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Original Article

Microbial Agents Causing Infective Corneal Ulcer and their Anti-microbial Susceptibility pattern

*Jhuma AA[1], Haque MM[2], Ahmed J[3], Das S[4], Paul TK[5], Rahman MM[6]

Abstract

This study was designed to identify the microbial agents causing infective corneal ulcer and to carry out the antimicrobial susceptibility patterns of isolated bacteria causing infective corneal ulcer. Out of 80 samples, 67 (83.75%) cases were positive by microscopy and culture. This study showed pure fungal growth in 39 (48.75%) cases, pure bacterial growth in 8 (10%) cases, mixed microbial growth (both fungi and bacteria) in 20 (25%) cases and no growth was observed in 13 (16.25%) cases. Among the fungal isolates, Aspergillus species was the leading agent detected in 37(46.3%) cases followed by Penicillium species in 7 (8.8%) instances. Pseudomonas aeruginosa was the most common bacterial pathogen found in 11 (13.8%) cases followed by Staphylococcus epidermidis present in 9 (11.3%) cases. Gentamicin, Ciprofloxacin and Levofloxacin were found to be better efficacious drugs against most of the bacterial pathogens noted in antimicrobial susceptibility test. This study showed that infective corneal ulcers are caused by both bacterial and fungal agents but fungal agents are more common. The findings of this study would help the ophthalmologists in evidence based management of their patients of infective corneal ulcer.

Keywords: *Infective corneal ulcer, antimicrobial susceptibility patterns, aspergillus species, pseudomonas aeruginosa*

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INTRODUCTION

Corneal ulcer is a serious sight threatening disorder presenting in all age and sex worldwide. It can lead to irreversible damage of the cornea in short time and consequently cause monocular blindness.[1] Every year about 1.5 to 2 million new cases of blindness are caused by corneal diseases in which ocular trauma and corneal ulceration are the main causes.[2]

A wide spectrum of microbial agents can produce corneal ulcer including bacteria, fungi, virus and parasites. Of them, bacteria and fungi are more common in developing countries.[3] The most common bacteria causing corneal ulceration are Streptococcus, Pseudomonas, Entero-bacteriaceae and Staphylococcus species.[4,5] Aspergillus (40-60%) and Fusarium (30-50%) are leading fungal agents causing corneal ulcer followed by Penicillium (5-15%) species.[6] Other fungi like Candida, Mucor, Rhizopus and Curvularia are also responsible for corneal ulcer [7].Fungal corneal ulcer is an important cause of vision loss in tropical and developing countries.[8] About 20% cases of fungal ulcers are complicated by bacterial co-infection.[9]

The consequences of untreated or severely infected corneal ulcer are opacification and perforation of cornea, endophthalmitis and ultimately impairment of vision. Corneal destruction may be complete in 24-48 hours with some strains of virulent bacterial agents like *S.aureus, S.pneumoniae, N.meningitidis, H.influenzae* and *Ps.aeruginosa*.[10] Most of these cases are due to lack of diagnostic facilities and appropriate treatment. Prompt and accurate identification of the causative microorganisms and selection of appropriate antibiotics is the key of specific treatment.[8] Microbial cause of corneal ulcer varies significantly between countries, even from region to region within the same country as it varies with patient population, geographical location and climate.[11] The sensitivity pattern of antibiotics also varies from region to region.[12] So, the therapeutic strategies are also variable.

In Bangladesh about 39-55% of all cases of unilateral blindness were caused due to complication of corneal

ulcer.[13] Several studies on corneal ulcer were carried out at different countries. Some studies showed that bacterial corneal ulcer is more common.[12,14] But most studies showed fungus is the common cause of corneal ulcer in developing countries like us and the incidence is increasing rapidly.[13, 15-17] This increased incidence is due to growing number of trauma cases, wide spread abuse of broad spectrum antibiotics and steroids.[18] The injudicious and empirical use of cortisone and its derivatives combined with antibiotics, suppressing the immune response, favors the growth of fungi and also cause invasive type of infection.[13]

Bacterial corneal ulcer often causes devastating condition by its rapid spread, potential complication and poor prognosis. Recent reports suggested that bacterial resistance to antibiotic agents is becoming increasing in ocular infection.[10, 14, 19] So, bacteria isolated from corneal ulcer must be periodically reviewed against available antibiotics to know the susceptibility pattern. By this way, misuse of antibiotic with its consequent effect will be minimized and the period of treatment will also be shortened.

MATERIALS AND METHODS

This cross-sectional study was carried out in the department of Microbiology in collaboration with the department of Ophthalmology, Sylhet MAG Osmani Medical College Hospital from 1st July 2015 to 30th June 2016. All clinically diagnosed patients of infective corneal ulcer were included in this study. Systemic disease associated ulcer, viral corneal ulcer and non-healing ulcer like mooren ulcer, marginal ulcer, interstitial keratitis & neurotrophic ulcer were excluded. After explaining the purpose of the study, informed written consent was taken from each patient or legal guardian. Prior to the beginning of this study, approval of the research protocol was obtained from the Ethical Review Committee of Sylhet MAG Osmani Medical College, Sylhet.

Samples were collected by the ophthalmologist with all aseptic precautions. One corneal swab and three corneal scrapings were collected from each patient. Corneal swab was taken for isolation of bacteria from the ulcerated area of the cornea with sterile cotton swab soaked with sterile normal saline. Blood agar media and MacConkey's agar media were used for culture of bacteria. Specific organisms were isolated and identified by standard laboratory procedure based on colony morphology, microscopic features, staining characteristics and biochemical properties. Antimicrobial susceptibility pattern were determined by Kirby-Bauer modified disk-diffusion method on Mueller-Hinton agar plates as per Central Laboratory Standard Institute (CLSI) guidelines. After taking corneal swab, two drops of preservative free local anesthetic (0.4% oxybuprocaine) was given to the eye. Five minutes after instillation of local anesthetic, three corneal scrapings were taken by using Bard-Parker blade (No.15) under microscope. First scraping material was used for 10% potassium hydroxide (KOH) wet mount. Fungus was cultured on Saboraud's Dextrose Agar (SDA) media with Chloramphenicol from second scraping material and last scraping material was used for gram staining. Inoculated SDA media was incubated at 25^0C and observed daily for first 7 days and on alternate days for the next 7 days for observing slow growing fungi. Identification of fungal growth was done by its macroscopic and microscopic features.

RESULTS

Total 80 patients of infective corneal ulcer were selected according to inclusion and exclusion criteria. Out of 80 cases, culture was found positive in 67 (83.75%) cases. Pure fungal growth was isolated in 39 (48.75%) cases, pure bacterial growth in 8 (10%) cases, mixed microbial growth (both fungus and bacteria) in 20 (25%) cases and no growth was found in 13 (16.25%) cases.

Table I: Showing isolated microorganisms from culture of corneal ulcer patients. (N=80)

Isolated microorganism	Frequency (n)	Percentage (%)
Fungus	39	48.75
Bacteria	08	10.00
Mixed (both fungus and bacteria)	20	25.00
No organism	13	16.25
Total	80	100

Out of total 59 (both pure fungus and mixed growth) fungal isolates, Aspergillus species 37(46.3%) were the commonest fungus. Among Aspergillus, *Aspergillus niger* 16 (20%) were the highest in number. Then Aspergillus *flavus* 8 (10%), *Aspergillus fumigatus* 7 (8.8%) and *Aspergillus terreus* 6 (7.5%) in order of their frequency. Other isolated fungi were Penicillium species 7 (8.8%), Fusarium species 6 (7.5%), Mucor 6 (7.5%) and Rhizopus 2 (2.5%). The following bar diagram showing the fact-

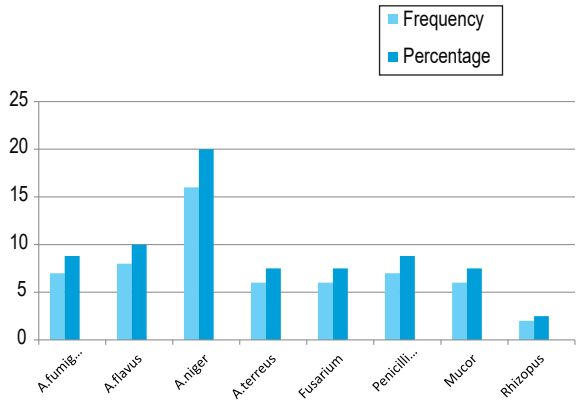


Figure 1: Bar diagram showing different fungal species isolated from corneal ulcer patients.

Out of 28 bacterial strain (including mixed with fungus) isolated from corneal ulcer patients, *Pseudomonas aeruginosa* was the most common isolates representing 11 (13.8%) cases. The next common isolated bacteria were *Staphylococcus epidermidis* present in 9 cases (11.3%). The other isolates were in order of frequency *Staphylococcus aureus* in 3 (3.8%) cases, Klebsiella species in 3 (3.8%) cases and *Escherichia coli* in 2 (2.5%) cases.

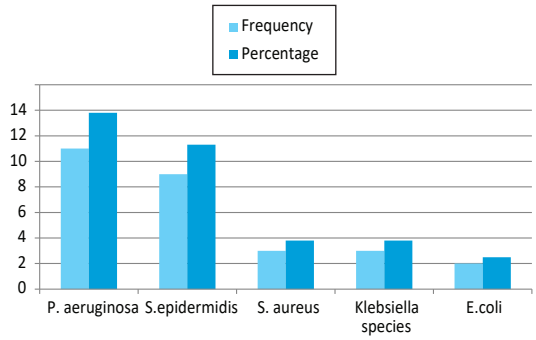
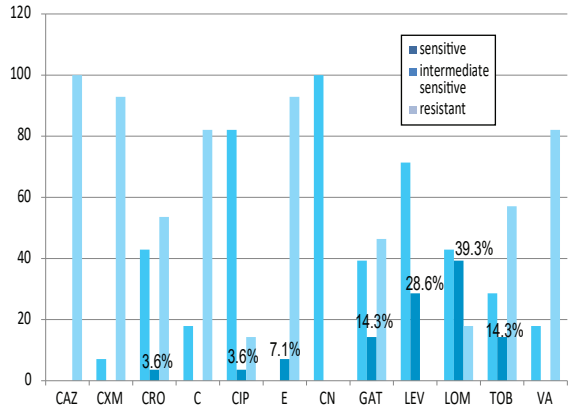


Figure 2: Bar diagram showing distribution of bacterial species among culture positive cases.

AST was done against the 28 isolated bacteria from the samples. All the isolates were 100% sensitive to gentamicin and highly sensitive to ciprofloxacin (82.1%) and levofloxacin (71.4%). All the bacterial isolates showed resistance to ceftazidime (100%). The isolates were also found highly resistant to cefuroxime (92.9%), erythromycin (92.9%), chloramphenicol (82.1%) and vancomycin (82.1%).



CAZ=Ceftazidime, CXM= Cefuroxime, CRO= Ceftriaxone, C=Chloramphenicol, CIP= Ciprofloxacin, E= Erythromycin, CN= Gentamycin, GAT=Gatifloxacin, LEV= Levofloxacin, LOM=Lomefloxacin, TOB=Tobramycin, VA= Vancomycin.

Figure 3: Bar diagram showing antimicrobial susceptibility pattern of isolated microorganism from patients of infective corneal ulcer

DISCUSSION

In this study, among 80 samples, culture positive case was 67(83.75%). Total microbial etiology of 83.75% compared well with others.[10,13,19] Among culture positive cases, pure fungal growth was detected in 39 (48.75%) cases, pure bacterial growth in 8 (10%) cases, mixed microbial growth (both fungus and bacteria) in 20 (25%) cases and no growth was found in 13 (16.25%) cases. This finding suggested that fungal agents were more common in causing infective corneal ulcer in this region.

Several studies regarding infective corneal ulcer were done in different regions of different countries where a wide variation in microbial agents causing infective corneal ulcer was observed. In India, 38.6% pure fungus, 23.9% was pure bacteria and 5.5% was mixed growth of bacteria and fungus were isolated from 800 studied group of corneal ulcer [20]. In Thailand, 60% was bacteria and 40% was fungi were isolated in 2004 [21]. In Oman, 88.26% bacteria and 11.84% fungi were isolated from 188 patients of corneal ulcer.[12] Dunlop et al. (1994) isolated 53.5% bacterial and 35.9% fungal agents in a study conducted in Chittagong Eye Infirmary Bangladesh.[22] Bacteria 42%, fungus 08% and mixed 04% cases were observed in Sylhet MAG Osmani Medical College hospital, Sylhet in 1992 [23] Akter. et al (2009) showed 42.86% fungal growth, 25% bacterial

growth and 16.07% mixed microbial growth (both bacteria and fungi) in Rajshahi Medical College Hospital, Bangladesh.[13] Another study was done by Ahmed et al. in 2010 in Bangabandhu Sheikh Mujib Medical University and Islamia Eye Hospital, Dhaka. They isolated 32.8% fungal, 20.8% bacterial and 5.2% mixed growth from 250 patients of corneal ulcer.[17]

In our study, fungi were identified as principle etiological agents of infective corneal ulcer. Fungi were isolated from a total 59 (73.75%) cases of which pure fungal growth were in 39 (48.75%) cases and mixed growth with bacteria in 20 (25%) cases. It was consistent with the findings of researchers from different parts of the world.[20, 24] *Aspergillus* spp. 37(46.3%) was the commonest fungus. Other isolated fungi were *Penicillium species 7* (8.8%), *Fusarium species* 6 (7.5%), Mucor 6 (7.5%) and Rhizopus 2 (2.5%). The fungal species detected in the present study was equally comparable with that of others.[2,15] *Aspergillus* spp. was the most predominant fungal pathogen in Bangladesh, Eastern India, Egypt and Uttarakhand, India.[2,3,13,15,17]. *Aspergillus* spp. is ubiquitious fungi commonly occurring in soil, water and decaying vegetation.[6] This mould produces abundant small conidia that are easily aerosolized.[25] The higher incidence of corneal infections by Aspergillus spp. is seen in drier climates which may be due to the fact that spores of Aspergillus can tolerate hot, dry weather conditions like us.[26] We isolated 8.8% Penicillium spp. while Chhangte et al. (2015) isolated 6.1% in Uttarakhand, India. Fusarium spp. was found only in 6 (7.5%) cases in our study but it was found the common fungal pathogen in Ghana (42.2%), Northern India (38.46%) and South India (45.85%).[8,16,20] This phenomenon may be explained by differences in climate and the natural environment of individual regions. Furthermore, nowaday, indiscriminate use of broad spectrum antibiotics, immunosuppressive drugs and corticosteroids enhance the rapid growth of fungi by suppressing immune response and decreasing local resistance of cornea.

In our study, bacteria were identified as etiological agents in 35% (10% pure bacterial and 25% mixed with fungus) cases of corneal ulcer. It was consistent with the findings of other researchers.[11,16,-24] When compared to the number of fungal isolates, less bacterial pathogens were detected in the present study. This result can be correlated with the fact that 33.8% patients enrolled in this study have treated with antibiotics or steroids before samples were collected and as a consequence fewer bacteria were isolated. Of the bacterial isolates, Pseudomonas spp. was the most common representing in 11 (13.8%) cases. This finding is similar with other studies done in Bangladesh, Iran, Thailand, Oman and Hong Kong.[12,14,21,22, 27,28] Again, this was different from other studies conducted in Bangladesh, Egypt, Eastern India, Northern India, South India and Switzerland.[3, 8, 13, -20, 23, 24] In our study, the next common isolated bacteria were *Staphylococcus epidermidis* present in 9 cases (11.3%). But *Staphylococcus epidermidis* was isolated in 21.9% and 20% cases in Iran and Oman respectively [12, 28]. We isolated *Staphylococcus aerues* in 3 (3.8%) cases, *Klebsiella spp.* in 3 (3.8%) cases and *Escherichia coli* in 2 (2.5%) cases which was different from the study done by Tewari et al. (2012). They found 32.7% *Staphylococcus aureus,* 6.8% *Klebsiella spp.* and *5.1% Escherichia coli* in Ahmedabad, India. These might be due to variation in the principle causative microbial agents of infective corneal ulcer in different countries.

AST was done against all the isolated bacteria from the 28 cases. We found that all those isolates were highly sensitive to gentamicin (100%), ciprofloxacin (82.1%) and levofloxacin (71.4%). All the bacterial isolates were resistant to cefotaxime (100%). The isolates were also found highly resistant to cefuroxime (92.9%), erythromycin (92.9%), chloramphenicol (82.1%) and vancomycin (82.1%). Chloramphenicol, the frequently used ophthalmic antibiotic was found less effective against most of bacterial isolates. This was also reported by Akter et al. (2009) and Mahran et al. (2014).[3,13] This poor performance of chloramphenicol may be due to its inappropriate and over use seen in common practice leading to drug resistance. Gentamicin, ciprofloxacin, and levofloxacin were found to be better efficacious drugs against most of the bacterial pathogens noted in in-vitro susceptibility testing.

CONCLUSIONS

Infective corneal ulcer is a common eye problem and is one of the major preventable causes of blindness in Bangladesh. It is caused by both bacterial and fungal agents but fungal agents are more common than bacteria in this geographical region. Resistance against common ocular antibiotics become increasing rapidly, so it is advisable to perform AST and modify the treatment according to the results of the sensitivity test.

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Original Article

Physical and Mental Health Status of Adolescents of Government Juvenile Development Centers in Bangladesh

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Abstract

Gradual rising of crime among adolescents is now a social and public health concern worldwide. A total of 1.9 million children getting incarcerated worldwide yearly where in Bangladesh, 1.3 million of children engaged in hazardous job most of them involved in crime. Again, physical and mental well-being is the legal and constitutional rights of the every adolescent including detained adolescent of Juvenile Development Centers. This is a cross-sectional study conducted to assess the physical and mental health status as well as socio-demographic status of adolescents of two Government Juvenile Development Center, Tongi and Konabari, Gazipur from January to December 2017. 191 adolescents were selected purposively (male: female=1.41:1). Data were collected by face to face interview and record review and height and weight of the respondents were measured. The mental health status was measured by WHO-5 Well-being Scale. The age range was from 13 to 17 years. Age of the respondents were significantly correlated with score of the WHO-5 well-being scale (p=0.028). The study observed higher score among respondents who had detained here for more than 2 months which was highly significant (p<0.001). Most of the respondents (75.9%) belong to poor family. The mean score of the WHO-5 well-being scale of the respondent was 52.20±10.0, where 35.1% had good and 64.9% had poor psychological well-being status and higher among male respondents (52.92±10.40) than the female respondents (51.29±9.45). The respondents who were employee prior to this institution had significantly high score (p=0.024). A significant relationship was observed between type of crime and the score of WHO-5 well-being scale (p=0.003). The mean body mass index was 20.26±1.27 kg/m^2. Almost every respondent (92.7%) belongs to normal nutritional category. Well-being score of the respondents was significantly increased with the body mass index (p=0.005). This study revealed score of WHO-5 well-being scale was significantly associated with duration of stay of the respondents (p<0.001, R=0.540). Thus this study provides prevalence of mental health status and nutritional status as well as socio-demographic condition of adolescents of Government Juvenile Development Centre in Bangladesh which may provide the Government, sociologists and psychologists valid and reliable data for making plans and policies for improving or updating the living conditions of detainee of Juvenile development Centre.

Keywords: *Psychological well-being, juvenile development centers in Bangladesh, adolescents.*

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INTRODUCTION

About 1.2 billion of adolescent constitutes 18 percent of total world population. Among them the Asia-Pacific region contains 60 percent of the adolescent population. South Asia is regarded as the home of adolescents, having around 330 million in 2009 than any other region.[1] There are 29.5 million adolescents in Bangladesh; among them 14.4 million girls and 15.1 million boys, making up about one fifth of total population.[2]

Delinquency may refer to behavior by youths under 18 years of the age which is not acceptable to society and is generally regarded as taking some kind of admonishment, punishment or corrective action. The growing number of children is involving with the criminal activities due to industrialization which is a matter of great concern for every nation specially developing country like Bangladesh.[3]

According to Child Incarceration Statistics, total 1,900,000 numbers of children getting incarcerated worldwide yearly; where 70,000 children remain detained on any given day. Children are involved in 25.9% of all violent offences and 74.1% of all non-violent offences worldwide. 336 in USA, 46.8 in England and Wales, 69 in South Africa, 24.9 in Australia per 1,00,000 youth population are involved in criminal activity. According to Bangladesh Bureau of Statistics, around 1.3 million children are engaged in hazardous jobs, 70% of whom are also involved in criminal activities. According to Ministry of Home Affairs, around 44% of the street children in Bangladesh are involved in drug peddling, 35% involved in picketing, 12% in mugging, 11% in human trafficking and 21% in other criminal activities.[4]

The global approach for prevention and protection of juvenile offenders through administration of justice has undergone vast transformations under the auspices of the United Nations with various international rule, convention and guidelines.[5] Since independence of Bangladesh in 1971, the first expression of concern about the protection of children came through the Children Act 1974. In 1990, after signing the Convention on the Rights of the Child (CRC) 1989, the law and policy has not substantially been changed which ensures that juveniles are separated and treated differently from adults and to protect their best interest during all kinds of legal processes. In practice, often the Act is not being implemented and as a result children receive the same treatment as adults. Consequently, children suffer adversely from existing laws and practices. In this context, recently, the Children Act 2013 has enacted on the basis of CRC that Bangladesh ratified 23 years ago.[6]

Almost in every country there is government juvenile correction or detention centre. In Bangladesh it is named as Juvenile Development Centre. They are three in numbers- two for boys and one for girls. The first Juvenile Development Centre was established in 1978 in Tongi, Gazipur for boys. Initially it had capacity for 200 boys, later the capacity was upgraded upto 300 boys. The second Juvenile Development Centre was established in Jessore in 1995 for 150 boys. The third and only Juvenile Development Centre for girls was established in Konabari, Gazipur in 2003 for 150 girls. All of these institutes involved themselves in improving their future life.

As adolescence is a period of turbulent time, a thorough understanding of adolescence in society depends on not only their biological, historical, sociological, educational or anthropological status, but also their psychological status. So this study was carried out to assess the psychological well-being status of adolescents of Juvenile Development Centers of Bangladesh.

MATERIALS AND METHODS

A cross-sectional study was conducted among the adolescents of Juvenile Development Centre, Tongi, Gazipur for boys and Konabari, Gazipur for girls. The period of study was from January to December 2017. By purposive sampling, total 191 respondents were selected. As per Children Act 2013, a Juvenile Development Centre can retain a convicted personnel upto 18 years, so 10 to 17 years was the age group of this study. A pre-tested, semi-structured questionnaire was used for data collection which contains question regarding socio-demographic status, their previous and current criminological profile and a scale named The WHO-5 Well-being Scale.

World Health Organization's Well-Being Index (WHO-5) is a short and generic global rating scale for measuring subjective well-being. It considers the five positive points of well-being for the measurement of mental health. The WHO-5 items are: 1) I have felt cheerful and in good spirits, 2) I have felt calm and relaxed, 3) I have felt active and vigorous, 4) I woke up feeling fresh and rested and 5) My daily life has been filled with things that interest me. The respondent is asked to rate how well each of the 5 statements applies to him or her when considering the last 2 weeks. Each of the five items is scored from 5 (all of the time) to 0 (none of the time). The raw score therefore ranges from 0 (absence of well-being) to 25 (maximal well-being). As because the scales measuring health related quality of life are translated to a percentage scale from 0 (absent) to 100 (maximal), the raw score is multiplied by 4. The score below 50 is considered as poor well-being status and score 50 and above is considered as good well-being status.[7]

Data were collected by face to face interview and record review. Height of the respondents was measured in centimeters by measuring tape and weight in kilogram by Camry weighting machine. Substance abuse was measured by statement of the respondents.

Data were processed and analyzed by using software SPSS, version 23.0. Both descriptive and inferential analysis was done according to the objective of the study. The level of significance was set at 0.05.

Prior to commencement of the study, the research protocol was approved by the Ethical Review Board (ERB) of National Institute of Preventive and Social Medicine (NIPSOM). The aims and objectives of the study along with its procedure, methods, risks and benefits were

explained to the respondent in easily understandable language and then informed written consent was taken from each respondent as well as legal authority. It was assured that all information and records would be kept confidential.

RESULTS

A total 191 adolescents of Juvenile Development Centers were studied for this cross sectional type of study. Among them 55.5% were male and 44.5% were female; 95.3% were Muslims and 4.7% were Hindus; 94.8% were unmarried and 5.2% were married; 31.4% were currently on study, whereas 68.6% dropped out from the educational institute; 32.5% of father and 53.4% of mother of the respondents were not educated.

The mean age of the respondents was 15.20±1.145 years. The respondents were categorized as poor, middle class and rich as per Asian Development Bank;[8] 75.9% of respondents were poor and rest 24.1% were on middle class. The mean of their monthly income was 3683.88±2075.40 BDT.

The mean of the WHO-5 well-being scale of the respondents was 52.20±9.997. Among the respondents, 35.1% were in the category of good psychological well-being status whereas 64.9% were in poor psychological well-being status (Figure-1).

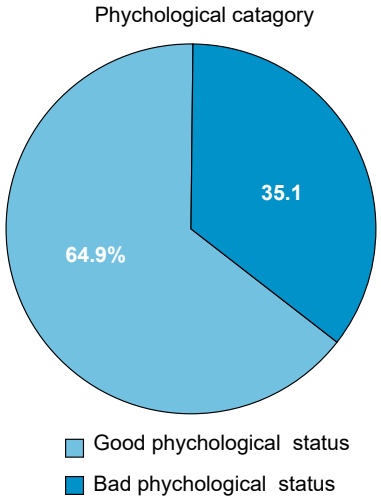

Figure-1: Pie chart showing category of psychological well-being status among the respondents

Nutritional status of the respondents was measured by their body mass index (BMI). The mean BMI of the respondents was 20.26±1.267 kg/m2; 92.7% of respondents were in normal, 5.2% were in underweight, 0.5% were in pre-obese and 1.6% were in overweight category (Figure-2).

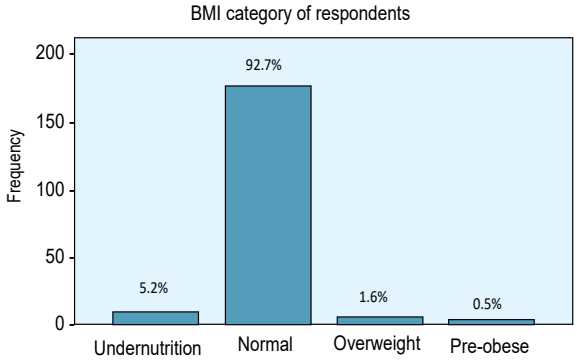

Figure-2: Histogram showing distribution of the respondents by BMI category

In the study it was found that 14.7% of respondent's family members were being victimized to any kind of assault, 28.3% of respondents thought they were deprived from their rights or property, 11.0% of respondents family member had relationship with criminal activity, 16.2% of respondents were gang member, 13.6% of respondents were influenced by their relatives or gang members on doing crime, 41.4% of respondents were involved with substance abuse.

About one third, that means 31.9% of respondents of these institute were accused for drug abuse, whereas 26.7% for assault, 19.4% for theft, 9.4% for dacoity, 7.9% for abduction, 2.1% for smuggling and rest 2.6% for murder and rape.

For the cause of doing crime, 48.2% of respondents mentioned that they are here for false allegation, 15.7% due to poverty, 12.0% due to anger, 11.5% due to frustation, 7.3% due to mental abberation and rest 5.2% due to revenge (Figure- 3).

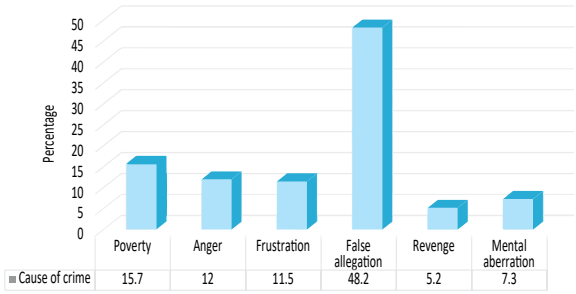

Figure-3: Distribution of the respondents by cause of doing crime

In case of inferential analysis, the dependent variable of the study, score of the WHO-5 well-being scale, was a continuous variable. So independent sample-T test and one way ANOVA was done with categorical independent variables; whereas correlation and regression was done with continuous independent variables. By analysis, it was found

that score of the WHO-5 well-being was statistically significant with age of the respondents (p=0.028), duration category of the respondents (p<0.001), occupation of respondents prior to this institution (p=0.024), type of crime respondents accused for (p=0.003) and BMI category of the respondents (p=0.005) (Table-II).

Table-IV: Significant variables set

Variables	Standardized coefficient Beta	p value
Age of the respondents	0.118	0.028
Duration category of the respondents	0.481	0.000
Occupation of respondents prior to this institution	-0.102	0.024
Type of crime respondents accused for	0.060	0.003
BMI category of the respondents	-0.095	0.005

Multiple regression was done with all the variables which were statistically significant and the result showed score of the WHO-5 well-being scale had significant association with duration category of the respondents after controlling the effect of other significant variables.

DISCUSSION

In present world, well-being as well as mental status is an well spoken term as the third goal of the Sustainable Development Goals is, "Ensure healthy lives and promote well-being for all at all ages".[9] For the assessment of the physical and mental status of adolescents of Government Juvenile Development Centers of Bangladesh a cross-sectional study was performed. It should be mentioned that no study was found to be conducted among adolescents of Juvenile Development Centers in Bangladesh to explore mental status before.

In this study, male-female respondent ratio was 1.41:1. According to Bangladesh Bureau of Statistics (BBS), 2016, National figure of male and female ratio is 1.003:1. Female proportion is slightly lower in this study due to shortage of time. Most of the respondents were Muslims (95.3%) and rest were Hindus (4.7%). According to BBS 2016, the Muslims are 89.1% and Hindus are 10%. This finding of the study is slightly higher than National figure. In this study, only 31.4% of respondents were currently on education, whereas 68.6% respondents dropped out from school. According to the report of Bangladesh Bureau of Educational Information and Statistics (Banbeis) the dropout rate of children was 40.29 in 2015. So the dropout rate is more among the criminally convicted children according to this study. Male and female literacy rate was 75.62% and 69.9% respectively, according to UNESCO. From the study, it was found that, 67.5% of father and 46.6% of mother of the respondents were literate. Though the rate of literacy of father of the respondents correlates with the National figure, but literacy rate among the mother was very low. Most of the respondents (75.9%) came from the middle class family and 24.1% came from lower class family. None of the respondent belongs to rich family. The mean monthly income of the respondents was 3683.88 BDT which was very low in compare to average monthly wages of 12897 BDT/person in Bangladesh.[8]

This study shows that 66.0% of the respondents thought they were never victimized to any kind of physical or mental assault. Rest of the respondents were experienced to physical or mental or both kind of assault. A study on USA shows that 5.4 million of violent crime occurred in 2014 among adolescents of age 12 and over 53% of these adolescents experienced previous physical, mental or both type of assault.[10]

A study conducted in South Africa among adults of type 2 Diabetes Mellitus showed 69% of respondents were in good and 31% of respondents were in poor psychological condition by using WHO-5 well-being scale.[11] This study showed, the mean score of the respondents was 52.2±10.0. Among the respondents, 35.1% of the respondents belong to the category good psychological status, whereas 64.9% of the respondents belong to the category poor psychological status. As the study was done on adolescents and in a convicted area, the percentage of having good psychological status was lower comparing to previous study.

Body mass index (BMI) of the respondents was calculated and they were categorized according to Asian classification of nutritional status. In this study a large number of the respondents (92.7%) had normal BMI. Underweight respondents were 5.2%, overweight respondents were 1.6% and pre-obese were 0.5%. This results differ from the study conducted girls in rural Bangladesh which reveals 36% girls were normal, 32% were underweight.[12] As these respondents got timely diet, disciplined life style, so their nutritional status might improved from the rural girls.

Score of the WHO-5 well-being of the respondents who lived in the Juvenile Development Center for above 2 months had higher (56.08±7.54) than the respondents who lived here upto 2 months (45.63±10.24) which was

highly significant (p<0.01). This indicate that adolescents who were the residents of Juvenile Development Center for more than 2 months got habituated with the restricted environment, adapted with the rules and terms of the institution, finds mates and had good psychological status than others.

The study result showed that age of the respondents were positively correlated with the mean score of the WHO-5 well-being scale, which was significant (p<0.05). Curve estimation was done and a cubic relationship was found between the age and score of the WHO-5 well-being scale. That means psychological well-being status increases with certain age limit and then decreased, which correlates with the study done in South Africa.[11]

CONCLUSIONS

This study provided prevalence of mental status as well as nutritional status of adolescents of Government Juvenile Development Centers in Bangladesh. Almost every respondent belong to normal BMI category. Well-being score of the respondents was significantly increased with the body mass index (BMI). Score of the WHO-5 well-being scale had significant association with duration of the respondents after controlling the effect of other significant variables. This means psychological counseling, increase sports and recreational facilities, educational and vocational services at the Government Juvenile Development Center may improve the coup-up facility of the respondents and thus improve their psychological well-being status. But the study was conducted in a small scale due to shortage of time. So, more population based researches are needed to explore physical and mental status of the adolescents of Juvenile Development Centers.

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Original Article

Rate of Metabolic Syndrome Among Patients with Facial Acanthosis Nigricans

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Abstract

Facial acanthosis nigricans (FAN) is an ignored dermatological entity. Nowadays it occurs more frequently than previous days may be due to changing economic and social status of our country. Aim of this study was to assess the rate of metabolic syndrome in cases of facial acanthosis nigricans. This observational study was conducted in the outpatient department (OPD) of dermatology and Venereology of Bangabandhu Sheikh Mujib Medical University (BSMMU) in the year 2017 among thirty clinically diagnosed cases of FAN. After taking their informed written consent; BMI, random plasma glucose, fasting lipid profile and serum insulin level was estimated in venous blood and recorded accordingly. To confirm metabolic syndrome we followed NCEP ATP III guideline (2005) where 3 of 5 positive criteria confirmed the diagnosis. All data was preserved in a secured computer device and was analyzed with SPSS program with appropriate statistical tools. Mean (±SD) age of patients was 35.63 ± 14.26 years and male to female ratio was 1:1.14. The mean BMI of cases was 33.73±3. We found 11 cases with hypertension, 8 with type II diabetes mellitus and 9 with dyslipidemia. Among the 30 cases of FAN 12 zygomatic type, 8 generalized type and 5 had band like pigmentation on the forehead. Twenty-three patients had acanthosis nigricans on both sides of body. According to our preset criteria we found 26.66% cases had metabolic syndrome. The rate of metabolic syndrome is higher in facial acanthosis nigricans patients. A further large scale study is recommended for strengthening this study findings.

Keywords: *Facial ancanthosis nigricans, Metabolic syndrome.*

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INTRODUCTION

Acanthosis nigricans (AN) is a simply identifiable dermatological condition characterized by velvety-dark coloured plaques appears on folds of skin, hands and feet, groin, armpits, umbilical area, knuckles, along the neck and even mucosal surface.[1] It presented as brown-to-black macular pigmentation with blurred ill-defined margins, commonly found on the zygomatic and malar areas with varying degrees of textural changes ranging from mild roughness to frank verrucous appearance of the affected areas.[2] Stimulation of tyrosine kinase growth factor receptor signaling pathways in epidermis is considered as common mechanism of AN.[3]

It is known for over hundred years, initially it thought to be a rare skin condition; but with the increasing rate of obesity and type-2 diabetes it is now a relatively common.[4] The rate of occurrence of AN among different ethnic groups varies from 7% to 49.2%.[5-7] AN is frequently associated with obesity, endocrine disorders (type 2 diabetes mellitus, isulin- resistance and hyperinsulinemia, hypothyroidism, hyperthyroidism and cushing syndrome), malignancy, genetic syndromes and the use of some drugs (glucocorticoids, niacin, insulin, oral contraceptives, and protease inhibitors), insulin injections (especially at the injection site).[8-11]

Facial AN is not a very common entity although some patients present with facial involvement. It is one of many causes of facial melanosis accounting 7.5%.[12] The initial common manifestation of facial acanthosis nigricans are cutaneous dryness, dark coloration and coarseness, which in affected area is of slate or black colored.[13] The pigmentation is followed by hypertrophy, accentuation of skin marking, and velvety texture.[13]

Table I: Definition of metabolic syndrome

	NCEP ATP (2005 revision)	WHO (1998)
Absolutely required	None	Insulin resistance
Criteria	Any three of the five criteria below	Insulin resistance or diabetes, plus two of the five criteria below
Obesity	Waist circumference: >40 inches in male and >35 inches in female	Waist/Hip ratio: >0.90 (M); >0.85 (F); or BMI > 30kg/m^2
Hyperglycemia	Fasting glucose ≥ 100 mg/dl	Insulin resistance required
Dyslipidemia	TG ≥ 150 mg/dl	TG ≥ 150 mg/dl or HDL: <39 mg/dl in male, <35 mg/dl in female
Dyslipidemia (second separate criteria)	HDL: <40 mg/dl (M); <50 mg/dl (F)	
Hypertension	>130 mm Hg systolic or >85 mmHg diastolic	≥ 140/90 mmHg
Other criteria		Microalbuminuria

Table I summarizes two commonly used definitions of metabolic syndrome. National Cholesterol Education Program (NCEP) Adult Treatment Panel-III(ATP-III)2005 was set five criteria for define metabolic syndrome. Obesity, hyperglycemia, dyslipidemia, hypertension any three of that five points will confirm metabolic syndrome. The World Health Organization (WHO) first developed its definition in 1998. Because insulin resistance was felt to be central to the pathophysiology of metabolic syndrome, evidence for insulin resistance is an absolute requirement in the WHO definition. In addition to this absolute requirement for insulin resistance, two additional criteria have to be met. These include obesity, dyslipidemia, hypertension and microalbuminuria.

MATERIALS AND METHODS

Clinically confirmed cases of facial acanthosis nigricans (FAN) who fulfilled our inclusion and exclusion criteria was enlisted as our case. Written consent was taken before taking personal and clinical information. Weight and height of patients was taken with a weight machine and abdominal circumference was measured with a plastic measuring tape. Blood pressure was measured with a sphygmomanometer and stethoscope. Patient's venous blood (5 cc) was drawn with aseptic measures and was sent for biochemical test of fasting lipid profile and fasting blood glucose.We defined metabolic syndrome according to National Cholesterol Education Program (NCEP) Adult Treatment Panel-III (ATP-III)2005 criteria. Where obesity was established when waist circumference of a male was more than 40 inches and that of female was more than 35 inches. When systemic blood pressure >130/85 mm Hg we defined that as hypertension. Other points of NCEP ATP III (2005) criteria for diagnosis of metabolic syndrome was fasting blood glucose ≥ 100 mg/dl, serum tritglycerides level ≥150 mg/dl and HDL cholesterol <40 mg/dl in male and <50 mg/dl in case of female patients. When three of above five criteria was positive we listed them as metabolic syndrome case. All data was recorded in a preformed data collection sheet. Data was preserved in a secured computer device and analyzed them with SPSS program version 20.

RESULTS

Out of 30 patients with facial acanthosis nigricans 14 (46.67%) were male and 16 (53.33%) were female mean age of cases was 35.63 years and their minimum age was 16 years and maximum age was 62 years. Regarding facial acanthosis nigricans we found 5 types of pigmentation like generalized, zygomatic, periorbital, band like on forehead and darkening over sulcus alaris nasi and sulcus mentolabialis. In our study zygomatic pigmentation was more common 40% than generalized (26.66%) and band like ogumentation on forehead type (16.66%).

We defined metabolic syndrome according to NCEP ATP III. We found waist circumference was high in (43.33%) cases, systemic hypertension was found in 36.66% cases, hyperglycemia in 26.66%, hypertriglyceridaemia in 30% cases and low HDL level in 26.7% cases. We found 8 (26.7%) patients with metabolic syndrome, who fulfilled at least three of above mentioned five criteria. Of them 16.66% was male and 10% was female respondent.

Table: II Demographic and clinical characteristics of cases (N=30)

Sample characteristics		
Age (year)		
mean ±SD	35.63 ± 14.26	
Range	46	
Min-Max	16-62	
Sex		
Male	14(46.7%)	
Female	16(53.3%)	
Male: Female (Ratio)	1:1.14	
Weight (KG)		
Mean ± SD	71.53 ± 9.5	
Range	37	
Min-Max	65-102	
BMI		
Mean ± SD	32.73 ± 3.4	
Range 12		
Min-Max	26-38	
Duration of disease (Year)		
Mean± SD	2.97 ± 1.3	
Range	5	
Min-Max	1-6	
Pigmentation type		
I. Generalized	8	26.7%
II. Zygomatic	12	40%
III. Band like on forehead	5	16.7%
IV. Peri- orbital pigmentation	3	10%
V. Sulcus of alaris nasi and or sulcus mentolabialis	2	6.7%
Presence of AN on other site	23	76.7%
Presence of acne	8	26.7%
Presence of acrochordon	4	13.7%
Only pigmentation present	11	36.7%
Both pigmentation and thickening present	19	63.7%
Components of metabolic syndrome		
i. **Obesity**		
Waist circumference (>40 inches in male and >35 inches in female)		
At or above obese level	13	43.3%
ii. **Hypertension (BP ≥130/≥85 mmHg)**	11	36.7%
iii. **Hyperglycemia (FBS≥110mg/dl)**	8	26.7%
iv. **Hypertrygliceridaemia (TG >150 mg/dl)**	9	30%
v. **Low HDL cholesterol level (<40 mg/dl in male and <50 mg/dl in female)**	8	26.7%
PCOS	5	16.7%
Atopy present	2	6.7%
FH of HTN positive	5	16.7%
FH of DM Positive	7	23.3%
Metabolic syndrome positive	8	26.7%

DISCUSSION

An observational study conducted on 30 diagnosed cases of facial acanthosis nigricans (FAN). The mean (±SD) age of patients was 35.63 years. Age range was 46 (16-62) years and mean duration of disease was 2.9 years. Male to female ratio was 1 : 1.14.

In a similar study conducted on 139 FAN patients found mean (±SD) age was 38.8 ±8.6 years and age range was 39 (22-61) years.[15] Verma et. al found age range 42 (16-58) years in 102 FAN patients. Above two studies was similar with our findings.[16]

Regarding sexpanda et. al found male to female ratio was 4.4 : 1 and Verma et. al found that ratio was 2.9 : 1. This result is dissimilar with our findings where female out numbered male.

Mean (±SD) weight of cases was 71.5 SD±9.6 kg and mean (±SD) BMI was 32.7SD±3.4.We found 5 types of pigmentation in face due to FAN. Common type was zygomatic (40%), generalized type was second common type (26.7%). others type was band like on forehead (16.7%), periorbital (10%), sulcus of alarisnasi and sulcus of mentolabialis (6.7%). Only pigmentary change was in 11(36.7%) cases and both pigmentary and texture change was in 19 (63.3%) cases. Panda et. al. found the involvement at fore head and temporal region was 69.1%, 57.7% was at zygomatic region and 14.6% was periocular and perioral involvement. Another study 59.8% involvement was found in forehead, 17.6% was with periorbital darkening, 12.7% was with perioral darkening and in 9.8% cases the darkening was generalized.[17] That finding was more or less near to our findings. In our study 5 (16.7%) cases were with positive family history with hypertension and 7 (23.3%) patients were with positive family history of diabetes mellitus.[18]

In 76.7% cases acanthosis nigricans was found in body other than face most likely on axillae, back of neck and body creases. 8(26.7%) patients were presented with acne, 4 (13.3%) patients were with acrochordon and 5 female patients with PCOD. Panda et.al found acanthosis nigricans on 81.3% on neck and 49.6% on axilla. 43.1% patients were presented with acrochordon.[19]

According to NCEP ATP III guideline we defined metabolic syndrome with 5 clinical and/or biochemical points. We looked for abdominal obesity while waist circumference became >40 inches in male and > 35 inches in case of female it was defined as obesity level. In our study 13 (43.3%) was positive for central obesity.[21] Hypertension was found in 11 (36.7%) cases, hyperglycemia was found in 8 (26.7%) cases, hypertriglyceridemia was found in 9 (30%) cases and low HDL level was found in 8 (26.7%) cases. Panda et al. found obesity in 39.84% cases, hypertension 22.8% case and dyslipidaemia in 39.0% cases. Outcome of that study was similar to our findings.

Panda et.al. found that obese patient classified as per BMI were increased chance to develop FAN two times than normal. In our study we found 26.7% cases with FAN developed metabolic syndrome.

CONCLUSIONS

In our study we found rate of metabolic syndrome is more in patients with FAN in our community. We suggest a large scale study to support and verify our study out comes.

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Original Article

Outcome of Colpoclesis in Advanced Pelvic Organ Prolapse in Elderly Women

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Abstract

To find out the safety, effectiveness and outcome of colpocleisis in advanced pelvic organ prolapse in elderly women. A prospective study was conducted in Sheikh Hasina Medical College,Tangail (250 beded general hospital,tangail) among 75 female patients aged 60 years and above with diagnosed cases of Pelvic Organ Prolapse (POP) during the period from February 2014 to February 2018 who had no desire in coital function. Patient information were recorded pre-operative, per-operative and post-operative period. Urodynamic investigation (uroflometry and post void residual urine) were done during pre-operative and early postoperative period. Follow up was done at 6 week, 3 month and then annually. Main outcome measures were relieving symptoms, recurrence of prolapse and development of urinary incontinence. Patient satisfaction (Subjective outcome) measured by interview during follow up. Colpocleisis was performed in 75 patients. Mean (age of the patients was 66.69 SD ±5.9 years, mean BMI 18.12 SD ±1.69 kg/m2 and mean parity 5.56 SD ±1.9. Majority of operation done under saddle block, only 21.31% was done under local anaesthesia. Mean operation time was 36.16 SD±6.23 minutes, mean blood loss was 41.61 SD±8.34 ml and mean hospital stay was 2.24 SD ±0.49 days. Objective and subjective outcome were same 98.7% only 1.3% patient developed recurrent prolapse (Failed operation) and 1.3% patient developed urinary urge incontinence. The mean differences were significant for the pre and postoperative maximum urinary flow rate, voided volume, post void residual urine (P value is 0.001). Colpocleisis is safe, effective with high success rate in the management of advance pelvic organ prolapse, who do not wish to preserve coital function. So it can be considered as one of surgical option for treating advance pelvic organ prolapse.

Keywords: *Colpocleisis, advanced pelvic organ prolapse.*

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INTRODUCTION

Pelvic organ prolapse (POP) is a condition that affects millions of women with a prevalence estimated in a clinical population to be 40% of parous woman.[1] Age and parity are well known risk factors for the development of POP.[3] Parity being the strongest risk factor with an adjusted risk ratio of 10.85.[3] Neurologic injury to the pelvic floor and underlying connective tissue disorders have also been implicated.[4-6] Other predisposing factors include chronic conditions that increase abdominal pressure such as heavy lifting, chronic cough, bowel dysfunction, previous hysterectomy, oestrogen deficiency.[7-9]

Pelvic organ prolapse (POP) is a disorder that decrease quality of life due to associate symptoms, recurrent urinary tract infection, and frequent surgical interventional in women.[10] In most countries, POP usually occurs in middle, elderly or advanced age (≥ 80 years) female patients.[11]

The condition of women with uterovaginal prolapse is managed expectantly, surgically or with pessaries. Expectant management is appropriate in the presence of small and asymptomatic prolapse, whereas pessaries are useful in women with concurrent disease that may

preclude surgery. Large and symptomatic pelvic prolapse may be managed with pessaries and surgically. The choice is dependant on the type and degree of prolapse, the women's general health, need for coital or reproductive function and the presence or absence of urinary symptoms. In general, women who are elderly have no desire for sexual intercourse or who are medically unfit, have their prolapse symptoms controlled with a pessary.Using pessary is not universally successful and may not be acceptable by some women.[12]

There choice for surgical management of procidentia are colpocleisis, sacrospinous fixation and sacrocolpopexy abdominally, either open or laparoscopically.[12] In contrast to the pelvic reconstructive surgeries colpocleisis is an obliterative procedure for women with uterovaginal prolapse, who do not wish to preserve vaginal function for sexual intercourse.[12] The procedure was first described by leon LeFort 1877 and the modified operation is still being performed today. The advantage of this technique over sacrospinous fixation and sacrocolpopexy lies in the fact that damage to adjacent organs, major vessels or nerves is unlikely, as the planes or dissection are superficial. The procedure is also quick to perform, with a short recovery time and can be carried out under local anaesthesia if necessary.[13]The aim of this study was to see the outcome of colpocleisis.

MATERIALS AND METHODS

This prospective study was conducted in Sheikh Hasina Medical College,Tangail (250 beded general hospital, tangail) during the period from February 2014 to February 2018. We select 75 patients who had high stage uterine prolapse with advanced anterior and posterior compartment prolapse (procedentia) who had no desire to coital function. Age group of study population was 60 years or more. Patient with POP who had received any surgical treatment related to prolapse, who had desire in preserve coital function, who had cervical and urinary pathology and who had urinary stress incontinence needs additional surgical intervention, were excluded from this study population.

The diagnosis was made based on history and clinical examination. The preoperative stage of genital prolapse was classified by the POP-Q staging system. For pre anesthetic cheekup all routine investigations were done in all patients and Echocardiography was done some patients. In addition in all patient paps smear and transvaginal sonography (TVS) were perform before surgery to exclude cervical and uterine pathology. Before the operation, all the patients were counseled about the desire for future vaginal intercourse with informed consent from patient and her husband. History, physical examination and personal information were recorded preoperatively using questionnaire. This included presenting symptoms associated problem and urinary symptoms.

Colpocleisis operation were carried out under regional anaesthesia (saddle block) and those patient who were highly morbid and unfit for regional and general anaesthesia, they were selected for local anaesthesia. While using local anaesthesia we used lidocaine (2%) 2-3 mg/kg body weight was used or with adrenalin (3-5 mg/kg body weight mixed with normal saline) operation began with the marking of two rectangles in both the anterior and posterior vaginal mucosa and then removed after dissection. The muscularis layers of the anterior and posterior vagina were brought together with a serial row of imbricating sutures with delayed absorbable sutures (1.0 vicryl). The vaginal mucosa without dissection was sutured into a tunnel for drainage purpose. After obliteration of the vagina, perineorraphy was performed with plication of the levetor ani muscle and perineal body. The intra-operative variable such as operation time, total blood loss, peroperative complication and early postoperative complication were recorded. Blood loss was measured by pre-weighed absorbed fabricated mat. Urodynamic investigation (uroflometry and post void residual urine) were done preoperative and early postoperative period, if maximum flow rate < 15 ml/s and post void residual urine ≥ 100 ml was defined as voiding dysfunction. To track the experience complication and satisfaction with operation, the patient were instructed to come at follow-up at 6 weeks, 3 month and then yearly, whenever she felt any problem. Most of the patient attended for follow up upto 6 weeks & three month but few patient complete the schedule. Main outcome measures were relieving distressing symptoms recurrence of prolapse, development of urinary incontinence and patient satisfaction with operation.

Regarding the patient's overall impression of the procedure two main aspect was inquired. For overall outcome measure the patients were inquired about their feeling for which they underwent the operation was removed completely or partially and had developed any newer complaints. For satisfaction they were asked whether they were satisfied with the outcome, and if not, when did they dissatisfaction begin and what symptoms bother them.

Data were analyzed using SPSS version 18.0 and presented as mean ± standard deviation, median or percentage depending on variables. Student t test and pair t test were use to compare the continuous data before and after the operation. A p value of <0.05 was considered to be a statistically significant difference.

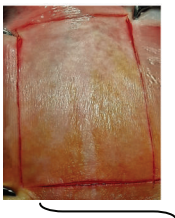

Fig.-1: Incision of anterior vagina

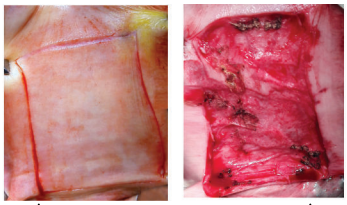

Fig.-2: Incision of posterior vagina

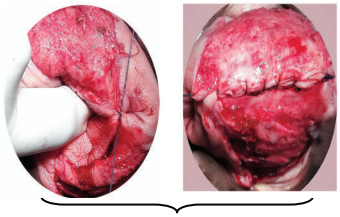

Fig.-3: Apposition of vaginal wall

Fig.-4: After complete apposition

RESULTS

Seventy five patients were observed during the study period the mean age of studied patients was 66.69 ±5.9 years ranged from 60 to 90 years with most frequent age group 60 to 65 years. The mean BMI of patients has been recorded 18.12 kg/m^2 with SD±1.6. The maximum number of patients found to be under weight (76%). Among the patients 45.3% of them gave history of delivery five children or less and rest of them had more than five children. According to co-morbidities of patient Diabetes malitus, Bronchial Asthma, CVD, Heart disease, Thyroid disease, Kyphosis, among them 25.33% patient had 1 co-morbidity, 52% patient had 2 or more co-morbidities and 2.67% patient had no co-morbidities. With the protrusion of utero vaginal bulge outside the vagina, among all the patients, 72% of them reported difficulty in micturation, 36% reported difficulty in defecation, 26.7% had constipation and 54.7% had backache. The surgery was carried out under regional anaesthesia (saddle block) (78.7%) and local anaesthesia (21.3%). (Table-I).

Table-1 : Characteristic of study population (N=75)

Parameters	Mean	±SD
Age (Yrs)	66.67	±5.9
Body Mass Index	18.2	±1.69
Parity	N	%
≤5	34	45.3
>5	41	54.7
Medical Co-morbidities		
1 Co-morbidity	19	25.33
≥2 Co-morbidity	39	52
Co-morbidity Absent	17	22.67
Patient's symptoms at presentation		
Protrusion of uterovaginal bulge	75	100
outside the vagina		
Difficulty in micturation	64	72
Difficulty in defecation	27	36
Constipation	20	26.67
Backache	41	54.67

The surgery was carried out under saddle block (regional anaesthesia) (78.7%) and local anaesthesia 21.3% The mean duration of operation was 36.166.23, range (30-60) min. The mean Blood loss was recorded during operation 41.618.34 ml, range (30-80) ml. The mean hospital stay after operation was 2.240.49 days, range (1-3) days. The mean duration of Foley's catheterization was 1.020.16 days, range (1-2) days. None of patient developed voiding difficulty duration post operative period. (Table-II)

Table-II : Peri-operative and post-operative parameter of study population

Parameter	Values (mean+SD) (Range)
Anesthesia Saddle Block	59 (78.7%)
Local Anesthesia	16 (21.3%)
Operation time (min)	36.166.23 (30-60)
Blood loss (ml)	41.618.34 (30-80)
Hospital Stay (day)	2.240.49 (1-3)
Duration of Foley's catheter (day)	1.020.16(1-2)
Post operative voiding difficulty	Nil

During the follow up, anatomical success, recurrent prolapse, incontinence and recurrent UTI was reported by 98.7%, 1.3%, 1.3% and 2.7% respectively. Almost in all cases patients were satisfied (90.7%) with the treatment outcome. 8% of them expressed of being very satisfied with the intervention. In one case the patient found to have more expectation about the treatment outcome (Table-III). The mean differences were significant for the pre and postoperative maximum urinary flow rate, voided volume, post void residual urine, where in each of these cases, P value was 0.001. It was not significantly different in terms of the means of voiding time before and after colpocleisis (Table-IV).

Table-III: Distribution of the patients according to outcome and satisfaction during follow up

Parameters		Number	Percentage
Anatomical success		74	98.7
Recurrent prolapse		1	1.3
Voiding difficulty	Nil		
Incontinence	Stress	Nil	
	Urge	1	1.3
	Mixed	Nil	
Urinary tract infection		2	2.71
Urinary retention	Nil		
Patients satisfaction	Very satisfied (delighted)	6	8.0
	Satisfied	68	90.7
	Not satisfied	1	1.3

Table-IV : Distribution of patients according to their Uroflowmetry parameters before and after colpoclesis

Distribution of patients according to their Uroflowmetry parameters before and after colpoclesis			
Parameters	Preoperative	Postoperative	P Value
Maximum flow rate (ml/s)	15.73 ± 4.33	21.15 ± 3.94	0.001
Voided volume (mL)	162.64 ± 54.18	226.85 ± 48.45	0.001
Voiding time (s)	47.53 ± 35.42	29.15 ± 6.11	0.767
Post void residual urine (mL)	41.56 ± 17.96	10.69 ± 9.58	0.001

DISCUSSION

Pelvic reconstructive surgery is especially challenging in elderly and advanced age women with high stage POP.[14] Most of these women have comorbidities which increases the incidence of adverse outcomes during and after surgical intervention.[15] Though various modalities of treatment for POP are available but colpoclesis may be an appropriate choice for high stage POP who do not desire vaginal coital function. In present study 75 patient undergone colpoclesis. The mean age of patient was 66.69 range (60-90) with SD±5.9 years, mean BMI were 18.12±1.69 kg/m.^{2} Study done by Amenda J.O'leary et al[12] found median age was 79 years (range 59-92) which was nearly similar to present study and study done by Soo chen Ng[16] found BMI 23.86±5.03 which is higher than the present study because most of our patient belonged to poor socio-economic condition. The prevalence of medical co-morbidities is high in older women. Soo chen Ng[16] reported 69.1% of patient had two or more medical co-morbidities. In present study 52% patient had two or more medical co-morbidities. Amenda J.O'leary et al[12] reported in study of LeFort partial colpoclesis 25 out of 27 women had pre-existing morbidities. In the present study 59% patient operation was done under saddle block (regional anaesthesia) and in 21.3% patient under local anaesthesia who felt mild pain and discomfort per-operatively. None of patient developed per-operative and post-operative complication. None of the patient complained moderate to severe pain during hospital stay and follow up. In our study mean operation time was 36.16 minute with SD±6.23, mean blood loss 41.61±8.34 ml, mean hospital stay was 2.24±0.49 days and duration of Foley's catheter insertion was 1.02±0.16 days. Study done by Soo chen Ng[16] found mean operation time was 78 minutes (30-135 minutes) and mean blood loss was 153.8 ml (30-450 ml) which was little higher than our study, because they reported that they had some patient of fragil pelvic floor and poor coagulation function and bleeding diathesis. Ghezzi at el[14] compared various pelvic reconstructive surgical methods in 138 women age 75 years or older and reported obliterative colpoclesis had a shorter operation time and less estimated blood loss

compared with vaginal hysterectomy. In the present study during follow up we found anatomical success in 98.7% and failed operation (recurrent prolapse) in 1.3% patient. one patient developed urge incontinence and one patient developed recurrent UTI. On self assessment while asking question about level of satisfaction with colpocleisis 98% patient said that they were satisfied, among them 8% patient were delighted (very satisfied) and one patient (1.3%) not satisfied due to failed operation. Our failed case had heart failure, bronchial asthma and obese and was done under local anaesthesia. Study done by Soo chen Ng[16] revealed high success rate after colpocleisis in women age 70 years or over (mean age 81) with advanced pelvic organ prolapse and self aasessment showed 87.5% patient successful. A retrospective study by Zebede S, Smith AL et al[15] involving 325 patient who under went LeFort colpocleisis in which 93% of patient reported being cured or greatly improved. Another study by Fitzgeraled MP, Richter HE[17] reported high surgical satisfaction after colpocleisis. In present study according to patient symptoms 72% patient had difficulty in micturition. Pre and post-operative uroflometry found that significantly improved maximum flow rate voided volume and post operative residual volume, P value 0.001. A retrospective study by Smith AL, Karp DR[18] involving 210 patient who underwent colpocleisis found 5 patient (12.5%) developed post operative voiding dysfunction and two patient 5% required intermittent self catheterization. Another study by Abbasy S. Lowenstein L[19] reported an improvement urinary symptoms without causing significant urinary retention in 38 patient with concomitant colpocleisis and mid urethral sling operation. The limitation of our study is follow up period is short and there is limited facilities of urodynamic study.

CONCLUSIONS

Outcome (objective and subjective) of colpocleisis in the treatment of advanced pelvic organ prolapse are high with low level of morbidity and recurrence. Colpocleisis is safe and effective management in selected elderly patient with the advanced pelvic organ prolapse, who no longer desire to maintenance vaginal coital function. This operation can be performed under local anaesthesia. It dose not require deep extensive tissue dissection and avoids an intra-abdominal approach. Colpocleisis can be considered as one of the surgical option for treating pelvic organ prolapse.

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Original Article

Use of Human Granulocyte Colony-Stimulating Factor (G-CSF) in Consolidation Chemotherapy in Adult Acute Myeloid Leukaemia (AML)

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Abstract

Acute myeloid leukaemia (AML) is treatable and potentially curable disease. Significant morbidity is related to the prolonged, severe neutropenia resulting from the disease as well as the intensive chemotherapy. The administration of granulocyte - colony stimulating factor (G-CSF) is recommended to reduce the neutropenic period. But the current information and guidelines are insufficient about the most appropriate time to start G-CSF and the optimum duration of treatment after chemotherapy in consolidation phase. This study explores better timing to start G-CSF after completion of chemotherapy in consolidation phase of AML patient. This prospective study was conducted in the department of Haematology, Bangabandhu Sheikh Mujib Medical University among AML patients, who received consolidation chemotherapy (high dose cytarabine). Samples were grouped into two arms. Arm-A (Absolute Neutrophil Count >1000/cmm) received prophylactic G-CSF and Arm-B (Absolute Neutrophil Count <1000/cmm) received G-CSF during neutropenia. Filgrastim was used as G-CSF and daily 300 micrograms were given subcutaneously according to study protocol. Statistical analysis was done by parametric (t test) test and appropriate using computer based SPSS (21) Program. Total sample was 19, out of which 6 in prophylactic G-CSF group (Arm-A) and 13 in delayed G-CSF group (Arm-B). Most of the patients were male (63.16%), male to female ratio 1.7:1 and mean age of sample 35 years. Mean ANC at the 1st day of G-CSF application in Arm-A 1170.5/cmm & in Arm-B 272.6/cmm (p=<0.001); mean requirements of G-CSF accordingly 11.5 and 5.9 (p=0.0014), mean 1st day of G-CSF application 9.5th day and 14.5th day (p=0.001). Outcomes in Arm-A and Arm-B were accordingly, mean duration of ANC recovery 10 and 9.85 days (p=0.913), febrile neutropenia 2.67 and 2.57 days (p=0.961), hospital stay 20 and 20.3 days (p=0.259), red cell concentrate transfusion 1.83 and 1.46 units (p=0.550), platelets concentrate transfusion 11.83 and 7.77 bags (p=0.2405), and there was no death case in two arms. Differences of timing to start G-CSF and its requirements between two groups were significant, but the outcomes did not show any statistically significant difference.

Keywords: *Acute myeloid leukaemia, consolidation, neutropenia, granulocyte colony-stimulating factor*

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INTRODUCTION

The global burden from cancer is rising. According to world health organisation (WHO), Bangladesh is experiencing increasing cancer burden with estimated 122,715 new cancer cases in 2012. Haematological malignancies comprise approximately 6.5% of all cancer incidences worldwide in 2012.[1] Hossain et al. published a multi-centre hospital-based retrospective descriptive study of Bangladesh over 5000 confirmed haematological cancer cases in between January 2008 to December 2012.[2] In this study Acute Myeloid Leukaemia was most frequent (28.3%) with a median age of 35 years.

Acute myeloid leukaemia (AML) is a cancer of the myeloid line of blood cells, characterized by the rapid growth of abnormal white blood cells that accumulate in the bone marrow and interfere with the production of normal blood cells. AML is the most common acute leukaemia affecting adults, and its incidence increases with age.[3]

AML is a treatable and potentially curable disease with intensive chemotherapy accompanied by recent improvements in supportive care.[4] In a recent Cancer and Leukaemia Group B (CALGB) study, 44% of patients less than 60 years of age who achieved complete remission (CR) with standard cytosine arabinoside (Ara-C) and daunorubicin chemotherapy and subsequently received up to four courses of post remission consolidation chemotherapy with high-dose cytosine arabinoside (HiDAC), were estimated to remain in disease free condition at 5 years.[5] Barriers to achieve higher rate of cure in AML include drug-resistant leukaemia, extramedullary toxicity from chemotherapeutic drugs, and prolonged pancytopenia due to ablative chemotherapy.[6]

Remission induction and consolidation treatment for acute myeloid leukaemia (AML) is associated with considerable morbidity and mortality.[7,8] A significant morbidity is related to the prolonged, severe neutropenia resulting from the disease as well as the intensive chemotherapy. The outcome of treatment is dependent, in part, on the ability of patients to tolerate the myelosuppression and its consequences.[9] Incidence of febrile neutropenia in consolidation phase is more than 85%.[10] The current ASCO guidelines justified the administration of colony stimulating factor (CSF) in clinical settings where the expected risk of suffering from febrile neutropenia (FN) is approximately 20%.[11]

G-CSF is a naturally occurring cytokine that stimulates the proliferation and differentiation of haemopoietic stem and progenitor cells committed to the neutrophil and granulocyte lineages. Fully differentiated neutrophilic granulocytes are functionally activated by G-CSF.[12]

Two forms of recombinant human G-CSF are available for clinical use - filgrastim and lenograstim. Both are produced by recombinant DNA technology. Filgrastim is produced in *Escherichia coli* whereas lenograstim is derived from Chinese hamster ovary cells. Available data do not suggest a clinically remarkable difference between filgrastim and lenograstim in chemotherapy-induced neutropenia and the mobilisation of peripheral blood progenitor cells in patients and healthy donors.[13]

Depth and duration of neutropenia correlate with the risk and severity of infection.[14] So reducing the frequency and severity of neutropenia is considered a clinically relevant end point. This premise has been used to justify the administration of G-CSF. But the current data is not sufficient to indicate regarding the most appropriate time to start G-CSF and the optimum duration of treatment after consolidation chemotherapy of AML patient to reduce neutropenic events.[15]

MATERIALS AND METHODS

This is a prospective observational study. This study was done at the department of Haematology, Bangabandhu Sheikh Mujib Medical University, Shahbag, Dhaka, Bangladesh. Study period for this study was from October, 2014 to March, 2016. Study population were the AML patients in Complete Remission admitted to Haematology Department for consolidation phase with high dose Cytarabine (HiDAC, 3000 mg/m^2). AML patients, who completed consolidation chemotherapy with HiDAC, satisfying inclusion and exclusion criteria, were included to this study. Confounding variables such as antibiotic therapy also were matched. Samples were grouped into two arms. Arm-A (ANC> 1000/cmm) received prophylactic G-CSF and Arm-B (ANC <1000/cmm) received G-CSF during neutropenia. Filgrastim was used as G-CSF and daily dose was 300 micrograms subcutaneously; and it will be continued up to neutrophil recovery (Absolute neutrophil count 1^9/L for 2 consecutive days). Purposive sampling was done. AML patients who have completed consolidation chemotherapy with HiDAC, aged between 18-60 years, Total WBC count 4000-11000/cmm and ANC>1000/cmm in peripheral blood before starting chemotherapy were taken. Informed written consent by the patient/party was taken. Patients with Acute promyelocytic leukaemia (AML M_3) and body weight <35kg or >80 kg were excluded from this study. Statistical analysis was done by parametric (t test) test and appropriate using computer based SPSS (21) Program.

RESULTS

During 17 months study period, since October 2014-March 2016, a total number of 19 patients who achieved complete remission after induction chemotherapy and then received consolidation chemotherapy with high dose cytarabine were analyzed. During each consolidation phase after finishing last dose of chemotherapy these patients were treated with G-CSF to reduce neutropenic period, neutropenic fever and hospital stay. G-CSF was

given at least 72 hours later of last dose chemotherapy. Six (6) patients received prophylactic G-CSF (Arm-A) before development of neutropenia while ANC>1000/cmm and thirteen (13) patients received delayed G-CSF (Arm-B) during neutropenic period while ANC<1000/cmm. After then outcomes were observed. Out of the 19 patients in the study, maximum was male (63.16%) and remaining (36.84%) patients were female. Male female ratio was 1.7:1. Patients ranged from 18-60 years. In Arm-A male were 3 & their age range 19-42 years; female were 3 & their age range 27-55 years. In Arm-B male were 9 & their age range 18-57 years; female were 4 & their age range 18-27. Among total 19 patients, 9 patients (47.37%) were in the range of 18-30 years, 3 patients (15.79%) were in the range of 31-45 years and the remaining 7 patients (36.84%) were in range of 46-60 years. Mean (±SD) ANC at 1st day of G-CSF application in Arm-A was 1170.50/cmm (±207.37) and Arm-B 272.62/cmm (±232.05). P value was <0.0001 and significant as p <0.05 (Table I).

Table I: Distribution of ANC at 1st day of G-CSF application

Group	Mean (± SD)	P value
Arm-A	1170.50 (± 207.37)	<0.0001
Arm-B	272.62 (± 232.05)	

First day of G-CSF application was counted from 1st day of chemotherapy. Mean (±SD) 1st day of G-CSF application in Arm-A was 9.5th day (±1.22) and Arm-B 14.5th day (±2.96). P value was 0.001 and significant as p<0.05 (Table II).

Table II: Distribution of 1st day of G-CSF application

Group	Mean (± SD)	P value
Arm-A	9.5 (± 1.22)	0.001
Arm-B	14.5 (± 2.96)	

Mean (±SD) of G-CSF requirement in Arm-A was 11.5 (±3.56) and Arm-B 5.92 (±2.69). P value was 0.0014 and significant as p<0.05 (Table III).

Table III: G-CSF requirement

Group	Mean (± SD)	P value
Arm-A	11.5 (± 3.56)	0.0014
Arm-B	5.92 (± 2.69)	

First day of neutropenia was counted from 1st day of chemotherapy. Mean (±SD) 1st day of neutropenia which developed after chemotherapy in Arm-A was 11th day (±1.55) and Arm-B 11.46th day (±2.57). P value was 0.6914 and this value was not significant as p>0.05 (Table IV).

Table IV: Distribution of first day of neutropenia after chemotherapy

Group	Mean (± SD)	P value
Arm-A	11 (± 1.55)	0.6914
Arm-B	11.46 (± 2.57)	

Duration of ANC recovery was counted from 1st day of neutropenia after chemotherapy to neutrophil count recovery. Mean (±SD) days needed to recover in Arm-A was 10 days (±3.85) and Arm-B 9.85 days (±2.23). P value was 0.913 and this value was not significant as p>0.05 (Table V).

Table V: Distribution of ANC recovery period

Group	Mean (± SD)	P value
Arm-A	10 (± 3.85)	0.913
Arm-B	9.85 (± 2.23)	

Out of the 6 patients in Arm-A 3 (50%) patients developed neutropenic fever and out of 13 patients in Arm-B 7 (53.85%) patients developed neutropenic fever (Table VI).

Table VI: Distribution of neutropenic fever (n=10)

Group	Frequency	Percentage
Arm-A	3 (out of 6)	50.0
Arm-B	7 (out of 13)	53.85

Mean (±SD) duration of neutropenic fever in Arm-A was 1.33 days (±1.97) and Arm-B 1.38 days (±2.23). P value was 0.965 and this value was not significant as p>0.05 (Table VII).

Table VII: Duration of neutropenic fever

Group	Mean (± SD)	P value
Arm-A	1.33 (± 1.97)	0.965
Arm-B	1.38 (± 2.47)	

Duration of hospitalization was counted from first day of chemotherapy to neutrophil count recovery. Mean (±SD) duration of hospital stay in Arm-A was 20 days (±3.35) and Arm-B 20.3 days (±1.89). P value was 0.259 and this value was not significant as p>0.05 (Table VIII).

Table VIII: Distribution of hospital stay

Group	Mean (± SD)	P value
Arm-A	20 (± 3.35)	0.259
Arm-B	20.3 (± 1.89)	

Mean (±SD) of platelet concentrate requirement in Arm-A was 11.83 (±9.22) and Arm-B 7.77 (±5.43). P value was 0.2405 and this value was not significant as p>0.05 (Table IX).

Table IX: Platelet concentrate requirement

Group	Mean (± SD)	P value
Arm-A	11.83 (± 9.22)	0.2405
Arm-B	7.77 (± 5.43)	

Mean (±SD) requirement of red cell concentrate in Arm-A was 1.83 (±1.60) and Arm-B 1.46 (±1.05). P value was 0.550 and this value was not significant as p>0.05 (Table X).

Table X: Red cell concentrate requirement

Group	Mean (± SD)	P value
Arm-A	1.83 (± 1.60)	0.550
Arm-B	1.46 (± 1.05)	

There was no death both in Arm-A and Arm-B.

DISCUSSION

This study was done to understand better timing of G-CSF starting after chemotherapy in consolidation phase of adult AML patients.

In this study, differences between two arms in ANC of G-CSF application by 898/cmm (1170.50/cmm vs 272.6/cmm; P=<0.0001); timing difference of G-CSF application by 5 days (9.5th day vs 14.5th day; P=0.001); and total need of G-CSF by 5.6 (11.5 G-CSF vs 5.92 G-CSF; P=0.0014); were significant.

The outcomes such as neutropenic period (10 days vs 9.85 days; P=0.91); duration of febrile days during neutropenia (1.33 days vs 1.38 days; P=0.96); hospital stay (20 days vs 20.3 days; P=0.259); and first day of neutropenia (11th days vs 11.46 days; P=0.69) revealed no statistically significant differences.

Moreover, mean platelet concentrates (11.83 units vs 7.77 units) and mean red cell concentrates (1.83 units vs 1.46 units) requirement also were more in prophylactic G-CSF group than delayed G-CSF group. Comparison of above findings between different age and sex groups were not focused as it failed to reveal any statistically significant value.

Above findings also correlate with the study of Marie VLT et al.[16] They included sixty-six patients receiving induction chemotherapy. Patients were randomized as follows: Group A received filgrastim from day 6 and group B from day 12. The dose was 480 µg/d if >75 kg and 300 µg/d if ≤75 kg. There was no difference in duration of neutropenia (17 days vs. 19 days, p=0.67) or rate of complications.[17]

Red cell concentrates and platelet concentrates requirement were more in prophylactic group probably due to more use of G-CSF. These findings correlate with the study of Papaldo et al.[18], Wexler LX and Stroncek DF et al.[19]

Papaldo et al. reported on the effects of G-CSF on haemoglobin in 506 patients with stage I-II breast cancer who received adjuvant epirubicin and cyclophosphamide (EC) at 120 mg/m² and 600 mg/m². Overall the study showed that anaemia was higher in the G-CSF group than in the controls (38.8% vs. 26.2%, P<0.005).[18]

In the study of Wexler LX thirty-seven newly diagnosed cases age 1 to 25 years were randomized to receive 18 cycles of chemotherapy alone or with GM-CSF. GM-CSF was associated with more severe and protracted thrombocytopenia; median platelet nadir 29,500/micro litre (range 3,000 to 288,000) vs. 59,000/micro litre (range 3,000 to 309,000), P < 0.0001; median time to recovery (> 75,000/microlitre) 16.0 days (range, 0 to 61) vs. 14.0 days (range 0 to 38), P < 0.0001(significant).[19]

In the study of Stroncek DF et al. no significant decrease in platelet counts was noted after administering G-CSF for 5 days, but individuals who received 10 days of G-CSF showed a close to 30% decrease from pre treatment platelet values prior to the aphaeresis.[20]

Above discussion gives information that prophylactic G-CSF (i.e G-CSF started before development of neutropenia) failed to show better outcomes than delayed G-CSF in consolidation phase of AML.

CONCLUSIONS

In the light of the discussion, the following conclusions and recommendations are made to understand the better timing to start G-CSF after chemotherapy in consolidation phase of AML patient.

Different guidelines recommended for using G-CSF in consolidation phase of AML and it can be started 24-72 hours after last dose of chemotherapy. This study evaluated the timing to start G-CSF on duration of G-CSF use, duration of hospitalization, duration of neutropenia and number of febrile days in AML patients.

Both prophylactic G-CSF group and delayed G-CSF group showed no statistically significant difference on neutropenic period, febrile days, neutrophil recovery, hospitalization, red cell concentrate and platelet concentrate transfusion. Rather early administration of G-CSF associated with more use of G-CSF as well as more need of red cell concentrate and platelet concentrate transfusion, which in turn increase the total treatment cost.

In conclusion, administration of G-CSF can be delayed to nine days or upto 270/cmm of ANC after the end of chemotherapy without a prolonged duration of neutropenia or other adverse effects. Prospective, controlled studies are needed to support these findings.

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Original Article

Aetiological Diagnosis of Pleural Effusion: A cross sectional study

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Abstract

Pleural effusion is a common clinical problem with different possible causes. It can be due to local, systemic, infectious or non-infectious causes. Aetiological diagnosis is important for proper treatment. To evaluate the aetiological diagnosis of pleural effusion of hospitalized adult patients this cross-sectional, descriptive study conducted from April to September 2012 at Bangabandhu Sheikh Mujib Medical University (BSMMU). A total of 100 cases were selected by purposive sampling. Data were collected using a structured questionnaire. Complete history was taken either from patient or accompanying attendants. Clinical examination was done and relevant investigations report were collected. Data were analyzed using statistical package for the social sciences (SPSS). The mean age of the patient was 41.2 SD± 7.4 years with a male to female ratio of 3:1. Over half (52%) of the patients were poor, 34% were middle class and 14% were rich. Over two-third (67%) of the patients were smoker and the remaining 33% were non smoker. Out of 100 patients with pleural effusion, 52 had tuberculosis and 16 patients had malignancy. Among the malignant cases 14 were found to have bronchial carcinoma and 2, had lymphoma. The remaining 32 patient had other causes of pleural effusion which included nephrotic syndrome 14, congestive cardiac failure 5, cirrhosis of liver 4, rheumatoid arthritis 3, amoebic liver abscess 2, and undiagnosed 4. Tuberculosis is the predominant cause of pleural effusion in our country and the second leading cause is malignancy.

Keywords: *Pleural effusion, Tuberculosis, Malignancy.*

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INTRODUCTION

Pleural effusions are a common clinical condition in developed as well as developing countries like Bangladesh and physicians of all specialties encountered them. Fluid accumulation is associated with many medical conditions through many different mechanisms, including increased pulmonary capillary pressure, decreased oncotic pressure, increased pleural membrane permeability, and obstruction of lymphatic flow.[1]

Approximately one million patients worldwide develop pleural effusion each year.[2] It can be due to local, systemic, infectious or non-infectious causes.[3]

In an area with a high incidence of tuberculosis, the commonest causes of pleural effusion include tuberculosis (25%), neoplasia (22.9%), congestive cardiac failure (17.9%) and pneumonia (14%).[4]

Diagnosis of a pleural effusion begins with obtaining the patient's clinical history and doing a physical examination and is followed by chest radiography and analysis of pleural fluid, Mantoux/ tuberculin skin test, staining of sputum specimens for acid-fast bacilli (AFB) and bacteriological cultures in appropriate instances.[5,6] If necessary, the process continues with further investigative studies, such as computed tomography (CT) of the thorax, pleural biopsy, thoracoscopy, and, occasionally, bronchoscopy.[5] Several studies have reported relatively large numbers of patients in whom a definite diagnosis could not be made despite extensive investigations. This study was designed for aetiological diagnosis of pleural effusion and to find out the frequencies of different aetiologies.

MATERIALS AND METHODS

This prospective cross-sectional study was carried out in the department of medicine, Bangabandhu Sheikh Mujib Medical University. One hundred admitted patients aged

> 13 years irrespective of any sex with a clinical and radiological evidence of pleural effusion were enrolled through purposive sampling. Informed written consent was taken from each and every patient.History regarding age, sex, socioeconomic status, smoking habit, cough, fever, dyspnoea, hemoptysis, weight loss, sputum, hoarseness of voice was taken. Examinations were done to find out chest movement on respiration, mediastinal shifting, percussion note, breath sound, vocal resonance and added sounds. Complete blood count (CBC), Erythrocyte sedimentation rate (ESR), Chest X-ray, pleural fluid aspiration, biochemical, bacteriological and cytological tests of pleural fluid was done in all patients. Pleural biopsy, lymph node biopsy, bronchoscopy and bronchoscopic biopsy were done where there was a need. All the data were collected in a predesigned structured questionnaire. All the informations were edited and entered into a computer. Data were analyzed using descriptive statistics.

RESULTS

Majority cases of tuberculous effusion were in between 31 to 60 years of age and malignant effusion was between 41 to 70 years of age. No malignant effusion was found before 30 years of age.Other effusion did not show any age predictor (Table-1). Incidence of tuberculosis and malignancy as the cause of pleural effusion is much more common in male than in female. In the study, out of 52 cases of tuberculous effusion, 35 were male and 17 were female and out of 16 case of malignant effusion 12 were male and 4 were female.

Among 100 patents with effusion, 67 were smoker and 33 were non-smoker. Among 16 patients of malignant pleural effusion, 14 (87.50%) were smokers (Figure-I). In most of the cases of tuberculous and malignant effusions ESR was above 50 mm in 1st hour (Table-2). ESR within normal range does not exclude tuberculosis or malignancy as the cause of pleural effusion. Tuberculous, Malignant, and Parapneumonic effusion due to amoebic liver abscess were exudative in nature. Congestive cardiac failure, cirrhosis of liver and nephrotic syndrome cases yielded transudative effusion. Some of the nonspecific effusion was exudative and some were transudative (Table-3). Histology of pleural biopsy specimen was the corner stone for the diagnosis of pleural effusion. In 24 cases, tuberculosis was diagnosed by sputum culture for AFB and 3 cases were diagnosed by detection of AFB in pleural fluid. Bronchoscopy and biopsy was the main procedure for the confirmed diagnosis of bronchial carcinoma and its histological type as the cause of malignant pleural effusion (Table-4).

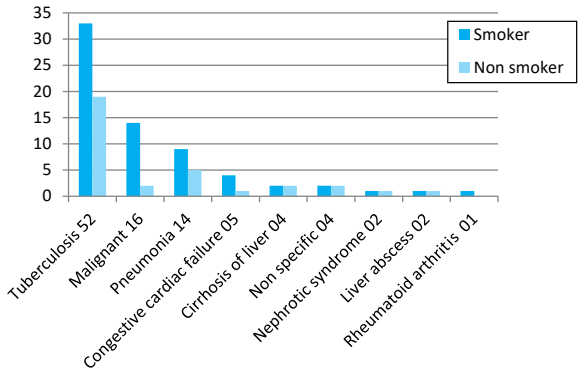

Figure 1: Smoking Habits of the patients having pleural effusion (n=100)

Table I: Age distribution in different group of effusion (N=100)

Age	Tuberculous	Malignant	Pneumonia	Congestive Cardiac failure	Cirrhosis of liver	Nephrotic syndrome	Liver Abscess	Non specific	Total
13-20	03	0	01	0	0	0	0	0	04
21-30	05	0	02	0	0	01	00	01	09
31-40	10	01	04	00	01	00	01	01	20
41-50	10	02	03	01	01	01	01	02	23
51-60	13	05	02	02	02	00	00	00	20
61-70	09	06	01	02	00	00	00	00	18
>-70	02	02	01	00	00	00	00	00	06
Total	52	19	14	05	04	02	02	04	100

Table II: Values of ESR of the patients having pleural effusion (N=100)

ESR- mm in 1st hour	Tubercular (N- 52)	Malignant (N-16)	Others (N-32)	Total (N-100)
<50 mm	03 (5.17%)	01(6.25%)	19(59.38%)	23(23%)
50-100mm	41(78.85%)	07(43.75%)	13(40.63%)	61(61%)
> 100 mm	08(15.38%)	08(50%)	00(00%)	16(16%)

Table III: Result of pleural fluid analysis (N=100)

Disease	Biochemical Analysis				Cellular Characteristics	Gram staining	Z-N Staining (AFB)	Malignant cell	C/S
	Protein gm/dl		Glucose gm/dl						
	>3	< 3	<60	>60					
Tubercular (n=52	52	00	48	04	Lymphcytes- plenty in 50 cases	No organism	(+)ve in 3cases	Absent	MTB (+)ve 24 cases
Malignant (n=16)	16	00	07	09	RBC (Plenty) with lympho 11 Mesothelial cell & ploymorph-3	No organism	(-)ve	Present in 4 cases	No growth
Pneumonia (n= 14)	14	00	14	00	plenty of polymorph with few lympho 6	Gram+ve cocci 7	(-)ve	Absent	Pneumococcalgr owth in 7 cases
CCF (n=05)	00	05	00	05	Lymphocyte (a few)= 4	No organism	(-)ve	Absent	No growth
Cirrhosis of liver (n=04)	00	04	00	04	Lymphocyte (a few)= 1	No organism	(-)ve	Absent	No growth
Nonspecific (n=04)	02	02	02	02	Lymphocyte (a few)= 5	No organism	(-)ve	Absent	No growth
Nephrotic Syn. (n=02)	00	02	00	02	Lymphocyte (a few)= 5	No organism	(-)ve	Absent	No growth
Liver abscess (n=02)	02	00	02	00	Lymphocyte (a few)= 2	No organism	(-)ve	Absent	No growth
R.A (n= 01)	01	00	00	00	Lymphocyte (a few)= 2	No organism	(-)ve	Absent	No growth

Table IV: Different procedures involved in confirmation of the diagnosis (N=100)

Disease	Diagnostic procedures involved to confirm the diagnosis					
	Pleural fluid Analysis	Sputum culture	pleural biopsy	Lymph node biopsy/FNAC	Bronchoscopic biopsy	Others
Tubercular (n=52	3(5.17%)	24(46.15%)	20(43.1%)	05(9.62%)	00(00%)	00(00%)
Malignant (n=16)	00(00%)		03(20%)	05 (11.76%)	08(80%)	00(00%)
Others (n= 32)	05(25%)					27(75%)

Tuberculosis was the most common cause of pleural effusion and among 100 patients with effusion 52 were due to tuberculosis. Bronchial carcinoma was found as the 2nd common cause of pleural effusion (16%). Pneumonia was found as the 3rd common cause (14%). No cause could be detected in 4 cases (Figure-II).

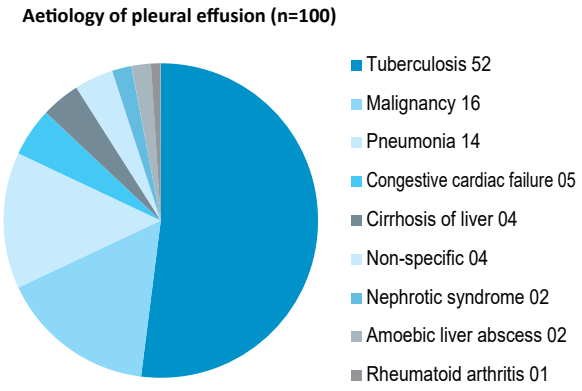

Figure 2: Etiology of pleural effusion

DISCUSSION

Pleural effusion is a very common problem in our clinical practice. Etiological diagnosis is essential for proper management of the effusion. In this study number of patients belonged to 31 - 60 years of age was 63 (63%). Incidence was found lower before 20 years (04%) and after 70 years of age (06%). which is more or less similar to another study in Bangladesh.[7] The incidence of tuberculosis was found highest between 51-60 years of age (25%) which corresponds to another study where the figure was 28%.[7] Bronchial carcinoma was highest between 51 to 70 years of age (56.25%) in this study. Al Quarain et al study says it is 46%. [8]

Pleural effusion was found to be much more common (67%) among smokers. Most of the patients (87.50%) with malignant pleural effusion and 64% of the patient with tuberculous effusion were smoker.

The etiology of pleural effusion has been studied extensively at different times. In a series of 97 patients with pleural effusion, Hoque E M et al. found following final diagnosis: Tuberculosis 60(62%), Malignancy 24 (25%) which included 12 cases of squamous cell carcinoma, 7 cases of adenocarcinoma, 3 cases of small cell carcinoma and 2 cases of lymphoma.[9] Others 13 (13%) which included, 6 cases of parapneumonic effusion, 3 cases of congestive cardiac failure, 2 cases of empyema and 2 cases of cirrhosis.[9] In present study, we have found 52 cases (52%) of tubercular effusion, which is quite similar (tubercular 62%) to study of Hoque E M et al.[9] This high incidence of tuberculosis in our country is probably due to poor socio-economic condition, overcrowding and inadequate health service facilities.

In this study, we have found 16 cases (16%) of malignant pleural effusion, of which 14 were of bronchial carcinoma and 2 cases of lymphoma. Out of remaining 32 cases, 14 cases were due to pneumonia, 5 cases were due to congestive cardiac failure and 4 cases were due to cirrhosis of liver caused by chronic hepatitis B viral infection. The results were more or less similar to that of Hoque E M et al. series except that the incidence of cirrhosis of liver which is more in this study.[9] This is probably due to overall increasing incidence of hepatitis B virus infection throughout the country.

In this study among 52 patients, 49 had increased ESR (more than 50 mmHg) while only 3 had it in normal range. Normal or nearly normal ESR does not exclude the diagnosis of tubercular effusion. In most of the malignant pleural effusion cases, ESR was more than 100 mm in 1st hour.

Among 52 patients, sputum for AFB were found positive in 14 (26.92%) cases and culture of the sputum yielded positive result in 24 (46.15%) cases. No AFB could be detected in rest of the cases. In one study, AFB was found in the sputum only in 3.12% cases.[10]

Among 16 patients with malignant effusion, sputum was collected from all patients and malignant cells were found in two sputum specimen (12.5%). In one study, malignant cells were found in the sputum in 2% cases.[10]

Most of the tuberculous effusion was straw colored 45 (86.53%). But four haemorrhagic effusions (7.69%) were also found in tuberculosis. As straw coloured effusion were also found in malignant effusion 2(12.5%), most of the cases of malignant pleural effusion were haemorrhagic 14 (87.5%). In Mostafa MG et al series, 6%of tuberculous effusions were found haemorrhagic and 18% of malignant effusion was found straw coloured.[11] Tuberculous, malignant, parapneunonic effusions and effusion due to liver abscess were found exudative (protein >3 gm/dl) with low glucose content whereas effusions due to CCF, cirrhosis of liver and nephrotic syndrome were found transudative with normal glucose content. In four cases of

nonspecific effusions, 2 cases were found exudative. High lymphocytes count was found in most of the cases of tuberculous and malignant pleural effusion.

Gram staining of pleural fluid revealed gram-positive cocci in seven cases (50%) of parapneumonic effusion but culture yielded growth of pneumococci in eight (57.14%) cases and staph. aureus in four (28.57%) cases.

In tuberculous effusion, it is believed to be the result of a delayed hypersensitivity reaction to tubercular protein.[8,12] They rarely contain any tubercle bacilli.[13,14]In this study, we found AFB in the pleural fluid of three patients with tuberculous effusion.

Out of 52 cases of tuberculous pleural effusion, pleural biopsy was done in 28 cases and it confirmed the diagnosis in 20(74.07%) cases. In Mostafa MG et al series it was 75%.[11] Lymph node biopsy findings were in favour of tuberculosis in 5 (8.62%) cases of tubercular effusion in this study.

In 16 cases of malignant pleural effusion pleural biopsies were done in 08 cases & bronchoscopy and biopsy of suspected lesions were done in 11 cases and lymph node biopsy was done in 8 cases. Positive result was found 13 cases in these studies.

Among 16 cases of malignant pleural effusion 14 cases were diagnosed as bronchial carcinoma and 2 cases are lymphoma. Among 14 cases of bronchial carcinoma 06 cases (42.85%) were squamous cell carcinoma, 4 cases (28.57%) were small cell carcinoma and 4 cases (28.57%) were adenocarcinoma. In one study, squamous cell carcinoma was found 60%.[10] Exfoliative cytology of sputum for malignant cells was positive in 1 case (10%) and malignant cells in the pleural fluid were found in 4 cases (40%). In one study those were 12.5% and 12.5% respectively.

In this study, we found five cases of pleural effusion due to congestive cardiac failure. Most of them had valvular and ischaemic heart disease including old Ml. In a study it was found 6%.[10]Although in developed countries, congestive heart failure, pneumonia and malignancy accounts for most of the cases of pleural effusion, in developing countries, tuberculosis is the major cause.[14]

In our study there were 14 cases (14%) of para pneumonic effusion. Pleural fluid was exudative in nature. In Hoque et al. study it was (6.19%).[15]In this series 4 cases (4%) of transudative effusion were due to cirrhosis of liver, which were confirmed by liver biopsy. In one study,cirrhosis comprises 4% cases.[7]

CONCLUSIONS

Tuberculosis and malignancies are the common causes of pleural effusion. Examination of pleural fluid and pleural biopsy play a very vital role in detection of aetiology of pleural effusion. FNAC or histopalhology of the accessible lymph nodes and pleural biopsy play an important role in the aetiological diagnosis to pleural effusion where pleural fluid analysis gives inadequate clues. So a combination of modalities might the approach to reach a specific diagnosis of pleural effusion.

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Original Article

Situation Awareness of Cough Etiquettes of Hospital Security Personnel and Janitors

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Abstract

Nosocomial infection is a major problem in hospitals around the world. To minimize the risk of infection in hospitals and other healthcare facilities, cough etiquette has to be applied. Thus, good situation awareness and the understanding why cough etiquette is important are necessary. The purpose of this study was to find out the effective education on cough etiquette on hospital security personnel's and janitors' situation awareness on cough etiquette. This research study followed quasy experimental design with pretest and post test control group design. The sampling technique was purposive sampling involving 24 respondents for experimental group and 27 respondents for the control group. The analysis of the data employed Wilcoxon test and it employed Mann Whitney test to find out the difference of independent variable medians. Questionnaires were used to gather data collection. The result of the analysis presented a mean of 97.7 on the post-test of control group and a mean of 116.3 on the post-test of treatment group. Wilcoxon and Mann Whitney tests resulted p = 0.001 (< 0.05), which meant there were significant differences. Education on cough etiquette is effective to raise hospital security personnel and the janitors' awareness on cough etiquette situation.

Keyword: *Situation awareness, cough etiquette, hospital security, janitors*

INTRODUCTION

Nosocomial infection is a major problem in hospitals around the world. The prevalence of nosocomial infections in developing countries is two to three times higher than in Europe or America. The incidence of nosocomial infections in intensive care units is higher than the other units.[1] Nosocomial infection may lead to the additional cost that the infected patient has to pay and may lead to additional time the patient has to stay. Nosocomial infections may occur because of the use of ventilator in pneumonic patients, infection of the blood vessels, urinary tract infections and infections due to surgery.[2]

To minimize the risk of infection occurs in hospitals and other health care facilities, prevention and infection controls have to be applied, which cover planning, implementation, consultation, education and training, and monitoring and evaluation.[3] Concrete manifestation of these efforts is the application of standard precautions. The application of standard precautions is expected to reduce the risk of pathogen transmission from known and unknown source.

In the application of standard precautions, there are several things to consider which are hand hygiene, the use of gloves, eye protection (covering face, nose, mouth), protective suit, needle and other sharp objects of wound prevention, respiratory hygiene or cough etiquette, environmental hygiene, linen, waste disposal and patient care equipment.[4]

Cough etiquette is one component of standard precautions meant to prevent the transmission of microorganism that cause respiratory tract infections that high level of health care[5]. When a persons exposed to a respiratory tract, coughing or sneezing, that person will excrete droplet-shaped disease particles containing viruses or microorganisms that, when entered into the respiratory tract of other people, may cause infection as well.[6]

Livnat et al (2007)[7] reveal that there are three levels of situation awareness. The first one is perception of all aspects in the environment, namely the basic knowledge or the understanding of the environment obtained through sight, touch and feeling. The second is comprehension which is the ability to analyze the collection or integration of the received of various information. The third is projection, which is the ability to predict future environmental conditions based on information and data received.

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Situation awareness has been recognized as an important variable and all divisions require it for performance enhancement. Situation awareness is to know and aware of the circumstances covering the place and the job.[8] A study is needed to investigate effective methode to improve the situation awareness. The method may various dependent on the local habits and culture. The purpose of this study was to find out the effective education of hospital security personnel's and janitors situation awareness regarding cough etiquette. Thus, improving situation awareness to cough etiquette would reduce spreading of microorganism in the hospital.

MATERIALS AND METHODS

This research followed study quasy experimental design with pretest and posttest control group design9. The sampling technique was purposive sampling involving 24 respondents for experimental groups and 27 for control groups. The analysis of the data employed Wilcoxon test and it employed Mann Whitney test to find the difference of independent variable medians. Questionnaires were used to gather collect data.

RESULTS

The results measurement of the situation awareness in the control group, mean 103,9 and SD 98,4 and in the treatment group, mean 104,92 and SD 10,84 differences of situation awareness in the control group before and after treatment was p = 0.015 (> 0.05), the result was not significan. Differences of Situation awareness in the treatment group before and after treatment was p = 0.003 (< 0.05), the result was significant differences of situation awareness in the control group and treatment group after treatment was p = 0.001 (< 0.05), the result was significant.

The results measurement of the age of respondent (table 1) by chi square test, p = 0.782, this data were homogenously distributed.

Table-1: Age of respondents

Variables	Control Group		Treatment Group	
	Frequency	Percentage	Frequency	Percentage
< 20	2	7.4	1	4.2
20 – 30 years	14	51.9	10	41.7
31- 40 years	9	33.3	10	41.7
>40 years	2	7.4	3	7.4

p 0.782**

**Not Significant (p > 0.05)

Table-II: Respondents employing time

Variables	Control Group		Treatment Group	
	Frequency	Percentage	Frequency	Percentage
< 1	6	22.2	7	29.2
1 - 5 years	20	74.1	16	66.7
> 5 years	1	3.7	1	4.2

p 0.841**

**Not Significant (p > 0.05)

The results measurement of the age of respondent (Table I) by chi square test, p = 0.841, this data were homogenously distributied.

Table-III : Differences of situation awareness between Control Group and Treament Group

Variable	Control Group			Treatment Group			P
	n	Mean	SD	n	Mean	SD	Value
Situation Awareness of before treatment	27	103.9	8.4	24	104.92	10.84	
Situation Awareness after treatment	27	97.7	9.6	24	116.3	12.75	0.001*
p	0.015**			0.003*			

*Significant (p < 0.05)

**Not Significant (p > 0.05)

DISCUSSION

After educating, hospital security officers and janitors situation awareness on cough etiquette had increased. Their awareness had risen because of they had acquired the educational materials. The educational materials served as positive reinforcement and as stimuli for situation awareness of cough etiquette.[10]

Infectious diseases are easily transmitted through respiratory systems in a form of droplet. It also can be transmitted through a contact with such fluid entering through then nose, mouth and eyes. One of the preventions is by making such droplets not spreading. Thus, Centre of desease Control and prevention has urged to apply cough etiquette.[11]

Since the end of the Second World War, coughing and sneezing have been a big concern. Now handkerchief is no longer the theme to deal with coughing and sneezing. Now, chough etiquette has become the an alternative to prevent the spread of diseases being transmitted through breathing. Some serious illnesses such as influenza, Respiratory Syncitial Virus (RSV), SAR transmitted through coughing and sneezing, as well as through unhygienic and which come in contact with contaminated material.[12]

CONCLUSIONS

On this basis, we conclude that education on cough etiquette with lecture was effective to improve hospital security personnel and the janitors situation awareness on cough etiquette, the significance was 0.001.

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Case Report

Chylous Effusions (Pleural Effusion and Ascites) due to Non-Hodgkin's Lymphoma A Case Report

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Abstract

Lymphoma can present with different type of serous effusion like pleural, pericardial and ascites and it signifies poor outcome .Pleural effusions are the most common type among these. Ascites and pericardial effusion are rare. Effusion can be can be caused by direct infiltration and impairment of the lymphatic drainage .Several investigations are available like study of the fluid for cytological, biochemical, immunohistochemistry and cytogenetics study to assess the qualities of effusion and make a quick diagnosis. This present case report will describe a case of 40 year old female patient with non-Hodgkin's lymphoma (NHL) presented with generalized lymphadenopathy and chylous ascites and pleural effusion.

Keywords: *Chylous effusions, ascites, lymphoma.*

INTRODUCTION

Effusion is a complication that can be present in lymphoma patient.[1-2] 20-30% patient will develop pleural effusion incase of lymphoma both NHL and Hodgkin's disease but pericardial effusion and ascites are uncommon. Among the subtypes of lymphoma , lymphoblastic variety of T-cell lymphoma usually cause serous effusions.[3,4] The main reason for effusion in lymphoma are obstruction of the thoracic duct, impaired lymphatic drainage and direct pleural infiltration.[5,6] In NHL the major mechanism is direct infiltration.[6] Cytololological and biochemical investigation can occasionally be used but positive result considerably varies between patient.[5] For more precise diagnosis immunocytochemstry, morphometry, flow cytometry, and cytogenetics have used. [6] Here we describe a patient who has been diagnosed as case of advanced NHL having chylous ascites and pleural effusion. Detailed review of the literature and pathogenesis of serous effusion wiil be discussed along with treatment plans. Written inform consent was taken from the patient.

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CASE REPORT

A 50 year old female patient was admitted in the department of internal medicine , Bangabandhu Sheikh mujib medical university, in January 2017 with fever , abdominal distension, weight loss and nodular swelling in different part of the body for three months.She also had anorexia and generalized weakness. She developed breathlessness on exertion for two weeks. Examination findings revealed, she was severely anaemic, vitals were normal, generalized lymphadenopathy were present which was firm , discrete,largest one was 2 cm in the neck and there was also right sided oleural effusion, mild splenomegaly and ascites. Other examination findings were normal. Investigations showed, CBC: Hb%-5.7 gm/dl, platelet count-150×10^9 /L, WBC(total count)-2.00×10^9/L, ESR- 55 mm in the 1st hour, PBF-macrocytic anaemia, reiculocyte count-1.57%, LDH-124U/ L,s mg/dl ,serum bilirubin-0.2 mg/dl, ALT-13/L, serum creatinine- 0.83 mg/dl, serum iron- 59 micro gm/dl, serum ferritin- 92.97 microgm/dl, TIBC- 214 micro gm/dl, CRP- 0.81 mg/dl, serum electrolytes: Na^+-136 mmol/l, K^+-4.1 mmol/l, CL-111 mmol/l, USG of whole abdomen- moderate ascites, mild splenomegaly,

right sided pleural effusion and para aortic lymphadenopathy, chest X-ray – right sided pleural effusion, echocardiogram- normal, study of ascetic fluid showed: physical examination- color – whitish with hazy appearance,(figure-1) microscopic examination revealed, total cell count-2,000 cell/cu,mm; lymphocyte-93%, neutrophils-07%, malignant cells- absent, protein- 48 gm/l, glucose- 7.7 mmol/l, asitic fluid TG- 560 mg/dl, asitic cholesterol-29 mg/dl, Gram stain and AFB stain was normal. Apperance of pleural fluid was also whitish but microscopy was not done and biopsy from supraclavicular lymphnode showed , nodal architechture was effaced by diffuse proliferation of atypical small lymphoid cells and few scattered large cells are also seen and features is consistent with Non-Hodgkin's lymphoma . So the final diagnosis was NHL with chylous acites and pleural effusion. Then she was treated with blood transfusion and referred to haematology for chemotheary and further management.

Figure:1 macroscopic appearance of ascetic and pleural fluid

DISCUSSION

Different type of malignancy can cause serous effusion including some infections among them one study showed done by Johnsin et al , studied 584 patient with serous effusion and found that lymphoma constitute 15% of the total study population.[1] Serous effusions developes in T-cell lymphoma more commonly than B-cell originated lymphoma.[3] There are several mechanisms that leads to serous effusionj in lymphoma like impaired lymphatic drainage caused by obstruction by lymphnode,venous obstruction, pulmonary infection, pleural ivolvement by lymphoma or after radiation therapy.[7] The main cause of chylous pleural effusion in Hodgkins disease is due to thoracic duct obstruction where as NHL it is caused by direct pleural infiltration.[8] Chylous ascites is rare form of ascites due to an accumulation of lymph in peritoneal cavity and the diagnosis is made when ascetic fluid triglyceride concentration is > 200 mg/dl.[9] Chylous ascites occurs by several mechanism like 1) Obstruction of the lymph flow by external pressure 2) exudation of lymph through dilated vessels in retroperitoneal vessels 3) direct leakage due to trauma producing lymphppleural fistula.[9] In NHL chylous ascites is caused by blockage of lymphatic channel by metastatic lymphoma cell.[10]

Aspiration of pleural and peritoneal fluids are diagnostics tools to evaluate and to relieve the pressure. Das *et a*l found that, 93.7% cases were identified by cytological examination of pleural fluid which matched in comparison to fine needle aspiration.[11] Following development of biomarkers , immunohistochemistry and cytogenetics the rate fast and precise diagnosis has increased.[12]

In the current study, pleural and ascetic fluid were aspirated but only ascetic fluid was studied which showed whitish hazy exudative fluid that had high lymphocyte count and high TG level(560 mg/dl) and negative for malignant cells and it was a cofirm case of chylous ascites. The lymphnode biopsy showed -Non Hodgkin's lymphoma. Though due to financial contrains immunohistochemistry was not done.

Serous effusions are in lymphoma carries poor outcome. [13] Symptomatic treatment and increase the quality of life is the mainstay of treatment and if treated with chemotherapy there is a high chance of development of tumor lysis syndrome. [14] So,decision is individualized for each patient.

CONCLUSIONS

In summery, in this case study we described a case of NHL in a eldely woman who presented with chylous pleural effusion and ascites. However it rare for lymphoma to have chylous effusions and it indicates it is formed because of lymphatic obstruction by lymphoma cells .Chylous ascites indicates poor outcome in high grade lymphoma.

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Case Report

Non-small Cell Carcinoma of Lung in a 19-year-old Male Presented as Malignant Pleural Effusion

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Abstract

Bronchial carcinoma is rare in younger age group. Smoking, environmental and occupational exposure are the major risk factors. Radiological imaging, bronchoscopy, FNAC and biopsy are the main mode of investigations. Surgery, radiotherapy and chemotherapy are the treatment of choice. Here, we report a case of 19-yearrs-old male and diagnosed as a case of non-small cell carcinoma of lung (NSCC). Cytological examination of pleural fluid showed non-small cell carcinoma. This may be indicating the changing trend of developing NSCC in young adults.

Keywords: *Non-small cell carcinoma, young male, malignant pleural effusion.*

INTRODUCTION

Lung cancer is one of the major health problems worldwide. It is the most common cause of cancer mortality for both male and female worldwide. In each year about 1.2 million people dies from lung cancer causing a major health concern.[1] In Bangladesh the prevalence of lung cancer is approximately 16.7% among all cancer related events. It is the common cancer in male (25%) and has male female ratio of 6.1:1.[2]

According to the latest data published by WHO in May 2017, lung cancer death in Bangladesh was 1.53% of total death. The age adjusted death rate was 11.13 per 100,000 of population.[3]

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Smoking, industrial exposure, genetic influences are the most common risk factors for lung cancer. NSCLC and SCLC comprise about 95 % of all lung cancer. In younger age patients are very likely to be symptomatic, having adenocarcinoma and usually presents in advance stages. Surgery is the treatment of choice if the primary tumor is resectable and there is no metastasis.Despite the advancement in imaging system and treatment, most of the cancers are diagnosed at late stage where curative treatment is not possible. So, prognosis is very poor.[5] year survival is only 14% in the early stage and 5% in the late stage.[4]

CASE REPORT

A 19-years-old male patient presented with dry cough, right sided pain and heaviness in the chest for 2 weeks. Pain was dull aching in character and increased with coughing and deep inspiration. There was history of significant weight loss. He was a smoker and there was no significant family history of lung cancer. There is no significant history of occupational exposure. General examination revealed nothing contributory but examination of respiratory system reveled features of right sided pleural effusion. Investigation revealed Hb% was 13 gm/dL, ESR- 21 mm in first hour and there was neutroplilic leukocytosis. Chest radiograph revealed right sided hydropneumothorax (Figure-1). CT scan of the chest reveled right sided pneumothorax with pulmonary inflammatory lesion (Figure-2).

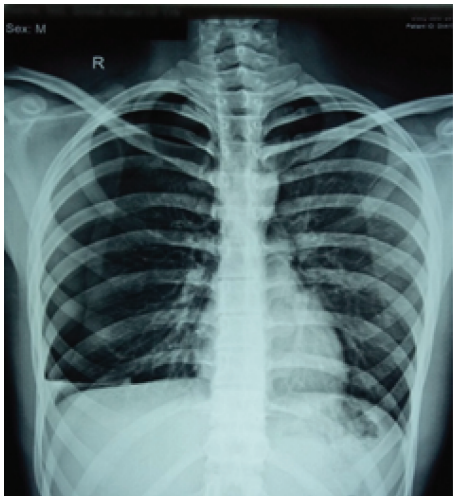

Figure-1: *Chest radiograph showing right sided hemopneumothorax*

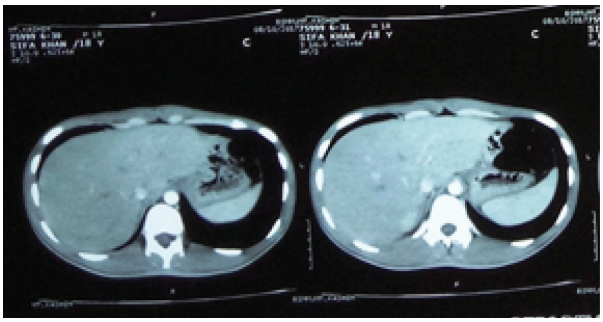

Figure-2: *CT-scan of chest showing right sided pneumothorax*

Pleural fluid was haemorrhagic and exudative in nature. Smear revealed few scattered and clusters of cells having irregular and hyper chromatic nuclei with a moderate amount of cytoplasm which is consistent with Non-small cell carcinoma (Figure-3). Numerous neutrophils, a few macrophages and mesothelial cells were also seen. Bronchoscopy was done and it was normal(Figure-4).

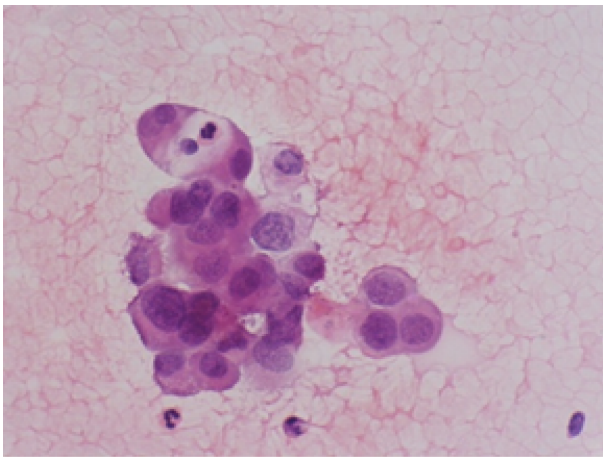

Figure-3: *The atypical cells are large having hyperchromatic neuclei with irregular neuclear margin and scanty cytoplasm.*

Tumour marker reveled CA-15.3 was 8.1 U/mLm, Serum CA-19.9 was 2.0 U/ml and CEA was 0.45 ng/ml.

Pleurodesis was done. PET-CT revels focal areas of left pleural thickening are seen along the left oblique fissure and along left costophrenic angle, showing very low grade metabolic activity within. A linear atelectatic band is seen in the middle lobe of right lung without significant metabolic activity within, most likely benign. Subtle focal cutaneous thickening is seen in the right anterolateral chest wall along the right 5th rib showing very low grade metabolic activity within, probably of inflammatory aetiology. Few sub centimeter sized level II cervical lymph node are seen, showing low grade FDG uptake of SUV Max 2.69, most likely of infective or inflammatory aetiology. (Figure-5)

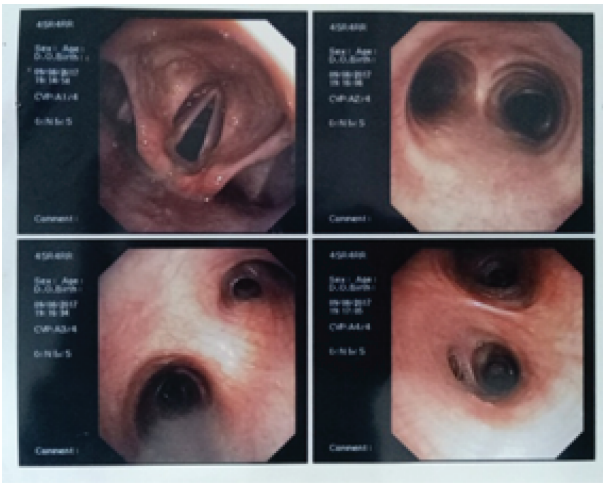

Figure-4: *Normal bronchoscopic findings*

The patient received 20 cycles of chemotherapy pametrexate and carboplatin.Now clinically asymptomatic.

The PET-CT was repeated after 4 months. Comparison was made with previous PET-CT. There was no evidence of pleural effusion. No abnormal metabolically active lesion or pleural thickening is noted in both lungs. The linear atelectic bang in the middle lobe of right lung without significant metabolic activity is unchanged. No new interval lesion is detected. No other definite PET/CT evidence of metabolically active disease focus is seen elsewhere in the body (Figure-6).

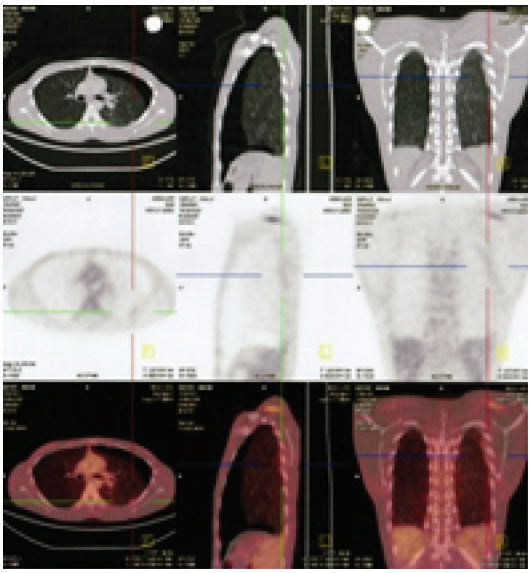

Figure-5: *PET-CT showing left sided pneumothorax*

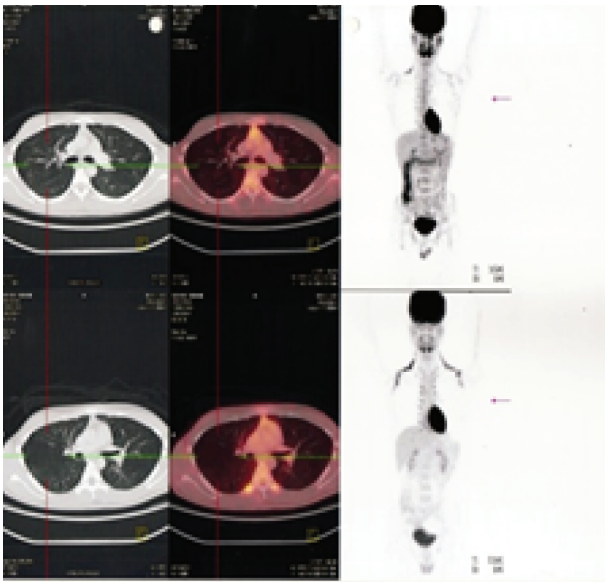

Figure-6: *Follow up PET-CT after 4 months.*

DISCUSSION

Lung cancer is leading cause of mortality in both male and female and accounts for 28% all cancer death.[7] Increasingly it is found in young age .NSCLC accounts for 85% of all lung cancers.[8]A significant percentage of young patient with lung cancer has positive family history indicating genetic influence as a significant risk factor.[8]

Smoking is the prime risk factor for lung cancer. The question of whether particular smoking patterns lead to an early onset of lung cancer is still open. Wynder and Graham found that younger patients who developed lung cancer smoked more than older patients .[5] But here in this case report the patient smoked very infrequently and had just 0.5 pack year.

Adenocarcinoma is the predominant histologic type (57.5-77.9%) in young patients; of both genders. The reason for the extremely high percentage of adenocarcinoma in young patients has been seldom studied and requires more attention. As compared with older patients, a higher female percentage in young patients was presented in several studies (36.1-48.7%)[6,7,9] however most studies have shown that males were the predominant gender.[10,11] In this case report the type of NSSC was not categorized.

To the best of our knowledge a case NSCC at the age of 18 or below in a male patient has not been reported previously. Rather there is no significant association with smoking, family history, environmental or occupational exposure.

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Obituary news May - 2018

BMA would like to express deep condolence on deaths of the following notable physicians in recent past:

Sl. No.	Name	Age	Name of District	Date of Death
1.	Dr. Syedur Rahman	60	Joypurhat	30/01/2018
2.	Dr. A S M Zakaria Sapan Ex.EC Member Central BMA & Pro-VC (Education) BSMMU	54	Dhaka	14/02/2018
3.	Dr. Rafiqul Islam	82	ICDDRB ,Dhaka.	
4.	Dr. Mihir Ranjan Pal	92	Kishorgonj	
5.	Dr. Ahmed Zillur Rahman UH & FPO	-	BMA Bagura Branch	28/05/2018

May Allah bless the departed souls.Our heartiest commiseration to the deceased's family, our prayers are with them during this difficult moment of their life.