history of previous attempt of self-harm. So, considering history, postmortem examination findings and circunstantial evidence the cause of death was due to hypovolemic shock as a result of burn which was ante mortem.

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