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Medical education is strongly associated with the practice of being a competent medical practitioner. Medical education with the scope of necessary hands-on training is essential to prepare a competent physician. Common problems found with clinical teaching are a lack of clear objectives and expectations, focus on factual recall rather than on development of problem-solving skills and attitudes, passive observation instead of active participation of learners, less opportunity for reflection and discussion. This Second Issue of the Centre for Medical Education (CME) Journal focuses on evidence-based practice of medical education with the opportunity of sound practice of research in the field of medical education and health care practices.

Nonalcoholic fatty liver disease (NAFLD) is the most common liver disease worldwide. Farhan Joha conducted a cross-sectional observational study carried out to investigate the association of serum uric acid levels with non-alcoholic fatty liver disease. The study revealed the mean serum uric acid level was significantly (p=0.001) higher in NAFLD (5.16 ± 1.62 mg/dl) compared to healthy controls (4.26 ± 0.96 mg/dl). Hyperurecaemia was also significantly (p=0.014) higher in NAFLD (20.0%) compared to control subjects (4.0%). It may be concluded that serum uric acid is strongly associated with non-alcoholic fatty liver disease.

Prolonged use of antimicrobial prophylaxis is common in our country. In ear surgeries it is still a matter of debate for several aspects. Therefore, needs to reach a consensus regarding the limited use of antimicrobial regimen during ear surgery. A prospective observational study was done by Prof. Dr. Md. Abu Hanif to compare the effectiveness between Per-operative and extended post-operative period antimicrobial usage in mastoid surgery. In this study most of the patients having tympanic membrane retraction (77.5%). Equal number of patients were in per-operative antibiotic group and extended post-operative period antibiotic use group. There was no significant association between antibiotic use and involved ear, diseased tympanic membrane, type of operation. Infection in 3rd &7th POD is not statistically significant. So, Long-term antibiotic prophylaxis does not have any advantage over only per-operative antibiotic.

Breastfeeding provides optimal and complete nutrition for newborn babies. A cross-sectional study was conducted by Dr. Habiba Anjuman for the assessment of infant feeding practices in a tertiary level private hospital of Bangladesh. A strong association was found between maternal education & occupation with EBF; father's education also showed strong relationship with exclusive breast-feeding pattern. House wife mothers were stick to EBF than those of service holder or day labors. Study revealed that exclusive breastfeeding was not maintained up to recommended age of 6 months. Educated and high-income group were more strictly following the right way of feeding practices guided by WHO recommendation.

Effective teaching learning is one of the most important component for better outcome in medical education. A cross-sectional study was conducted to identify the views of fifth year students and intern doctors about the barriers and suggestions of present teaching learning status of 'Allied Subjects of Surgery' in undergraduate medical education of Bangladesh by Dr. Mohammad Mohibur Rahman. The study revealed that most of the respondent's (>90%) opined that the main barriers of teaching learning of 'Surgery and its Allied Subjects' were inadequate learning material, theories are learned more than practical skills and inadequate evening shift clinical teaching. The main suggestions of the respondents (>90%) to improve the teaching learning status were adequate provision of hands on teaching with sufficient number of learning material and clinical teaching should be held in ward, outdoor and emergency department.

Clinical skills laboratory (CSL) is one of the modern teaching tools of the medical education where different difficult skills can be practiced on models or dummy before practicing on living patient. Endotracheal intubation is one of the important skills for the healthcare providers to be practiced frequently. Clinical skills laboratories (CSL) was used as teaching by Dr. Farhana Selina to evaluate its efficacy for different levels of revised Bloom's taxonomy. Total 78 first-year nursing students were enrolled in to 2 groups: multimedia (MM) and CSL group. Both the groups were taught endotracheal intubation by the same instructor and were tested by 10 multiple choice question (MCQ) test. The mean score of 'remember' and 'evaluating' level were significantly better in the CSL group, whereas the other level scores were better in the MM group. Lower most (remembering) and one of top (evaluating) domain to learning was helpful when CSL was used as teaching tool.

Ocular trauma is an important cause of blindness and ocular morbidity throughout the world. Professor Sabiha Siraj Mohua conducted a descriptive study through retrospective review to assess the pattern of ocular trauma in Rohingya refugees in Bangladesh admitted to Ophthalmology department in a tertiary hospital. Penetrating corneal injury (43.9%) was the most common clinical presentation among the ocular injuries. A total of eleven eyes (15.1%) had no light perception at presentation. Maximum patients of ocular trauma from Rohingya Refugees were due to sharp object induced injury, open globe type and injury taken place at home.

A meta-analysis titled "Diabetes and Tuberculosis: Integrated strategy the best remedy to combat both" by Dr. Afsana Habib Sheuly identified burden of tuberculosis (TB) and co-morbid diabetes mellitus (DM) now a major public health problem. Tuberculosis-Diabetes Mellitus (TB-DM) patients have a higher risk of TB progression, relapse, and death as compared to TB only. The rising prevalence of diabetic cases globally is an alarming threat for rising cases of TB. So, this meta-analysis is aimed to understand the exact prevalence of TB-DM comorbidities in the Asian country as well as globally. Assessing the

Magnitude and risk/associated factors of TBDM comorbidity at country/local level is crucial before making decisions to undertake TBDM integrated services.

Thanadar Ajmiree Flora conducted a case study on cemento-ossifying fibroma of mandible. Ossifying fibroma is a rare benign neoplasm with female predilection in the third and fourth decades of life. In this case a 43 years old male patient reported to the department of Oral and Maxillofacial surgery with complaints of a swelling on the right side of his lower jaw for the past two years. Radiographically represented as an unilocular radiopaque lesion with a well defined thinly corticated margin. An excisional biopsy was performed and Histopathologically confirmed as benign bone lesion which is suggestive of ossifying fibroma.

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Original Article

Serum Uric Acid Level in Nonalcoholic Fatty Liver Diseases

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Abstract

Background: Nonalcoholic fatty liver disease (NAFLD) is the most common liver disease worldwide. The growing body of evidence has demonstrated that uric acid is an independent risk factor for cardiovascular disease. Limited evidence is available regarding the association between serum uric acid and NAFLD. The aim of this study was to investigate the association of serum uric acid level with NAFLD.

Methods: This cross-sectional observational study carried out in the Department of Biochemistry, Sylhet MAG Osmani Medical College, Sylhet in collaboration with the Department of Hepatology, Sylhet MAG Osmani Medical College Hospital during the period between July 2017 to June 2018. Fifty cases of NAFLD and 50 age and sex matched healthy subjects will be selected. Estimation of serum uric acid level were measured.

Results: The mean serum uric acid level mg/dl was significantly (p=0.001) higher in NAFLD (5.16 ± 1.62) compared to healthy controls (4.26 ± 0.96). Hyperurecaemia was also significantly (p=0.014) higher in NAFLD (20.0%) compared to control subjects (4.0%).

Conclusion: It may be concluded that serum uric acid is strongly associated with non-alcoholic fatty liver disease.

Keywords: Serum Uric acid level, Nonalcoholic fatty liver diseases

Introduction

Nonalcoholic fatty liver disease (NAFLD), characterized by increased fat accumulation in the hepatocytes of the liver parenchyma, is today one of the most common causes of chronic liver disease worldwide.[1] Nonalcoholic fatty liver disease (NAFLD), develops in the absence of alcohol abuse. When nonalcoholic fatty liver disease is accompanied with liver cell injury and inflammation it is called nonalcoholic steatohepatitis. About 30% nonalcoholic fatty liver disease progress to nonalcoholic steatohepatitis, if untreated it can be lead to fibrosis, cirrhosis or even hepatocellular carcinoma (HCC).[2]

The enzyme xanthine oxidase makes uric acid from xanthine and hypoxanthine, which in turn are produced from other purines. In humans, uric acid is the final oxidation product of purine metabolism and is excreted in the urine. The level of serum uric acid (SUA) is maintained by the balance between SUA production and excretion.[3]

More than 50% of the anti-oxidant capacity of blood plasma comes from uric acid as a potent anti-oxidant. On the other hand, uric acid can also act as a pro-oxidant like other reducing substances such as ascorbic acid. Therefore, it is unclear whether elevated levels of serum uric acid are a protective response or a primary cause in diseases associated with oxidative stress.[4]

Several studies indicated that hyperuricemia was independently associated with the NAFLD development, even after adjusting for potential confounders including metabolic syndrome features and insulin resistance.[5,6,7] Regarding the potential role, hyperuricemia exerts in promoting pro-inflammatory, pro-oxidant function, and insulin resistance in adipose tissue.[8]

Methods

This cross-sectional observational study was carried out in the Department of Biochemistry, Sylhet MAG Osmani

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Medical College, Sylhet in collaboration with the Department of Hepatology, Sylhet MAG Osmani Medical College & Hospital during the period from July 2017 to June 2018 with a view to compare serum uric acid level between non-alcoholic fatty liver disease and healthy subjects. In this study 50 cases of NAFLD and another 50 age and sex matched healthy subjects were selected and grouped as group-A and group-B respectively. Informed written consent was taken before taking any interview. Anthropometric measurements including height, weight, waist circumference, and blood pressure were recorded. BMI was calculated as weight in kg divided by the height in meter square. Fatty liver was diagnosed based on the findings of abdominal ultrasonography without alcohol consumption, viral, or autoimmune liver disease. Serum uric acid was collected for biochemical analysis. Relevant information was recorded in a pre-formed data collection sheet designed for the study.

Results

The mean age of the participants of non-alcoholic fatty liver disease (Group-A) was 40.04 ± 9.37 years and control subjects (Group-B) was 40.90 ± 12.37 years. The mean age of the participants did not differ significantly between two groups (t=0.519; p=0.605).

There were 28 (56.0%) male and 22 (44.0%) female in non-alcoholic fatty liver disease group; whereas 32 (64.0%) male and female 18 (36.0%) in control subjects; difference between two groups was not significant (χ^2=0.667; p=0.414).

The mean BMI of the non-alcoholic fatty liver disease was 26.08 ± 1.41 (range 23.44-30.10) Kg/M^2; whereas the mean BMI of the control subjects was 23.89 ± 2.31 (range 17.82-30.10) Kg/M^2. The mean BMI of non-alcoholic fatty liver disease group was significantly higher than that of control subjects (t=5.718; p<0.001).

Distribution of patients by serum uric acid level

The mean serum uric acid level (mg/dl) was 5.16 ± 1.62 (range, 2.5-8.8) in non-alcoholic fatty liver disease group and was 4.26 ± 0.96 (range, 2.4-6.4) in control subjects. The mean serum uric acid level of the non-alcoholic fatty liver disease was significantly higher compared to control subjects (t=3.367; p=0.001) (Fig1).

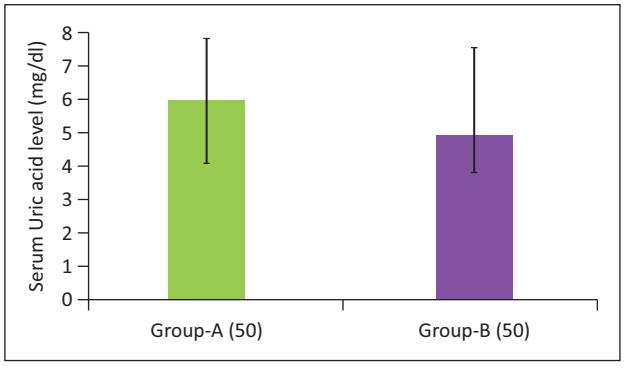

Figure 1: Distribution of patients by serum uric acid level

Table 1: Comparison of frequency of hyperurecaemia between study groups

Hyperurecaemia	Group-A (n=50)	Group-B (n=50)	p-value
Yes	10 (20.0%)	2 (4.0%)	*p=0.014
No	40 (80.0%)	48 (96.0%)	
Total	50 (100.0)	50 (100.0)	

*Chi-square (χ^2) Test was employed to analyse the data.
Figures in the parenthesis denote corresponding percentage.

Hyperurecaemia was observed in 10 (20.0%) patients in non-alcoholic fatty liver disease group and 2 (4.0%) participants in control subjects. Hyperurecaemia was found significantly more in non-alcoholic fatty liver disease compared to control subjects (χ^2=6.061; p=0.014) (Table 1).

Discussion

NAFLD has been recognized as a major health burden and the prevalence is increasing year by year. In western countries, NAFLD has also become one of the most common liver diseases, affecting 20% to 40% of the general population. Recent studies showed that elevated SUA was associated with the development or progression of NAFLD.[12,13] However, data on the association between SUA and NAFLD in our population are limited.

This study stated that the mean serum uric acid level (mg/dl) was 5.16 ± 1.62 in non-alcoholic fatty liver disease group and was 4.26 ± 0.96 in control subjects. The mean serum uric acid level of the non-alcoholic fatty liver disease group was significantly higher compared to control subjects (p=0.001). This result was in line of the study,[14] that the mean uric acid concentration in mg/dl for cases was 5.73 ± 1.57, and for controls was 4.69 ± 0.91. Increased serum uric acid concentration was associated with an increased incidence of NAFLD with a statistical significance (p < 0.05). Several other studies supported these findings.[5,15,16] This proves higher the uric acid level the greater the chances of developing NAFLD.

In this study hyperurecaemia was observed in 20.0% of patients in non-alcoholic fatty liver disease group and 4.0% of participants in control subjects. Hyperurecaemia was found significantly more in non-alcoholic fatty liver disease compared to control subjects (p=0.014). This result was in agreement with the study,[17] where they found that hyperuricemia was more in non-alcoholic fatty liver disease (23.5%) compared to control subjects (13.9%) (p=0.014); difference was significant (p<0.001).[15] It also supported these findings that hyperurecaemia was observed in 47.3% of patients in non-alcoholic fatty liver disease group and 25.7% of participants in control subjects.[18]

In another study where they found hyperurecaemia was in 52% of patients in non-alcoholic group and 28% of participants in control group. Hyperurecaemia was found significantly more in non-alcoholic fatty liver disease compared to control subjects ($p<0.05$).

Conclusion

This study revealed that the serum uric acid level and as well as hyperurecaemia were significantly higher in non-alcoholic fatty liver disease compared to control subjects. From the findings of this study, it may be concluded that serum uric acid has strong association in non-alcoholic fatty liver disease and thus elevated serum uric acid may play an important role in NAFLD pathogenesis.

References

1. Mirmiran P, Amirhamidi Z, Ejtahed H-S, Bahadoran Z, Azizi F. 2017. Relationship between Diet and Non-alcoholic Fatty Liver Disease: A Review Article. Iranian Journal of Public Health, 46(8), 1007-1017.
2. Alam S, Hossain MM, Azam G, Mustafa G, Alam M, Sayeed A, et al. 2017. Nonalcoholic Fatty Liver Disease: A New Frontier for Hepatology in Bangladesh and a Call for Action to Combat. Journal of Bangladesh College of Physicians and Surgeons, 35, 184-191.
3. Fang J, Alderman MH. 2000. Serum uric acid and cardiovascular mortality the NHANES I epidemiologic follow-up study, 1971–1992. National Health and Nutrition Examination Survey. The Journal of the American Medical Association, 283, 2404-410.
4. Proctor PH. 2008. Uric acid: neuroprotective or neurotoxic? Stroke, 39, e88.
5. Li Y, Xu C, Yu C, Xu L, Miao M. 2009. Association of serum uric acid level with non-alcoholic fatty liver disease: a cross-sectional study. Journal of Hepatology, 50, 1029-1034.
6. Sirota JC, Mcfann K, Targher G, Johnson RJ, Chonchol M, Jalal DI. 2013. Elevated serum uric acid levels are associated with non-alcoholic fatty liver disease independently of metabol ic syndrome features in the united states: liver ultrasound data from the national health and nutrition examination survey. Metabolism, 62, 392-399.
7. Shih MH, Lazo M, Liu SH, Bonekamp S, Hernaez R, Clark JM. 2015. Association between serum uric acid and nonalcoholic fatty liver disease in the US population. Journal of the Formosan Medical Association, 114, 314-320.
8. Liu Z, Que S, Zhou L, Zheng Z. 2015. Dose-response Relationship of Serum Uric Acid with Metabolic Syndrome and Non-alcoholic Fatty Liver Disease Incidence: A Meta-analysis of Prospective Studies. Scientific Reports, 5, 14325.
9. Vinotha T, Kumar E KA, Lighty G, Nirmala S. 2016. Association of high serum uric acid in chronic liver disease. International Journal of Current Advanced Research, 5(9), 1240-1244.
10. Varma M, Makwane M, Kare PK, Jha RK, Parmar A. 2016. Study of serum ferritin, serum uric acid and plasma malondialdehyde (MDA) levels in non-alcoholic fatty liver disease. International Journal of Biomedical and Advance Research, 7(4), 169-174.
11. Lee K. 2009. Relationship between uric acid and hepatic steatosis among Koreans. Diabetes and Metabolism, 35, 447-451.
12. Xu C, Yu C, Xu L, Miao M, Li Y. 2010. High serumuric acid increases the risk for nonalcoholic fatty liver disease: a prospective observational study. Public Library of Science (PLoS) ONE, 5, e11578.
13. Powell EE, Jonsson JR, Clouston AD. 2010. Metabolic factors and non-alcoholic fatty liver disease as co-factors in other liver diseases. Digestive Diseases, 28, 186-191.
14. Mohan J, Ramanathan R, Velliangiri L, Thangavel D, Rangan V, Subramaniam V. 2014. Association of serum uric acid level and body mass index between non-alcoholic fatty liver disease patients and healthy volunteers. International Journal Advanced Medicne, 1, 234-237.
15. Liu C-Q, He CM, Chen N, Wang D, Shi X, Ziu Y, et al. 2016. Serum uric acid is independently and linearly associated with risk of nonalcoholic fatty liver disease in obese Chinese adults. Scientific Reports, 6, 38605.
16. Azharuddin MM, Abdali N, Ajmal M-R, Ahmad I, Kamal A. 2016. Non-Alcoholic Fatty Liver Disease, Hyperuricemia and Carotid Intima-Medial Thickness: A Case Control Study. International Journal of Contemporary Medical Research, 3(9), 2568-2571.
17. Lin H, Li Q, Liu X, Ma H, Xia M, Wang D, et al. 2015. Liver Fat Content Is Associated with Elevated Serum Uric Acid in the Chinese Middle-Aged and Elderly Populations: Shanghai Changfeng Study. Public Library of Science (PLoS) ONE, 10(10), e0140379.
18. Bansal A, Lohokare R, Sarkar PD, Hargaonkar P. 2017. Study of serum uric acid levels and BMI in patients with NAFLD: a observational study at a tertiary care centre of Central India. International Journal of Contemporary Medical Research, (5), 1050-1052. Pediatr Infect Dis J 2006 Feb; 25(2): 142-46.

Study on Comparison of EffectivenessBetween Per-operative Only and Extended Post-operative Period Antimicrobial usage in Mastoid Surgery: NIENT Experience

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Abstract

Background: Control of pos-toperative infection is a multifaceted problem. High tissue concentration of antibiotic at the time of operation is appeared to be effective in preventing postoperative wound infection. Prolonged use of antimicrobial prophylaxis is common in our country. Standard policies of antimicrobial prophylaxis (per-operative only) are well established in different surgical interventions throughout the world. However, in ear surgeries it is still a matter of debate for several aspects. Therefore, a consensus needs to be reached regarding the limited use of antimicrobial regimen during ear surgery. The objective of the study was to compare the effectiveness between Per-operative only and extended post-operative period Antimicrobial Usage in Mastoid Surgery.

Methods: Chronic Otitis Media (COM) who fulfilled the inclusion and exclusion criteria were recruited as subject in the study and were underwent mastoid surgery in national institute of ENT. In post-operative period patients were followed up on day 3, day 7 for any evidence of infection.

Results: Age ranges of participated patients are within 15-60 years. Mean age is 26.53 years. Median age is 23.50 years with standard deviation 11.092. In this study most of the patients having Tympanic Membrane retraction (77.5%). Most of the patients were underwent modified radical mastoidectomy (70%). Equal numbers of patients were in per-operative only antibiotic group and extended post-operative period antibiotic use group. There was no significant association between Antibiotic use and sex, residence, involved ear, diseased tympanic membrane, type of operation. Infection in 3rd &7th Post-operative day (POD) is not statistically significant.

Conclusion: There is no significant association between per-operative only/extended post-operative antibiotic use and post-operative wound infection. In addition there is no correlation of wound infection in comparison of age, sex, residence, laterality of ear, type of operation and duration of operation. So, Long-term antibiotic prophylaxis does not have any advantage over only per-operative antibiotic.

Keywards: Chronic Otitis Media (COM), Mastoid surgery, Antibiotic prophylaxis, Attico antral, NIENT.

Introduction

Post-operative wound infection is one of the causes of post-operative morbidity and resource utilization.[1] Infection rate in clean surgery is 1-2%, in clean contaminated surgery is <10%, contaminated surgery is 15-20% and dirty surgery is up to 40%.[2] A surgical infection occurs when micro-organisms from the skin or the environment enter the incision. These infections can develop at any time from two to three days after surgery until the wound has healed.[3]

Infection is related to advanced age, anaemia, jaundice, malnutrition, diabetes, uraemia, malignant neoplasm, use of steroid, type of operation, type of incision, and presence of foreign material.[5] Antibiotics are an important component of prophylaxis against surgical wound infection. They should be used together with preoperative patient preparation, good surgical technique and appropriate postoperative wound care. Antibiotics are not a substitute for the other three components. Control of postoperative infection is a multifaceted problem. High tissue concentration of antibiotic at the time of operation is appeared to be effective in preventing postoperative wound infection. Effective prophylaxis depends on effective concentrations throughout the period of potential tissue contamination.[4] In all operations the administration of additional doses after the end of surgery does not provide any additional prophylactic benefits.[6] Prolonged use of antimicrobial prophylaxis is common in our country. Majority of the literature from developed countries are suggesting short duration of antimicrobial therapy.

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Standard policies of antimicrobial prophylaxis are well established in different surgical interventions. However, in ear surgeries it is still a matter of debate in several aspects. Many previous studies[7,8] are mainly focused on prophylaxis in middle ear surgery alone without inclusion of mastoidectomy. Mastoidectomy is a routinely performed surgery for chronic otitis media (COM) of attico antral variety and some cases of tubo-tympanic variety having matoid reserver. The middle ear cleft in these patients is exposed to contamination through its natural communications of eustachian tube and external auditory canal.[8] In addition, infected mastoid air cells may act as a source of infection in the postoperative period. Thus, many otologists believe that prolonged antibiotic usage is justifiable to counterbalance few of the above-mentioned factors. Therefore, a consensus needs to be reached regarding the limited use of antimicrobial regimen during ear surgery.

This study has been designed to compare the effectiveness of antibiotic between Per-operative only and extended post-operative period use of antibiotic.

Rationale for the study:

Use of antibiotics in extended post-operative period is our conventional practice that can cause drug resistance and financial burden. In proper OT settings it is enough to use per operative antibiotic only that is being practiced in different renowned centre throughout the world in different speciality. In our setting, no study was still present in case of ear surgery. So, now it is time demanded question that should we use antibiotic as per conventional way or rationally. To answer it, this study was conducted in NIENT and this will help to make a guideline for proper use of antibiotic in ear surgery.

Hypothesis:

Only per-operative antibiotic is not inferior to extended post-operative period antibiotic to control infection in mastoid surgery.

Objectives:

General objective

To compare the effectiveness between Per-operative only and extended post-operative period Antimicrobial Usage in Mastoid Surgery

Specific objective

- To determine the factors related to post-operative infection in mastoid surgery.
- Socio demographic factors analysis of patients of mastoid surgery

Method

Place of study: Department of Otolaryngology-Head & Neck Surgery, National Institute of ENT, Tejgaon, Dhaka.

Period of study: 6 months (January 2021-June 2021)

Study population: Cases of COM undergoing mastoid surgery fulfilling the inclusion and exclusion criteria at National Institute of ENT, Tejgaon, Dhaka.

Study design: Prospective observational study.

Sample size: The following power calculation formula will be applied to calculate the sample size:

$$n = \frac{z^2 pq}{d^2}$$

n= required sample size, z= confidence limit= 1.96

p= prevalence= 3.9% = 0.039; q = 1-0.036= 0.961

d= acceptable standard error= 0.05

$$n = \frac{(1.96)^2 x 0.039 x 0.961}{(0.05)^2}$$

$$= 57.59$$

Due to time constrain we took 40 cases.

Sampling technique: Purposive sampling.

Selection criteria:

Inclusion Criteria

- Patients diagnosed with COM need mastoid surgery
- Age (15-60 years)

Exclusion Criteria

- Co-morbidities (uncontrolled DM, HTN, Malnutrition etc)
- Mastoid abscess
- COM with Intracranial complications
- Who himself wants to withdraw his/her name

Study variable:

Age, Sex, Residence, Types of mastoid operation, Duration of surgery, Rate of infection at 3rd and 7th POD.

Operational definition:

Infection: In post-operative follow up, patient having fever with pain, swelling, discharge from the wound with laboratory findings in favor of infection (leukocytosis/ positive culture report) will be regarded as infective case.

Cortical mastoidectomy: It is an operation in which exenteration of all accessible mastoid air cells is done preserving the posterior meatal wall.

Modified radical mastoidectomy: It is an operation to eradicate disease of the attic and mastoid, both of which are exteriorized into the external auditory canal by removal of the posterior meatal and lateral attic walls. Tympanic membrane remnant, functioning ossicles and the reversible mucosa and function of the eustachian tube are preserved.

Radical mastoidectomy: It is an operation to eradicate disease of the middle ear and mastoid in which mastoid, middle ear, attic and the antrum are exteriorized into the

external ear by removal of posterior meatal wall. All remnants of tympanic membrane, ossicles, chorda tympani and the mucoperiosteal lining are removed and the opening of eustachian tube closed by packing a piece of muscle or cartilage.

OT- OperationTheatre

COM- Chronic Otitis Media

NIENT- National Institute of Ear, Nose and Throat

POD-Post Operative Day

Study Procedure: This prospective study was conducted in the Department Otolaryngology- Head & Neck surgery, National institute of ENT, Tejgaon, Dhaka. After obtaining clearance and approval from ethical review committee of National institute of ENT, Cases who were undergone mastoid surgery for COM in the department of Otolaryngology-Head & neck surgery, were thoroughly evaluated. Those patients who fulfilled the inclusion and exclusion criteria were recruited as subject in the study after getting a written informed consent.

Pre-operative Measures:

- Correct preparation of the patient
- Correct preparation of the surgical team
- Avoidance of infected health care personnel to reduce the risk of infection.

Per-operative Measures:

- Correct ventilation systems in the operating theatre
- Correct room cleaning and disinfection
- Correct sterilization of surgical instruments
- Use of surgical clothing and sterilized microscope cover able to reduce the infection transmission risk at a minimum level
- Strict aseptic surgical techniques
- Patient was operated as first case
- Standard Antibiotic was given before giving incision
- Additional antibiotic was given after 3 hour of starting operation
- In one group antibiotic was given per-operatively only. No antibiotics was given in post-operative period
- In second group antibiotic was given both in per-operative and in post-operative period as conventional manner
- Povisep soaked gauze was given in post-auricular wound

Post-operative Measures:

Patients were kept admitted for 7 days after operation and discharged after stitch off and removal of pack from mastoid cavity.

Ethical Issue:

The study subjects or patients were informed verbally about the study design, the purpose of the study and their right to withdraw themselves from the projects at any time, for any reason. Then written informed consent was taken from the patients or local guardian. It was assured that all information and records were kept confident. It does not conflict with any religious, social or sensational issues. This procedure did not involve asking participant to commit any acts that might diminish their self- esteem or cause them to experience embarrassment or regret.

Statistical Analysis:

Windows (SPSS Inc, IL, USA) was used for statistical analysis. The mean values were calculated for continuous variables. The quantitative observations were indicated by frequencies and percentages.

Adjusted odds ratio was used to evaluate the independent influence of factors including age, sex, residence, types of operation, duration of operation, per-operative only antibiotic use, extended post-operative antibiotic use on post-operative infection. A P value less than 0.05 was considered to be statistically significant.

Results

This prospective study was conducted at the Department of Otolaryngology- Head & Neck Surgery, National institute of ENT, Tejgaon, Dhaka, from january 2021 to June 2021. The major objectives of the study included observing post-operative wound infection after giving per-operative only and extended post-operative period antibiotics in case mastoid surgery. All cases of COM admitted for mastoid surgery were included as study subjects.

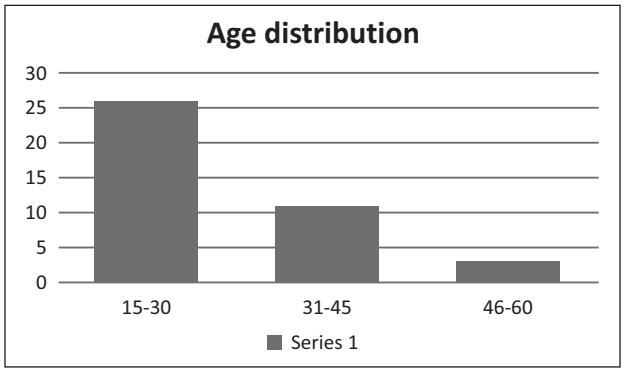

Figure 1: Bar diagram revealed age(years) distribution of participated patients

Age range of participated patients is within 15-60 years. Most of the patients are in age group 15-30 years. Mean age is 26.53 years. Median age is 23.50 years with standard deviation 11.092.

Table 1: Distribution of study subjects according to their sex.

	Frequency	Percent
Male	24	60.0
Female	16	40.0
Total	40	100.0

It revealed most of the patients are male (60%)

Table 2: Distribution of study subjects according to their residence

	Frequency	Percent
Urban	21	52.5
Rural	19	47.5
Total	40	100.0

It revealed more than 50% patients were from urban area

Table 3: Distribution of study subjects as per involved ear

	Frequency	Percent
Right	10	25.0
Left	26	65.0
Both	4	10.0
Total	40	100.0

Table shows involvement of left ear is very high

Table 4: Distribution of study subjects by disease condition of tympanic membrane

	Frequency	Percent
Perforation	9	22.5
Retraction	31	77.5
Total	40	100.0

Table shows the most of the patients having tympanic membrane retraction (77.5%).

Table 5: Distribution of study subjects by type of operation

	Frequency	Percent
Cortical mastoidectomy	12	30.0
Modified radical mastoidectomy	28	70.0
Total	40	100.0

Table shows most of the patients were underwent modified radical mastoidectomy (70%).

Table 6: Distribution of study subject by duration of operation

	Frequency	Percent	Mean±SD
≤150 minute	16	40.0	168.13±36.13
>150 minute	24	60.0	

Table shows time range of duration of operation 105-300 minutes, mean time was 168.13 minutes and standard deviation 36.139 minutes.

Table 7: Distribution of study subject by different antibiotic using group

	Frequency	Percent
Per-operative	20	50.0
Extended post-operative	20	50.0
Total	40	100.0

Table shows equal number of patients got antibiotic in per operative group and extended post-operative group

Table 8: Distribution of infected study subject at 3rd POD

	Frequency	Percent
Infected	1	2.5
Not infected	39	97.5
Total	40	100.0

Table 9: Distribution of infected study subject at 7th POD

	Frequency	Percent
Infected	1	2.5
Not infected	39	97.5
Total	40	100.0

Table 10: Association of Antibiotic use and sex

Sex	Per-operative only No (%)	Extended post-operative No (%)	Total	OR	p-value
Male	13(65%)	11(55%)	24(60%)	1.519 (.425-5.426)	0.519
Female	7(35%)	9(45%)	16(40%)		
Total	20(100%)	20(100%)	40(100%)		

It was observed that there was no significant association between Antibiotic use and sex

Table 11: Association of antibiotic use and residence

Residence	Antibiotic use		Total	OR	p-value
	Per-operative only No (%)	Extended post-operative No (%)			
Rural	12(40%)	8(45%)	21(52.5%)	1.833 (.522-6.434)	0.342
Urban	8(60%)	11(55%)	19(47.5%)		
Total	20(100%)	20(100%)	40(100%)		

It was observed that there was no significant association between antibiotic use and residence

Table 12: Association between involved ear and Antibiotic use

Involved ear	Antibiotic use		Total	OR	p-value
	Per-operative only No (%)	Extended post-operative No (%)			
Left	5(25%)	5(25%)	10(25%)	0.857 (.199-3.690)	0.709
Right	14(70%)	12(60%)	26(65%)		
Both	1(5%)	3(15%)	4(10%)		
Total	20(100%)	20(100%)	40(100%)		

Table shows there was no significant association between involved ear and Antibiotic use

Table 13: Association between status of diseased tympanic membrane and Antibiotic use

Tympanic membrane	Antibiotic use		Total	OR	p-value
	Per-operative only No (%)	Extended post-operative No (%)			
Perforation	5(25%)	4(20%)	9(22.5%)	1.333 (.300-5.926)	1.000
Retraction	15(75%)	16(80%)	31(77.5%)		
Total	20(100%)	20(100%)	40(100%		
	100.0%	100.0%	100.0%		

It was observed that there was no significant association between status of diseased tympanic membrane and Antibiotic use.

Table 14: Association between type of operation and Antibiotic use

	Antibiotic use		Total	OR	p-value
	Per-operative only No (%)	Extended post-operative No (%)			
Cortical mastoidectomy	5 (25%)	7 20%)	12 (30.5%)	0.619 (.158-5.926)	1.490
Modified radical mastoidectomy	15 (75%)	35 (80%)	28 (70.5%)		
Total	20 (100%)	65 (100%)	40 (100%		

It was observed that there was no significant association between type of operation and Antibiotic use.

Table 15: Association of infection in 3rd POD with antibiotic use is not statistically significant

	Antibiotic use		Total	OR	p-value
	Per-operative only No (%)	Extended post-operative No (%)			
Infected	1 (5%)	0 (00)	1 (2.5%)	2.053 (1.488-2.832)	1.000
Not infected	19 (95%)	20 (100%)	39 (97.5%)		
Total	20 (100%)	20 (100%)	40 (100%)		

It was observed that only one infected case was found in only per-operative antibiotic use group in 3rd POD that was not statistically significant (P>0.5).

Table 16: Infection in 7th POD is not statistically significant

	Antibiotic use		Total	OR	p-value
	Per-operative only No (%)	Extended post-operative No (%)			
Infected	1 (5%)	0 (00)	1 (2.5%)	2.053 (1.488-2.832)	1.000
Not infected	19 (95%)	20 (100%)	39 (97.5%)		
Total	20 (100%)	20 (100%)	40 (100%)		

It was observed that only one infected case was found in only per-operative antibiotic use group in 7th POD that was not statistically significant (P>0.5).

		7th POD				OR	p-value
		Infected		Not infected			
		N	%	N	%		
Antibiotic use	Per-operative only	1	100.0%	19	48.7%	0.950 (0.859-1.050)	1.000
	Long term	0	0.0%	20	51.3%		
Sex	Male	1	100.0%	23	59.0%	0.958 (0.882-1.042	1.000
	Female	0	0.0%	16	41.0%		
Residence	Urban	1	100.0%	20	51.3%	0.952 (0.866-1.048	1.000
	Rural	0	0.0%	19	48.7%		
	Slum	0	0.0%	0	0.0%		
Involved ear	Right	0	0.0%	10	25.6%	-	1.000
	Left	1	100.0%	25	64.1%		
	Both	0	0.0%	4	10.3%		
Tympanic membrane	Perforation	0	0.0%	9	23.1%	1.033 (0.969-1.102)	1.000
	Retraction	1	100.0%	30	76.9%		
Name of operation	Cortical mastoidectomy	0	0.0%	12	30.8%	1.037 (0.966-1.114)	1.000
	Modified radical mastoidectomy	1	100.0%	27	69.2%		
	Radical mastoidectomy	0	0.0%	0	0.0%		

It was observed that infection in 7th POD in different parameter were not statistically significant (P>0.05).

Discussion

The result of the study showed that the mean age of the study subjects was 26.53±11.1 years with the range of 15 to 60 years. This finding was consistent with other studies carried out in India with 25.8±10.6 years mean age.[15]

In this study shows the chronic otitis media (COM) present in the left ear 26 (65%), in right ear 10(25%) and in both ear 4 (10%). Out of the 40 people, 31 (77.5%) had tympanic membrane retraction and 9 (22.5%) had tympanic membrane perforation. Therefore, the findings of the study are in well agreement with the findings of the other research works.[12-16]

In this study shows participated patients revealed male predominance (60%). Participated patients revealed urban predominance. This finding consistent with other studies.[3,5,6]

This study shows majority operation was modified radical mastoidectomy (70%). Many previous studies[7,8] are mainly focused on prophylaxis in middle ear surgery alone, without inclusion of mastoidectomy. Mastoidectomy is a routinely performed surgery for chronic otitis media (COM) of attico antral variety and some cases of tubo tympanic variety.[8]

In this study it showed the time range of operation was 105-300 minutes, mean time was 168.13 minutes with standard deviation 36.139 minutes. In maximum operations, it needed >150 minutes. Therefore, the findings of the study are in well agreement with the findings of the other research works.[15] They reported the duration of surgery was ranged between 60 and 180 minutes.

This study found only 2.5% were infection in per-operative only antibiotic use group and had found no infection in extended post-operative period antibiotic use group in Mastoid Surgery. Therefore, the findings of the study are in well agreement with the findings of the other research works.[16]

The incidence of post-operative infection in a large series study by Govaerts et al.[2] ranged from less than 5%. In some of the infected surgeries it was more than 10% .

Carlin et al.[14] concluded that the use of prophylactic systemic antibiotics in myringoplasty surgery. Seventy-one individuals were clinically and bacteriologically assessed both preoperatively and after a period of 8 weeks postoperatively. The results showed that antibiotic prophylaxis did not eradicate bacterial pathogens already present in pre-operative ears. However Martinusc et al.[17] concluded that no difference was found in the occurrence of post-operative infections between short-course and extended-course antibiotic prophylaxis in ear surgery.

The use of prophylactic antimicrobials is well established in most surgical specialties. A single dose of pre-operative antimicrobial can be as effective as 5 days of postoperative

antibiotics in reducing incidence of postoperative infections.[8] But in order to administer appropriate antimicrobial, a sound knowledge of the procedure and likely pathogen affecting particular surgical wound is very important. Traditionally, surgical wounds have been categorized as clean, clean contaminated, contaminated, and dirty. This division has allowed appropriate and judicious use of prophylactic antimicrobials in prevention of postoperative infection.[7]

The pathogenesis of surgical wound infection following ear surgeries is similar to any other surgical wound. But direct communication of middle ear cleft with external ear and that of nasopharynx through the Eustachian tube increases the risk of postoperative infection.[8] Categorical division of ear surgeries is therefore helpful in standardization and subgroup analysis. For practical purposes, ear surgeries are categorized based on the presence or absence of infection. Those that are performed in the absence of pre-operative ear discharge are classified as clean; this includes stapedotomy, stapedectomies, myringoplasty, facial nerve decompression and myringotomy with or without grommet insertion procedures. Procedures done in the presence of discharge due to active status of the disease are categorized as clean-contaminated and contaminated wounds, that is, tympanomastoid surgeries done for active mucosal and squamosal COM.[9]

Therefore, Using per-operative only antibiotics could avoid additional adverse events: antibiotic resistance development and higher hospital costs. Future research should focus on identifying risk groups that might benefit from prolonged prophylaxis. Also a consensus may be warranted for developing on the administration of only per-operative prophylactic antimicrobial regime for mastoid surgery for COM.

Conclusion

There is no significant association between per-operative only/extended post-operative antibiotic use with post-operative wound infection. So, Long-term antibiotic prophylaxis does not have any advantage over only per-operative antibiotic.

Limitations:

There were some limitations in this study-

1. This is a study of smaller group.
2. Multiple surgeons were involved.
3. Different types of mastoid surgery were included in this study.
4. All COM cases were not included
5. Confounding factors were not addressed.

Recommendations

Further studies on large sample size will be required to strengthen our knowledge on single dose antibiotics use in per-operative only.

No use of antibiotic if a surgery fulfills the following criteria-

1. Taking strict aseptic precaution.
2. Having no comorbidities.

References

1. Tong MC, Yue V, Ku PK, van Hasselt CA. Preoperative topical ofloxacin solution for tympanoplasty: a randomized, controlled study. OtolNeurotol 2002; 23:18-20.
2. Govaerts PJ, Raemaekers J, Verlinden A, Kalai M, Somers T, Offeciers FE. Use of antibiotic prophylaxis in ear surgery. Laryngoscope 1998;108: 107-110.
3. Hung T, Knight JR, Sankar V. Anterosuperior anchoring myringoplasty technique for anterior and subtotal perforations. ClinOtolaryngol Allied Sci 2004; 29:210-214.
4. Faramarzi A, Hashemi SB, Rajaee A. "Mucosal pocket" myringoplasty: a modification of underlay technique for anterior or subtotal perforations. Am J Otolaryngol 2012; 33:708-713?
5. McGrew BM, Jackson CG, Glasscock ME 3rd. Impact of mastoidectomy on simple tympanic membrane perforation repair. Laryngoscope 2004; 114: 506-511.
6. Kartush JM. Ossicular chain reconstruction. Capitulum to malleus. OtolaryngolClin North Am 1994; 27:689-715.
7. Waddell TK, Rotstein OD. Antimicrobial prophylaxis in surgery. Committee on Antimicrobial Agents, Canadian Infectious Diseases Society. CMAJ 1994; 151:925-931.
8. Jackler RK, Schindler RA. Role of the mastoid in tympanic membrane reconstruction. Laryngoscope 1984; 94:495-500.
9. Verschuur HP, de Wever W, van Benthem PP. Antibiotic prophylaxis in clean and clean-contaminated ear surgery. Cochrane Database Syst Rev 2004 ;(3):CD003996.
10. Lildholdt T, Felding JU, Juul A, Kristensen S, Schouenborg P. Efficacy of perioperative ceftazidime in the surgical treatment of chronic otitis media due to Pseudomonas aeurginosa. Preliminary report of a prospective controlled study. Arch Otorhinolaryngol 1986;242:167-169.
11. Jung T, Kim YH, Kim YH, Park SK, Martin D. Medial or medio-lateral graft tympanoplasty for repair of tympanic membrane perforation. Int J Pediatr Otorhinolaryngol 2009; 73:941-943.
12. Hosamani P, Ananth L, Medikeri SB. Comparative study of efficacy of graft placement with or without anterior tagging in type one tympanoplasty for mucosal type chronic otitis media. J LaryngolOtol 2012;126: 125-130.

13. Peng R, Lalwani AK. Efficacy of "Hammock" Tympanoplasty in the treatment of anterior perforations. Laryngoscope 2013; 123:1236-1240.

14. Carlin W. V., Lesser T. H. J., John D. G., Fielder C., Carrick D. G., Thomas P. L. & Hill S. Systemic antibiotic prophylaxis and reconstructive ear surgery. Clin. Otolaryngol.1987; 12:441-446

15. Sreeshyla B, Sivaji N, Mary S, Peter W AA. Short-Term Versus Long-Term Antibiotic Prophylaxis in Cochlear Implant Surgery.Otology & Neurotology: 2004 ; 25:720-722

16. Bidkar VJ, Jalisatigi RR, Naik AS, Shanbag DR, Siddappa R, Sharma PV. Perioperative Only Versus Extended Antimicrobial Usage in Tympanomastoid Surgery: A Randomized Trial. Laryngoscope 2014; 124:1459-1463.

17. Martinus CO , Zijtveld C , Kuipers S, Oever JT, Honings J, Weijs W, Wertheim HFL. Evaluation of Prolonged vs Short Courses of Antibiotic Prophylaxis Following Ear, Nose, Throat, and Oral and Maxillofacial Surgery: A Systematic Review and Meta-analysis. JAMA Otolaryngol Head Neck Surg. 2019;145(7):610-616.

18. Antimicrobial prophylaxis for surgery. Treat Guidel Med Lett 2004;2:27-32.

Barriers and Suggestions of Present Teaching Learning Status of 'Allied Subjects of Surgery' in Undergraduate Medical Education of Bangladesh: Fifth-year Students and Intern Doctors' Views

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Abstract

Background: Effective teaching learning is one of the most important component of better outcome in medical education.

Methods: This cross-sectional study was conducted to identify the views of fifth year students and intern doctors about the barriers and suggestions of present teaching learning status of 'Allied Subjects of Surgery' in undergraduate medical education of Bangladesh. The study was conducted from January 2021 to December 2021. A self-administered semi-structured questionnaire was administered to collect data from138 fifth-year students and 151 intern doctors. Convenience sampling technique was adopted for selection of eight medical colleges and the respondents were selected from the colleges purposively.

Results: Most of the respondent's (>90%) opined that the main barriers of teaching learning of 'Surgery and its Allied Subjects' were inadequate learning instruments, theories learned more than practical skills and inadequate evening shift clinical teaching. The main suggestions of the respondents (>90%) to improve the teaching learning status were there should be adequate provision of hands on learning with sufficient number of learning instruments and clinical teaching should be taken in ward, outdoor and emergency.

Conclusion: We should give adequate emphasis for proper clinical teaching in clinical places and adequate hands on learning with sufficient number of learning instruments to improve the teaching learning of Allied Subjects of Surgery in undergraduate medical education of Bangladesh.

Keywords: Allied Subjects of Surgery, Barriers and suggestions of teaching learning of Allied Subjects of Surgery, Undergraduate Medical Education of Bangladesh

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Introduction

Clinical teaching is the teaching and learning focused on and usually directly involving patients and their problems.[1] Clinical teaching lies at the heart of medical education.[2] At undergraduate level, medical and dental schools strive to give students as much clinical exposure as possible.[3] Common problems found with clinical teaching are as follows: lack of clear objectives and expectation; focus on factual recall rather than on development of problem solving skills and attitudes; teaching pitched at the incorrect level, usually too high; passive observation instead of active participation of learners; inadequate supervision and provision of feedback; little opportunity for reflection and discussion; informed consent not sought from patients; lack of respect or privacy and dignity of patients and lack of continuity with the rest of the curriculum.[4]

A survey of students' perceptions of 'good' and 'bad' teaching concluded that teachers' interpersonal behavior, how carefully they prepare and plan their teaching and ability to run their session well, determine their worth as clinical teachers.[5]

Challenges of Undergraduate Surgical Education are lack of standardized undergraduate surgical curricula and learning objectives, overreliance on student and educator

motivation, discrepancy between theoretical and practical learning, lack of human resources for undergraduate surgical education. The main barriers to surgical education at medical school identified were the lack of standardized surgical curricula with mandatory learning objectives and the inadequacy of human resources for surgical education. COVID-19 has exacerbated these challenges by depleting the pool of surgical educators and reducing access to learning opportunities in clinical environments. To address the worldwide need for a bigger surgical workforce, specific attention must be paid to improving undergraduate surgical education. Solutions proposed include the event of a typical surgical curriculum with learning outcomes appropriate for local needs, the incentivisation of surgical educators, the incorporation of targeted online and simulation teaching, and the use of technology.[6]

Methods

This cross-sectional descriptive study was conducted from 01 January 2021 to 31 December 2021 (01 year) after approval from Intuitional Review Board (IRB) of Centre for Medical Education of Bangladesh (CME) as a part of thesis of Masters in Medical Education (MMEd) under Bangabandhu Sheikh Mujib Medical University (BSMMU). Data were collected from purposively selected 138 fifth year students and 151 intern doctors from conveniently selected eight medical colleges of Bangladesh after getting permission from the concerned authorities and respondents. Their comments regarding barriers and suggestions were collected in a self-administered semi structured questionnaire that contained four questions on this issue in Surgery and its Allied Subjects in undergraduate medical education of Bangladesh. The questionnaires were distributed to the fifth-year students and intern doctors and were collected with the responses face to face; in some cases these were collected by online (WhatsApp) procedure due to restrictions in COVID 19 pandemic situation. Data were entered, processed and analyzed by using SPSS software program version 26.

Results

Table 1: Opinion of the fifth-year students and intern doctors about the barriers of teaching and learning of 'Surgery and its Allied Subjects' in MBBS course (n = 289)

Barrier	Frequency*	Percentage*
Inadequate practice of evening clinical teaching	260	90.3%
Inadequate learning instruments	229	79.5%
Theories are learned more than practical	197	68.4%
Less cooperation of staff	143	49.7%
Learning is hampered due to excess number of student	106	36.8%
Inadequate number of teacher	106	36.8%
Some teachers cannot instruct properly	99	34.4%
Inadequate number of patient	93	32.3%
Sometimes classes do not held	36	12.5%
Inadequate practice of morning clinical teaching	33	11.5%

*Multiple response

Table 1 shows that opinion of the fifth-year students and intern doctors about the barriers of teaching and learning of 'Surgery and its Allied subjects' in MBBS course. From the opinion it was found that maximum (90.3%) expressed, 'inadequate practice of evening clinical teaching'. Of the respondents 79.5% opined 'inadequate learning instruments' and 68.4% opined about 'theories are learned more than practical'. Only11.5% fifth-year students and intern doctors opined about 'inadequate practice of morning clinical teaching'.

Table 2: Suggestions of fifth-year students and intern doctors to improve the teaching and learning status of different subjects of Surgery and its Allied Subjects (n = 289)

Suggestion	Frequency*	Percentage*
Provision of hands on learning	260	90.3%
Sufficient instruments should be available for clinical teaching	229	79.5%
Clinical teaching should be taken in ward, outdoor and emergency	197	68.4%
Sufficient number of patient should be available	143	49.7%
Clinical teaching can be taken in outreach centers	106	36.8%
Sufficient free beds should be available for the patient specially in non-government medical college	106	36.8%
More classes should be taken by the senior teachers	99	34.4%
Number of teacher should be increased	93	32.3%
Follow the curriculum as much as possible	36	12.5%
Give importance of the subjects according to basic health needs of the country	33	11.5%

*Multiple response

Table 2 shows about the suggestions of fifth-year students and intern doctors to improve the teaching and learning status of different subjects of Surgery and its Allied Subjects in MBBS course. Of the list of suggestions maximum respondents (93.7%) proposed for 'provision of hands on learning'. Of the respondents 93% suggested about 'sufficient instruments should be available for clinical teaching' and 63.8% suggested that 'clinical teaching should be taken in ward, outdoor and emergency'. Only 33.8% suggested to 'give importance of the subjects according to basic health needs of the country'.

Discussion

Maximum fifth-year students and intern doctors (Table 1) opined the main barriers of teaching and learning of Surgery and its Allied Subjects in MBBS course were inadequate practice of evening clinical teaching (90.3%), inadequate learning instruments and theories are learned more than practical. On the other hand maximum (Table 2) fifth-year students and intern doctors suggested about provision of hands on learning (93.7%), sufficient instruments should be available for clinical teaching (93%) and clinical teaching should be taken in ward, outdoor and emergency. Minimum fifth-year students and intern doctors opined about sometimes classes were not held and inadequate practice of morning clinical teaching whereas minimum respondents suggested to follow the curriculum as much as possible and give importance of the subjects according to basic health needs of the country.

So the important things that were found for better teaching learning of Surgery and its Allied Subjects were improvement of evening clinical teaching and learning instruments, provision of hands on learning and clinical teaching should be taken in clinical places that are in ward, outdoor and emergency. In a study it had been found that Ophthalmology remains one among the foremost technologically up-to-date specialties in healthcare, yet this is often not reflected in the academic methods. Undergraduate ophthalmology education is in urgent need of reform as junior doctors are losing confidence in assessing ophthalmic complaints and undergraduate students are dissatisfied with traditional teaching methods. Technology Enhanced Learning (TEL) which required sufficient modern instruments and skills (hands on learning) has been shown to reduce learning time, improve knowledge retention and enhance student engagement, especially amongst digital learners.[7] In another study the increasing clinical and academic commitments for surgeons leave little time for teaching. This is very true for surgeons working in low and middle-income countries. These commitments cause less protected teaching time, with adverse consequences for surgical education.[8] To form an efficient partnership between surgeons and students to deliver the simplest surgical teaching for the advancement of the students may be a challenge for medical schools and surgeons.[9]

Conclusion

The main barriers of teaching learning of Surgery and its Allied Subjects were inadequate evening clinical teaching, inadequate learning instruments and less practical learning than theories.

The most important suggestion were to improve the teaching learning of Surgery and its Allied Subjects are clinical teaching should be taken in ward, outdoor and emergency, provision of hands on learning and sufficient instruments should be available for clinical teaching. Now adequate emphasis should be given for proper clinical teaching in clinical places and adequate hands on learning with sufficient instrument to improve the teaching learning of Allied Subjects of Surgery in undergraduate medical education of Bangladesh.

References

1. Islam MS, Khan I, Talukder HK and Akther HK. Clinical teaching in dermatology of Undergraduate Medical Students of Bangladesh [Internet]. Bangladesh Journal of Medical Education. 2010[cited 12 October 2021]; 01(01):16-24. Available from: https://www.banglajol.info/index.php/BJME/article/view/12854/9240
2. Bissel V, McKelie RA, Kinane DF, McHugh S Teaching periodontal pocket charting to dental students: a comparison of computer assisted learning and traditional tutorials [Internet]. Br Dent J, 2003[cited 13 October 2021]; 195(6):333-336. Available from: DOI: 10.1038/sj.bdj.4810535 (Accessed: 13 October 2021).
3. Chadwick RG, Carena AP, Hunter B, Campbell K, Evaluation of a head mounted camera for clinical dental teaching[Internet]. Br Dent J. 2008[cited 15 October 2021]; 204(2): 93-96. Available from: DOI: 10.1038/bdj.2008.10.
4. Janada MS, Schittek, Simulation of patient encounters using a virtual patient in periodontology instruction of dental students: design, usability and learning effect in history taking skills[Internet]. Eur J Dental Educ, 2004[cited 12 October 2021]; 8(3): 111-119. Available from: DOI: 10.1111/j.1600- 0579.2004. 00339.x,
5. Metcalfe DH, Mathura M, Students' perceptions of good and bad teaching: report of a critical incident study [Internet]. Med Educ, 1995[cited 30 October 2021]; 29(3): 193-197. Available from: doi: 10.1111/j.1365- 2923.1995.tb02829.x
6. Ravi K, Anyamele U A, Korch M. Badwi N, Daoud H A, Shah SSNH, Undergraduate Surgical Education: a Global Perspective[Internet]. Indian Journal of Surgery, 2021[cited 16 October 2021]; 1-9. Available from: https://link.springer.com/article/10.1007/s12262-021-02975-z.

7. Scantling-Birch Y, Naveed H, Tollemache N, Gounder P, and Rajak S, Is undergraduate ophthalmology teaching in the United Kingdom still fit for purpose? [Internet]. Eye, 2021[cited 25 October 2021]; 36: 343-345. Available from: https://www.nature.com/articles/s41433-021-01756-y

8. Taylor I, (2003) Surgery in the UK Undergraduate Curriculum [Internet]. Surgery, 2003[cited 25 October 2021]; 21(5): I-II. Available from: https://doi.org/10.1383/surg.21.5.0.15502.

9. Agha RA, Papanikitas A, Baum M, Benjamin IS, (2005) The teaching of surgery in the undergraduate curriculum. Part II - Importance and recommendations for change[Internet]. International Journal of Surgery, 2005[cited 20 December 2021]; 3:151-157, Available from: doi:10.1016/j.ijsu.2005.03.016

Original Article

Different Domains of Revised Bloom's Taxonomy in Learning of Endotracheal Intubation and Comparison between Clinical Skills Laboratory (CSL) and Multimedia Presentation

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Abstract

Background: Clinical skills laboratory (CSL) is one of the modern teaching tools of the medical education. Endotracheal intubation is one of the important skills for the healthcare worker to be practiced frequently.

Methods: Bloom's taxonomy was revised on 2001 to make the structure bi-directional from unidirectional. Knowledge and cognitive processes were assessed in this structure. The component of knowledge domain had six levels: remember, understand, apply, analyze, evaluate, and create. In this study the teaching tool clinical skills laboratories (CSL) was used to evaluate its efficacy for different levels of revised Bloom's taxonomy. Total 78 first-year nursing students were enrolled in to 2 groups. The groups were multimedia (MM) and CSL group. Both the groups were taught endotracheal intubation by the same instructor and were tested by 10 multiple choice question (MCQ) test. These 10 questions were set according to lower 5 revised Bloom's taxonomy levels.

Results: The mean score of both the groups did not show any difference but the mean score of the male participants was significantly better than the score of females of this group. The mean score of 'remember' and 'evaluating' level were significantly better in the CSL group, whereas the other level scores were better in the MM group.

Conclusion: Lower most (remembering) and one of top (evaluating) domain to learning was helpful when CSL was used as teaching tool. Other domains were better taught by multimedia type traditional teaching tool.

Keywords: Bloom's taxonomy, revised Bloom's taxonomy, clinical skills laboratory (CSL).

Introduction

Benjamin Bloom and his associates built up the Taxonomy of instructive targets: the psychological space in 1956, which fills in as the establishment for instructive outcomes and learning objectives.[1] Bloom's taxonomy made a typical language to such an extent that learning materials might measure up among educational institutions and gave an approach to evaluate what an educational plan offered inside the learning domain. The three learning domains are affective, cognitive and psychomotor. The classification of Bloom's taxonomy was first reported on 1956 which elaborated the intellectual area and overviewed the progressive construction with six degrees of learning: knowledge (lowest level), comprehension, application, analysis, synthesis, and evaluation (highest level).

Blossom's Taxonomy was revised in 2001 by Lorin Anderson and David Krathwohl (one of the co-authors on the first taxonomy). Concerning update, Krathwohl remarked on how Bloom's Taxonomy went from a unidimensional cognitive process of intellectual cycles to a two-dimensional structure of cognitive processes and types of knowledge. The knowledge measurement comprised of factual knowledge, conceptual knowledge, procedural knowledge, and metacognitive knowledge subtypes. The knowledge cycle subheadings of the revised one had similarity with the original one. It had six levels like remember, understand, apply, analyze, evaluate, and create.

The names of the levels were changed from noun to verb, and the top most level was named "create." According to the revised one, the knowledge has four sub classifications.[2] These subtypes are factual, conceptual, procedural and metacognitive. Terminology and specific details are the

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examples of factual knowledge. Theories, principles, categories and classifications are the example of conceptual knowledge. Knowledge regarding specific procedure and skills are considered as procedural knowledge. The metacognitive knowledge is mostly about the knowledge of cognition and about the knowledge about one's self. These different categories are helpful is setting learning objectives of course curriculum and can highlight beyond factual knowledge.

In the modern days of medical education, there are lots of nursing and medical institutions that started Clinical skills laboratories (CSL) in their teaching curriculum.[3] Not only in case of under graduation or post-graduation teaching purposes, CSL is also successfully used in continuing professional development (CPD) and continuing medical education (CME) programs of numerous educational institutions. In order to teach procedures and skill in safe, systematic and protected way the CSL has been standardized in different ways for different types of clinical approaches. Among the different regions of the world, now a days CSL has been included in the medical curriculum successfully for last few decades.

A standard laboratory should have procedural room, networked computers, ward area with bed and interviewing/ consultation room.[4] The aim is to create the environment of a clinic or healthcare premise to feel the trainee a real environment. The notice board usually displays teaching/ learning opportunities along with electrocardiography interpretations, physical examination with basic life support information. The laboratory should enhance a self-directory training to the students. The structure of the clinical skills laboratory should preferably include facilities for Objective Structured Clinical Examinations (OSCE) and other types of clinical examinations.

Procedural skills are learnt and practiced on models and manikins those could be screen-based or realistic high-tech interactive simulators. The common examples of simulations are venous/arterial puncture, blood pressure measuring, central venous catheterization, cardio pulmonary resuscitation (CPR), endotracheal intubation, urinary catheterization, spinal injection and different types of clinical examinations.

The primary objective of this study was to assess the relationship between clinical skills laboratory (CSL) and different levels of revised Bloom's taxonomy in case of endotracheal intubation. The secondary objective of this study was to compare the efficacy of clinical skills laboratories (CSL) and multimedia (MM) as teaching tools in case of endotracheal intubation for different levels of Revised Bloom's Taxonomy.

Methods

This was a randomized control trial (RCT) on medical education to assess the teaching tools CSL and multimedia (MM) presentation for teaching endotracheal intubation. Ethical approval was achieved from the institutional review board (IRB). Participants were first year nursing students, who never came across of any knowledge of endotracheal intubation. Study place was Sylhet Women's Medical College. Total number of participants were 78. By random lottery method the participants were divided into 2 groups (MM and CSL) keeping equal number of gender distribution in each group. All the first-year nursing students who never had any knowledge of endotracheal intubation were included. Students of any other academic year or students not interested to be enrolled were excluded from the study. Informed consents were taken from all the participants. MM group participants attended a 20-minute multimedia presentation on endotracheal intubation by a senior anesthesiologist. CSL group was demonstrated endotracheal intubation for 20 minutes by the same teacher. Both the groups then sat for a best response multiple choice question (MCQ) examination. Both the groups were allotted 10 minutes for examination. This was a pre-tested question paper of 10 questions set on 5 levels of revised bloom's taxonomy. The domains were remembering, understanding, applying, analyzing, evaluating and creating. These 5 domains were equally distributed among the 10 questions. The answer papers were marked by the same teacher. Total score of the paper as well as domain wise scores were documented. All data were transferred to an Excel data sheet. Mean, median and mode were calculated. The mean differences of both the groups of all variable were calculated by independent t-test.

Results

This study was carried out on total 78 participants. Participants were equally divided into two groups, multimedia (MM) and clinical skill laboratory (CSL).

Table 1: Distribution according to gender and mean age

	MM	CSL	%
Number of participants	39	39	
Male	05	05	13%
Female	34	34	87%
Mean age (year)	20.10 (±0.640)	20.15 (±0.744)	
Male mean age (year)	20.66	20.16	
Female mean age (year)	20.0	20.15	

Table 1 was distributed according to gender and mean age. Equal number (39) of participants were enrolled in both MM and CSL group. Number of male (05) and female (34) were also equal in both the groups. Mean age of the participants of the MM group was 20.10 and it was 20.15 in the CSL group. Mean age of male participants were 20.66 and 20.16 years in MM and CSL groups respectively. The mean age of female participants was 20 in MM and 20.15 in the CSL.

Table 2: Distribution according to mean, median and mode of the scores of both groups

	MM	CSL	Overall mean
Mean	4.69	4.64	
Median	5	5	
Mode	6	4,5	4.66
Range	9	5	
SD	± 2.052	± 1.270	
Minimum	0	2	
Maximum	9	7	

Table 2 shows mean, median and mode of the scores of both the groups. Mean of MM was 4.69 and it was 4.64 in CSL. Median was same (5) for both the groups. MM had a wide range (9) in comparison to the range (5) of CSL. Overall mean score was 4.66.

Table 3: Distribution according to mean score of both the groups

	MM	CSL	t-value	p-value	Significance
Mean	4.69	4.64	-0.1	0.45	Not significant

Table 3 describes the mean scores of male and female of both the groups. Mean scores of MM and CSL were 4.69 and 4.64 respectively and the difference was statistically not significant (p=0.45).

Table 4: Distribution of mean scores according to gender

	Male	Female	t-value	p-value	Significance
MM	4.88	4.66	0.18	0.43	Not significant
CSL	5.66	4.5	2.07	0.02	Significant

Table 4 shows the difference between the mean scores of the male (4.88) and female (4.66) of MM was statistically not significant (p=0.43). On the other hand, the difference between the mean scores of male (5.66) and female (4.5)on CSL was statistically significant (p=0.02).

Table 5: Distribution of mean scores of MM and CSL according to different Bloom's taxonomy domain

Revised Bloom's taxonomy domain	No. of questions	MM	CSL	t-value	p-value	Significance
Remembering	2	1.02	1.06	-6.51	.000092	Significant
Understanding	2	1.03	0.95	13.37	<.00001	Significant
Applying	2	0.95	0.91	8.94	<.00001	Significant
Analyzing	2	0.87	0.85	4.47	.001039	Significant
Evaluating	2	0.82	0.87	11.18	<.00001	Significant
Creating	0	-	-	-	-	-

Table 5 illustrates the distribution of mean scores of MM and CSL according to different Bloom's taxonomy domain. The domains remembering, understanding, applying, analyzing and evaluating had 2 questions of each type. There was no question of creating domain. The scores of remembering and evaluating were significantly higher in CSL group. The mean scores of understanding, applying and analyzing were significantly higher in the MM group.

Discussion

Zainab et al published their original research work on assessing performance of CSL along with the level of satisfaction of CSL as a teaching tool. This study was conducted on 184 third year students.[5] All the students underwent CSL training. The result was assessed by OSCE method. Among all 96% students passed in generic stations and 72% passed in the discipline-based stations. The mean score of Gynecology was 73% but the mean scores of other surgical disciplines like Surgery and ENT were 98.7%. Feedback from students on CSL was achieved by 6 questions using a 5-point Likert scale. It was found that 96.2% students thought CSL course was well organized, 95% students found the CSL objective of teaching was appropriate, 93.7% students were confident to practice on real patients and two-third students recommended the course to establish the course in medical college.

The psychomotor skill of pediatric interns was assessed after finishing the rotation at a medical college of Tehran.[6] Twenty-five interns were taught by traditional method, when 19 interns were trained by CSL. Non-randomized, simple sampling technique was applied to enroll in experimental and control groups. In the experimental group the mean score before rotation was 29.6 and after training was 120.69. The mean score before and after training were 16.45 and 102.87 respectively in the control group. The improvement mean was significantly ($p<0.05$) better in the experimental group. The authors concluded mentioning that the CSL could be included as a teaching tool in the medical college.

In the medical education practicing and teaching motor skill for students is extremely important in order to prepare themselves for performing any procedure. It has been proved that conjoining cognitive domain along with psychomotor and affective domains significantly help to develop procedure-based curriculums.[7] Some people think that Dave's psychomotor taxonomy which comprises of imitation, manipulation, practical precision, articulation, and naturalization, may help in the objectives of surgical based procedural teaching by introducing simulation based clinical skill labs.[8] There is another psychomotor domain named Simpson's taxonomy is also popular among academicians in developing procedure-based learning.[9] There are seven components of this domain, they are perception, set, guided response, mechanism, complex overt response, adaptation, and origination.

Trung Q Tran et al performed their study to assess the efficacy of teacher-made (TM) simulating model with commercial models (CM).[10] A total 144 nursing students were enrolled it the study. Both the groups, CM and TM had pre and post-tests. Both the groups were asked to perform procedures on real patients after finishing the post-test assessment. Mean scores of pre and post-tests of both the groups showed marked improvement but the difference of improvement between two groups were not significant. When performing procedure on the real patient, it was found that, the TM group had a better communication skill. It was concluded that clinical skill on basic intravenous (IV) training on TM has been proved as a cost benefit model.

The advantage of CSL is that it can be demonstrated by preparing for clinical practice without disturbing the patient. Enabling students to study at their own comfort zone in a safe environment.[11] CSL allows early practice of complex, painful and embarrassing procedures in a supervised environment. It also provides frequent rehearsals of certain skills. The relevance of CSL is related to its ability to mimic actual clinical practice and the application of new educational theories and strategies. Students can have good clinical skills to address common health issues, core and outcome capabilities.[12] Students practicing CSL will be more confident in approaching patients, expressing their opinions and getting immediate feedback. It can meet students' educational needs and reduce their fear and anxiety about clinical competitions. Apart from students, institutions are also benefitted from CSL. These include: more time for research, professional development, educational management and other educational activities. There are some disadvantages of CSL also.[13] Firstly, rapidly increasing number of medical students. Accommodating huge number of trainees in certain limited schedule could hamper the quality of learning process. Secondly, difficulty in getting well trained, enthusiastic teachers who would be ready to adopt a newer teaching tool. Thirdly, the cost effectiveness. Preparing lab with procedure- based simulating models could be expensive for some institutions.

Conclusion

CSL is one of the modern teaching tools, currently popular in lots of medical institutions. Revised Bloom's taxonomy classifies the psychomotor domain of the learning process in to 6 groups. Lower most (remembering) and one of top (evaluating) domain to learning was helpful when CSL was used as teaching tool. Other domains were better taught by multimedia type traditional teaching tool.

References

1. Adams NE. Bloom's taxonomy of cognitive learning objectives. J Med Libr Assoc. 2015; 103(3):152-3.
2. Su WM, Osisek PJ. The Revised Bloom's Taxonomy: implications for educating nurses. J Contin Educ Nurs. 2011;42(7):321-7.
3. Ledingham McA, Dent JA. Clinical skills centers. In: Dent JA, Harden RM, editors. A practical guide for medical teachers. Edinburgh (UK): Churchill Livingstone; 2001.
4. Dent JA. Current trends and future implications in the developing role of clinical skills centres. Med Teach 2001; 23: 483-489.
5. Zainab Shafiq, Tariq Saeed Mufti, Iftikhar Qayum. Role of clinical skill centre in undergraduate medical education: Initial experience at Rehman Medical College Peshawar. JPak Med Assoc 2017; 67(1): 73-76.
6. Seyed Mansour Razavy, Payman Salamati, Elham Shahgholi, Malektaj Honarmand and Fariba Naderi et al. The Effects of Clinical Skills Learning Centers on Learning Promotion among Pediatrics Interns. Iranian Journal of Medical Education 2011; 10(4): 430-438.
7. Kumar N, Rahman E, Adds PJ. An effective and novel method for teaching applied facial anatomy and related procedural skills to esthetic physicians. Adv Med Educ Pract. 2018;9:905-913.
8. Costa GOFD, Rocha HAL, Moura Júnior LG, Medeiros FDC. Taxonomy of educational objectives and learning theories in the training of laparoscopic surgical techniques in a simulation environment. Rev Col Bras Cir. 2018;45(5):e1954.
9. Menix KD. Domains of learning: interdependent components of achievable learning outcomes. J Contin Educ Nurs. 1996;27(5):200-8.
10. Tran, T.Q., Scherpbier, A., Van Dalen, J. et al. Teacher-made models: the answer for medical skills training in developing countries? BMC Med Educ 2012;12: 98.

    https://doi.org/10.1186/1472-6920-12-98.
11. Bligh J. Techniques in medical education: The Clinical Skills Unit. Postgrad Med J. 1995; 71: 730-732.
12. Wilson DB, Jennett PA. The Medical Skills Centre at the University of Calgary Medical School. Med Educ 1997; 31: 45-48.
13. Friedman CP. The marvelous medical education machine or how medical education can be 'unstuck' in time. Med Teach 2000; 22: 496-502.

Assessment of Infant Feeding Practices in a Tertiary Level Private Hospital of Bangladesh

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Abstract

Background: Breastfeeding provides optimal and complete nutrition for newborn babies. World Health Organization (WHO) recommends exclusive breastfeeding for the first 6 months of life, with continued breastfeeding through the second year of life.
Purpose: To determine breastfeeding and infant feeding patterns by enquiring the mothers of whom regarding the factors influencing the complementary and breastfeeding practices.

Methods: This cross-sectional study was conducted on 460 mothers of children less than 24 months of age from July 2012 through December 2012 in inpatient & outpatient department of Pediatrics of Uttara Adhunic Medical College & Hospital. Study subjects were interviewed using structured questionnaires that included socio-demographic, economic, and complementary and breast-feeding practicing trait profiles. All the relevant data were recorded in a pre-designed data collection sheet. Results were presented by appropriate tables and figures.

Results: Breast feeding was practiced more frequently by mothers aged 21-30yrs (208). Strong association was found between maternal education & occupation with Exclusive Breast Feeding (EBF); father's education also shows strong relationship with exclusive breast-feeding pattern. House wife mothers stick to EBF than those of service holder or day labors. Higher education of the father and mother also had significant relationship with the initiation of breast feeding within one hour in our study. Based on the multiple response it was revealed that majority given banana (59.3%), more than half chose khichuri (50.4%) and sujii (50.2%). Fish, meat, cereal, and pulse were consumed by 170, 130, 26 and 12 children respectively.

Conclusion: Study shows that exclusive breastfeeding was not maintained up to recommended age of 6 months. Knowledge about Complementary Feeding (CF) was lacking in the mothers. Regarding, mothers' education and socioeconomic conditions, a positive correlation was noted with feeding practice. Educated and high-income group are more strictly follow the right way of feeding practices guided by WHO recommendation.

Keywards: Infant feeding practices, Tertiary level hospital, Breastfeeding, weaning

Introduction

Adequate nutrition during infancy and early childhood is fundamental to the development of each child's full human potential. It is well recognized that the period from birth to two years of age is a “critical window” for the promotion of optimal growth, health and behavioral development. Longitudinal studies have consistently shown that this is the peak age for growth faltering, deficiencies of certain micronutrients, and common childhood illnesses such as diarrhea. After a child reaches 2 years of age, it is very difficult to reverse stunting that has occurred earlier.[1] Poor breastfeeding and complementary feeding practices, coupled with high rates of infectious diseases, are the principal proximate causes of malnutrition during the first two years of life. For this reason, it is essential to ensure that caregivers are provided with appropriate guidance regarding optimal feeding of infants and young children. From about 6 months of age, breast milk alone is no longer sufficient to cover a baby's nutritional requirements. He or she can also start to swallow non-liquid complementary foods at this stage, helping to support growth, brain development and the building of natural defenses. The period of weaning is critical for the future development and growth of infants.[2]

During breastfeeding, approximately 0.25-0.5 grams per day of secretory IgA antibodies pass to the baby via the milk. This is one of the most important features of colostrum, the breast milk created for newborns. The main target for these antibodies is probably microorganisms in the baby's intestine. There is some uptake of IgA to the rest of the body, but this amount is relatively small.[3] Also, breast

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milk contains several anti-infective factors such as bile salt stimulated lipase and lactoferrin.[4] The World Health Organization (WHO) recommends exclusive breastfeeding for the first 6 months of life, with continued breastfeeding through the second year of life. However, these recommendations are not followed everywhere: in 2007, a national survey in USA reported that 26% of all women, with children aged from 0 to 5 years, did not give any breastfeeding at all. In a study of five Asian countries (2002 to 2005), the percentages of exclusive breastfeeding of infants younger than 6 months were reported as 30.7% in Timor-Leste, 33.7% in Philippine, 38.9% in Indonesia and 60.1% in Cambodia. The fifth country, Vietnam, reported only 15.5%.[5]

Breastfeeding provides optimal and complete nutrition for newborn babies. Although new mothers in Bangladesh are increasingly choosing to breastfeed their babies, rates of exclusive breastfeeding are low and duration remains short. The purpose of this study was to describe the breastfeeding and weaning practices of Bangladeshi mothers over the infant's two year of life to determine the factors associated with early cessation.

Methods

This cross-sectional study was conducted in the department of pediatrics of Uttara Adhunic Medical College & Hospital on 460 mothers of children of 0-24 months of age attended at inpatient & outpatient department from July 2012 through December 2012. Study subjects were selected purposively based on specific selection criteria. Number of samples were determined on the basis of WHO's "Sample size determination in health studies" at 5% level of significance, 95% confidence level and 50% anticipated population proportion- the minimum sample size has been calculated was 384; although 460 samples were investigated with 20% added for correction of the sampling error. Those children who had congenital anomaly of any kind, mental retardation was excluded from the study. Data were collected by face to face interview by a structured questionnaire. Each of the questionnaires was sorted for consistency and completeness. Then the cleaned data were coded and entered by the researcher herself into the computer with the assistance of SPSS version 11.5.

Results

Table 1: Age distribution of the children

Age group (months)	Frequency	Percentage
0-6	15	3.3
6-12	225	48.9
12-18	70	15.2
18-24	150	32.6
Total	**460**	**100**
Mean±SD	**10.43±4.42 (SD)**	

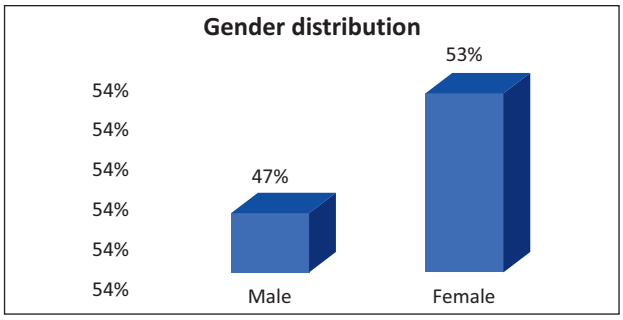

Figure 1: Bar diagram showing gender distribution of the children

Table 2: Age distribution of the mother

Age group	Frequency	Percentage
<20 years	92	20
20-30years	333	72.4
>30 years	35	7.6
Total	**460**	**100**
Mean±SD	**24.34 ±3.97(SD) years**	

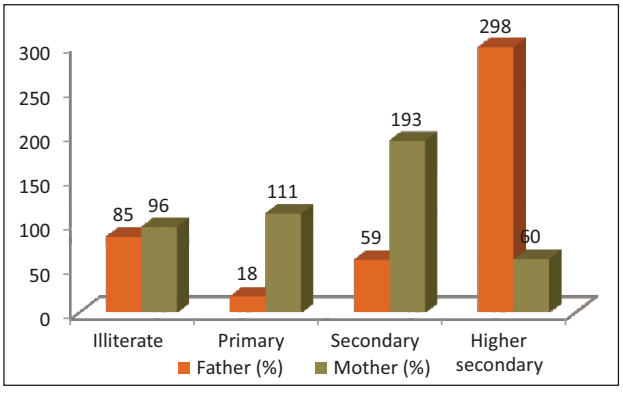

Figure 2: Bar diagram showing educational status of the parents

Table 3: Distribution of first / pre-lacteal feeding of the child after birth

First fed	Frequency	Percentage
Breast milk	280	60.9
Sugar water/Honey	97	21.1
Formula milk/Cow's milk	83	18.0
Total	**460**	**100**

Table 4: Distribution of breast-feeding patterns of children

Breast-feeding pattern	Frequency	Percentage
Exclusive	180	39
Non-exclusive	280	61
Total	**460**	**100**

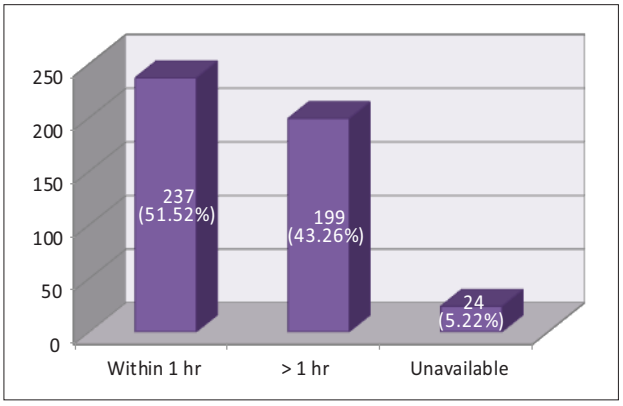

Figure 3: Bar diagram showing distribution of starting time of breast feeding

Table 5: Distribution of types of complementary foods*

Khichuri	Frequency	Percentage
Rice	232	50.4
Sujii	231	50.2
Cereal (commercially available)	34	7.4
Pulse	12	2.6
Fish	170	37.0
Meat	130	28.3
Banana	273	59.3
Others	63	13.7

*Multiple answers

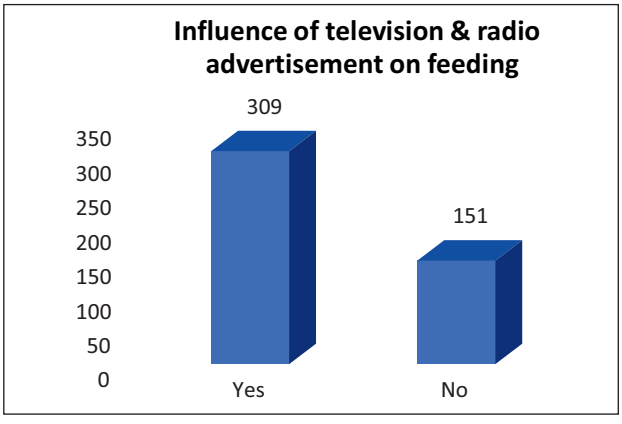

Figure 4: Bar diagram showing distribution of influenced of television and radio advertisement on child feeding

Table 6: Distribution of knowledge on breast feeding

Knowledge	Frequency	Percentage
No	219	47.6
Yes	198	43.4
Total	**460**	**100**

Table 7: Distribution of knowledge on complementary feeding practice

Knowledge	Frequency	Percentage
No	175	38.0
Yes	285	62.0
Total	**460**	**100**

Table VIII: Comparison of exclusive & non-exclusive breast-feeding on socio-demographic characteristics

Variables	Exclusive breast-feeding (280)	Non-exclusive breast feeding (180)	χ^2 value/ p value
Maternal age			
<20	37	55	39.33/
21-30	208	125	<0.001[s]
>30	35	0	
Mother's occupation			
House wife	239	160	18.65/
Service	41	12	<0.001[s]
Day labour	0	8	
Father's occupation			
Service	200	84	114.51/
Business	64	12	<0.001[s]
Day labor	12	76	
Others	4	8	
Family Income			
<10000	155	160	61.80/
10000-25000	83	20	<0.001[s]
>25000	42	0	
Mother's education			
Illiterate	16	80	212.47/
Primary	35	76	<0.001[s]
Secondary	173	20	
Higher secondary	56	4	
Father's education			
Illiterate	12	73	128.86/
Primary	11	7	<0.001[s]
Secondary	23	36	
Higher secondary	234	64	
Residence			
Urban	256	87	107.98/
Rural	12	36	<0.001[s]
Urban slum	12	57	
Housing			
Katcha	4	73	152.51/
Semipacca	40	47	<0.001[s]
Pacca	236	60	

Discussion

The purpose of this study was to describe the breastfeeding and weaning practices of Bangladeshi mothers over the infant's two year of life to determine the factors associated with early cessation. The study included a total of 460 children of whom 242 (52.6%) were male and 218 (47.4%) were female. Minimum age was 2 months, maximum 24 months, mean was 10.43 with a SD of ±4.42. Most of the children were from 7-12 months age group (225, 48.9%) and minimum 3.3% from 0-6 months. Around 53.3% were fed with breast milk, 73.3% had breast milk as their first feeding (rest 26.7% sugar water). More than half (53.3%) of them continued breast feeding for 6 months, one fourth (26.7%) could not stick to the same. Only breast feeding was practiced up to as lowest age of 2 months and as prolonged as age of 10 months. Nearly 61% (n=460) mothers breastfed exclusively in the study conducted by Ukegbu et al. They revealed only 37.3% (85) breastfed exclusively for 6 months. The ability of mothers to practice EBF was linked to adequate feeding and fluid intake[6]. Whereas about 280 (61%) practiced breastfed against 180 (39%) mothers who did not in this study.

Strong association was revealed between maternal age and breast-feeding practice. Breast feeding was practiced more frequently by mothers aged 21 – 30 (208) and more than 30 years of age (35) compared with those less than 20 years (37) old, $\chi2_{(2)}$ =39.33, p<0.001.

Almost ¾th (74.6%) of the respondents were dwellers of urban and only 48 (10.4%) were from rural areas. Most of the respondents (296, 64.3%) lived in pacca houses and 16.7% (77) in katcha houses. Urban area dwellers were found to be more in favour of breast feeding than their counter parts (rural & urban slum) who preferred cow's milk or sugar water as initiating food for the infants ($\chi2_{(2)}$ =107.98, p<0.001). The respondents leaving in pacca houses constitute the majority (64.3%), the katcha (16.7%) and semi-pacca (18.9%) dwellers were the rest. Strong association was also revealed between breast feeding and the residential status ($\chi2_{(2)}$=152.51, p<0.001); those leaving in the pacca housing were practicing breast feeding than the others.

One study in Kenya Found almost all the children (99%) were breastfed; however, more than a third (37%) were not breastfed in the first hour following delivery. The main reasons given for not initiating breastfeeding immediately were: little or no breast milk (35%); baby being asleep/tired (23%); baby being sick (13%); and mother being sick (9%)[7]. About 60.9% (280) baby received breast milk as first feeding in our study; rest had sugar water (21.1%) or cow's milk (18%). Among total 460 children 237 received it within first hour of birth. Higher education of the father ($\chi2_{(3)}$ =98.67, p = 0.000) and mother ($\chi2_{(3)}$=154.22, p= 0.000) was strongly related with the initiation of breast feeding within one hour in our study.

Women in Hong Kong, like women in many other industrialized countries, are increasingly choosing to breastfeed their infants. Although more than 70% of all new mothers now initiate breastfeeding, up from 19% in 1981 and 37% in 1997, Hong Kong still has low breastfeeding rates when compared with other developed countries[8,9]. In excess of half (280; 60.9%) of the children were exclusively breast fed infants in the present study; among them 63.9% continued for 5-6 months, prematurely terminated children were 78 (27.9%) and 23 (8.2%) mothers lingered for more than 6 months (p<.001).

The survey showed the major constraints to exclusive breastfeeding to be: the perception that babies continued to be hungry after breastfeeding (29%); maternal health problems (26%); fear of babies becoming addicted to breast milk (26%); pressure from mother-in-law (25%); pains in the breast (25%); and the need to return to work (24%)[10]. In our study among the non-exclusive breast feeder's more than half (57.8%) committed it for social belief, 72 mothers (40%) mentioned unavailability of their breast milk and only 4 had other reasons. Putting first feed in the baby (breast milk, cow's milk, Sugar water) showed strong association with reasons for not breast feeding in my study; $\chi2_{(3)}$ =125.21, p < 0.001. Major constraint revealed in my study was social belief pertaining to norms and culture of the society.

Complementary foods should be varied and include adequate quantities of meat, poultry, fish or eggs, as well as vitamin A-rich fruits and vegetables every day. Where this is not possible, the use of fortified complementary foods and vitamin mineral supplements may be necessary to ensure adequacy of particular nutrient intakes[11]. The selection of type of foods is an important facet and more or less depends largely on the cultural aspect of the geographical region. Our study based on the multiple response revealed that, banana, 'khichuri', sujii, fish, meat, cereal, pulse and rice gruel were consumed by 273, 232, 231, 170, 130, 26, 12, 8 children respectively.

Factors associated with early introduction of complementary foods (before the age of six months) at multivariate level include child's sex; mother's marital status, ethnicity, and education level; pregnancy desirability; place of delivery; and slum of residence (p < 0.05, respectively)[12]. Mothers now a days have substantial knowledge about child feeding practice. While the parents (especially mother) were enquired regarding knowledge on complementary feeding practice, 285 (62%) provided their view as having the knowledge and 175 (38%) was found not having the appropriate knowledge.

Conclusion

Study findings showed that exclusive breastfeeding was not maintained up to recommended age of 6 months and knowledge about complementary feeding was lacking in the mothers. Infant and young child feeding practices observed in this study were far from the recommended norms given in the methodology used to collect the data (IYCF feeding assessment protocol). Mothers had insufficient knowledge

of complementary feeding. Educated and high-income groups follow the right way of feeding practices as recommended by WHO guidelines.

Reference

1. Martorell R, Kettel Khan L, Schroeder DG. Reversibility of stunting: epidemiological findings in children from developing countries. Eur J Clin Nutr 1994:45-57.
2. Meeting Report. Feeding the Non-Breastfed Child: 6-24 Months of Age. WHO, Geneva, March 2004: 71-76
3. Hanson, L. A.; Söderström, T. Human milk: Defense against infection. Progress in Clinical and Biological Research1981; 61: 147–159.
4. Rodriguez-Palmero M, Koletzko B, Kunz C, Jensen R. Nutritional and biochemical properties of human milk: II. Lipids, micronutrients, and bioactive factors. Clin Perinatol 1999;26: 335–59.
5. Huong N Thu, Bo Eriksson, Toan T Khanh, Max Petzold, Göran Bondjers, Chuc Nguyen Kim, Liem N Thanh and Henry Ascher. Breastfeeding practices in urban and rural Vietnam. BMC Pub Health 2012, 12:964.
6. A U Ukegbu, P O Ukegbu, U U Onyeonoro, C F Ubajaka, Determinants of breastfeeding patterns among mothers in Anambra State, Nigeria. SAJCH 2011; 5: 112-116.
7. Kimani-Murage EW, Madise NJ, Fotso JC, Kyobutungi C, Mutua MK, Gitau TM and Yatich N. Patterns and determinants of breastfeeding and complementary feeding practices in urban informal settlements, Nairobi Kenya. BMC Public Health 2011, 11:396.
8. Baby Friendly Hospital Initiative Hong Kong Association: *World breastfeeding week 2009: survey report.* Hong Kong: Author; 2009: 121-124.
9. Callen J, Pinelli J: Incidence and duration of breastfeeding for term infants in Canada, United States, Europe, and Australia: A literature review. *Birth* 2004, 31:285-292.
10. Agunbiade OM and Ogunleye OV. Constraints to exclusive breastfeeding practice among breastfeeding mothers in Southwest Nigeria: implications for scaling up. Int Breastfeed J. 2012; 7: 5.
11. World Health Organization: Global Strategy on Infant and Young Child Feeding. *55th World Health Assembly* Geneva, Switzerland; 2002: 232-235.
12. Kimani-Murage EW, Madise NJ, Fotso JC, Kyobutungi C, Mutua MK, Gitau TM and Yatich N. Patterns and determinants of breastfeeding and complementary feeding practices in urban informal settlements, Nairobi Kenya. BMC Public Health 2011, 11:396

Original Article

Pattern of Ocular Trauma in Rohingya Refugees in Bangladesh Admitted to Ophthalmology Department in a Tertiary Hospital

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Abstract

Background: Ocular trauma is an important cause of blindness and ocular morbidity throughout the world. Despite prompt treatment, the severity of the injuries might result in catastrophic and irreparable vision loss as well as diminished quality of life. The objective of the present study was to determine the pattern of ocular trauma in Rohingya Refugees admitted into Ophthalmology department of Chittagong Medical College Hospital (CMCH).

Methods: This descriptive study was conducted by retrospective review of records of 73 Rohingya Refugees patients of ocular trauma admitted into the department of Ophthalmology of CMCH over a period of 4 year from 1st September, 2017 to 31st August, 2021. All the relevant information were recorded in a pre-designed data collection sheet. Results were presented by appropriate tables and figures.

Results: Out of 73 Rohingya Refugees, 61.6% were males and 38.4% were females. Maximum patients (53.4%) were less than 20 years age. The most common place of injury occurred at home 32 (43.9%) followed by sports 19 (26.0%) and causative agents of injury was sharp object 23 (31.5%) followed by blunt object 22 (30.1%). Most of the participants had open globe injury (52.0%) followed by closed globe injury (32.9%). Penetrating corneal injury (43.9%) was the most common clinical presentation among the ocular injuries. Visual acuity at presentation was PL, HM in 45.2% of the cases and 6/12-6/6 only in 13.7% of the cases. A total of eleven eyes (15.1%) had no light perception at presentation. During discharge, only a small degree of vision improvement was achieved.

Conclusion: Maximum patients of ocular trauma from Rohingya Refugees were due to sharp object induced injury, open globe type and injury taken place at home. The feasibility and efficiency of various preventive approaches in minimizing ocular trauma should be investigated further in the Refugees camp.

Keywords: Ocular trauma, Rohingya refugees

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Introduction:

The Rohingya are a minority ethnic group residing in the Rakhine state of Myanmar. According to UN estimates, in late September 2017, approximately 10,000 Rohingya were killed and over 730,000 fled into Bangladesh.[1] The United Nations High Commissioner for Refugees (UNHCR) now reports over 919,000 Rohingya refugees are residing in several camps in the two southernmost sub-districts of Cox's Bazar district.[2]These enormous numbers of displaced people have limited access to healthcare with higher health risks.[3] Evidence suggests that the prevalence of vision impairments and blindness among refugees are common and often higher than the general population. A recent systematic review found that the prevalence of blindness in the refugee camps can range from 1.3% to 26.2%.[4]

Ocular trauma is a major cause of ocular morbidity and has been reported to be one of the most important cause of unilateral vision loss in developing countries.[5] According to the World Health Organization (WHO) global estimates, the annual incidence of ocular trauma is approximately 55 million and ocular injuries account for 5% to 16% of ophthalmology consultations.[6]

The eye represents only 0.27% of the total body surface area and 4% of the facial area, but it is the third most common

organ affected by trauma after hands and feet.[7] The impact of trauma on a human eye may range from occurrence of minute corneal abrasions/innocuous sub-conjunctival hemorrhage to a badly lacerated globe.[8] Despite advances in treatment, the prognosis for these injuries is still uncertain.[9-10] Most of these injuries are produced in foreseeable circumstances, and therefore could be prevented by means of appropriate eye protection. Among the most established risk factors are age, gender, socio-economic status and life style.[9]

Chittagong Medical College Hospital is situated in the port city of Chittagong in the south-eastern part of the country, Bangladesh, and is one of the largest hospitals in the country and a tertiary level hospital.

In a recent study was conducted on 3,629 persons of Rohingya refugees, Cataract was responsible for 75.0% of blindness and 75.8% severe visual impairment.[11] However, no studies had been carried out on pattern, presentation and risk factors of ocular trauma of Rohingya refugees in the study area. Most of the ocular trauma of Rohingya refugees was managed by health facilities of local government or private institutes. Ocular trauma, which necessitates immediate treatment, is transported to a tertiary hospital for better care.

In view of public health importance, this study will provide information on pattern, presentation and risk factors of ocular trauma of Rohingya refugees admitted at Ophthalmology Department, Chittagong Medical College Hospital. This will serve as the foundation for appropriate stack holders to plan and implement preventive and curative actions so that timely intervention can prevent vision loss and protect the eyes.

Methods

This hospital based retrospective study was carried out on ocular trauma patients of Rohingya refugees admitted in Department of Ophthalmology, CMCH. It included cases that were admitted from 1st September, 2017 to 31st August, 2021.

Total 73 patients were included in this study using register records of admitted patients in Ophthalmology department, CMCH.

Patients who were referred from other government or private health institutions and admitted to the Ophthalmology department through the emergency department were included. Those with non-traumatic spontaneous ruptures or patients referred by other department of our hospital for ocular trauma were excluded. The variables were socio-demographic data (gender, age), the place where trauma occurred, causative agents, type of ocular injury, clinical presentation and visual acuity (VA) (at presentation and after treatment). Variables were identified based on the literature and data collection form was developed accordingly. Type of ocular injury was classified based on internationally accepted Birmingham Eye Trauma Terminology System (BETTS).[12]

Data collected from register records were exported as Microsoft Excel sheets from the data collection form, and statistical analysis was performed using the IBM SPSS-23.0 Statistics software. Variables were presented as numbers and percentages.

Results

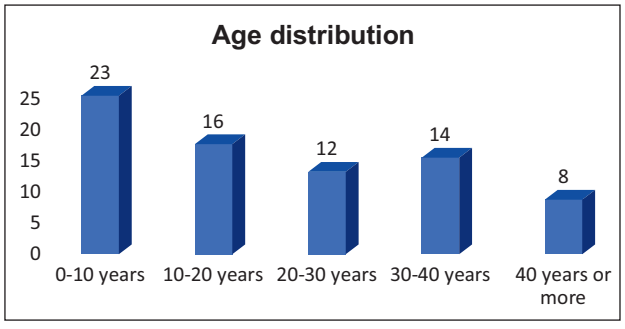

Figure 1: Bar diagram showing age distribution of the study subjects

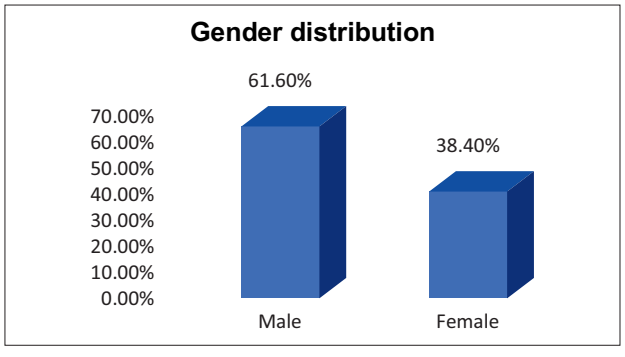

Figure 2: Bar diagram showing gender distribution of the study subjects

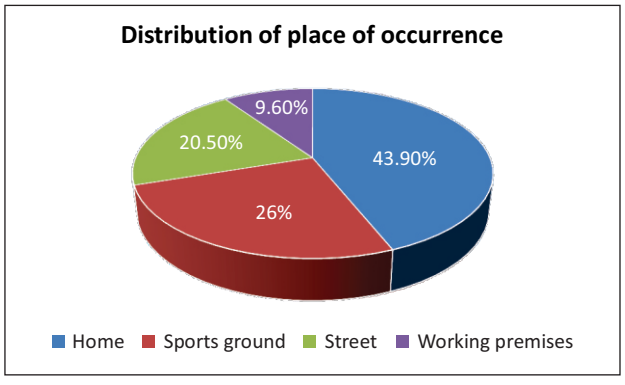

Figure 3: Pie chart showing distribution of place of occurrence of injury

Table 1: Distribution of causative agents (n=73)

Source	Number of patients	Percentage (%)
Sharp Object	23	31.5
Blunt Object	22	30.1
Metallic Object	13	17.8
Vegetable matter (thorn/branch)	8	11.0
Alkali (Lime)	4	5.5
Fall	1	1.4
Motor Vehicle Crash	1	1.4
Fireworks	1	1.4

Table 2: Distribution of types of ocular injury

Mechanical Injury		Frequency (%)
Non-mechanical Injury	Open globe injury • Rupture • Laceration -Penetrating -IOFB	38 (52.0) 03 (4.1) 35 (47.9) -33 (45.2) -02 (2.7)
	Closed globe injury • Contusion • Lamellar laceration	24 (32.9) 15 (20.6) 9 (12.3)
	Adnexal	07 (9.6)
	Chemical Injury	04 (5.5)
Total		**73 (100)**

**IOFB: Intraocular foreign body

Table 3: Distribution of clinical presentations of ocular injury

Diagnosis	Number of patients	Percentage (%)
Penetrating Corneal Injury	32	43.9
Eyelid Laceration	7	9.6
Corneal FB	5	6.8
Subconjunctival Haemorrhage	4	5.5
Chemical Injury	4	5.5
Corneal Abrasion	3	4.1
Uveal prolapse	03	4.1
Traumatic Aphakia	2	2.7
Traumatic Cataract	2	2.7
Staphyloma	2	2.7
Intraocular FB	2	2.7
Painful blind eye	2	2.7
Conjunctival Laceration	1	1.4
Penetrating Scleral Injury	1	1.4
Hyphema	1	1.4
Traumatic Uveitis	1	1.4
Traumatic Optic neuropathy	1	1.4

Table 4: Distribution of percentage of patients according to different categories of visual acuity in different assessment periods

Visual acuity	At presentation	After treatment	p value
NPL	15.1	15.1	$>0.05^{ns}$
PL to HM	45.2	36.9	$<0.05^{s}$
3/60 to 6/60	15.1	16.4	$>0.05^{ns}$
6/36 to 6/18	10.9	12.3	$<0.05^{s}$
6/12 to 6/6	13.7	19.2	$<0.05^{s}$

s= significant, ns=non-significant, p value obtained by χ^2 test
NPL: No perception of light; PL: Perception of light; HM: Hand movement.

Discussion

Ocular trauma is one of the common cause of ocular morbidity and blindness. It can be minimized by timely intervention and optimum management.

The result showed that the occurrence of ocular trauma was high in males (61.6%) and this is supported by other studies conducted around the globe; in Lahore, Pakistan males accounted 75% and 72.3% in Nepal, respectively.[13-14] This could be attributable to the fact that males are more likely to engage in outdoor activities where trauma is frequent.

Among patients presented for ocular trauma, most of them (53.4%) were less than 20 years of age; Mukherjee AK, Saini JS, Dabral SM (1984) carried out a study of 82 patients varying in age group from 5yrs to 62years which were hospitalized with penetrating ocular injuries. Majority of these were males (60 cases, 73.17%). 37 patients (44.91%) were less than 30 years of age.[15] This finding stands to reason because those who are at risk of ocular injuries are more likely to engage in risky behaviors and activities.

Several studies have described events that surround ocular trauma. In our study, the most common place of injury occurred at home (43.9%) followed by sports (26.0%); a finding that is consistent both in low and high-income countries.[13,16] A study conducted in the United Kingdom found that play is a common event surrounding ocular trauma in children.[17] As a result, close guardian supervision is required during sports to minimize unnecessary ocular morbidity as a result of injuries.

Mechanical ocular injuries can either be caused by sharp or blunt objects. In our study, the most common causative agents of injuries were sharp objects in 31.5% of the cases followed by trauma with blunt objects (30.1%). These findings are consistent with Tehmina and associates.[13] Thus penetrating and blunt injuries were more common as compared to chemical, electrical and thermal injuries.

In this study, open globe injuries ware most common (52.0%) than closed globe injuries (32.9%) followed by adnexal

injuries (9.6%) and chemical injuries (5.5%). These results are similar with Tehmina and associates who reported open globe injuries in 57 % .[13] This finding differs from the result reported by Thokozani in Malawi[18] and Gebril in Libya[19], who reported that closed-globe injuries were more common than open-globe injuries. Such differences may arise due to most of the closed globe injuries were managed locally.

Our studies also showed that the most common clinical presentation of ocular trauma was penetrating corneal injuries (43.9%) followed by eyelid laceration (9.6%) and corneal foreign bodies (6.8%). These were owing to the wide range of objects that might cause ocular injuries.

Visual acuities (VA) at presentation ware PL, HM in 45.2% of the cases and 6/12-6/6 only in 13.7% of the cases in our study. A total of eleven eyes (15.1%) had no light perception at presentation. In a study conducted in Dhulikhel hospital, Nepal, 83.92% patients presented with VA of better than 6/12 and only 2.67% patients were under blindness category.[14] This might be due to discrepancies on the severity of ocular trauma.

During discharge, only a small degree of vision improvement were achieved. These were related to a delay in referring the patient to our department, as well as the patients' ignorance.

Limitation:

There are a few flaws in the study. The research was carried out in a tertiary referral hospital. Patients with minor eye injuries, from the Refugee camp, may have been treated at their local health facilities rather than being referred to a tertiary hospital. Secondly, due to COVID-19 pandemic situation, our department received the fewest cases from the Rohingya Refugees camp.

Recommendation

A long-term database of all ocular injuries in the country is suggested to facilitate larger-scale research and the development of ocular injury prevention measures.

Conclusion

Study shows that that most of the Rohinga refugees admitted with ocular trauma in the department of Ophthalmology of Chittagong Medical college were less than 20 years of age, male had trauma in their working place by sharp objects. The ultimate diagnosis of most of the patients were open globe injury and the pattern was lacerated corneal injury, the presenting visual acuity was very poor in most of the patients with no significant improvement after treatment.

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Disclosure:

All the authors declared no competing interest.

References

1. Independent international fact-finding mission on Myanmar [Internet]. Ohchr.org. [cited 2021 Nov 12]. Available from: https://www.ohchr.org/Documents/HRBodies/HRCouncil/FFM-Myanmar/A_HRC_39_64.pdf
2. The Economist. The flow of Rohingya refugees into Bangladesh shows no sign of abating. Economist (London, England: 1843) [Internet]. 2017 Oct 19 [cited 2021 Nov 12]; Available from: https://www.economist.com/graphic-detail/2017/10/19 /the-flow-of-rohingya-refugees-into-bangladesh-shows-no-sign-of-abating
3. Islam MM, Nuzhath T. Health risks of Rohingya refugee population in Bangladesh: a call for global attention. J Glob Health. 2018;8(2):020309.4.Bal S, Duckles A, Buttenheim A. Visual health and visual healthcare access in refugees and displaced persons: A systematic review. J Immigr Minor Health. 2019;21(1):161-74.
5. Thylefors B. Epidemiological patterns of ocular trauma. Aust N Z J Ophthalmol. 1992;20(2):95-8.
6. Négrel AD, Thylefors B. The global impact of eye injuries. Ophthalmic Epidemiol. 1998;5(3):143-69.
7. Omolase CO, Omolade EO, Ogunleye OT, Omolase BO, Ihemedu CO, Adeosun OA. Pattern of ocular injuries in owo, Nigeria. J Ophthalmic Vis Res. 2011;6(2):114-8.
8. Singh DV, Sharma YR, Azad RV, Talwar D. Profile of ocular trauma at tertiary eye centre [Internet]. Jkscience.org. [cited 2021 Nov 12]. Available from: https://www.jkscience.org/archive/volume7/profile.pdf
9. Bian X, Xu S, Song Y, Wang Y, Zhao B, Zhong Y, et al. Global, national and regional prevalence, and associated factors of ocular trauma: A protocol for systematic review and meta-analysis. Medicine (Baltimore). 2020;99(35): e21870.
10. Hoskin AK, Watson SL, Mackey DA, Agrawal R, Keay L. Eye injury registries - A systematic review. Injury. 2019;50(11):1839-46.
11. Hussain AHME, Ahmed M, Vincent JE, Islam J, Sapkota YD, Das T, et al. Rapid assessment of avoidable blindness and cataract surgery coverage among forcibly displaced Myanmar Nationals (Rohingya refugees) in Cox's Bazar, Bangladesh. PLoS One. 2020;15(12): e0243005.
12. Kuhn F, Mester V, Morris R, D. Witherspoon C. THE BIRMINGHAM EYE TRAUMA TERMINOLOGY SYSTEM (BETT). ZdravVestn [Internet]. 1 [cited 12Nov.2021];71. Available from: https://vestnik. szd.

si/index.php/ZdravVest/article/ view/1702

13. Jahangir T, Butt NH, Hamza U, Tayyab H, Jahangir S. Pattern of presentation and factors leading to ocular trauma [Internet]. Com.pk. [cited 2021 Nov 20]. Available from: http://www.pjo.com.pk/27/2/ Tehmina%20Jahangir.pdf
14. Sthapit PR, Marasini S, Khoju U, Thapa G, Nepal BP. Ocular trauma in patients presenting to Dhulikhel Hospital. Kathmandu Univ Med J (KUMJ). 2011;9(33):54-7.
15. Mukherjee AK, Saini JS, Dabral SM. A profile of penetrating eye injuries. Indian J Ophthalmol. 1984;32(5):269–71.16.Sukati VN, Hansraj R. Characteristics of eye injuries in urban KwaZulu-Natal Province, South Africa: 2005-2008. Afr Vis Eye Health. 2013;72(3):119-26.
17. Sii F, Barry RJ, Abbott J, Blanch RJ, MacEwen CJ, Shah P. The UK Paediatric Ocular Trauma Study 2 (POTS2): demographics and mechanisms of injuries. Clin
Ophthalmol. 2018; 12:105-11.
18. Zungu T, Mdala S, Manda C, Twabi HS, Kayange P. Characteristics and visual outcome of ocular trauma patients at Queen Elizabeth Central Hospital in Malawi. PLoS One. 2021;16(3): e0246155.19.Gebril MM. Pattern of ocular trauma in Benghazi eye hospital, Benghazi, Libya. Libyan Int Med Univ J. 2017;2(1):40.

Diabetes and Tuberculosis: Integrated Strategy the Best Remedy to Combat Both

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Abstract

Burden of tuberculosis (TB) and co-morbid diabetes mellitus (DM) now a major public health problem. Tuberculosis-Diabetes Mellitus (TB-DM) patients have a higher risk of TB progression, relapse, and death as compared to TB only. The rising prevalence of diabetic cases globally is an alarming threat for rising cases of TB. So, this review article is aimed to understand the exact prevalence of TB-DM comorbidities in the Asian country as well as global. Assessing the magnitude and risk/associated factors of TBDM comorbidity at country/local level is crucial before making decisions to undertake TBDM integrated services.

Introduction:

Burden of tuberculosis (TB) and co-morbid diabetes mellitus (DM) now a major public health problem. Tuberculosis-Diabetes Mellitus (TB-DM) patients have a higher risk of TB progression, relapse, and death as compared to TB only. The rising prevalence of diabetic cases globally is an alarming threat for rising cases of TB.

Tuberculosis remains a major contributor to global burden of disease. In 2016, 10.4 million people were estimated to develop active tuberculosis (new and relapsed cases), and 1.3 million people who were HIV negative and 374 000 who were HIV positive died from the disease, mostly in low-income and middle-income countries.[1]

Diabetes doubles the risk of developing tuberculosis, and poor glycemic control adversely affects tuberculosis treatment outcomes with effects such as prolongation of culture conversion, treatment failure, relapse, and death.[2-4] Furthermore, diabetes accounted for 10.6% of global tuberculosis deaths among HIV-negative individuals in 2015. With 425 million people affected by diabetes globally in 2017, and a predicted 48% increase up to 629 million people who would have diabetes in 2045. Unfortunately, the regions with the current highest burden of tuberculosis would also experience the biggest increase in diabetes prevalence, with a 163% increase for Africa and an 84% increase for southeast Asia.[5] In this context, data on the prevalence of diabetes in patients with active tuberculosis are important for health-care planning and resource allocations.

Diabetes and Tuberculosis; a two-way sword

Available reports suggest that 95% of patients with TB live in the low- and middle-income countries and more than 70% of patients with DM also live in the same countries, especially in South East Asia.[6]

Currently, both TB and diabetes are of global public health importance due to converging epidemic of both communicable and non-communicable diseases.

Diabetes and TB may affect each other at many levels, among active TB patients; diabetes may adversely affect TB treatment outcomes and increasing the risk of relapse, death rate and multidrug resistance. Screening for diabetes in patients with TB can help in early case detection and management of diabetes and will lead to better TB treatment outcome.[7,8]

The World Health Organization and International Union against TB and lungs disease in collaboration with National TB Control Program developed a collaborative framework for care and control of diabetes and TB which emphasizes the routine implementation of bi-directional screening of two diseases and recommends the surveillance of diabetes among TB in all countries in primary health-care settings.[9] However, screening methods, recording and reporting for the two diseases in routine health-care settings have not been well determined, and operational research is needed for better information in this field.

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Table 1: List of literatures about diabetes and tuberculosis

Title	Author	Journal name	Place of study	Year
1. Burden of diabetes mellitus among tuberculosis patients in Asia-Pacific region: Evidence from meta-analysis using real-world data	M.S. Hussain	International journal of infectious diseases	Meta-analysis, Asia pacific	2018
2. Prevalence of diabetes mellitus amongst hospitalized tuberculosis patients at an Indian tertiary care center: A descriptive analysis	Tripti Pande1,	PLoS One	India	2015-2016
3. Prevalence of Diabetes Mellitus and its Predictors among Tuberculosis Patients Currently on Treatment	Deepak Sharma	Indian J Community Med		2018
4. Prevalence and associated factors of diabetes mellitus among tuberculosis patients in Hanoi, Vietnam	N. B. Hoa1	BMC infectious disease	Vietnam	2018
5. Global prevalence of diabetes in active tuberculosis: a systematic review and meta-analysis of data from 2·3 million patients with tuberculosis	Jean Jacques Noubiap	Lancet	Meta-analysis, global	2019
6. Diabetes and tuberculosis-a wake-up call		Editorial, lancet		
7. Prevalence of diabetes mellitus among tuberculosis patients in Sub-Saharan Africa: a systematic review and meta-analysis of observational studies	Animut Alebel1	BMC infectious disease	Meta-analysis, sub-sahara	2019
8. Diabetes Mellitus among Adult Tuberculosis Patients Attending Tuberculosis Clinics in Eastern Ethiopia	Lucy Tenaye	Biomed research International	Ethiopia	2019
9. Prevalence of diabetes among tuberculosis patients and associated risk factors in Kathmandu valley	Thapa B1	SAARC Journal of Tuberculosis, Lung Diseases & HIV/AIDS	Nepal	2015
10. A study on prevalence of diabetes and associated risk factors among diagnosed tuberculosis patients registered under Revised National Tuberculosis Control Program in Bhopal District	Vivek Nagar	J Family Med Prim Care	India	2018
11. Prevalence and associated factors of tuberculosis and diabetes mellitus comorbidity: A systematic review	Mahteme Haile Workneh	PLoS One	Systematic review	2017
12. Prevalence of Diabetes and Pre-Diabetes and Associated Risk Factors among Tuberculosis Patients in India	Vijay Viswanathan1	PloS One	India	2012
13. Prevalence of type 2 diabetes and pre-diabetes among pulmonary and extrapulmonary tuberculosis patients of Bangladesh: A cross-sectional study	Afsana Sheuly	Endocrinol Diabetes Metab	Bangladesh	2022

Diabetes among tuberculosis patients globally

A meta-analysis and systematic review[10] was done and the team found that in total, 2,291,571 people with active tuberculosis from 50 countries were included. The diabetes prevalence in this population varied widely across countries. The prevalence varied from 1.9% (Benin) to 32.4% (Ethiopia) in Africa, from 0.1% (Latvia) to 22.9% (Portugal) in Europe, from 6.1% (Libya) to 22.8% (Egypt) in the Middle East and North Africa, from 14.0% (Guyana) to 29.5% (Mexico) in North America and the Caribbean, from 4.8% (Peru) to 32.4% (Chile) in South and Central America, from 10.6% (Bangladesh) to 24.1% (Sri Lanka) in southeast Asia, and from 7.5% (Thailand) to 45.2% (Marshall Islands) in the western Pacific. The global prevalence of diabetes in tuberculosis was 15.3% (95% prediction interval 2.5-36.1), with substantial heterogeneity.

The prevalence of diabetes in people with tuberculosis was higher in the western Pacific, North America and the Caribbean, southeast Asia, Middle East and North Africa than in Africa, Europe, or South and Central America (p<0.0001). This prevalence was slightly higher in countries with low tuberculosis burden than in countries with high burden (p=0.036; table, appendix). The prevalence was higher in studies including only adults than studies including both adults and children (p=0.0008). The prevalence was lower in countries with low levels of income (p=0.0003) and low Human Development Index (HDI) compared with others (p<0.0001). The prevalence did not differ between periods of recruitment of participants (table, appendix) and between hospital-based and population-based studies. This global prevalence of diabetes among patients with tuberculosis is almost twice higher than what has recently been reported by the International Diabetes Federation (IDF) for the global adult general population in 2017, at 8.8%.6 This finding reinforces the fact that diabetes represents a major risk factor for tuberculosis occurrence.[11]

Diabetes among Tuberculosis in Asia

Deepak Sharma, et al found in their study the prevalence of DM in TB was 13.1% in India. This finding is comparable with the result of studies carried out in India (15.3%) and abroad (USA (11.4%); Indonesia (14.8%).[12,13,14] However, some studies conducted in India have reported comparatively higher prevalence ranging from 29% to 50%.[15,16] A low prevalence of diabetes in TB was observed in studies from China (6.3%) and Spain (5.9%).[17,18] A probable explanation for this variation in prevalence is the different study area and its population characteristics.

Another study from India, Vivek Nagar[19] stated that high prevalence of DM among the TB patients (12.39%) treated in Bhopal; and it was significantly higher among those with age > 50 years, male gender, smokers, patients having high BMI range (>25), Type II treatment category and those with pulmonary TB as compared to age <50, female gender, nonsmokers, BMI range <25, Type I treatment category, and extra pulmonary TB.

A Nepal study [20] stated that total of 37 out of 407 (9.1%) TB patients in the study were found to have diabetes. This proportion was found lower than those of screening studies in India17 and China,14 however, it was found consistent with North India.[21]

A meta-analysis[22] done with total of 54 articles incorporating 57,771 TB patients were qualified for inclusion in this meta-analysis. The pooled prevalence of DM among tuberculosis patients was found to be 18.4% (95% CI: 15.6%-21.6%, p = 0.000). Subgroup analysis revealed that pooled prevalence of TB-DM across Asia ranging from 8.9% (95% CI: 4.9%-15.8%) in Sri Lanka to 33% (95% CI: 25.5%-41.6%) in Iran. Almost similar burden were reported from India 19.8% (95% CI: 14.3% - 26.7%) and Pakistan 20.5% (95% CI: 11.6%-33.6%).

Diabetes among Tuberculosis in Bangladesh

A cross-sectional analytical study [23] done in Bangladesh recruited 350 TB patients (175 PTB and 175 EPTB) from two tertiary care hospitals specialized for TB treatment. Oral glucose tolerance tests and fasting plasma glucose measurements were carried out for unknown glycemic status and those with previously known diabetes, respectively. Overall, the prevalence of T_2DM (Type- 2 DM) and pre-DM was 19.1% (new 85.1%, old 14.9%) and 34.3%, respectively. Although the risk factors were highly prevalent among the patients with EPTB, a higher proportion of T_2DM (26.3%) and pre-DM (34.3%) was detected among the patients with PTB. The proportion of impaired fasting glucose was low in both groups, but a high trend of impaired glucose tolerance was observed across the groups, with a higher proportion (35.4%) in the PTB group. Both pre-DM and T_2DM showed significantly higher odds (pre-DM, Adjusted Odds Ratio (AOR): 4.488; CI: 2.531-7.958; $p < .001$ and T_2DM, AOR: 4.280; CI: 2.305-7.946; $p < .001$) for having PTB. To our knowledge, this was the first study in Bangladesh that aimed to identify the burden of diabetes or hyperglycemia in subgroups of TB patients. The study showed that people with PTB were more affected by T_2DM or hyperglycemia. The result was consistent with other epidemiological studies conducted in India,[24] Mexico[25] and Vietnam.[26] In these studies, the prevalence of diabetic patients with PTB and EPTB ranges from 15% to 35% and 8% to 26%, respectively.[24-26]

Another cross-sectional study conducted in Bangladesh also identified that PTB patients made eighty-five per cent of the burden of diabetes in the TB population.[27] However, it was uncertain why people with PTB faced a high prevalence of T_2DM. One possibility was a higher prevalence of tobacco consumption in the PTB group could influence the burden of T_2DM. Studies demonstrated diabetic smokers had a fivefold increased risk of a pretreatment positive smear than did non-diabetic non-smokers.[28] Although studies reported production of high free radicals in smokers contributed to the development of T_2DM,[29,30] no studies had found that investigated the influence of tobacco consumption on T_2DM in association with PTB patients. In the current study, the overall prevalence of diabetes in patients with TB was higher than the global pooled prevalence (15.3% 95% CI 14.1-16.6) of diabetes in patients with TB but similar to the Southeast Asia (19.0% 95% CI 16.2-32.5).[31] Southeast Asia experiences the highest prevalence of diabetes in TB patients. Within Southeast Asia, the highest prevalence was reported in Sri Lanka (24.1 95% CI 16.6-32.5), and then in India (19.9;95% CI 16.8-23.2). [31] In Bangladesh, the pooled prevalence was reported as 10.6% (95% CI 7.2-14.5), which is close to the reported prevalence for the IDF regions that experienced the least prevalence of diabetes in TB patients that includes Africa (8·0% 95% CI 5·9-10·4), south and central America (7·7% 95% CI 6·9-8·6), and

Europe (7·5% 95% CI 5·2-10·2).[31] Contradictory to the previous literature, the current study showed a higher proportion of diabetes, which is consistent with the prevalence of diabetes in TB patients in Southeast Asia.[22]

Diabetes and tuberculosis: a wake-up call

Diabetes has long been known to be a risk factor for active tuberculosis and reactivation of latent tuberculosis. It is also associated with worse tuberculosis treatment outcomes. Additionally, tuberculosis infection in itself can worsen glycemic control. Drug-drug interactions can further complicate the picture, leading to a reduction in the effectiveness of both tuberculosis and diabetes treatments, and potential worsening of drug side-effects etc. For many health systems, coping with communicable diseases alone can be difficult. On the one hand, adding the increasing burden of diabetes and other non-communicable diseases (NCDs) into the mix will be an extra strain with which many countries will struggle to cope. The fact that the NCDs will worsen the burden of communicable diseases could be the straw that breaks the camel's back for some health systems. On the other hand, this interaction between communicable diseases and NCDs could provide the wake-up call that health providers need to kick NCD prevention programs into action.

Conclusion

Importantly, the intersection between communicable diseases and NCDs should be used as a driver to strengthen health systems, to ensure that they can provide access to care with financial risk protection for all disorders, not just a select few. Illness, death, and disability do not recognize the divide between communicable diseases and NCDs, and nor should our delivery of health care.

References

1. WHO. Global tuberculosis report 2017. 2017. http://www.who.int/tb/publications/global_report/en/ (accessed Aug 28, 2018).
2. Baker MA, Harries AD, Jeon CY, et al. The impact of diabetes on tuberculosis treatment outcomes: a systematic review. BMC Med 2011; 9: 81.
3. Salindri AD, Kipiani M, Kempker RR, et al. Diabetes reduces the rate of sputum culture conversion in patients with newly diagnosed multidrug-resistant tuberculosis. Open Forum Infect Dis 2016;3: ofw126.
4. Shewade HD, Jeyashree K, Mahajan P, et al. Effect of glycemic control and type of diabetes treatment on unsuccessful TB treatment outcomes among people with TB-Diabetes: a systematic review. PLoS One 2017; 12:e 0186697.
5. International Diabetes Federation. IDF diabetes atlas: 8th edition. 2017. http://www. diabetesatlas. org/IDF_Diabetes_Atlas_8e_interactive_EN/(accessed April 18, 2018).
6. International Diabetes Federation. IDF Diabetes Atlas. 5th Edition. Belgium: Fifth; 2011. doi: 10.1007/978-90-481-3271-3.
7. Jeon CY, Murray MB. Diabetes mellitus increases the risk of active tuberculosis: A systematic review of 13 observational studies. PLoS Med. 2008;5: e152.
8. Ruslami R, Aarnoutse RE, Alisjahbana B, van der Ven AJ, van Crevel R. Implications of the global increase of diabetes for tuberculosis control and patient care. Trop Med Int Health. 2010; 15:1289-99.
9. WHO. Geneva: Global Tuberculosis Report 2013; 2013. doi: 10.3917/spub.092.0139.
10. Noubiap JJ, Nansseu JR, Nyaga UF, Nkeck JR, Endomba FT, Kaze AD, Agbor VN, Bigna JJ. Global prevalence of diabetes in active tuberculosis: a systematic review and meta-analysis of data from 2· 3 million patients with tuberculosis. The Lancet Global Health. 2019 Apr 1;7(4): e448-60.
11. Narasimhan P, Wood J, Macintyre CR, Mathai D. Risk factors for tuberculosis. Pulm Med 2013; 2013: 828939.
12. Sharma D, Goel NK, Sharma MK, Walia DK, Thakare MM, Khaneja R. Prevalence of diabetes mellitus and its predictors among tuberculosis patients currently on treatment. Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine. 2018 Oct;43(4):302.
13. Magee MJ, Foote M, Maggio DM, Howards PP, Narayan KM, Blumberg HM, et al. Diabetes mellitus and risk of all-cause mortality among patients with tuberculosis in the state of Georgia, 2009-2012. Ann Epidemiol. 2014; 24:369-75.
14. Alisjahbana B, Sahiratmadja E, Nelwan EJ, Purwa AM, Ahmad Y, Ottenhoff TH, et al. The effect of type 2 diabetes mellitus on the presentation and treatment response of pulmonary tuberculosis. Clin Infect Dis. 2007; 45:428-5.
15. Raghuraman S, Vasudevan KP, Govindarajan S, Chinnakali P, Panigrahi KC. Prevalence of

diabetes mellitus among tuberculosis patients in urban Puducherry. N Am J Med Sci. 2014; 6:30-4.

16. Balakrishnan S, Vijayan S, Nair S, Subramoniapillai J, Mrithyunjayan S, Wilson N, et al. High diabetes prevalence among tuberculosis cases in Kerala, India. PLoS One. 2012;7: e46502

17. Wang Q, Ma A, Han X, Zhao S, Cai J, Ma Y, et al. Prevalence of type 2 diabetes among newly detected pulmonary tuberculosis patients in China: A community-based cohort study. PLoS One. 2013;8: e82660.

18. Moreno-Martínez A, Casals M, Orcau À, Gorrindo P, Masdeu E, Caylà JA, et al. Factors associated with diabetes mellitus among adults with tuberculosis in a large European city, 2000-2013. Int J Tuberc Lung Dis. 2015; 19:1507–12.

19. Workneh MH, Bjune GA, Yimer SA. Prevalence and associated factors of tuberculosis and diabetes mellitus comorbidity: a systematic review. PloS one. 2017 Apr 21;12(4): e0175925.

20. Thapa B, Paudel R, Thapa P, Shrestha A, Poudyal AK. Prevalence of diabetes among tuberculosis patients and associated risk factors in Kathmandu valley. SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS. 215;12(2):20-7.

21. Group IT-DS. Screening of patients with tuberculosis for diabetes mellitus in India. Tropical Medicine and International Health. 2013;18(5):636-45.

22. Hussain MS, Siddiqui AN, Najmi AK. Burden of diabetes mellitus among tuberculosis patients in Asia-Pacific region: Evidence from meta-analysis using real-world data. International Journal of Infectious Diseases. 2018 Aug 1; 73:87.

23. Sheuly AH, Arefin SZ, Barua L, Zaman MS, Chowdhury HA. Prevalence of type 2 diabetes and pre-diabetes among pulmonary and extrapulmonary tuberculosis patients of Bangladesh: A cross-sectional study. Endocrinology, Diabetes & Metabolism. 2022 Mar 8: e00334.

24. Pande T, Huddart S, Xavier W, et al. Prevalence of diabetes mellitus amongst hospitalized tuberculosis patients at an Indian tertiary care center: a descriptive analysis. PLoS One. 2018; 13:1-13.

25. Hoa NB, Phuc PD, Hien NT, et al. Prevalence and associated factors of diabetes mellitus among tuberculosis patients in Hanoi, Vietnam. BMC Infect Dis. 2018; 18:1-9.

26. Pérez-Guzmán C, Vargas MH, Arellano-Macías MR, et al. Clinical and epidemiological features of extrapulmonary tuberculosis in a high incidence region. Salud Publica Mex. 2014; 56:189-196.

27. Sarker M, Barua M, Guerra F, et al. Double trouble: prevalence and factors associated with tuberculosis and diabetes comorbidity in Bangladesh. PLoS One. 2016;11: e0165396.

28. Bai K-J,Lee J-J, Chien S-T,et al. The influence of smoking on pulmonary tuberculosis in diabetic and non-diabetic patients. PLoS One. 2016;11: e0156677.

29. Bellou V, Belbasis L, Tzoulaki I, Evangelou E. Risk factors for type 2 diabetes mellitus: an exposure-wide umbrella review of meta-analyses. PLoS One. 2018;13: e0194127

30. Chang SA. Smoking and type 2 diabetes mellitus. Diabetes Metab J. 2012; 36:399-403.

31. Noubiap JJ, Nansseu JR, Nyaga UF, et al. Global prevalence of diabetes in active tuberculosis: a systematic review and meta-analysis of data from 2·3 million patients with tuberculosis. The Lancet Global Health. 2019;7: e448-e460.

A Case Report on Cemento-ossifying Fibroma of Mandible

Flora TA[1], Tapu TT[2]

Abstract

Ossifying fibroma is a rare benign neoplasm with growth potential. Here the mandible is more involved than maxilla There is female predilection in the third and fourth decades of life. The common site is the premolar and molar area of the mandible. These lesions are characterized by replacement of endogenous bone with a highly cellular fibrous neoplasm containing varied amounts of bony trabeculae and/or cementum-like spherules. A 43 years old male patient reported to the department of Oral and Maxillofacial surgery with complaints of a swelling on the right side of his lower jaw for the past two years. Radiographically, it is represented as an unilocular radiopaque lesion with a well-defined thinly corticated margin. An excisional biopsy was performed. Histopathological examination showed the presence of a benign bone lesion suggestive of ossifying fibroma.

Keywords: Ossifying fibroma.

Introduction

Ossifying fibroma is benign asymptomatic neoplasm of bone that generally have slow growth and present proliferation of fibrous cell tissue with a varying quantity of bone products that include bone, cement or a combination of both.[1,2] It occurs most often in the posterior region of the mandible[2,3,4,5], maxilla and zygomatic arch. They are more common in females[3,5,6,7], and present greatest incidence in the third and fourth decades of life.[5,8] Here facial asymmetry and tooth displacement are also noted.

The differential diagnosis is generally made with other lesions that mixed radiolucent- radiopaque internal structures seep especially with fibrous dysplasia.[6,9,10] The other lesions should also be taken into consideration as differential diagnoses were calcifying odontogenic cysts, calcifying odontogenic tumors (Pindborg tumor) and adenomatoid odontogenic tumors.

The lesion is well-circumscribed and well delimited in nature which allows enucleation of the tumor.[2]

This was a case in which the patient reported to the dental and maxillofacial surgery department with complaints of a swelling on the right side of his lower jaw.

Case Report

We represent a case of a 43 years old male patient who reported to the Dental and Maxillofacial surgery department with complaints of swelling on the right side of his lower jaw which was initially pea size and grew rapidly to the present size with difficulty in speech and mastication. The patient revealed a medical history of hypertension and consuming antihypertensive medications.

Radiographically it represented an unilocular radiopaque lesion with a thinly corticated margin. The interior of the lesion showed minute deep radiopaque calcification. On clinical examination the swelling was non tender and hard in consistency. After excision of the swelling from the jaw the specimen was sent for histopathological examination. Grossly the lesion is encapsulated, rubbery, tan color and ovoid mass measuring 2.5 x 2.2 cm. Microscopy revealed para keratinized stratified squamous epithelium exhibiting pseudoepitheliomatous hyperplasia with few epithelial cell rests with few eosinophilic mineralized areas of variable sizes showing trabeculae and osteocytes resembling bone. The bone showed chronic inflammatory cells infiltrate. The sections also showed mature connective tissue stroma areas of fibrosis and some blood vessels.

Figure 1: Gross Findings of Cemento-ossifying Fibroma

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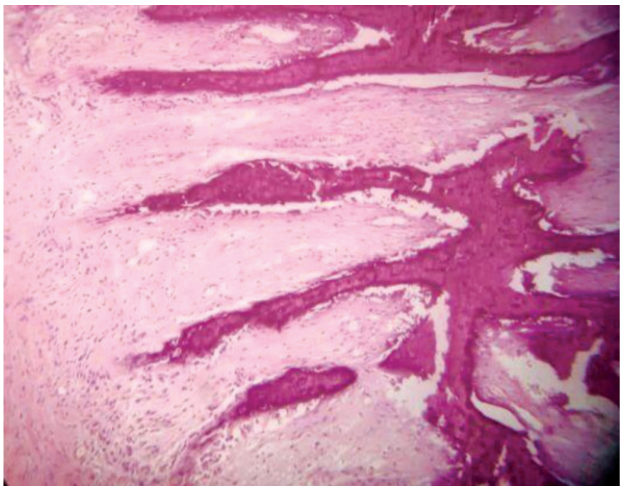

Figure 2: Histopathological Findings of Cemento-ossifying Fibroma

Discussion

Ossifying fibromas are formed from pluripotent mesenchymal cells that originate from the periodontal ligament.

These cells are capable of forming bone tissue and cement.[1,11] There is a supposition that previous tooth extraction or periodontitis might provide a stimulus .[3,12] To some extent the formation of ossifying fibromas might be simply linked to a disturbance of bone maturation due to congenital cause.[4]

Ossifying fibromas are predominant in females.[3,5,6,14] They occur commonly between the third and fourth decades of life.[2,3,5,14,15,16] The premolar and molar regions of the mandible are the commonest sites.[2,5,17,18,19] Small lesions are asymptomatic.[2] These lesions grow and expand. Their tumefaction is pain free, despite significant facial asymmetry.[2,3,5,9,19,20] Their growth is relatively slow.[3,9,16, 20] Pain and paresthesia are only rarely associated with ossifying fibromas.[2] Mobility and root divergence can be found in 17% of the cases.5[7,14,15] In this reported case, there was no root resorption, divergence and facial asymmetry. The lesion is painless and there is no paresthesia.

The lesions are usually unilocular or multilocular forms. [4,21] In most of the cases the lesions are radiolucent with radiopaque foci, depending on the calcification of tissue. [28] Aggressive lesions may show loss of the limits at the edges, similar to perforations in cortical bone.[22] In this reported case, the lesion was unilocular, radiopaque with dense bright radiopaque minute calcification.

The margin is thinly corticated. The differential diagnosis is usually made in relation to monostotic fibrous dysplasia. But the final diagnosis is made through histopathological examination. Grossly the tumor may be well capsulated or not encapsulated. The cortical lining of the bone may intake or ruptured. The case report showed encapsulated thinly corticated lesions.

Histopathologically the lesion shows hyperplasia of spindle cells specially fibrocyte with mineralized eosinophilic areas of variable sizes. showing trabeculae and osteocytes. In this case report, there was spindle cell hyperplasia arranged in trabeculae form with some osteocytes and calcification.

The importance of such an overall assessment of such patients need to be emphasized. In this manner patients' conditions can be correctly diagnosed and appropriate treatment plans can be drawn up.

Conclusion

Microscopic findings in our case can resemble a variety of benign fibro-osseous neoplasms. Radiographic and clinical findings also correlate the diagnosis which help to support the accurate diagnosis.

References

1. Canger E.M., Celenk P., Kayip Max S., Alkant A., Gunhan O. Familial ossifying fibromas: report of two case s. J Oral Sci. 2004;46(1):61-64.
2. Charles A.W. Doenças do osso. In: Neville B.W., Damm D.D., Allen C.M., Bouquot J.E., editors. Oral and maxillofacial pathology. 2nd ed. Saunders; Philadelphia: 2002. pp. 511 553.
3. Martín-Granizo R., Sanchez-Cuellar A., Falahat F. Cemento-ossifying fibroma of the upper gingivae. Otolaryngol Head Neck Surg. 2000;122(5):775.
4. Tchane I.B., Adjibabi W., Biaou O., Alamou S., Balle M., Alan. Cemento ossifying fibroma: two cases. Rev Stomatol Chir Maxillofac. 2005;106(1):30-32.
5. Eversole L.R., Leider A.S., Nelson K. Ossifying fibroma: a clinicopathologic study of sixty-four cases. Oral Surg Oral Med Oral Pathol. 1985;60(5):505-511.
6. Vicente R.J.C., Gonzales M.S., Santa M.Z.J., Madrigal R.B. Tumores no odontogénicos de los maxilares: clasificación, clínica y diagnóstico. Med Oral. 1997;2(83):10.
7. Sciubba J.J., Younai F. Ossifying fibroma of the mandible and maxilla: review of 18 cases. J Oral Pathol Med. 1989;18(6):315 321.
8. Gurol M., Uckan S., Guler N., Yatmaz P.I. Surgical and reconstructive treatment of a large ossifying fibroma of the mandible in a retrognathic patient. J Oral Maxillofac Surg. 2001;59(9):1097-1100.
9. Aguirre J.M. Tumores de los maxilares. In: Bagán J.V., Ceballos A., Bermejo A., Aguirre J.M., Peñarrocha M., editors. Medicina oral. Masson; Barcelona: 1995. pp. 507-508.

10. Slootweg P.J. Maxillofacial fibro osseous lesions: classification and differential diagnosis. Semin Diagn Pathol. 1996;13(2):104-112.

11. Saiz-Pardo-Pinos A.J., Olmedo-Gaya M.V., Prados-Sánchez E., Vallecillo-Capilla M. Juvenile ossifying fibroma: a case study. Med Oral Patol Oral Cir Bucal. 2004;9(5):456-458. 454-6.

12. Pérez-García S., Berini-Aytés L., Gay Escoda C. Ossifying fibroma of the upper jaw: report of a case and review of the literature. Med Oral. 2004;9(4):333-339.

13. Povýsil C., Matějovský Z. Fibro osseous lesion with calcified spherules (cementifying fibroma like lesion) of the tibia. Ultrastruct Pathol. 1993;17(1):25-34.

14. Eversole L.R., Merrell P.W., Strub D. Radiographic characteristics of central ossifying fibroma. Oral Surg Oral Med Oral Pathol. 1985;59(5):522-527.

15. Zachariades N., Vairaktaris E., Papanicolaou S., Triantafyllou D., Papavassiliou D., Mezitis M. Ossifying fibroma of the jaws. Review of the literature and report of 16 cases. Int J Oral Surg. 1984;13(1):1-6.

16. Sapp J.P., Eversole L.R., Wysocki G.P. Harcourt Brace España; Madrid: 1998. Patología oral y maxilofacial contemporánea.

17. Antonelli J.R. Ossifying fibroma of the maxillary sinus: a case report. Ann Dent. 1989;48(1):33-36.

18. Carrera Grañó I., Berini Aytés L., Escoda C.G. Peripheral ossifying fibroma. Report of a case and review of the literature. Med Oral. 2001;6(2):135-141.

19. Regezi J.A., Sciubba J.G. Saunders; Philadelphia: 1993. Oral pathology: clinical pathologic correlations.

20. Shafer W.G. Tumores benignos e malignos da cavidade bucal. In: Shafer W.G., Levy B.H., editors. Tratado de patologia bucal. 2nd ed. Nueva Editorial Interamericana; México: 1986. pp. 141 143.

21. Fujimoto Y., Katoh M., Miyata M., Kawai T., Saito K., Morita M. Cystic cemento-ossifying fibroma of the ethmoidal cells (a case report) J Laryngol Otol. 1987;101(9):946-952.

22. Summerlin D.J., Tomich C.E. Focal cemento-osseous dysplasia: a clinicopathologic study of 221 cases. Oral Surg Oral Med Oral Pathol. 1994;78(5):611-620.

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