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“Teacher’s Evaluation” for Faculty Development – A New Journey in Medical Education in Bangladesh

The term ‘Evaluation’ is the systemic process to determine merit, worth; value or significance.¹ Evaluation is like going to the doctor for a check-up. Just like how the doctor examines one’s body to see if everything is working properly, an evaluation examines a program or project to see if it’s doing what it’s supposed to be doing. Teacher’s evaluation is an integral part of the medical education which has come to be known worldwide as a useful input to improve the teaching quality. In the Western world it has already been established, but not used very effectively in our country. Recently, there has been a growth of interest in this area especially from Government (DGME) & also by institutions themselves.² Over the ages, teachers have always been evaluated. It was actually started in the 5th century B.C.³

The evaluation of courses & programmes is an internal process of quality control for all higher educational institutes including medical colleges. Although there are a large number of possible methods for teacher’s evaluation, the most common source of input for it is feedback from the students or, Students Evaluation of Teaching (SETs). This SETs commonly takes the form of completion of anonymous questionnaires such as 11 explicit issues (how well does the teacher teach core subject) & 5 implicit issues (how well does the teacher model the core values) and this rating is a necessary source of evidence of teaching effectiveness.^{4,2} Teachers evaluation refers to the “formal process an institute uses to review & rate teachers performance and effectiveness in the classroom”.⁵ In practice, teacher’s evaluation involves understanding & agreeing on the inputs (e.g., the practices that define quality teaching), outputs (e.g., student achievement measures) and methods of evaluation (e.g., student assessment data, teacher observation rubrics).⁶ Teacher’s evaluation serves two purposes: improvement & accountability as a summative or, formative evaluation basis.⁷ and is conducted to ensure teacher’s quality & to promote professional learning with the goal of improving future performance.⁸ This program concentrate on the core activity of teaching covering areas such as planning & preparation, classroom environment & instruction of teaching.⁹

Teacher’s evaluation is actually for faculty development, which is not a luxury, rather than an imperative for every health professional institutes. Faculty development must be an integral part of every medical colleges and the outcomes of it should be realistic, measurable (task oriented) & be suitable to meet the needs of individuals & the institutions. There are lots of barriers to faculty development such as unsupportive leadership, lack of faculty motivation, lack of institutional support, misconceptions, etc. Therefore, this development

needs to be systematic, involving proper planning, implementation & evaluation. Teacher's evaluation plays an important role in various ways such as exploring teacher's instructional style & abilities, providing suggestions for improvement, assisting in prevention of problems in classroom, improving classroom teaching practices, etc.¹⁰ Teacher's evaluation by the students feedback is an effective tool for faculty development as it is currently understood as a form of professional development.

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Instruction for Authors:

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Each of the following section should begin on separate page-

- ⊙ Title page
- ⊙ Abstract
- ⊙ Text (Introduction, Materials and method, Results, Discussion). Insert tables and legends where they fit.
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May be structured with subheadings of Background Objective, Materials and Method, Results, Conclusion. Not mandatory for review articles and case reports. Should not exceed 250 words.

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States the purpose of the article and summarizes the rational of the study.

Brief review of the subject.

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Should be very clear mentioning study design, place and period.

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Should contain well- founded arguments.

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Original Article

Phenotypic Screening and Genotypic Characterization of Extended-spectrum-beta-lactamase Producing Uropathogenic Escherichia coli (UPEC) isolated from a Tertiary Care Hospital in Bangladesh

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Abstract

Beta-lactamases are the most important factors in the resistance to beta-lactam antibiotics among gram-negative bacteria, especially Escherichia coli. The prevalence of infections caused by extended-spectrum β -lactamases (ESBLs)-producing Esch. coli is increasing, as one of the emerging health problems worldwide. This study aimed to investigate the prevalence of ESBL producing Esch. coli isolated from urinary tract infections (UTIs) and to observe the antibiotic resistance gene among them. This cross-sectional study was conducted in the Department of Microbiology, Dhaka Medical College from July 2015 to June 2016. Out of 280 urine samples with pus cells ≥ 5 /HPF, 60 (72.29%) isolated bacteria was Escherichia coli identified by standard laboratory methods. Antibiotic susceptibility test was done by Kirby-Bauer disc diffusion method. ESBL producers were detected phenotypically by Double-disk-synergy (DDS) test. Genotypically ESBL genes (blaCTX-M-15 and blaOXA-1) among the ESBL producers were detected by PCR. Among 60 isolated Escherichia coli, 22 (36.67%) ESBL producers were detected by DDS test. Ten (45.45%) ESBL producers were positive for blaCTX-M-15, 5(22.73%) were positive for blaOXA-1 and 4(18.18%) isolates were harbouring the both ESBL genes. The results of this study showed high proportion of ESBL producing Esch. coli in Bangladesh.

Keywords: Beta-lactamases, Uropathogenic Esch. Coli, Phenotypic Screening, Genotypic, Characterization, Urinary tract infection.

Introduction

Urinary tract infection is the common bacterial infection for both female and male, especially Escherichia coli is a common UTI causing gram negative bacteria.^{1,2} The variety of Esch. coli causing UTI is called Uropathogenic Escherichia coli (UPEC) which accounts for up to 80% of UTI.³ Uropathogenic Esch. coli possess various virulence factors, with increased prevalence of ESBL accounting up to 17% of community acquired UTI and 58% of nosocomial UTI infection.⁴ Extended spectrum β -lactamases (ESBLs) are plasmid mediated enzymes that confer resistance to

the penicillins, first, second, and third-generation cephalosporins and monobactams (i.e. aztreonam) but do not affect cephamycins (i.e. cefoxitin and cefotetan) or carbapenems and inhibited by β -lactamase inhibitors such as clavulanic acid.^{5,6} Genotypic characterization of ESBL in UPEC has become important objective in antibiotic resistance of infectious agents. The common genes responsible for resistance against β -lactam groups are TEM, SHV, CTX-M.⁷ CTX-M gene possessing 291 amino acid and any change in it results in emergence of a new variant CTX-M gene.⁸ Currently the most widely distributed CTX-M enzyme is CTX-M-15.⁹ OXA-1 has been described as the most common OXA-type beta-lactamase.¹⁰ Genotypic and phenotypic expression may differ in wild and laboratory conditions based on gene regulation. Patients with increased threat of colonization and infection with ESBL producing microorganism makes the patients fatally sick with prolonged hospital stay.⁶ Therefore the present

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Therefore the present study has been carried out to detect ESBL by double disc method and ESBL gene by using designed primers through PCR assay in clinical isolates of *Esch.coli* obtained from patients with UTIs from Dhaka Medical College Hospital in Bangladesh.

Materials and methods

A cross sectional study was conducted in the Department of Microbiology, Dhaka Medical College, Dhaka, from July, 2015 to June, 2016. This research protocol was approved by Research Review Committee and Ethical Review Committee of Dhaka Medical College. All the patients presenting with the clinical features of UTI irrespective of age & sex who attended in the outdoor patient Department (OPD) or admitted in the indoor patient department (IPD) of the hospital were included as the study population. A total of 280 non-repetitive urine specimens were included in the study.

Sample collection:

A mid-stream urine were collected aseptically in a sterile, dry, wide necked, leak proof container and catheterized urine samples received from inpatients of the hospital and were labelled appropriately and transported immediately to the Microbiology laboratory for further processing.

Bacterial isolates

All samples were inoculated on blood agar and MacConkey agar media. The inoculated culture plates were aerobically incubated at 37°C for 24 hours. Incubated plates were observed for the presence of any bacterial growth after 24 hours. If growth occurred, colony count was done to calculate the number of colony forming unit per ml of urine. A count of 1×10^5 or more bacteria per ml of urine was considered as clinically significant. *Esch. coli* was identified by colony morphology, staining character and biochemical tests including: fermentation of glucose, lactose, sucrose, gas and H₂S production into TSI agar, citrate utilization, indole production and urease test into MIU media as per standard laboratory techniques.¹¹

Antimicrobial susceptibility testing

Susceptibility test to antimicrobial agents of all isolated *Escherichia coli* were done by Kirby-Bauer modified disc diffusion technique as described by CLSI guideline (CLSI, 2015).¹² Antibiotic discs used were ceftazidime (30 µg /disc), ceftriaxone (30 µg/disc), cefixime (30 µg /disc), cefuroxime (30 µg/disc), imipenem (10 µg/disc), amoxiclav (amoxicillin and clavulanic acid) (20/10

µg/disc), ciprofloxacin (5 µg/disc), gentamicin (10 µg/disc), amikacin (30 µg/disc), co-trimoxazole (1.25/23.75 µg/disc), azithromycin (15 µg/disc), nitrofurantoin (300 µg/disc), colistin sulphate (10 µg/disc), piperacillin-tazobactam (100/10 µg/disc), tigecycline (15 µg/disc) (Oxoid Ltd. UK). Mueller Hinton agar media was used for antimicrobial susceptibility test. Susceptibility of the Enterobacteriaceae to tigecycline was determined using 15 µg tigecycline disc and the criteria of the United States Food and Drug Administration was used for interpretation.¹³ *Escherichia coli* ATCC 25922 was used as the quality control strain. Study isolates were phenotypically characterized for the production of ESBL by using DDS test. Antimicrobial susceptibility testing of all ESBL producers were also performed.

Double disc synergy (DDS) test for detection of ESBL producing organism¹⁴

This test was performed on Mueller-Hinton agar plate. Amoxiclav (amoxicillin 20 µg + clavulanic acid 10 µg) disc was placed at the centre of the plate. Third generation cephalosporins (ceftriaxone, ceftazidime and cefotaxime) were placed 20 mm apart from center of the amoxiclav disc. Inoculated plate was incubated at 37°C for 24 hours. A clear extension of the edge of the inhibition zone of cephalosporin disc towards amoxiclav disc was interpreted as ESBLs production.

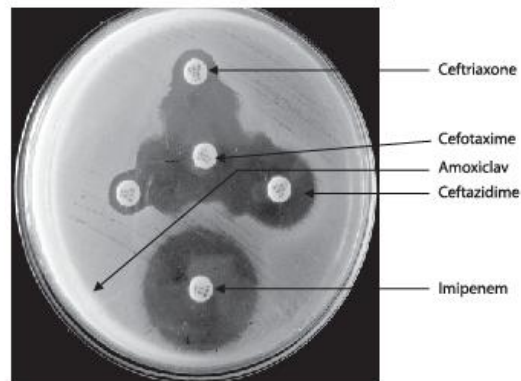


Figure-1: Double-Disk Synergy test for detection of ESBL producers.

Detection of ESBL encoding Genes by PCR¹⁵

Bacterial pellet formation

PCR was used for identification of ESBLs encoding genes (*bla*CTX-M-15 and *bla*OXA-1) among phenotypically confirmed ESBLs producing uropathogenic

Escherichia coli. To prepare bacterial pellet, a loop full of bacterial colonies was inoculated into a falcon tube containing Trypticase Soy Broth. After incubation overnight at 37°C, the Falcon tubes were centrifuged at 4,000 rpm for 10 minutes, after which the supernatant was discarded. A small amount of sterile trypticase soy broth was added into the Falcon tubes with pellets and mixed evenly. Then an equal amount of bacterial suspension was placed into 2 to 3 microcentrifuge tubes. The microcentrifuge tubes were then centrifuged at 4,000 rpm for 10 minutes and the supernatant was discarded. The microcentrifuge tubes containing bacterial pellets were kept at -20°C until DNA extraction.

DNA extraction

Three hundred µl of sterile distilled water was added into microcentrifuge tubes having bacterial pellet and vortexed until mixed. Mixture was heated at 100°C for 10 minutes in a heat block. After heating, immediately the microcentrifuge tubes were placed on ice for 5 minutes and then centrifuged at 14,000Xg at 4°C for 6 minutes. Supernatant was taken into another microcentrifuge tube by micropipette and was used for PCR. Extracted DNA was preserved at 4°C for 7-10 days and - 20°C for long time.

Mixing of mastermix and specific primers (Table-I) with DNA template and Amplification in thermal cycler were done. The amplified DNA were loaded into a 1.5% agarose gel, electrophoresed at 100 volts for minutes, stained with 1% ethidium bromide, and visualized under UV light.

Table-I: The primers used in this study

Genes	Sequence (5'-3')	Bp
CTX-M-15-SF	CACACGTGGAATTTAGGGACT	996
CTX-M-15 SR	GCCGTCTAAGGCGATAAACA	
OXA-1-F	ACCAGATTCCAAC TTCAA	598
OXA-1-R	TCTTGGCTTTTATGCTTG	

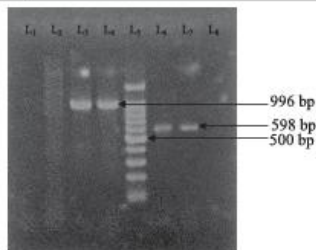


Figure-II: Photograph of gel electrophoresis of amplified DNA of 996 bp for blaCTX-M-15 gene (Lane 3 and 4). Amplified DNA of 598 bp for blaOXA-1-group gene (Lane 6 and 7). Hundred bp DNA ladder (Lane 5). Negative control without DNA (Lane 2).

Statistical analysis

The results of the study were recorded systematically. Data analysis was done by using 'Microsoft Office Excel 2013' program.

Results

Among the isolated 60 uropathogenic *Esch. coli*, 22(36.67%) ESBL producers were detected by DDS test. Among the ESBL producers 95.45% were resistant to ceftriaxone and cefixim, 90.91% .

were resistant to ceftazidime, cefuroxime and co-trimoxazole, 77.27% were resistant to amoxiclave and azithromycin, 72.73% were resistant to ciprofloxacin, 45.45% were resistant to gentamicin and piperacillin-tazobactam, 22.73% were resistant to nitrofurantoin and low level of resistance to imipenem 4.54%. All (100%) the ESBL producers were sensitive to colistin and tigacycline. (Table-II)

Table-II: Antibiotic resistance rates of Esch. coli isolates tested in this study.

Antibiotic	ESBL producer (N=22) n(%)	Non-ESBL producer (N=48) n(%)	Total (N=60) n(%)
Amoxiclave	17(77.27)	26(54.17)	43(71.67)
Ceftriaxone	21(95.45)	25(52.08)	46(76.67)
Ceftazidime	20(90.91)	29(60.41)	49(81.67)
Cefixime	21(95.45)	25(52.08)	46(76.67)
Cefuroxime	20(90.91)	29(60.42)	49(81.67)
Azithromycin	17(77.27)	31(64.58)	48(80.00)
Ciprofloxacin	16(72.73)	34(70.83)	50(83.33)
Cotrimoxazole	20(90.91)	34(70.83)	54(90.00)
Gentamicin	10(45.45)	17(35.42)	27(45.00)
Amikacin	4(18.18)	5(10.42)	9(15.00)
Nitrofurantoin	5(22.73)	9(18.75)	14(23.33)
Piperacillin-tazobactam	10(45.45)	4(8.33)	14(23.33)
Imipenem	1(4.54)	8(16.67)	9(15.00)
Colistin	0(00)	1(2.08)	1(1.67)
Tigecycline	0(00)	1(2.08)	1(1.67)

Note: N = Total number of isolates; n = number of positive cases

PCR for ESBL specific genes was performed for all the 22 ESBL isolates that were detected by DDS test. Ten (45.45%) ESBL producers were positive for blaCTX-M-15, 5(22.73%) were positive for blaOXA-1 and 4(18.18%) isolates were harbouring the both ESBL genes. (Table-III)

ESBL encoding genes	Positive n (%)
CTX-M-15 alone	10 (45.45)
OXA-1 alone	5 (22.73)
CTX-M-15 + OXA-1	4 (18.18)
Total	19 (86.36)

Discussion:

The emergence and rapid dissemination of multidrug-resistant Enterobacteriaceae worries the whole world and, in particular, ESBL-producing enterobacteriaceae. Since 2000s, ESBL producing *Escherichia coli* have been considered as serious pathogens both in nosocomial and community infections around the world, and their virulence varies by region.¹⁶ ESBL producing *Escherichia coli* are more common in females and in hospital settings and are for more than half of nosocomial origin, which is often very complicated to treat.¹⁷ In this study, among the 60 isolated *Esch. coli*, 22 (36.67%) ESBL producers were detected by DDS test. In agreement with this findings, Rajabnia *et al.*, (2019) reported 37.11% ESBL producing *Esch. coli* isolated from UTI.¹⁸ A few other studies Motaqim (2007) and Kulkarni *et al.*, (2016) also reported 34.1% and 46.87% ESBL producers respectively.^{19,20} In Bangladesh Rahman *et al.*, (2004) found that 43.20% *Esch. coli* were ESBL producer which is higher than the present study.²¹ Shigh *et al.*, (2016) reported a high proportion of ESBL which was 82.6%.²² However, 80% ESBL producers was also reported in Bangladesh in another study.²³ Canton *et al.*, (2008) reported that the higher prevalence of ESBL producers in Asia than in Europe and America was observed because of spread of mobile genetic elements, mainly 148 epidemic plasmids, and the dispersion of specific clones have been responsible. Moreover, the prevalence of ESBL producers varies with time as well as from country to country, city to city and even hospital to hospital of one city.²⁴

In this study, sensitivity pattern of ESBL producing *Esch. coli* was done against different antibiotics and has shown that, the highest antibiotic resistance among ESBL was observed with ceftriaxone and cefixim

(95.45%), ceftazidime, cefuroxime and cotrimoxazole (90.91%), amoxiclave and azithromycin (77.27%), ciprofloxacin (72.73%), gentamycin and piperacillin-tazobactam (45.45%). The highest antibiotic sensitivity was observed with colistin and tigecycline (100%), imipenem (95.46%). Islam *et al.*, from Bangladesh reported that ESBL producing *Esch. coli* strains have 100% resistant to amoxicillin, ceftriaxone, ceftazidime and cefotaxim, 86.4% resistant to cotrimoxazole, 54.5% resistant to nitrofurantoin and all strains were sensitive to imipenem.²⁵ Another study by Halabi *et al.*, reported that highest antibiotic resistance was observed with amoxicillin (100%), cefixim (96%), cefotaxime (91%), ceftazidime (90%) and the highest sensitivity was observed with colistin (100%) and imipenem (96%).²⁶ This findings are very much similar to the present study. Similar findings were also observed by Shamsuzzaman who reported that all the ESBL producers were sensitive to colistin.²⁷ Canigia and Dowzicky reported that more than 95.0% of the ESBL producing *Esch. coli* were sensitive to tigecycline and imipenem which is almost similar to present findings.²⁸

In the present study among 22 ESBL producing strains, 14 (63.63%) were positive for blaCTX-M-15 gene. In agreement with the present findings Yeasmin (2016) from DMCH and Sedighi *et al.*, (2015) from Iran, reported that the detection rate of the blaCTX-M-15 gene in patient with UTI were 62.16% and 66.67% respectively.^{29,30} Previous reports within or outside of Bangladesh showed a high prevalence of CTX-M-15 group in ESBL producing *E. coli*.^{31,32} Present study observed 9 (40.91%) OXA-1 producers among the 22 ESBL producing *Esch. coli*. A recent study in Bangladesh reported that 40% OXA-1 producers isolated from urine, which was very close to the present findings.³³ Using specific primer for blaCTX-M-15 and blaOXA-1, present study could not detect any ESBL gene in 3 (13.64%) of the ESBL producers. Other than blaCTX-M-15 and blaOXA-1, till now there are many variants of ESBL genes, of them TEM and SHV genes are commonly present worldwide.²⁸ The reason for the absence of blaCTX-M-15 and blaOXA-1 in those 3 phenotypic positive ESBL producers might be due to the presence of other variants of ESBL genes.

Conclusion

The present study reflected that the high prevalence of ESBL uropathogenic *Esch. coli*, especially blaCTX-M-15 (63.63%) are increasing in Bangladesh. Imipenem, colistin and tigecycline were found to be most effective

drug for the treatment of ESBL producers. It is thought that ESBLs should be detected by phenotypic or genotypic methods for selecting the appropriate antibiotics regarding treating the patients with UTIs. Surveys and monitoring should be done routinely for recognizing the antimicrobial resistance and to setup the antibiotic policy.

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Original Article

Usefulness of intrauterine insemination in unexplained and male subfertility with mild form of oligoastheno teratozoospermia

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Abstract

Background: Unexplained infertility is a diagnosis of exclusion after systematic evaluation fails to identify a cause. Oligospermia is defined traditionally by a sperm density <20 million/ml. Intrauterine insemination has been used to treat infertile couples for almost 200 years. Intrauterine insemination is specially appropriate for cases with mild male factor infertility, anovulation, endometriosis with at least one patent tube and unexplained infertility. IUI is considered as a first line procedure due to its simplicity, easy management low cost. In IUI (intra uterine insemination) processed semen is inserted in the uterine cavity using a small catheter at the time of ovulation in stimulated cycle.

Objective: To evaluate the pregnancy rate per cycle of IUI in unexplained infertility and mild male factor infertility.

Materials and methods: This study was interventional study carried out in the Department of Obstetrics and Gynaecology, Bangabandhu Sheikh Mujib Medical University, Dhaka in collaboration with Labaid Fertility Centre, Labaid Specialized Hospital, Dhaka from July 2016 to June 2018. Married couples with female partner aged 18 -35 years, male partner 20 -50 years. Total 148 subjects were included in this study. The patients were divided to groups groups. In group A 74 patients were unexplained infertility and group B 74 patients were mild form of oligoastheno-teratozoospermia. Data was collected using a structured questionnaire (research instrument) containing all the variables of interest. The questionnaire will be finalized following pretesting. Data was processed and analyzed with the help of computer program SPSS (Statistical package for Social Science) with version 25.

Results: This study shows in female the average age was 29.16 years in unexplained infertility group (Group A) and 27.55 years in mild form of oligoastheno-teratozoospermia group (Group B). The average age was 36.63 years in unexplained infertility group (Group A) and 35.18 years in mild form of oligoastheno-teratozoospermia group (Group B). Semen concentration was 94.27 m/ml in unexplained infertility group and 16.37 m/ml in mild form of oligoastheno-teratozoospermia group. 6.75% of pregnancy in unexplained infertility and 4.05% of pregnancy in mild form of oligoastheno-teratozoospermia. It was observed that prewash concentration was 89.01 m/ml, prewash motility was 68.78, prewash morphology was 58.82, postwash concentration was 59.80 m/ml and post was motility was 99.21 in unexplained infertility. On the other hand in mild form of oligoastheno-teratozoospermia prewash concentration was 17.76 m/ml, prewash motility was 31.35, prewash morphology was 15.00, postwash concentration was 20.33 m/ml and post was motility was 84.86. The difference was statistically significant (<0.05).

Conclusion: Intra Uterine Insemination (IUI) is a cheap and minimally invasive method compared to other methods of assisted reproduction. The IUI procedure is simple and may be performed even if the woman is not receiving medication to improve her egg production. Many physicians will encourage women to take medications to stimulate the ovaries in order to increase egg production and, hopefully, the chance of achieving pregnancy.

Keywords: Intrauterine insemination, Unexplained subfertility, Oligoastheno-teratozoospermia.

Introduction

Intrauterine insemination has been used to treat infertile couples for almost 200 years. Intrauterine insemination is specially appropriate for cases with mild male factor infertility, anovulation, endometriosis with at least one patent tube and unexplained infertility.¹ IUI is considered as a first line procedure due to its simplicity, easy management low cost. In IUI (intra uterine insemination) processed semen is inserted in

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the uterine cavity using a small catheter at the time of ovulation in stimulated cycle.¹

Unexplained infertility is infertility that is idiopathic in the sense that its cause remains unknown even after an infertility work up usually including semen analysis in the man and assessment of ovulation, fallopian tubes and normal uterine cavity in the women.² However, even the most sophisticated diagnostic assessment can not reveal all possible abnormalities. Therefore unexplained infertility appears to be either the lower extreme of the normal distribution of fertility or it arises from a defect in fecundity that cannot be detected by the routine infertility evaluation.³ Pregnancy rates are lower with increasing age of the female partner and duration of infertility.⁴ Although several studies have examined the effectiveness of intrauterine insemination (IUI) as treatment for unexplained infertility in natural cycle the best available evidence suggests that treatment with IUI in natural cycles has no clinically important effects. Some study suggested that both OH and IUI independently contributed to increased pregnancy rates.⁵ Combined treatment with clomiphene and IUI is commonly recommended for couples with unexplained infertility, but best available evidence indicates it has no significant benefit.

Male sub fertility is a common condition amongst sub fertile couples. It is now recognized that abnormalities in the male are the sole cause of infertility and are an important contributing factor in the couple with reproductive failure.⁶ One of the most frequently used fertility treatments worldwide for couples with male sub fertility is intrauterine insemination (IUI).⁷ IUI is beneficial in male factor infertility because IUI appears

to result in higher pregnancy rate than natural intercourse or intracervical insemination. As IUI is a simple, low cost and easy procedure and commonly done in unexplained infertility and male infertility, so we decided to do this study to observe the outcome of IUI in unexplained infertility and mild male factor abnormality with fixed ovarian stimulation protocol.

Materials and methods

It was interventional study carried out in the Department of Obstetrics and Gynaecology, Bangabandhu Sheikh Mujib Medical University, Dhaka in collaboration with Labaid Fertility Centre, Labaid Specialized Hospital, Dhaka from July 2016 to June 2018. Married couples with female partner aged 18 -35, male partner 20 -50. Total 148 subjects were included in this study. The patients were divided to two groups. In group A 74 patients were unexplained infertility and group B 74 patients were mild form of oligoastheno-teratozoospermia. Female partners having regular menstrual cycle & ovulation confirmed by D21 S. Progesterone, at least one tube is patent, uterine cavity is normal . Semen analysis is normal in male partner according to traditional WHO normal reference values (WHO 1987; WHO 1992; WHO 1999). Infertile couple with only male partner has mild oligospermia; semen count 10-20 million/ml (as according to WHO 1999 normal sperm count is >20 million/ml), mild form of asthenozoospermia; total motility 30%-<50% (as according to WHO 1999 normal sperm count is >20 million/ml), mild form of teratozoospermia; morphology 20-30% (as according to WHO 1999 normal sperm count is >20 million/ml), total motile sperm count before processing (million = volume x concentration x % motility): 10-20 million and female partner has no known cause of infertility. Data was collected using a structured questionnaire (research instrument) containing all the variables of interest. The questionnaire will be finalized following pretesting. Data was processed and analyzed with the help of computer program SPSS (Statistical package for Social Science) with version 25.

Results

Table I shows in female the average age was 29.16 years in unexplained infertility group (Group-A) and 27.55 years in mild form of oligoastheno-teratozoospermia group (Group B). In male the average age was 36.63 years in unexplained infertility group (Group-A) and 35.18 years in mild form of oligoastheno-teratozoospermia group (Group-B) (Table-I).

71.62% were primary infertility and 28.38% secondary infertility in unexplained infertility group. 77.03% were primary infertility and 22.97% were secondary infertility in mild form oligostheno-teratozoospermia group (Table-II). Table-III shows the average duration of infertility were 6.31 years in unexplained infertility and 5.12 years in mild form of oligoastheno-teratozoospermia group. Semen concentration was 94.27 m/mil in unexplained infertility group and 16.37 m/mil in mild form of oligoastheno-teratozoospermia group (Table IV). Table VI shows 6.75% of pregnancy in unexplained infertility and 4.05% of pregnancy in mild form of oligoastheno-teratozoospermia. Table-VII shows prewash concentration was 89.01 m/mil, prewash motility was 68.78, prewash morphology was 58.82, postwash concentration was 59.80 m/mil and post was motility was 99.21 in unexplained infertility. On the other hand in mild form of oligoastheno-teratozoospermia prewash concentration was 17.76 m/mil, prewash motility was 31.35, prewash morphology was 15.00, postwash concentration was 20.33 m/mil and post was motility was 84.86. The difference was statistically significant (p<0.05).

Table-I: Female age distribution of the study subjects

Age in years	Group A (n=74)		Group B (n=74)		P-value
	No	%	No	%	
Female					
20-25	18	24.32	28	37.84	0.006
26-30	29	39.19	22	29.73	
31-35	26	35.14	24	32.43	
36-40	1	1.35	0	0.00	
Mean±SD	29.16±4.06		27.55±4.78		
Male					
20-25	0	0.00	2	2.70	0.054
26-30	6	8.11	11	14.86	
31-35	28	37.84	32	43.24	
36-40	32	43.24	23	31.08	
41-45	6	8.11	6	8.11	
46-50	2	2.70	0	0.00	
Mean±SD	36.63±4.22		35.18±4.83		

Group-A: Unexplained infertility

Group-B: Oligoastheno-teratozoospermia

Table-II: Distribution of type infertility of the study subject

Type infertility	Group A (n=74)		Group B (n=74)		P-value
	No	%	No	%	
Primary	53	71.6	57	77.0	0.452
Secondary	21	28.4	17	23.0	

Group-A: Unexplained infertility

Group-B: Oligoastheno-teratozoospermia

Table-III: Duration of infertility of the study subjects

Duration of infertility	Group A (n=74)		Group B (n=74)		P-value
	No	%	No	%	
≤5 years	34	45.9	50	67.6	0.001
6-10 years	32	43.2	17	23.0	
11-15 years	7	9.5	7	9.5	
16-20 years	1	1.4	0	0.0	
Mean±SD	6.31±1.89		5.12±1.23		

Group-A: Unexplained infertility

Group-B: Oligoastheno-teratozoospermia

Table-IV: Semen analysis of the study subjects

Semen analysis	Group A (n=74)		Group B (n=74)		P-value
	Mean±SD		Mean±SD		
Concentration	94.27±21.47		16.37±6.07		0.001
Motility	74.51±10.93		38.17±13.73		0.001
Morphology	62.52±12.23		23.64±13.30		0.001
FSH	5.94±1.83		5.12±2.00		0.011
TSH	2.30±1.12		2.29±1.23		0.957

Group-A: Unexplained infertility

Group-B: Oligoastheno-teratozoospermia

Table-V: Number of mature follicle

No. of mature follicle	Group A (n=74)		Group B (n=74)		P-value
	No	%	No	%	
Right					
None	10	13.51	0	0.00	0.282
1-3	61	82.43	72	97.30	
4-6	1	1.35	2	2.70	
>6	2	2.70	0	0.00	
Mean±SD	1.37±1.44		1.17±0.70		
Left					
None	14	18.92	0	0.00	0.576
1-3	55	74.32	74	100.00	
4-6	5	6.76	0	0.00	
>6	0	0.00	0	0.00	
Mean±SD	1.28±1.15		1.20±0.46		

Group-A: Unexplained infertility

Group-B: Oligoastheno-teratozoospermia

Table-VI: Pregnancy rate of the study subject

Pregnancy confirmation	Group A (n=74)		Group B (n=74)		P-value
	No	%	No	%	
Yes	5	6.75	3	4.05	0.405
No	70	94.59	72	97.30	

Group-A: Unexplained infertility

Group-B: Oligoastheno-teratozoospermia

Table-VII: Prewash and post wash

Semen analysis	Group A (n=74)	Group B (n=74)	P-value
	Mean±SD	Mean±SD	
Prewash concentration	89.01±23.32	17.76±7.87	0.001
Prewash motility	68.78±9.69	31.35±14.30	0.001
Prewash morphology	58.82±8.22	15.00±6.32	0.001
Postwash concentration	59.80±19.02	20.33±13.48	0.001
Post wash motility	99.21±8.90	84.86±15.98	0.001

Group-A: Unexplained infertility

Group-B: Oligoastheno-teratozoospermia

Discussion

Intrauterine insemination (IUI) is frequently used in the treatment of infertile couples with various causes of infertility, including cervical factor, ovulatory dysfunction, endometriosis, immunological caused, male factor and unexplained infertility. It is also the mode of treatment for various ejaculatory and coital problems. IUI is generally considered to be an intermediate step of low to moderate complexity before the application of more sophisticated assisted reproductive technologies (ART).⁸

In our study, we made an effort to determine the pregnancy rate per cycle of IUI in unexplained infertility and mild male factor infertility. The variables selected were patient parameters like age of the woman, duration of infertility, type of infertility. Parameters related to ovulation induction included number of dominant follicles, endometrial thickness. Laboratory parameters like postwash motility and morphology were recorded.

In this study shows the average age was 29.16 years in unexplained infertility group and 27.55 years in mild form of oligoastheno-teratozoospermia group. The difference was statistically significant (P<0.05). This findings consisted with the study of Aboulghar et al.⁹

This study found primary infertility was higher in between two groups which was 71.62% and 77.03 respectively. Similar study Edi-Osagie et al.¹⁰ found 76% were primary infertility and 24 were secondary infertility.

The duration of infertility significantly higher in unexplained infertility than mild form of oligoastheno-teratozoospermia (6.31 vs. 5.12 years, P =

0.031). An earlier study also found a significant decline in the success of IUI therapy as the duration of infertility increased.¹¹

In this study the higher observed among women with a dominant follicle ≤17 mm, although nonsignificant, could be along the lines of previous findings and due in part to a more intense ovarian stimulation. However, contrary to other studies.¹²

No difference was noted in the success rate with regards to the type of infertility. Among indications for IUI, the success rate was higher in anovulatory and unexplained infertility patients as compared with endometriosis and male factor infertility, although the difference statistically statistical significance. The trend toward lower pregnancy rates in endometriosis has been documented in an earlier meta analysis, with the pregnancy rates reduced to half in comparison with other infertility indications.¹³ The pregnancy rate in our study for male factor infertility was marginally lower than that in previously reported studies.^{14,15} This study overall pregnancy rate with IUI of 6.75% of pregnancy in unexplained infertility and 4.05% of pregnancy in mild form of oligoastheno-teratozoospermia is low as compared with the results from other studies.^{14,15}

Another important reason for lower pregnancy rates in our setting could be our strategy of aiming for monofollicular development during controlled ovarian hyperstimulation (COH). This, while leading to lower pregnancy rates, reduces both the multiple pregnancy and the hyperstimulation rates. With the current trend of limiting the number of embryos transferred in IVF cycles, ovulation induction is emerging as the prime cause for higher order pregnancies. Earlier studies have reported an incidence of 20% twins and 39% higher order multiple pregnancies as a result of ovulation induction, outside assisted reproductive technology (ART).^{16,17}

With respect to the sperm characteristics, higher concentration and better quality after sperm preparation were consistently related to improved pregnancy rate after IUI.¹⁸ In this sense, the pregnancy rate observed among those with sperm count higher than 30x10⁶ was on average double that of the middle categories (5.1–30x10⁶) and almost five times higher than in the lowest category (≤5 x10⁶). Therefore, our results would not support the suggested sperm count of <10x10⁶ as the threshold value for IUI treatment of infertile couples, since still acceptable pregnancy rates may be observed with sperm count between 5.1 and

10x10⁶.^{19,20} However, the considerable decrease in pregnancy rate with $\leq 5 \times 10^6$ would be very difficult to counterbalance by the presence of other favorable factors such as a multifollicular response or a short duration of infertility.

The sperm quality that is necessary for successful IUI is lower than World Health Organization threshold values for normal sperm. Intrauterine insemination is effective therapy for male factor infertility when initial sperm motility is $> \text{ or } = 30\%$ and the total motile sperm count is $> \text{ or } = 5 \times 10^6$. When initial values are lower, IUI has little chance of success.¹ The number of motile sperm available for insemination and especially their 24-hour survival are highly predictive of IUI success. This advanced semen analysis is an excellent screening test to evaluate couples considering IUI.²¹

Conclusion

IUI is usually the first step in treating couples with unexplained infertility. Controlled ovarian stimulation, with intrauterine insemination, has proved successfully in the treatment of marital infertility, especially in cases of ovulation disorders, disorders of cervical factors, disorders of man's sperm gram, mild forms of endometriosis and infertility of unknown causes. IUI is a cheap and minimally invasive method compared to other methods of assisted reproduction. Numerous reports indicate that the pregnancy rate is much higher if IUI is combined with controlled ovarian stimulation. The IUI procedure is simple and may be performed even if the woman is not receiving medication to improve her egg production. Many physicians will encourage women to take medications to stimulate the ovaries in order to increase egg production and, hopefully, the chance of achieving pregnancy.

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Original Article

Participants' Perception and Attitude to Teaching Methodology Assessment (TMA) Principles training programme currently introducing by CME-DGME

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Abstract

Objective: To explore participants' experiences regarding current practice of TMA principles training programme was held in Dhaka National Medical College in Bangladesh by CME-DGME.

Methodology: This was a cross sectional, descriptive study which include both qualitative and quantitative components. Study period was one year, from January 2022 to December 2022. Study was done among the participants of DNMC who have completed their course. Out of 83 participants 50 participants were included by convenient sampling. A semi structured self-administered questionnaire was used to collect data. No pre testing was done. Analysis of data was done by SPSS computer software programme version 17.

Results: Most of the respondents were agreed and strongly agreed that the training programme help them in their teaching experience, sufficient for them to become a medical educationist, running according to the guideline of CME-DGME, sufficient to cover all aspect of medical education and the quality of teaching of this training programme was effective.

Conclusion: Most of the participants show their satisfaction about the current practice of TMA principles training programme guided by CME-DGME. Rest of the participants expressed their different views and suggestions for the improvement of this training programme such as need more interactive sessions, resource persons from different medical Institutes should be included, class topics and explanations should be more interesting and attractive.

Key words: Teaching methodology, Centre for Medical Education, Directorate General of Medical Education.

Introduction

The aim is to prepare a learner to demonstrate mastery of core skills and the ability to adapt to new situations.¹ Everyone in a medical institute has an important role and responsibility to participate in the quest for quality Improvement. An evolutionary change already done in the era of medical education in Bangladesh. Now most of the medical colleges have

introduced teaching methodology assessment principles training programme in their medical colleges from January 2022 to till date. This study was try to find out difficulties, fairness and pitfall of newly introduced TMA principles training programme. Medical education is a continuous process which can bring expected changes among the students and teachers. Student's teaching-learning depend on various methods of teaching and assessments procedures. Lectures can be an inspiring learning medium and most students and faculty expect them to be an integral part of knowledge acquisition. It is thus unsurprising that students prefer in-person lectures versus recorded lectures.² Lecturing is demonstrably as good as any method in effecting knowledge transfer to learners. Students often prefer

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lectures because they are usually good guides to summative assessments and studying lecture notes provides a high yield way to prepare.³ A useful framework to understand knowledge acquisition in a lecture is provided by Constructivist Learning Theory.⁴ Assessments can be classified in a variety of different ways and many of them are reasonable. One useful classification of assessments is as formative, summative or diagnostic.

Methodology

This was a cross sectional descriptive study which include both qualitative and quantitative components. Study period was one year, from January 2022 to December2022, among the participants of DNMC who have completed their course. Out of 83 participants, 50 participants were included by convenient sampling. A semi structured self-administered questionnaire was used to collect data. No pre testing was done. Analysis of data was done by SPSS computer software programme version 17. Respondents were anonymous, so confidentiality will be maintained. Result of the study will be used for further development of TMA principles training programme.

Result

This was a cross sectional descriptive study which included on conveniently selected 50 participants of DNMC who had experiences of facing TMA principles training Programme. The main objectives of the study was to find out the perception and attitude of the participants to TMA principles training programme. Specific objectives were to record their experiences, opinions, observation and suggestions for the improvement of TMA principles trainingprogramme.

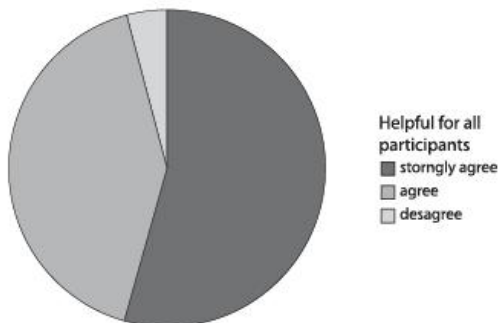


Figure-I: Responses of the participants regarding the statement of “This training programme is essentially helpful for all participants” showing in pie chart.

Table-I: Opinion of the participants regarding the statement of “This TMA training programme is sufficient to become a medical educationist” distributed in this table below.

Sufficient to become medical educationist	Frequency	Percentage
strongly agree	17	34.0
agree	23	46.0
cannot decide	4	8.0
disagree	6	12.0
Total	50	100.0

Table-II: Opinion of the participants regarding the statement of “This TMA programme is running according to the guideline of CME DGME” distributed in this table below.

TMA program is running according to the guideline of CME DGME	Frequency	Percentage
strongly agree	19	38.0
agree	22	44.0
cannot decide	9	18.0
Total	50	100.0

Table-III: Opinion of the participants regarding the statement of “This TMA programme is covered all aspects of medical education” distributed in this table below.

Covered all aspects of medical education	Frequency	Percentage
strongly agree	13	26.0
agree	28	56.0
cannot decide	2	4.0
disagree	5	10.0
strongly disagree	2	4.0
Total	50	100.0

Table-IV: Opinion of the participants regarding the statement of “Attendance of the participants is satisfactory” distributed in this table below.

Attendance of the participants was satisfactory	Frequency	Percentage
strongly agree	15	30.0
agree	31	62.0
cannot decide	2	4.0
disagree	2	4.0
Total	50	100.0

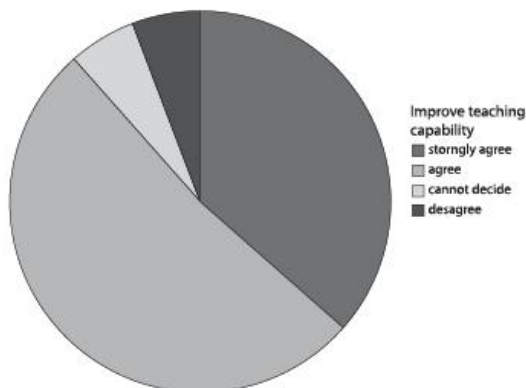


Figure-II: Responses of the participants regarding the statement of "Assignments were effective for the participants to improve their teaching capability" showing in pie chart.

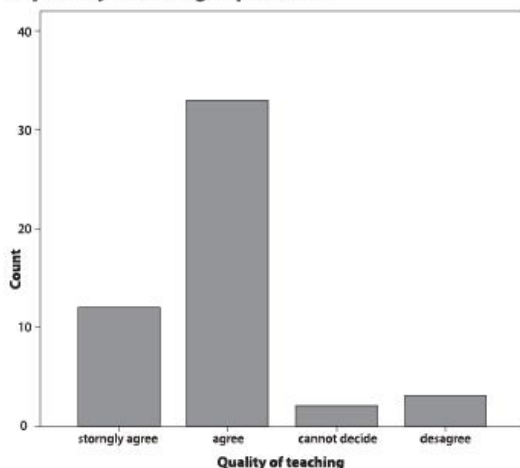


Figure-III: Responses of the participants regarding the statement of "Quality of teaching of this training programme was effective." showing in This Bar diagram.

Suggestion of the participants

- 29 participants have no suggestions
- 5 participants suggested that need more interactive sessions
- 3 participants suggested that resource persons from different medical colleges should included
- 3 participants suggested that class topics and explanation should be more interesting and attractive
- 2 participants suggested that need more improvement of course content and training programme

- 2 participants suggested that need refresher training and included new participants
- 2 participants suggested that need involvement of participants as resource person after completion their training
- 2 participants suggested that effectiveness of this training programme should be evaluated by CME-DGME
- 1 participant suggested that add more techniques that help to make the class more effective
- 1 participant suggested that medical professionals will be benefited by this programme

Discussion

The relevance or appropriateness of educational programmes has been questioned by Frenk et al. (2010), Cooke et al. (2010) and others.⁶

1. "This training programme is essentially helpful for all participants"

About 95% of the respondents were agreed and strongly agreed that the training programme help them in their teaching experience. Only about 5 were disagreed.
2. "This training programme is sufficient to become a medical educationist for all participants"

About 80% of the respondents were agreed and strongly agreed that the training programme was sufficient for them to become a medical educationist but 12% respondents were disagreed. Only about 8% respondents were cannot decided whether this training programme was sufficient or not for them to become a medical educationist
3. "This training programme is running in all medical college according to the guideline of CME-DGME"

About 82% of the respondents were agreed and strongly agreed that the training programme was running according to the guideline of CME-DGME but 18% respondents cannot decided whether this training programme was running according to the guideline of CME-DGME or not.
4. "This training programme is sufficient to cover all aspect of medical education to all the participants"

About 82% of the respondents were agreed and strongly agreed that the training programme was sufficient to cover all aspect of medical education. About 4% cannot decided whether this training programme was sufficient to cover all aspect of medical education or not. About 14% of the

respondents were disagreed and strongly disagreed that the training programme was sufficient to cover all aspect of medical education

5. "Attendance of this training programme was satisfactory."

About 92% of the respondents were agreed and strongly agreed that the attendance of the participants of this training programme was satisfactory. About 4% cannot decided whether the attendance of the participants this training programme was satisfactory or not. About 4% of the respondents were disagreed that the attendance of the participants of this training programme was satisfactory.

6. "Assignments were effective for the participants to improve their teaching capability"

About 88% of the respondents were agreed and strongly agreed that the training programme that the assignments were effective for the participants to improve their teaching capability.

About 6% cannot decided whether the assignments were effective for the participants to improve their teaching capability or not. About 6% of the respondents were disagreed that the assignments were effective for the participants to improve their teaching capability

7. "Quality of teaching of this training programme was effective."

About 90% of the respondents were agreed and strongly agreed that the quality of teaching of this training programme was effective. About 4% cannot decided whether the quality of teaching of this training programme was effective or not. About 6% of the respondents were disagreed that the quality of teaching of this training programme was effective.

8. Write, if you have any suggestion(s) for improving of TMA principles Programme

58% of the participants have no suggestions for any improvement of the programme

10% of the participants suggested that need more interactive sessions of this training programme

06% of the participants suggested that resource persons from different medical colleges should included

06% of the participants suggested that class topics and explanations should be more interesting and attractive

04% of the participants suggested that need more improvement of course contents and training programme

04% of the participants suggested that need refresher training and include new participants

04% of the participants suggested that need involvement of participants as resource person after completion their training

04% of the participants suggested that effectiveness of this training programme should be evaluated by CME-DGME

02% of the participant suggested that add more techniques that help to make the class more easy and effective

02% of the participant suggested that medical professionals will be benefited by this programme

Conclusion

Most of the participants show their satisfaction about the current practice of TMA principles training programme guided by CME-DGME. Rest of the participants expressed their different views and suggestions for the improvement of this training programme such as need more interactive sessions, resource persons from different medical Institutes should be included, class topics and explanations should be more interesting and attractive, need more improvement of the course contents and training programme, need refresher training and include new participants, involvement of participants as resource person after completion of their training, effectiveness of this training programme should be evaluated by CME-DGME, add more techniques that help to make the class more easy and effective and medical professionals will be benefited by this programme. Teachers can be more skilled and efficient to deliver lecture, students will be benefited.

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Original Article

Status of Serum Iron Level in Preeclampsia

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Abstract

Background: Preeclampsia complicates 2-8% of all pregnancies and it is the most common medical complication associated with increased maternal and infant mortality and morbidity. In Bangladesh about 16% of maternal death occurs due to preeclampsia and eclampsia.

Objective: To assess the serum iron level in pregnant women with preeclampsia and normal pregnant women.

Methods: A case control study was conducted from January 2015 to December 2015 among 50 patients with preeclampsia as case. The results were compared with 50 apparently healthy pregnant control. Data were collected through the interview. All Statistical analysis done by using SPSS windows package to assess the serum iron level in difference between two groups were evaluated by student's unpaired t-test.

Results: The analysis revealed that serum iron level was significantly ($P < 0.001$) higher in pregnant women with preeclampsia than that of normal pregnant women.

Conclusion: In preeclampsia alteration of serum iron status when compared with healthy pregnant women. Excess iron increase lipid peroxidation. Early detection and supplementation to treat this deficiency may reduce the incidence of preeclampsia.

Keywords: Preeclampsia, serum iron level.

Introduction

Preeclampsia is a multisystem disorder of unknown aetiology characterized by development of hypertension to the extent of 140/90 mm of Hg or more with proteinuria after 20th weeks of pregnancy in a previously normotensive and non-proteinuria patient.¹ Preeclampsia is a fatal medical disorder of pregnancy. It has been associated with adverse course and outcome of the pregnancy² resulting in increased maternal and infant mortality and morbidity.³ World wide, preeclampsia and eclampsia are estimated to be responsible for approximately 14% maternal deaths per

year.³ Seven hundred and ninety maternal deaths per 100,000 live births have been reported due to preeclampsia. Its incidence in primigravidae is about 10% and in multigravidae is about 5%.⁴ In Bangladesh, about 16% of maternal deaths are caused by preeclampsia and eclampsia.⁵ Placental ischemia or hypoxia is widely regarded as a key factor of preeclampsia. However, in the presence of catalytic amounts of transition metal ions, particularly iron, which may arise in the ischemic placenta by destruction of red blood cells.⁶ When tissues become ischemic reactive oxygen species such as superoxide and hydrogen peroxide are produced.⁷ This radical and iron can initiate and promote the process of lipid peroxidation perhaps facilitated by the hyperlipidaemia. Iron are abundant in the placenta, are important in the production of free radicals hyperlipidemia and increase iron levels in the maternal

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compartment in preeclampsia could be responsible for causing oxidative stress in placenta.⁸ On the basis of the above mentioned findings the present study to assess the levels of serum iron in women presenting with preeclampsia, compared to that in normal pregnancy.

Materials and Methods

A case control study was conducted in the Department of Biochemistry, Mymensingh Medical College in collaboration with Obstetrics and Gynecology Department of MMCH, from January 2015 to Dec 2015. According to selection criteria total 100 subjects were studied out of them 50 were case (Gr-I) and 50 were control (Gr-II). Purposive sampling was adopted for collecting data. Data was collected direct interview from patients. The study subjects were selected on the basis of presence of inclusion and exclusion criteria and their informed written consent were taken. For laboratory investigations, desired amount of blood was collected, processed and preserved for estimation of iron level. Data were processed and analyzed by computer Software SPSS version 20. Student's unpaired t-test was used to analyze the data between groups. For analytical tests, the level of significance was 95% confidence limit (P<0.05) was taken as level of significance All values were expressed as Mean ± SD.

Results

The study showed that serum iron levels was higher in case when compared with control group.

Table-I: Comparison of mean age in the study population.

Age (years)	Group-I (Case) Mean ± SD	Group-II (Control) Mean ± SD	P-value
Age (20-40) Years	24.40 ± 4.18	24.46 ± 3.73	0.94 ^{NS}

In this study, age range was from 20 to 40 years for both case and control group. It was observed that the mean age of the Gr.I and Gr.II was 24.40 ± 4.18 and 24.46 ± 3.73 years respectively and the level of significance was 0.94. Thus difference in mean age was not significant between preeclamptic and apparently healthy pregnant control group.

Table-II: Comparison of blood pressure in the study population

Blood pressure (mmHg)	Group-I (Case) Mean ± SD (mm of Hg)	Group-II (Control) Mean ± SD (mm of Hg)	P-value
Systolic blood pressure	156.9 ± 18.1	112.9 ± 9.9	<0.001**
Diastolic blood pressure	103.2 ± 16.1	73.9 ± 7.8	<0.001**

Systolic blood pressure

The study revealed that the systolic blood pressure was high in preeclamptic group and normal in apparently healthy pregnant control group. The mean systolic blood pressure of the Gr.I and Gr.II were 156.9 ± 18.1 and 112.9 ± 9.9 mm of Hg respectively. Thus, difference in mean systolic blood pressure was highly significant between Gr.I and Gr.II group (p<0.001).

Diastolic blood pressure

It was observed that the diastolic blood pressure was high in preeclamptic group and normal in apparently healthy pregnant control group. The mean diastolic blood pressure of Gr.I and Gr.II were 103.2 ± 16.1 and 73.9 ± 7.8 mm of Hg respectively. Thus, difference in mean diastolic blood pressure was highly significant between Gr.I and Gr.II group (<0.001).

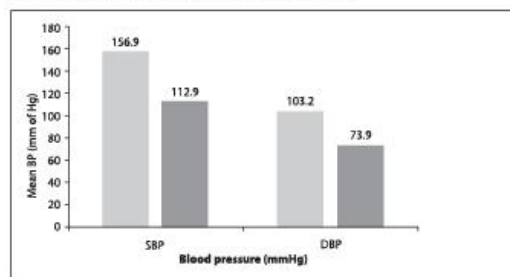


Figure-I: Comparison of mean SBP & DBP in the study population

- Group-I (Case)
- Group-II (Control)

Table-III: Comparison of gestational age in weeks in the study population

	Group-I (Case) Mean ± SD	Group-II (Control) Mean ± SD	P-value
Gestational weeks	30.5±5.2	28.6±5.0	0.064 ^{NS}

Table-IV: Comparison of gestational age in trimester in the study population

Trimester	Group-I (Case) No. (%)	Group-II (Control) No. (%)	P-value
2nd trimester	9(18.0%)	14(28.0%)	0.235 ^{NS}
3rd trimester	41(82.0%)	36(32.0%)	
Total	50(100.0%)	50(100.0%)	

In Gr.I group, out of 50 (case), 9 were 2nd trimester of pregnancy and 41 were 3rd trimester of pregnancy. In Gr.II group, out of 50 normal healthy pregnancy, 14 were 2nd trimester of pregnancy and 36 were 3rd trimester

of pregnancy. Out of 50 case 41 (82.02%) were 3rd trimester and 9(18.0%) were 2nd trimester. Thus, it was observed that in 3rd trimester of pregnancy patients were more prompt to preeclampsia than 2nd trimester of pregnancy. Mean difference case and control is 30.5 ± 5.2 and 28.6 ± 5.0 .

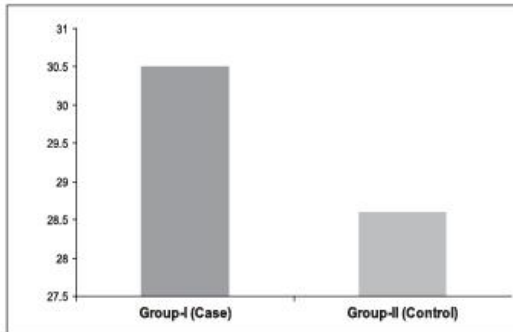


Figure-II: Comparison of mean gestational weeks in the study population

Table-V: Comparison of mean serum iron levels in the study population.

	Group-I (Case) Mean \pm SD ($\mu\text{g/dl}$)	Group-II (Control) Mean \pm SD ($\mu\text{g/dl}$)	P-value
Serum iron	156.9 ± 23.6	97.6 ± 25.5	<0.001**

The study revealed that serum iron level was higher in Gr.I group (preeclamptic women) as compared to Gr.II group (healthy control subjects). Serum iron level was below normal (normal level of serum iron= 50-150 $\mu\text{g/dl}$) in the normal pregnancy. The mean values of serum iron levels were 156.9 ± 23.6 , 97.6 ± 25.5 $\mu\text{g/dl}$ for the Gr.I and Gr.II groups respectively. The difference in mean serum iron levels were highly significant when compared between Gr.I and Gr. II groups ($p < 0.001$).

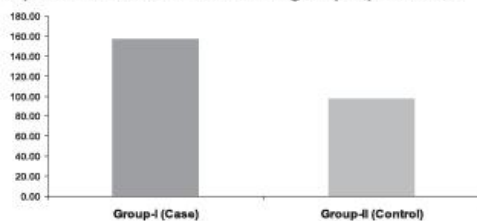


Figure-III: Comparison of mean serum iron levels in the study population

Discussion

The Present case control study it was found that the mean concentration of serum Iron significantly

increased in subjects with preeclampsia when compared to healthy controls ($P < 0.001$).^{9,6} The age range was selected between 20-40 yrs for both case and control. As it was expected there was no statistical significance of difference in age distribution ($P > 0.05$). In present study systolic and diastolic blood pressure was normal in control group, but both were very high in the preeclamptic group. There was highly significant difference for both systolic and diastolic blood pressure between the case and control ($P < 0.001$).

The present study noticed that the complication of preeclampsia were started on second trimester of gestation and severe in third trimester. Excess iron is postulated as causal factor in the oxidative stress in its radical form.⁶ The ability of transferrin to bind with free iron in the circulation is decreased.¹⁰ A decreased transferrin level would have led to iron-dependent OH⁻ formation from H₂O₂ in these patients. This may be a cause of the increase in lipid peroxidation in the plasma of the patients with mild to severe preeclampsia.¹¹ The intracellular iron storage ferritin protein can hold up to 4000 iron atoms. In normal pregnancy, serum ferritin concentration depicts replaceable iron storage that is in the liver, spleen and bone-marrow.¹² Serum iron and ferritin level changes during the pregnancy with advancing gestation and reaches at the minimum level during the third trimester of pregnancy as the storage form of iron are depleted because of feto-placental demand and required expansion of red cell mass.⁸

The present study shows that increased iron is important finding in women with preeclampsia. The rationale of routine iron supplementation in non-anaemic women is questionable. Also, routine investigation of serum iron status of pregnant women with high risk for preeclampsia as part of antenatal checkup may help to establish diagnosis of preeclampsia before appearance of its clinical manifestations and unnecessary use of iron in non-anaemic women should be avoided.⁹

Conclusion

The present study was conducted to evaluate the serum iron status in pregnant women with preeclampsia. In this study serum iron level was significantly high in preeclamptic group when compared to normal pregnant group. The present study revealed that increased iron is important finding in women with preeclampsia. Therefore, it may be recommended that routine investigations of these biochemical parameters of pregnant women who attended the antenatal clinic

for antenatal checkup should be carried out to detect preeclampsia. So, iron status of pregnant women could be assessed before giving iron supplement as these may cause more harm than benefit.

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Original Article

Comparative Study of Effectiveness Between Azithromycin and Levofloxacin in the Treatment of Childhood Typhoid Fever

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Abstract

Background: Typhoid fever is an important cause of morbidity and mortality in patients especially in developing country. Therapy with conventional drugs is associated with increasing resistance, non-compliance to therapy and toxicity.

Objective: The aim of this study was to compare the effectiveness of Azithromycin and levofloxacin in the treatment of childhood typhoid fever.

Methods: This comparative study was carried out among 120 patients presenting with symptoms, signs and laboratory investigations diagnostic of typhoid fever in IPD and OPD of Paediatric Department, Dhaka National Medical College Hospital, Dhaka, from April to October 2013. Patients received Levofloxacin (n=60) consider as group I and Azithromycin (n=60) consider as group II. Widal test positive was included for the study & specific antibiotic (Levofloxacin or Azithromycin) treatment was started by randomization using lottery method. Statistical analysis of the results were obtained by using window based computer software devised with Statistical Packages for Social Sciences (SPSS-20.1).

Results: Majority of the patients time of afebrile after taking antibiotic was 6 days in group I (n =21, 35.0%) whereas it was 4 days in group II (n=23,38.3%). The difference was not statistically significant (p>0.05) between two groups. Almost two third 68.33% of the patients in group I and 100.0% in group II patients were receiving treatment for 7 days. Regarding the side effects, it was observed that nearly three fourth (73.3%) of the patients in group I and 45(75.0%) in group II patients had nausea. Vomiting was found 8(13.3%) and 4(6.7%) in group I and group II respectively. Diarrhoea was 2(3.3%) in group I and 13(21.7%) in group II. Abdominal discomfort was 17(28.3%) in group I and 13(21.7%) in group II. The difference was not statistically significant (p>0.05) between two groups.

Conclusion: Both drugs are equally effective in the treatment of childhood typhoid fever. Considering duration of treatment Azithromycin is better than levofloxacin.

Keywords: Levofloxacin, Azithromycin, Typhoid fever.

Introduction

Typhoid fever (typhoid or paratyphoid fever) caused by *Salmonella* serotype Typhi (S Typhi) or *Salmonella* serotype Paratyphi (S Paratyphi) remains endemic in

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many areas of the developing world, causing over 26 million infections and over 200,000 deaths annually.¹ The incidence is highest in south-central Asia and South East Asia over 100/100,000 cases/year, with the highest burden of disease in children aged 2-15 years.^{2,3} S Typhi represents the commonest cause of bacteraemia in this age group.^{4,5} Early recognition and management of typhoid fever is needed to avoid the severe complications and possible fatality.⁶ If not treated properly, enteric fever carries a mortality rate of 30%,

whilst appropriate antimicrobial treatment reduces the mortality rate to as low as 0.5%.⁷ Levofloxacin is a third generation fluoroquinolone drugs. The role of levofloxacin on intestinal bacteria and Enterobacteriaceae are strong, such as Shigella, Salmonella, E.coli, etc. Fluoroquinolones are the drug of choice for the treatment of typhoid fever.⁸ Application of levofloxacin in the pediatric field have different controversy. In recent years, levofloxacin has been widely used in pediatrics, yet no serious reactions, including cartilage involvement reported.⁹ Azithromycin is the first of a new class of broad-spectrum antibiotics called azalides, which contain a nitrogen atom in the macrolide aglycone ring.¹⁰ Azithromycin has an MIC of 4–16 mg/L against isolates of *S. typhi*.¹¹ Rapid movement of azithromycin from blood into tissue results in significantly higher azithromycin concentrations in tissue than in plasma (up to 50–100 times the maximum observed concentration in plasma). The prolonged concentration of azithromycin in cells is advantageous in the treatment of experimental Salmonella spp. infection in mice, which is intracellular, and may explain the good results obtained with azithromycin in children and adults with typhoid fever in Chile and Egypt.¹²

Materials & Methods

This comparative study was carried out on children age belonged to 1–12 years presenting with symptoms, signs and laboratory investigations diagnostic of typhoid fever in IPD and OPD of Paediatric, Dhaka National Medical College Hospital, Dhaka, Bangladesh during the period from April 2013 to October 2013. The diagnosis of typhoid fever was based on fever for more than 7 days; positive Widal test and exclusion of other febrile illnesses were enrolled in this study. Typhoid fever associated with other disease and patient who were already receiving antibiotics were excluded from the study. Patients receiving Levofloxacin consider as group I and Patients receiving Azithromycin consider as group II by using lottery method. The results were compared statistically between two groups. The collected data were entered into the computer and analyzed by using SPSS (version 20.1) to assess the comparative effectiveness of Azithromycin and Levofloxacin in the treatment of childhood typhoid fever. The study was approved by the Institutional Ethical Committee.

Results

In group I, majority 21(35.0%) patients time of afebrile

after taking antibiotic was 6 days and in group-II 23(38.3%) patient’s time of afebrile after taking antibiotic was 4 days. The difference was not statistically significant ($p>0.05$) between two groups. (Table I)

Table-I: Distribution of the study patients by time of afebrile after taking antibiotic (n=120)

Time of afebrile after taking antibiotic	Group-I (n=60)		Group-II (n=60)		P-value
	n	%	n	%	
3 days	7	11.7	4	6.7	0.239 ^{ns}
4 days	14	23.3	23	38.3	
5 days	18	30.0	12	20.0	
6 days	21	35.0	21	35.0	

Ns=not significant

p-value reached from chi square test

Almost three fourth (73.3%) patients in group-I and 45(75.0%) in group-II patients had nausea. Vomiting was found in 8(13.3%) patients of group-I and 4(6.7%) patients of group-II. Diarrhoea was found in 2(3.3%) patients of group-I and 13(21.7%) patients of group-II. Abdominal discomfort was observed in 17(28.3%) patients of group-I and 13(21.7%) patients of group-II. Skin rash was 2(3.3%) patients in group-I and 4(6.7%) patients in group-II. The difference was not statistically significant ($p>0.05$) between two groups (Table-II)

Table-II: Distribution of the study patients by side effects after taking antibiotic (n=120)

Side effects	Group-I (n=60)		Group-II (n=60)		P-value
	n	%	n	%	
Nausea	44	73.3	45	75.0	0.834 ^{ns}
Vomiting	8	13.3	4	6.7	0.223 ^{ns}
Diarrhoea	2	3.3	5	8.3	0.219 ^{ns}
Abdominal discomfort	17	28.3	13	21.7	0.399 ^{ns}
Skin rash	2	3.3	4	6.7	0.339 ^{ns}

ns=not significant

p-value reached from chi square test

Almost two third, 39(65.0%) patients in group-I and 56(93.0%) in group-II patients were receiving treatment for 7 days. Duration of treatment was statistically significant ($p<0.05$) between two groups (Table-III).

Table-III: Distribution of the study patients by treatment duration (n=120)

Time of afebrile after taking antibiotic	Group-I (n=60*)		Group-II (n=60**)		P-value
	n	%	n	%	
10 Days	19	31.7	0	0.0	
7 Days	41	68.33	60	100	

Discussion

In this current study it was observed that time of afebrile after taking antibiotic 6 days in 35.0% patients in group-I and 4 days 38.3% in group-II. The difference was not statistically significant ($p>0.05$) between two groups. This finding is consistent to the finding of Frenk et al.¹³ who observed the mean afebrile period was 3.9 ± 1.0 days and 4.1 ± 1.1 days in case of Levofloxacin and Azithromycin respectively.¹³ Another study conducted in our country with azithromycin showed a mean afebrile period of 3.82 ± 1.49 days.¹⁴ Levofloxacin and Azithromycin are generally well tolerated. Side effects include nausea, vomiting, dyspepsia, abdominal pain, diarrhoea, headache, dizziness and asthenia; rarely tremor, anxiety, tachycardia, hypotension, hypoglycaemia, pneumonitis, rhabdomyolysis etc. Sheng¹⁵ mentioned in his study that Gastrointestinal symptoms (nausea, vomiting, diarrhea, abdominal pain etc.) observed 60.53%, respiratory symptoms (cough, sore throat, etc.) observed 31.58% and headache observed 26.32%. In our study we observed that nearly three fourth (73.3%) of the patients in group-I and 45(75.0%) in group-II patients had nausea. Vomiting was found 8(13.3%) and 4(6.7%) in group-I and group-II respectively. Diarrhoea was 2(3.3%) in group-I and 13(21.7%) in group-II. Abdominal discomfort was 17(28.3%) in group-I and 13(21.7%) in group-II. The difference was not statistically significant ($p>0.05$) between two groups.

Conclusion

Time of afebrile after taking antibiotic 3–6 days in both groups. Duration of treatment was prolonged in Levofloxacin group with compared to Azithromycin. Nausea and abdominal discomfort were the more common side effects in both groups. Diarrhoea and skin rash occurred in some cases in both groups. Both drugs are equally effective in the treatment of childhood typhoid fever. Considering duration of treatment Azithromycin is better than levofloxacin

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Conflict of Interest

Authors declare no conflict of Interest.

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Original Article

Prevalence of Hepatitis B infection among the Pregnant Women of Forcibly Displaced Myanmar Nationals in a Selected Rohingya Camp

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Abstract

Background: Hepatitis B is a viral infection that affects the liver and causes both acute and chronic diseases. It spreads through contact with the blood or other body fluids of an infected person. The best way to prevent hepatitis B is to get vaccinated. Treatment options for chronic hepatitis B include antiviral medications and liver transplantation. Hepatitis B virus can easily pass from a pregnant woman with hepatitis B to her baby at birth. In the Forcibly Displaced Myanmar National's camp, Hepatitis B is affecting more and more mothers and children day by day at an alarming rate.

Objective: This study aimed to find out the prevalence of Hepatitis B among the pregnant women of Forcibly Displaced Myanmar National people.

Methodology: This was a cross-sectional study conducted on pregnant women who have visited OPD of Maternal and Child Health Care Centre by Human Aid Bangladesh in Balukhali camp 9, Ukhiya, Cox's Bazar. A total of 465 subjects were included in the study. The respondents were interviewed and information was recorded in the questionnaire. The laboratory investigation was done and collected from the patient on spot from the facility. Ethical issues were maintained and the results were obtained to complete the data sheet analyzed by SPSS, Z test, t-test, Chi-Square test.

Results: A total of 465 respondents were interviewed and tested for hepatitis B infection by HbsAg strip test by ICT method. In the study 53(11.40%) of the respondents were found positive for hepatitis B infection. Most of the respondents were illiterate 153(32.90%). The maximum respondents were in the age range of 16-20 years(61.94%). Very few respondents were known for hepatitis B infection. 24(5.1%) . Among the respondents, 21(4.52%) had a positive partner or family member. Most of the respondents 368(79.14)were not vaccinated.

Conclusion: The prevalence of Hepatitis B Infection among Pregnant women of Forcibly Displaced Myanmar National is quite high. Lack of knowledge, poverty, lack of vaccination, and violence contributed behind the high rate of Hepatitis B Infection among them.

Key words: Hepatitis B, Pregnant, Myanmar, Rohingya.

Introduction

Hepatitis B affects approximately 296 million people, including over 6 million children under the age of 5. Hepatitis B contributes to an estimated 820,000 deaths every year. 25% of chronic hepatitis B infections progress to liver cancer.¹ The prevalence of HBV

infection in the general population of Bangladesh was 4% (95% CI 3.0–5.1), which is considered as a low intermediate prevalence rate and indicated a higher prevalence rate in Bangladesh than the global prevalence rate (3.5%).² Among the pregnant women the rate is 0.4%.³

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On 25 August 2017, the world witnessed a massive humanitarian crisis unfold in Rakhine State, Myanmar. Hundreds of thousands of terrorised Rohingya fled from Rakhine as they came under violent attack and villages were razed. This triggered an unprecedented exodus

across the border to neighbouring Bangladesh. Within a few weeks, half a million people entered Bangladesh seeking safety and shelter. There are now 860,000 Rohingya living in refugee camps in Cox's Bazar, over half of whom are children.⁴

The Rohingya refugee crisis has made Rohingya women more vulnerable. Currently, Rohingya women make up approximately 67% of the refugee population and are victims of sexual violence and exploitation. Of the 335,670 female refugees in the population, 70,000 (20%) are estimated to be pregnant or new mothers. This pregnancy rate is much higher than that of their native Myanmar where only 4.7% of women are pregnant or new mothers. Many experts believe that the increase in pregnancy rate is a result of illiteracy, child marriage, multiple marriage and sexual violence against displaced Rohingya women.⁵

Hepatitis B is a growing infection among those pregnant women. Which is a major health risk for the entire FDMN community specially the children. Hepatitis B can be easily passed from mother to children during birth. This can happen during a vaginal delivery or a C-section.⁶

Hepatitis B infection can easily be diagnosed by HbsAg strip test. Hepatitis B surface antigen (HBsAg) is a distinctive serological marker of acute or chronic hepatitis B infection. HBsAg is the first antigen to appear following infection with HBV and is generally detected 1-10 weeks after the onset of clinical symptoms. HBsAg assays are routinely used to diagnose suspected HBV infection and monitor the status of infected individuals to determine whether the infection has resolved or the patient has become a chronic carrier of the virus. In patients that recover from HBV infection, HBsAg is undetectable 3-5 months after the onset of infection. In patients with chronic HBV infection, HBsAg remains detectable for life. Prenatal HBsAg screening has been recommended so that newborns from HBV carrier mothers may obtain prophylactic treatment. Persistence of HBsAg, without anti-HBs, with combinations of positivity of anti-HBc, HBeAg, or anti-HBe indicates infectivity and need for investigation for chronic persistent or chronic aggressive hepatitis.⁶

A recent study on the prevalence of Hepatitis B and C virus among the Rohingya refugees in Cox's Bazar has found that more than one in five Rohingya adults have hepatitis C virus (HCV) infection. The study was conducted by the National Liver Foundation of Bangladesh (NLFB). According to the study, hepatitis C was found in 26 percent females and 18 percent males, while eight percent of pregnant female refugees were

found to be HCV positive. It also mentioned that HCV is 18 times higher among the Rohingya refugees than Bangladeshis. NLFB conducted two studies on the prevalence of hepatitis B (HBV) and hepatitis C (HCV) among the Rohingya refugees. Apart from hepatitis C virus, hepatitis B was found in nine percent male, five percent female, and three percent pregnant female refugees. Among all age groups, HCV was found in 11 percent of refugees, while the percentage of HBV was four percent. HBV affected pregnant women unknowingly transmit the virus to their newborns, the most common mode of HBV transmission.⁷ There is an immediate need for well-organised studies to assess the causes and risk for viral transmission and the capacity of health systems in the camps to deliver preventive care and treatment services.

Methodology

The study was a descriptive type of cross sectional study. Study place was Balukhali Rohingya camp, Camp number 9, Ukhiya, Cox's Bazar. The duration of the study was 12 months, from 1st January 2022 to 31st December 2022. Study population were Pregnant Rohingya refugee women of reproductive age in Camp 9. Number of respondents were 465. Pregnant women coming to the health centre from FDMN camp no 9 were selected according to inclusion and exclusion criteria. In each case, information about the patient was obtained after getting the consent of subject. A well-designed questionnaire was developed and used for the study. The following informations about socio-economic condition and the information about hepatitis B were taken and included in questionnaire form. Then HbAg strip test was done by ICT method and result was included in form and advices were given to the subject according to the result. Data were analyzed by using the statistical software namely SPSS (Statistical Package for Social Sciences)-version 29 and then data were presented using a frequency table, graph and chart.

Results

Table-I: Distribution of the respondent by occupation and hepatitis B Infection status.(n=465)

Occupation	HbsAg status		Total No(%)	P-value
	Positive No(%)	Negative No(%)		
Housewife	49(10.54)	354(76.13)	403(86.67)	0.03
Worker	2(0.43)	19(4.10)	21(4.53)	
Shopkeeper	0(0.00)	5(1.08)	5(1.08)	
Tailor	1(0.22)	7(1.51)	8(1.73)	
Day labour	0(0.00)	2(0.43)	2(0.43)	
Hawkers	0(0.00)	6(1.29)	6(1.29)	
Others	1(0.22)	3(0.65)	4(0.87)	

Table-I: shows that most of the respondents were housewife 403(86.67%). And then 21(4.53%) were workers, 8(1.73%) were tailors, 6(1.29%) were hawkers, 5(1.08%) were shopkeepers, 2(0.43%) were day labor and 4 (0.87%) were in other occupation. Among all of them HbsAg positive was 53. Among which 49(10.54%) were housewife , 2(0.43%) were worker, 1(0.22%) were tailor and another 1(0.22%) were in other profession. The difference was statistically significant(p<.05).

Table-II: Distribution of the respondents by age and HbsAg status. (n=465)

Age in years	HbsAg status		Total No(%)	P-value
	Positive No(%)	Negative No(%)		
11-15	7(1.51)	46(9.89)	53(11.78)	0.1
16-20	24(5.16)	264(56.77)	288(61.94)	
21-25	13(2.80)	56(12.04)	69(14.84)	
26-30	6(1.29)	36(7.74)	42(9.03)	
31-35	3(0.65)	8(1.72)	11(2.37)	
36-40	0(0.00)	2(0.43)	2(0.43)	

Table-II shows the distribution of respondents by age and HbsAg test status. It shows that most of the respondents were at the age of 16-20 years (61.94%). Total number of positive HbsAg cases were also in the age range of 16-20 years of age, 24(5.16%) of total respondents. Next positive cases is in 21-25 years of age range 13(2.80%). Next is 11-15 (1.51%), 26-30(1.29%) and 31-35(0.65%). The difference was statistically insignificant(p>0.5).

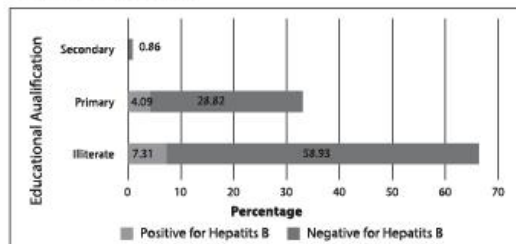


Figure-I: Distribution of Hepatitis B infection status in relation with educational qualification of the subjects. (n=465)

Figure-I: shows that most of the respondents were illiterate, around 66.24%. Then 32.90% of respondents went to primary school and only 0.86% of the respondents went to high school. HbsAg positive status was also high among the illiterate respondent, which was about 7.31% of the total respondents. Among upto primary going respondents it was 4.09% and among

upto secondary school going respondents, no respondents were found positive. The difference was statistically significant(p<.05).

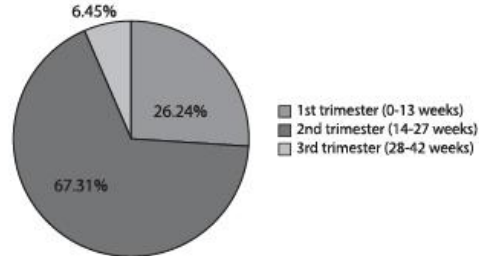


Figure-II: Distribution of respondents according to their pregnancy trimester. n=465

Figure-II shows that most of the respondents were in second trimester, about 67.31% and 26.24% of respondents were in the first trimester. In third trimester were 6.45% of respondents.

Table-III: Distribution of respondents by HbsAg test status and positive hepatitis B family member. n(465)

Hepatitis B Positive partner or Family member	HbsAg status		Total No(%)	P-value
	Positive No(%)	Negative No(%)		
Positive	19(4.09)	2(0.43)	21(4.52)	0.01
Negative	34(7.31)	410(88.17)	444(95.48)	

Table-III shows that 21(4.52%) of respondents had positive hepatitis B partners or family members. Among them, 19(4.09%) respondents were positive for HbsAg test. Another 444(95.48%) had a negative hepatitis B partner. Most of them had actually not been tested before. Among those 444 respondents, 34(7.31%) were positive. So having a positive family member or partner make 90.48% cases positive. The difference was statistically significant(p<.05)

Table-IV: Distribution of the respondents by Hepatitis B Vaccination status and HbsAg status. (n=465)

Hepatitis B Vaccination status	HbsAg status		Total No(%)	P-value
	Positive No(%)	Negative No(%)		
Vaccinated	0(0.00)	43(9.25)	43(9.25)	0.01
Non Vaccinated	52(11.18)	316(67.96)	368(79.14)	
Partially vaccinated	1(0.22)	53(11.40)	54(11.62)	

Table-IV shows that 368(79.14%) were non-vaccinated and 54(11.62%) were partially vaccinated. Only 43(9.25%) were fully vaccinated against hepatitis B, and all of them were negative in HbsAg test. The resources for the vaccination FDMN people is very low. So the

vaccination percentage is very less. The difference was statistically significant as $p < 0.5$.

Discussion

It has been observed that among the FDMN pregnant women, the rate of hepatitis B is very high. About 53(11.40%) from 465 respondents were positive for the HbsAg ICT strip test. The rate is very high than the neighboring countries and Bangladesh. In Bangladesh, the rate is 4% for the general population and 0.4% for the pregnant women.⁸ For Myanmar nationals the rate is 3.8% for the general population and for pregnant women it is 3.2%.⁹

Among the respondents most of the subjects were in the age range of 16-20(61.94%) followed by 21-25(14.84%), 11-15(11.78%), 26-30(9.03%), 32-35(2.37%) and 36-40(0.43%). It was evident that in the FDMN community becoming pregnant for a female in a very early age is very common. The total number of positive HbsAg cases was also in the age range of 16-20 years of age, which is about 5.16% of total respondents. The next positive cases among 21-25 years of age range, about 2.80% of total respondents. Next is 11-15 (1.51%), 26-30(1.29%), and 31-35(0.65%). Early marriage and early pregnancy rate is very high among the FDMN girls.¹⁰ It was shown in the study that around 66.24% respondents were illiterate. Around 32.90% of respondents went to primary school and only 0.86% of the respondents went to high school. HbsAg positive status were also high among the illiterate respondent, which is about 7.31% of the total respondents. Among upto primary going it was 4.09% and among upto secondary school going respondents no respondents were found positive. The illiteracy rate in FDMN people especially among girls is around 75% and for Bangladeshi host population it is around 40%.¹¹ The study shows that most of the respondents were housewives 403(86.67%). Then 21(4.53%) were workers, 8(1.73%) were tailor, 6(1.29%) were hawkers, 5(1.08%) were shopkeepers, 2(0.43%) were day labour and 4 (0.87%) were in other occupation. Among all of them, HbsAg positive was 53. Among those 49(10.54%) were housewife, 2(0.43%) were worker, 1(0.22%) were tailor and another 1(0.22%) were in other profession. For Bangladeshi the occupation for the pregnant female is mostly housewives but the rate is less than the FDMN mothers.¹² Most of the respondents have 2 children about 39.78%. Then 33.12% of respondents have 1 child 21.72% have 3, 3.44% have 4 and 1.94% have 5 children. Hepatitis B is positive among those who have 2 or 3

children, which is 3.87% of total respondents. 2.80% of total respondents were positive with one child, with 4 it was 0.66% and with 5 children it was 0.22% of total respondents. In Bangladesh fertility rate is also mostly 2 according to a 2020 study.¹³ The respondent's family income was around 5001 BDT to 10000 BDT 306(67.81%). Then (0-5000) BDT income were in 124(26.67%) family and 10001-15000 BDT income were in 32(6.88%) family. Lastly 15001-20000 BDT income were in 3(0.65%) respondents family. FDMN people actually have a very little income source. They mainly depend on relief by different international and local organizations. Among the 5001-10000 BDT income family HbsAg positive rate were more, around 35(7.53%) of total respondents. Then 14(3.01%) respondents were positive for HbsAg and were in 0-5000 BDT income family and 4(0.86%) were in 10001-15000 BDT range. Among Bangladeshi average family income is 26000 in 2023 which is quite more than FDMN people.¹⁴ Among the respondents, 24(5.16%) were previously known cases of hepatitis B. They all became positive on HbsAg test. Among the others 441(94.84%) respondents, 29(6.24%) respondents were positive. So it can be told that most of the cases were unknown before. Most of the respondents were not hospitalized before 414(89.03%), only 51(10.96%) were hospitalized before. In the study among the participants hospitalized 15(3.22%) were positive for hepatitis B, and 38(9.18%) of non hospitalized person were positive. Percentage of Hepatitis B infection among hospitalized people is more than the non-hospitalized. The study shows that among the respondents 36(7.74%) had major operations before. Among them 8 were positive for hepatitis, which is 1.72% of total respondents. In the study 429(92.26%) respondents had not any major operation before, among them 45(9.68%) were positive for HbsAg. So it can be said that those who had an operation before have more positive rate of hepatitis B than who haven't. Globally only 1.4 per 10000 cases become positive for hepatitis B after operation.¹⁵ Among the respondents most of the respondents haven't taken any blood or blood product, which is 423(90.97%). Among them 7(1.51%) were positive for hepatitis B. It is 10.40% of respondents who haven't taken any blood product. And 42(9.04%) respondents took a blood or blood product before. Among them 7(1.51% of total respondents) were positive, which is 16.67% of those who took blood or blood product before. The global rate of hepatitis B after getting a blood transfusion is 0.29% only.¹⁶

Among the respondents 21(4.52%) have positive hepatitis B partner or family members. Among them 19 respondents were positive for HbsAg test, which is 4.09% of total population and 90.48% of those who have positive family member or partner. Simultaneously 444(95.48%) had negative hepatitis B partner. Most of them actually not been tested before. Among those 444 respondents, 34(7.31% of total) were positive. Which is 7.66% of those respondents who had not any positive family member. So having positive family member or partner make 90.48% of cases positive. The global rate for women affected by hepatitis B exposure by family member or partner is 32.7%.¹⁷ The study shows that 368(79.14%) were non vaccinated and 54(11.62%) were partially vaccinated. And 43(9.25%) were fully vaccinated against hepatitis B , And all of them were negative in HbsAg test. The resources for vaccination FDMN people is very low. So vaccination percentage is very less compare to Bangladesh. The Bangladeshi rate is 66.63%.¹⁸ In Bangladesh, Hepatitis B is 4.00%¹⁹ and among the pregnant mother, it is 0.4% and in Myanmar it is 3.8% and 1.3% accordingly.²⁰ Compared to Bangladesh and Myanmar Hepatitis B prevalence 11.40% among the FDMN pregnant women is very alarming and needs immediate action.

Conclusion

Data from the present study shows that the prevalence of Hepatitis B infection among FDMN pregnant women is very high. Early marriage, unsafe blood transfusion, having a partner or family member hepatitis B positive, illiteracy, poor economic condition, and poor vaccination status are the main reason behind this high prevalence. This high prevalence of Hepatitis B among the pregnant mothers of FDMN community should be taken as an utmost public health concern for both FDMN community and host population. Necessary steps should be taken to resolve the situation. Vaccination against Hepatitis B should be given priority for FDMN community. Health education and education about hepatitis and other communicable diseases should be given to FDMN people. Further study with a large number of subjects and more time should be conducted. The study should be conducted all the areas of Rohingya camps to find out the whole population status properly.

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Original Article

Status of Serum FT₃ & TSH in Patients with Heart Failure

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Abstract

Background: Heart failure is undoubtedly one of the most challenging health problems. In critical illness, thyroid hormone dysregulation occurs in heart failure patients without apparent thyroid disease, ultimately decrease in triiodothyronine level which accelerates poor prognosis of the patients.

Objective: To determine the status of serum FT₃ & TSH in patients with heart failure.

Methods: This was a cross-sectional analytical study, carried out in the Department of Biochemistry, Sir Salimullah Medical College, Dhaka from March 2022 to February 2023. A total number of 110 clinically diagnosed heart failure subjects who were admitted within 6 hours at Cardiology department of SSMC & MH and NICVD, according to inclusion and exclusion criteria were included in this study. Serum FT₃ and serum TSH were determined.

Results: Heart failure prevalence increases from 61-70 years and almost two third of patients were male. Serum FT₃ level was significantly lower among heart failure patients but serum TSH was normal in all study subjects.

Conclusion: Low FT₃ is associated with heart failure and contributes to the worsening or exacerbation of heart failure.

Key words: Heart failure patients, serum FT₃, serum TSH.

Introduction

Heart failure is the most relevant issue in public health with ageing populations.¹ It occurs when the heart cannot pump as well as it should. This may happen when heart muscles become weak or stiff.²

An estimated 64.3 million people are living with heart failure worldwide.³ In united states, heart failure affects about 6.2 million adults, with an incidence approaching 21 per 1000 population after 65 years. Projections estimate that by 2030 more than 8 million people will be affected by heart failure.⁴ In developing countries, the prevalence of known heart failure is estimated at 1% to 2% and the rate is higher among people who lead an urban lifestyle.³

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The thyroid gland synthesizes and secretes thyroid hormone that is regulated by hypothalamus-pituitary-thyroid axis. This gland primarily synthesizes and secretes thyroxine that is approximately 85% of thyroid hormone and a smaller amount of triiodothyronine. Biologically active hormone triiodothyronine (T₃) derives from peripheral conversion of thyroxine (T₄) by 5'-monodeiodination.⁵ T₄ must be deiodinated to T₃ because T₃ has higher affinity to the thyroid hormone nuclear receptor. Thyroid hormone is essential for normal growth and development as well as regulate metabolism and body temperature.

The cardiovascular system is one of the most important targets on which thyroid hormone acts.⁶ Clinical and experimental evidence are showing that triiodothyronine (T₃) plays major role in modulating myocardial contractility and hemodynamics.⁵ Several studies are demonstrating that thyroid hormone metabolism is altered in heart failure patients without

thyroid disease, characterized by low circulating T3 level with normal thyroxine and thyroid stimulating hormone. Which occur due to reduced enzyme activity of 5'-monodeiodinase D1 and D2 that reduced peripheral conversion from T4 to T3 and stimulate expression of deiodinase enzyme D3 that convert T3 to 3,3'-diiodothyronine (T2) and prevent activation of T4 by converting it into reverse triiodothyronine (rT3). 7-9 The extent of the changes is related to the duration of the disease, as well as the severity of the illness. So, the magnitude of this decrease in T3 is related to the worse prognosis in heart failure patients.

Considering these facts, the current study has planned to evaluate the status of serum FT3 in patients with heart failure. It may give an idea about the prognosis of the patient population. So, this study may be valuable predictors of long-term outcome of heart failure patients and will help take proper measures that may reduce hospital stay, morbidity and mortality with improvement in the quality of life of heart failure patients.

Materials & Methods

This was a cross-sectional analytical study carried out in the Department of Biochemistry of Sir Salimullah Medical College, from March 2022 to February 2023. A total of 110 clinically diagnosed heart failure subjects who were admitted within 6 hours in the department of cardiology in SSMC & MH and NICVD were included in this study. Patient with previously diagnosed case of thyroid disorders or treated with thyroid medication, subject with history of taking dopamine or steroids, renal impairment & dialysis, liver cirrhosis, cancer, severe infection (sepsis), pulmonary hypertension or other lung problems with patients age >74 years were excluded. Purposive type of sampling technique was used. Before starting the data collection, all patients were described about the study objective and details procedure of the study. They were clearly informed that this participation is voluntary and had the freedom to withdraw themselves from the study at any stage. Written informed consent was taken from all respondents. On admission patients' medical history and data from physical examination were recorded on a standard questionnaire by the investigator. Blood samples were collected & analysis of FT3, TSH and NT-proBNP were done. After estimation of NT-proBNP grouping of the study subjects were done. Group-I included heart failure subjects with NT-proBNP > 2000 pg/ml and group-II included heart failure subjects with

NT-proBNP 125-2000 pg/ml. FT3 levels was observed between these two groups. At the end of data collection, all the data were rechecked, coded, and entered in standard statistical software, database using SPSS software (Version-22). The Chi square test was done to observe age, gender distribution, status of serum FT3 between the study subjects. An unpaired t test was performed to show any significant difference between the mean values of serum TSH between the study groups. The p-value of <0.05 was considered statistically significant.

Results

Table-I: Distribution of the study patients according to age (N=110).

Age (years)	Group-I (n=55)		Group-II (n=55)		P-value
	n	%	n	%	
≤40	2	3.6	2	3.6	0.327 ^{ns}
41-50	4	7.3	4	7.3	
51-60	11	20.0	13	23.6	
61-70	15	27.3	23	41.8	
>70	23	41.8	13	23.6	

Results are expressed as frequency, percentage. pvalue determined by Chi-square test, ns= not significant.

Group-I; Heart failure patients with NT-proBNP > 2000 pg/ml.

Group-II; Heart failure patients with NT-proBNP 125-2000pg/ml.

The Chi-square test was done to measure the level of significance. It was observed that almost half (41.8%) of patients belonged to age >70 years in group-I and 41.8% of patients belongs to age 61-70 years in group-II. The difference was not statistically significant (p>0.05) between two groups.

Table-II: Gender distribution of the study subjects (n=110)

Gender	Group-I (n=55)		Group-II (n=55)		P-value
	n	%	n	%	
Male	33	60.0	40	72.7	0.157 ^{ns}
Female	22	40.0	15	27.3	

Results are expressed as frequency and percentage. P-value determined by Chi-square test, ns= not significant.

The Chi-square test indicates the gender distribution of study subjects among groups. It was observed that almost two third (60.0%) of patients were male in group-I and 72.7% in group-II. The difference was not statistically significant (p>0.05) between two groups.

Table-III: Status of serum TSH among the study groups (n=110).

Serum TSH (mIU/L) Normal (0.55-4.78)	Group-I (n=55)		Group-II (n=55)		P-value
	Mean±SD	Mean±SD	Mean±SD	Mean±SD	
Mean±SD	3.07±1.0	3.39±0.62			0.046 ^s
Range (Min-Max)	1.04-4.72	1.84-4.32			

Results are expressed as Mean±SD. p-value was determined by Unpaired-t test, s= significant.

An unpaired-t test was done to measure the mean serum TSH was 3.07±1.0 mIU/L in group-I and 3.39±0.62 mIU/L in group-II. All (100.0%) of patients had belonged to normal (0.55-4.78 mIU/L) serum TSH level in both groups. But the difference was statistically significant (p<0.05) between two groups.

Table-IV: Comparison of Serum FT₃ between study subjects (n=110).

Serum FT ₃ (pg/ml)	Group-I (n=55)		Group-II (n=55)		P-value
	n	%	n	%	
Low (<2.3)	19	34.5	9	16.4	0.028 ^s
Normal (2.3-4.1)	36	65.5	46	83.6	

Results are expressed as frequency and percentage. P-value determined by Chi-square test, ns= not significant.

The Chi-square test was done to measure the level of significance. It was observed that more than one third (34.5%) of patients had low serum FT₃ (<2.3 pg/ml) in group-I and 16.4% in group-II. The difference was statistically significant (p<0.05) between two groups.

Discussion

This cross-sectional analytical study was carried out on heart failure patients without prior thyroid dysfunction. A total of 110 subjects were included based on predefined enrollment criteria. Among them 55 were heart failure patients with NT-proBNP > 2000 pg/ml and 55 were HF patients with NT-proBNP 125-2000 pg/ml. This study was conducted in the department of Biochemistry, Sir Salimullah Medical college, to assess the condition of FT₃ in patients with heart failure.

In the present study, nearly half (41.8%) of the participants belong to age > 70 years in group 1 and half of the subjects were belongs to 61-70 years in group-II. It was evident from the current study that heart failure prevalence increases from middle to old age.¹⁰⁻¹²

In this study, almost two third (60.0%) of patients were male in group-I and 72.7% in group-II.^{5,13} Probably female in our society is neglected to any sorts of health

issue and thereby admission in the hospitals. That's why male was predominant.¹³

In accordance with the present study the mean value of serum TSH was 3.07±1.0 in group 1 and 3.39±0.62 mIU/L in group 2. It was observed that all the patients had belonged to normal TSH (0.55-4.78) level in both groups.¹⁴⁻¹⁶ Normal TSH levels were common in patients with non-thyroidal illnesses.

The current study showed that low serum free triiodothyronine (<2.3 pg/ml) was observed more than one third (34.5%) of patients in NT-proBNP > 2000 pg/ml than 16.4% in patients with NT-proBNP 125-2000 pg/ml.^{5,8,9,17-19} Low thyroid hormone concentration, mainly low serum FT₃ concentration, is a common finding in patients with non-thyroidal illnesses, including cardiac diseases like heart failure. The pathophysiology behind this in human peripheral thyroid hormone metabolism is regulated by three iodothyronine deiodinases (D1, D2 and D3). D3 decreases the serum T₃ level.⁵ Low triiodothyronine state may produce a hypothyroid-like-syndrome that contributes to the worsening or exacerbation of the intrinsic cardiac diseases.

Conclusion

In conclusion, low FT₃ appears to be a powerful independent prognostic marker. Although the present study may be used for risk stratification of heart failure patients, additional study is needed to determine the correlation, prognosis and specific treatment that should be prioritized in high-risk heart failure patients.

Limitation of the study

The study population was selected from a few selected hospitals in Dhaka city with limited time span, so the results of the study may not reflect the exact picture of the country. In this study only the status of FT₃ was observed. Due to time limitation correlation, prognosis and treatment response with thyroid hormone supplementation was not observed.

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Original Article

Management of Foreign Bodies in the Ear: A Cross-Sectional Study in Dhaka National Medical Institute Hospital

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Abstract

Foreign bodies in the ear are relatively common in emergency medicine. However, attempts at removal made outside the health care setting by untrained persons can result in complications of varying degree. The current study was a descriptive type of cross-sectional study that was conducted for 3 years from February 2020 to January 2023. The study included 123 cases in both sexes. The technique used in the study was convenient type of non-probability sampling. Among the respondents 80 were males and 43 were females. The incidence of an aural foreign body was directly proportional to age group (0-5) years are higher (43.1%) than other. The most common foreign bodies were stone (22.8%), paper (16.3%), beads (14.6%), eraser (12.2%) and cotton buds (11.4%). Out of 123 patients 93 patients went to the otolaryngologist for foreign body insertion. But other 30 patients went to non-otolaryngologist and all of them were suffered from different type of complication. Such as 17 cases of canal abrasion, laceration, and/or bleeding, 8 cases of otitis externa, 6 cases of tympanic membrane perforation, 5 cases of impaired hearing, 3 cases of chronic suppurative otitis media, and 2 cases of middle ear involvement. Of the 93 patients who were seen by an otolaryngologist initially, only 6 (6.5%) developed a complication: 4 cases of canal abrasion, laceration, and/or bleeding and 2 cases of otitis externa. The difference in overall complication rates between patients treated by otolaryngologists and non-otolaryngologists was statistically significant ($p < 0.001$). We conclude that attempts at removal of foreign body by otolaryngologists can reduce the incidence of complications.

Keywords: Foreign Body, Canal abrasion, Laceration, Tympanic membrane.

Introduction

Insertion of a foreign body into the ear is a common occurrence worldwide, and it is seen most often, but not exclusively, in children.¹ Mentally ill adults are also known to insert a foreign body in their ears. A wide variety of objects are inserted into the ears;² the specific types of object generally vary according to the patient's age. Commonly reported substances include stones, paper, beads, pencil erasers, cotton buds (e.g., Q-tips), insects, seeds, matchsticks, and many others.³

The earliest presentation of an aural foreign body generally occurs around the age of 9 months, when

children develop a pincer grip and become able to manipulate small objects. When a caregiver suspects that a child has sustained an aural foreign-body impaction, the caregiver should not scold or threaten the child because the child may deny it to avoid punishment. Obviously, denial can result in a delay in discovery and increase the risk of complications. In adults, impaction can result from a desire to clean or scratch the ear canal.⁴

Most cases of a foreign body in the ear are not serious. The urgency of any particular situation depends primarily on the nature of the substance and its precise location. The keys to successful removal are adequate vision, appropriate equipment, a cooperative patient, and a skilled physician.^{5,6}

We conducted a study to review the clinical spectrum and profile of foreign bodies in the ear as seen in our

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medical facility in southwestern Nigeria.² Our focus was on the complications associated with a delay in presentation and the consequences of attempted removal by untrained persons.

Materials and Methods

This cross-sectional study was carried out in the Department of ENT of the Dhaka National Medical Institute Hospital from February 2020 to January 2023. Among the patients in this department during the above mentioned period 123 cases were selected conveniently for this study.

Table-I: Age and sex Distribution

Age (yr)	Male	Female	Total
	n (%)	n (%)	n (%)
0 to 5	44(35.8)	9 (7.3)	5. (43.1)
6 to 10	14 (11.4)	8 (6.5)	22 (17.9)
11 to 15	11 (8.9)	4 (3.3)	15 (12.2)
16 to 20	3 (2.4)	5 (4.1)	8 (6.5)
21 to 25	4 (3.3)	2 (1.6)	6 (4.96)
26 to 30	0 (0.0)	4 (3.3)	4 (3.3)
≥ 31	4 (3.3)	11 (8.9)	15 (12.2)
Total	80 (65.0)	43 (35.0)	123 (100)

* The difference between the proportion of males and females was statistically significant

Our hospital is a tertiary care institution located in a suburban setting in southwest Nigeria. Records were obtained from the OPD of ENT department and OT.

In addition to demographic data, we compiled information on the type of foreign body, the affected side, the interval between onset and presentation, the presenting signs and symptoms, treatment, any previous attempts at removal by a non-otolaryngologist, and complications.

We identified 136 cases in all of these, 13 were excluded because of incomplete data, leaving us with 123 evaluable cases. For analysis, patients were assigned to various age groups broken into 5-year increments up through age 30; all those older than 30 years were classified as a single, separate group. Data were tabulated and statistically analyzed with the Statistical Package for the Social Sciences software (SPSS v. 15; Chicago). A p value of less than 0.05 was considered statistically significant.

Results

Demographic Data

The study population was made up of 80 males and 43 females, aged 2 to 67 years (mean: 13.2). The male-to-female

ratio was 1.9:1. A total of 90 patients (73.2%) were in the pediatric age group (45 yr), and 33 patients (26.8%) were considered adults (16 yr); the difference between the proportion of younger and older patients was statistically significant (p < 0.001). The incidence of an aural foreign body was directly proportional to age group; the younger the patient, the higher the incidence. (Table-I).

The most common foreign bodies were stones, which were found in 28 patients (22.8%). Other common substances were paper, beads, pencil erasers, and cotton buds. All the cases of cotton bud insertion occurred in adults. Eight patients had an insect in their ear; 6 believed that the insect had crawled into their ear while they were sleeping, and 2 said that the insect had flown into their ear while they were walking down the street. The right ear was affected more than the left (57.7 vs. 42.3%) (Table-II).

Table-II: Type of Foreign Body and Affected Side

Type	Right ear	Left ear	Total
	n (%)	n (%)	n (%)
Stone	12 (9.8)	16 (13.0)	28 (22.8)
Paper	13 (10.6)	7 (5.7)	20 (16.3)
Beads	11 (8.9)	7 (5.7)	18 (14.6)
Eraser	8 (6.5)	7 (5.7)	15 (12.2)
Cotton buds	8 (6.5)	6 (4.9)	14 (11.4)
Insects	6 (4.9)	2 (1.6)	8 (6.5)
Maize/bean seed	4 (3.3)	3 (2.4)	7 (5.7)
Matchstick	6 (4.9)	0 (0.0)	6 (4.9)
Wristwatch battery	2 (1.6)	3 (2.4)	5 (4.1)
Foam piece	1 (0.8)	1 (0.8)	2 (1.6)
Total	71 (57.5)	52 (42.3)	123 (100)

Table-III: Presenting Signs and Symptoms

Presentation	n* (%)
Insertion of foreign body	55 (44.7)
Otalgia	38 (30.9)
Otorrhea	17 (13.8)
Bleeding from ear canal	10 (8.1%)
Tinnitus	8 (6.5)
Blockage/impaired hearing	6 (4.9)
Mass in the ear canal	1 (0.8)

* Some patients presented with more than one sign or symptom.

Interval between Onset and Presentation

The time lag between insertion and presentation to our hospital varied greatly. A total of 40 patients (32.5%)

presented within 12 hours, 29 (23.6%) between 12 and 24 hours, 35 (28.5%)

between 1 day and 1 week, 7 (5.7%) between 1 week and 1 month. 3 (2.4%) between 1 and 3 months, and 1 (0.8%) presented after 8 years. Eight patients (6.5%) were not sure when they had acquired their foreign body.

Presenting Signs and Symptoms

In addition to a primary complaint of an obvious object in the ear. 38 patients (30.9%) presented with otalgia, 17 (13.8%) with otorrhea, and 10 (8.1%) with bleeding from the external auditory canal (Table-III).

Treatment

All of the foreign bodies were removed by an otolaryngologist either in the OPD or in the operating theater, depending on the circumstances of each case. In the clinic, 94 patients (76.4%) had the foreign body removed by instrumentation under direct vision, 10 (8.1%) by ear syringing, and 4 (3.3%) with a combination of both, all without the need for general anesthesia. The remaining 15 patients did require light general anesthesia and were treated in the operating theater-10 (8.1%) because they had been frightened by or had experienced considerable trauma during previous attempts at removal by a non-otolaryngologist, and 5 (4.1%) because the foreign body was deeply impacted (Table-IV).

Table-IV: Use of Anesthesia

Anesthesia use	n (%)
Anesthesia not needed for treatment: Instrumentation under direct vision	97 (76.4)
Syringing	10 (8.1)
Both	4 (3.3)
Light general anesthesia needed: Uncooperative patient or ear trauma	10 (8.1)
Deeply impacted foreign body	5 (4.1)
Total	123 (100)

Previous Attempts at Removal and Complications

Prior to presentation, 30 patients (24.4%) had undergone various attempts at removal of the foreign body by a parent, neighbor, or general physician. Of this group, 23 patients experienced a total of 41 complications. The most common was canal abrasion, laceration, and/or bleeding, which was seen in 17 patients; others were otitis externa in 8 patients, tympanic membrane perforation in 6, impaired hearing

in 5, chronic suppurative otitis media in 3, and middle ear involvement in 2. By contrast, only 6 complications (6.5%) occurred in the 93 patients initially treated by an otolaryngologist: canal abrasion, laceration, and/or bleeding in 4 patients and otitis externa in 2. The difference in overall complication rates between patients treated by otolaryngologists and non-otolaryngologists was statistically significant (p < 0.001).

Discussion

The vast majority of foreign bodies that become impacted in the ear are placed there voluntarily, usually by children. The reasons are many; children place things in their ears because they are bored or curious, because they wish to imitate what adults do, and simply because the objects are at hand.⁷ Most of the patients in our study (73.2%) were classified as pediatric (15yr of age); the largest of the groups categorized in 5-year increments were those aged 5 years and younger (43.1%). Other studies of aural foreign bodies have shown that 38.1 to 64.2% occurred in children aged 0 through 5 years.

Some 26.8% of the patients in our study were classified as adults (16 yr). While boys were affected more than girls in our pediatric group, women were affected more than men in our adult group. Women were more likely than men to use cotton buds to clean their ears. The tips of poorly made buds can become easily detached from the stem. Routine ear cleaning is often done by women after they have had a bath. The types of aural foreign bodies found in our study are similar to what has been reported in other centers. Our findings were unusual in one respect, however; the most common foreign bodies in our study were stones. This might be attributable to the fact that children in Nigeria have more access to stones and often play with them, especially during school recess periods.⁸

Wristwatch battery impaction was documented in 5 of our cases. The hazard posed by these batteries is serious, especially if they remain in the ear for a prolonged time. Many of these batteries contain alkaline substances that can cause liquefactive necrosis of the canal wall and surrounding tissues if not removed promptly. Also, adults should be advised that watch batteries must be properly disposed of so that children do not gain access to them.

Eight of our patients had a dead insect removed from their ear. Some of them had already applied palm oil, olive oil, liquid paraffin, or alcoholic spirits to kill the insect.

In our study, the right ear was more often affected than the left (57.7 vs. 42.3%). This ratio is similar to those reported in other studies.^{9,10} The higher proportion of foreign bodies in the right ear can be explained by the fact that most of the foreign bodies were inserted by patients themselves, and most of these patients were right-handed.

The interval from onset to presentation varied from a few hours to 8 years. Some 40 patients (32.5%) presented to the hospital within 12 hours of onset, and 69 patients (56.1%) did so within 24 hours. The patient who was not treated for 8 years was in nursery school when he inserted a pencil eraser into his ear; he did not tell his parents because he was afraid of being punished. Over time, the eraser became overgrown by exuberant granulation. Two other children experienced complications months after acquiring their aural foreign body because they failed to inform anyone. The lesson here is that parents and caregivers who suspect an aural foreign body should approach the situation in a nonjudgmental manner so that these objects can be discovered and safely removed before complications develop.

There is little scientific evidence regarding the best method of removal. Therefore, each removing foreign bodies from the ear.¹¹ treatment should be judged on its own merit for every individual case. The choice of procedure should take into consideration the exact location, shape, and composition of the foreign body. For example, nonimpacted hygroscopic objects can be syringed with normal saline at body temperature. Live insects must be killed first by instillation of a suffocating fluid such as olive oil or liquid paraffin. Instrumentation usually includes a Jobson Horne probe, ear curette, ear loop, and crocodile forceps. Otomicroscopes and cyanoacrylate (Super Glue) can also be used. General anesthesia is useful in some complicated cases and in uncooperative patients. In addition, years of experience often lead to the development of individual innovative techniques that are safe and effective.¹²

In our study, 108 patients (87.8%) had their foreign body removed in the clinic by an otolaryngologist; 94 of the objects (76.4%) were removed under direct vision with appropriate instruments, 10 (8.1%) with syringing, and 4 (3.3%) with both. All of these patients presented without complications, and all were cooperative. In the other 15 patients (12.2%), circumstances dictated that the object be removed after the induction of general anesthesia.

Ideally, patients with an aural foreign body would first seek care from an otolaryngologist,¹³ but in Bangladesh this is not always possible because there are not enough ENT specialists in most communities. Greater public education and public awareness regarding prevention and treatment would be very helpful, and we urge the leaders of our local healthcare communities to undertake such an effort. Also, we would welcome more continuing medical education for our general duty physicians and greater availability of instrumentation, which would allow them to determine which cases they could safely handle and which should be referred to otolaryngologist. With better training of general duty physicians, patients would have more options, which might allow them to avoid journeys of hundreds of kilometers on risky roads.¹⁴

In our study, 30 patients (24.4%) were initially "treated" by untrained personnel, and as a result, they incurred a total of 41 preventable complications. It is also important to recognize that each unsuccessful attempt can significantly jeopardize the success of subsequent efforts. Repeated attempts not only lead to further swelling and bleeding, but they can also compromise a patient's cooperation.

Conclusion

Insertion of a foreign body into the ear is a common occurrence worldwide and it is seen most often in children. Ideally, patients with an aural foreign body would first seek care from an otolaryngologist, but in Bangladesh this is not always possible because there are not enough ENT specialists in most communities. We would welcome more continuing medical education for our general duty physicians and greater availability of instrumentation, which would allow them to determine which cases they could safely handle and should be referred to an otolaryngologist. Thus, the incidence of different type of complications can be reduced.

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Original Article

Pre-Operative Screening for Biliary Atresia Using a Stool Color Card in Infants: In a Tertiary Care Hospital in Bangladesh

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Abstract

Aim of the study: To evaluate the accuracy of stool color card (SCC) for pre-operative diagnosis of biliary atresia in infants.

Materials and Methods: This cross-sectional descriptive study was conducted at the Department of Pediatric Gastroenterology and Nutrition, BSMMU, Dhaka, Bangladesh. The stools of infants were compared with stool color card after collection for 3 consecutive days. Results were expressed as sensitivity, specificity, positive and negative predictive value. The study did not involve any social or legal risk to the subjects or any invasion of privacy.

Results: Forty neonatal cholestasis cases were studied. Among them, 33 babies (mean age, 75.7±34.5 days) were diagnosed as biliary atresia (BA) and 7 of them (mean age, 77.1±30.5 days) as non-biliary atresia (NBA) with male predominance 24 (60%). Ultrasonography of hepatobiliary system showed non-visualized gall bladder in 8 infants in BA group. Gallbladder contraction was absent in 32 (97%) cases of BA group (P=0.01). Hepatobiliary scintigraphy showed no excretion of radiotracer in 33 (100%) infants of BA group and 6 (85.7%) infants of non-BA group (P=0.17). The relation between the SCC diagnosis and the final diagnosis of BA significant relationship (P<0.05). The stool colour card showed sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of 90.9%, 77.1%, 90.9%, 77.1% and 85% respectively for the diagnosis of biliary atresia.

Conclusion: Stool color card was found highly sensitive with positive predictive value along with high diagnostic accuracy. So that stool color card can be a reliable screening tool of biliary atresia.

Keywords: Biliary Atresia, stool color card, infants.

Introduction

Normal hepatobiliary function is adequate bile flow depended from the liver to the gallbladder through biliary channels, where bile is stored and concentrated and secreted to the duodenum when it is required for the digestive process. Interruption of this biliary secretion results in partial or complete cholestasis.^{1,2}

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Cholestatic jaundice, characterized by elevation of serum direct bilirubin, is an uncommon but potentially serious condition that indicates hepatobiliary dysfunction.¹ It affects approximately 1 in every 2,500 infants.² Neonatal cholestasis is defined as direct hyperbilirubinemia occurring in the newborn as a consequence of diminished bile flow.³ Direct hyperbilirubinemia in a neonate is defined as a serum direct bilirubin concentration of greater than 1 mg/dL if the total serum bilirubin (TSB) is <5 mg/dL or greater than 20% of TSB if the TSB is ≥ 5 mg/dL.⁴

The two most common causes of neonatal cholestasis

(NCS) are Biliary atresia (BA) and Idiopathic Neonatal Hepatitis (INH). It is important to differentiate between these two entities as early intervention in the form of Kasai portoenterostomy in BA improves the prognosis.⁵ Biliary atresia is an idiopathic progressive inflammatory process of the extrahepatic bile ducts with obliteration and concomitant ongoing damage of the intrahepatic bile ducts resulting in chronic cholestasis, progressive fibrosis, and eventually biliary cirrhosis.⁶ It occurs worldwide, affecting an estimated 1 in 8000-15000 live births.⁷ A study was done in Bangladesh in 2005, showed that biliary atresia is a common cause of neonatal cholestasis in Bangladesh.⁸ Although the pathogenesis of biliary atresia is still unclear, the disease is characterized by a complete inability to excrete bile as a result of sclerosing inflammation of the extra and possibly intra hepatic bile ducts.⁹ Although cholestatic jaundice develops early, most of the cases patients present lately.⁸

An easy method, which detects neonatal cholestasis in a simple way, particularly biliary atresia is to look at the baby's stool color. It is pale in cases of cholestasis, that is, grey, creamy or white and occasionally pigmented as a light caramel colour.¹⁰ Thus, a screening programme with a stool color card, showing different normal and abnormal stool colors, to be compared with the baby's stool, was first introduced in Japan in 1987¹¹ and in 2002 in Taiwan.¹² This has led to a significant reduction in delay of biliary atresia diagnoses, and has allowed significantly earlier Kasai operations and thus reducing the need for hazardous liver transplantation at a young age.¹³ Diagnostic tests (like- liver biopsy, MRCP) are costly, invasive and not available in all centers, especially in developing countries. No single test showed 100% sensitivity and specificity and it is well documented that the summation of different parameters will give more accuracy in diagnosis of BA.¹⁴

Different studies have shown the accuracy of stool color card. A recent study showed the sensitivity, specificity, positive predictive value, and negative predictive values of 76.5%, 99.9%, 12.7% and 99.9%, respectively.¹⁵ In another study, the sensitivity and specificity of stool color card were found to be 80% and 99.9%, respectively, and the positive predictive value was 22.9%.¹⁶ Regarding the reliability of stool color card showed the sensitivity, specificity, and positive predictive values of 89.7%, 99.9%, and 28.6% respectively, in their study.¹⁷ Cholestasis may be present early, but it is rarely obvious to the clinician because it

overlaps with the common physiologic jaundice seen in more than half of newborns during the first few weeks of life. In infants with BA, jaundice persists and the appearance of signs of cholestasis such as dark urine and pale stools follow. A provisional diagnosis is occasionally made before 4 weeks of life, but more typically not until 6 to 12 weeks and is based upon exclusion of other causes of neonatal cholestasis and typical liver biopsy findings. Major clinical challenges remaining are: (1) early diagnosis, so as to increase the percentage of successful HPEs, (2) prevention of the progressive liver injury and fibrosis that occur even after successful HPE.¹⁸

The aim of this study is to evaluate the accuracy of stool color card for diagnosis of biliary atresia by calculating its sensitivity, specificity, positive predictive value and negative predictive value

Methods

This cross sectional descriptive study was done from January 2020 to June 2021 in the Department of Pediatric Gastroenterology and Nutrition in Infants having clinically apparent jaundice developed before 3 months of age and persisted for more than 2 weeks and who fulfilled the following criteria of pale stool (either persistent or intermittent) with dark colored urine and direct bilirubin of ≥ 1 mg/dl, if total serum bilirubin is < 5 mg/dl (< 85 μ mol/L) or direct bilirubin of > 20 % of total serum bilirubin, if total serum bilirubin is ≥ 5 mg/dl (≥ 85 μ mol/L). Very sick infants (coagulopathy, encephalopathy, cardiopulmonary imbalance), infants suffering from severe co-morbid conditions (cirrhosis, sepsis, DIC) and parents not willing to be enrolled in this study were excluded from the study.

Procedure

During recruitment, objectives of the study were explained to the parents and written consent was obtained. The detailed clinical history, physical examination findings and investigation reports were recorded in a predesigned standard data sheet. History was obtained from the parents, which included basic demography, perinatal histories, age at onset of jaundice, pattern of jaundice, colour of stool and urine, birth weight, parental consanguinity, maternal illness during pregnancy etc. Stool color was observed by the researcher himself to decide whether it was pigmented or pale stool. The infant stool was collected and compared with the infant stool colour card for 3 consecutive days and these SCC findings were compared between Biliary atresia and non-BA group

based on sensitivity, specificity, positive predictive value and negative predictive value. Stool color was defined as pale (completely and uniformly devoid of any green or yellow pigments), slightly pale (contained mixture of pale and normally pigmented stools, or uniform in color but not normally pigmented), or normally pigmented (uniformly and normally pigmented). Physical examinations of all cases were done by researcher himself on the day of admission or afterwards whenever possible. The following data were obtained during physical examination: growth parameters, presence of associated physical anomalies and any signs of systemic diseases. Other significant physical findings were also recorded. For all patients, serum bilirubin (total and direct) were done by photometric method, serum alanine aminotransferase by kinetic rate method, gamma glutamyl transpeptidase by enzymatic rate method, prothrombin time by viscosity clot detection method. For diagnosis of causes, the following investigations were done according to need: complete blood count by spectrophotometry, flow-cytometry and impedance methods, urine routine microscopic examination by fluorescence flow cytometry, thyroid function tests (FT4, TSH) and TORCH (IgM) antibodies by ELISA techniques. These investigations were done from Microbiology, Virology, Biochemistry and Molecular Biology, Hematology and Clinical Pathology departments of BSMMU. Ultrasonography of the hepatobiliary system, hepatobiliary scintigraphy and percutaneous liver biopsy were done in all cases. For ultrasonography of hepatobiliary system, the infants were kept on fasting state for 3-4 hours then abdominal sonography was done by the same radiologist using Philips, Affiniti 30 ultrasound system with either 2-5 MHz convex transducer or 7.5-12 MHz linear transducer at the department of Radiology and Imaging, BSMMU. The findings of triangular cord sign, gall bladder length, gall bladder volume were recorded. During the fasting state, infants were given intravenous fluid as required. Again, an hour after feeding, sonography was done to see the volume of contraction of gall bladder. Then triangular cord sign, gall bladder length and gall bladder contractility in ultrasonography findings were compared between biliary atresia and non-BA group. The sensitivity, specificity, positive predictive value and negative predictive value and diagnostic accuracy of the accuracy of stool colour card for diagnosis of biliary atresia were determined. Scintigraphy of hepatobiliary system was done after giving phenobarbitone (5

mg/Kg/day orally in two divided doses) for at least 3-5 days and was done in Institute of Nuclear Medicine and Allied Science, BSMMU. After ensuring normal coagulation parameters, platelet counts, and taking informed consent of parents, percutaneous liver biopsy was done using a Trucut liver biopsy needle by a trained, expert resident of the department and histopathology report was obtained from Pathology department, BSMMU. Liver biopsy was taken as gold standard for diagnosis of biliary atresia and idiopathic neonatal hepatitis. Results of investigations were collected and recorded in a structured questionnaire.

Statistical analysis

After collection, data were manually checked and analyzed by using Statistical Package for Social Science (SPSS 22.0 Chicago, Illinois) for Windows XP. Fisher exact test and Chi-Square test were used for categorical data, while independent t-test and Mann-Whitney U test were used for comparison of continuous data. For all statistical tests, p value of less than 0.05 was considered as statistically significant. Results were expressed as sensitivity, specificity, positive predictive value, negative predictive value of stool colour card (SCC) which was used as a diagnostic marker for Biliary Atresia (BA).

Results

Total 40 children fulfilled the study criteria were included in the study of which 24 (60%) babies were males and 16 (40%) females. Among them, 33 (83%) infants were diagnosed as BA and 7 (17%) as non-BA with a mean age of 75.7±34.5 days and 77.1±30.5 days respectively.

Figure-1 shows among the studied subjects, 33 (83%) infants had persistent pale stool for consecutive 3 days whereas, 7 (17%) infants did not have persistent pale stool.

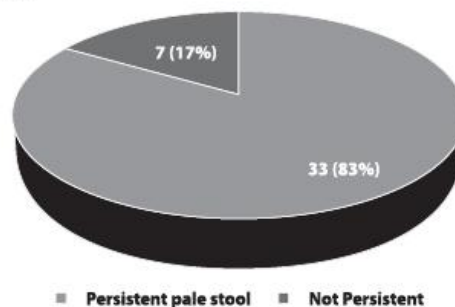


Figure-1: showing persistent pale stool (present or not) by stool colour card (N=40)

Table-I shows no excretion of radiotracer activity even after 24 hours in 33 (100%) infants in BA group, whereas it was 6 (86%) in non-BA group. The P value (p=0.17) is statistically not significant. Only 1 infant in non-BA group had excretion of radiotracer into the intestine.

Table-I: Comparison of Scintigraphic findings of BA and non-BA group (N=40)

Radiotracer excretion into the intestine	Group A (n=74)		Non-BA (n=7)		P-value
	N	%	N	%	
Present	0	0	1	14	0.17ns
Absent	33	100	6	86	

Table-II: Relation between SCC diagnosis and final diagnosis of biliary atresia by liver biopsy (N=40)

Occupation	Final diagnosis (Biopsy)		Total	P-value
	BA (n=33)	Non BA (n=7)		
BA	30 (90.9%)	3 (42.9%)	33 (82.5%)	0.01s
Clinical diagnosis (True positive)		(False positive)		
Non BA	3 (9.1%)	4 (57.1%)	7 (17.5%)	
(SCC)	(False positive)	(True positive)		
To	33	7	40	

Table-III shows the comparison of the SCC diagnosis with the final diagnosis by liver biopsy. The sensitivity and specificity of the SCC were 90.9% and 77.1% respectively. The positive predictive value was 90.9% and the negative predictive value was 77.1%. The overall accuracy of the SCC was 85%.

Table-III: Comparison of the SCC diagnosis with the final diagnosis by liver biopsy (N=40)

Statistic	Value
Sensitivity	90.9%
Specificity	77.1%
Positive Predictive Value	90.9%
Negative Predictive Value	77.1%
Accuracy	85%

Discussion

The diagnosis of neonatal cholestasis in infants is still difficult as many differentials have to be excluded until a firm diagnosis is reached. The major diagnostic challenge is to distinguish biliary atresia from idiopathic neonatal hepatitis. Biliary atresia, common and correctable cause of cholestasis, should be diagnosed as early as possible, because early diagnosis of this condition positively affects the outcome. Among different diagnostic tools, biliary atresia can be

diagnosed by ultrasonography and successfully treated by surgical correction. Cholestasis is defined as impairment in the excretion of bile, which can be caused by defects in intrahepatic-transmembrane transport of bile, or mechanical obstruction to bile flow. Elevated conjugated bilirubin is the predominant characteristic features in most of the causes of neonatal cholestasis.¹⁹ In biliary atresia the body accumulates an excess of bilirubin, it turns yellow (jaundice), passage of conjugated bilirubin through urine causing dark urine, due to lack of bile pigment the stools are pale.²⁰ With the aim to evaluate the accuracy of infant stool colour card for diagnosis of biliary atresia by calculating its sensitivity, specificity, positive predictive value, negative predictive value, this cross-sectional study was carried out in 40 infants with neonatal cholestasis due to Biliary atresia and non-BA attending Pediatric Gastroenterology and Nutrition Department of BSMMU, Dhaka on 40 study cases aged 14-90 days). In this study, among total of 40 cholestatic cases, 24 were males and 16 females. Among the studied subjects, highest frequency (n=24) was seen in 31-60 days age group. Maximum patients 33 and 7 in BA and Non-BA group showed age at admission (days) 73 mean±SD 75.7±34.5 and 77.1±30.5 respectively. There was no significant difference of age between two groups (p>0.05). In accordance reported mean age at presentation was 48.25 days, majority of the subjects 52.6% were found in the age group of 42-56 days.²⁰ There were 55.3% male and 44.7% female babies and male to female ratio was 1.2:1. Other findings were similar with that of common epidemiological background of neonatal cholestasis. Previous report revealed that neonatal cholestasis had slightly more male predominance.⁸ History of persistent pale stool was significantly higher in BA group than non-BA (97% vs 0.0%). History of intermittent pale stool significantly higher in non-BA than BA infants (100% vs 3.0%). p value was calculated by Fisher's exact test, which is statistically significant (p=0.00). In accordance analyzed the clinical course of 29 infants with BA detected by stool color card registry.¹⁷ Twenty three (79.3%) infants and 26 (89.7%) infants were found to have pale-colored stool before 30 and 60 days of age, respectively. Hsiao et al. (2008) reported among 148 infants in 2004 and 131 infants in 2005 as having pale-colored stool (colors 1-3) before 60 days of age. Among them, 29 (19.6%) in 2004 and 34 (26.0%) in 2005 were diagnosed as having BA. Previous studies showed that the detection of cholestasis rests on the clinical recognition of jaundice, pale stool, and/or dark urine

with a palpable liver in most of the cases.^{12,21} Our present study showed that persistent pale stool in BA patients was present in 97%. Sarker et al. (2021) reported 78.5% subjects had pale colored stool, three (7.9%) had yellow colored and five (13.6%) had greenish colored stool. 74 In the present study ultrasonography of HBS in the studied infants showed absent or non-visualized gall bladder in 8 (20%) cases. Triangular cord sign was seen in 4 (12%) babies of BA group and absent in non-BA group ($p=1.00$). The p value ($p=0.00$) of gall bladder contraction in both the groups is significant. Kanegawa et al.²² described that in neonatal cholestasis, "triangular cord" sign was one of the important signs of cholestasis. Lee et al.²³ found that there were nonvisualization of gall bladder or bile duct in infants subjects with neonatal cholestasis. Similar comparable results was shown²⁰ where it was seen that the common sonographic findings of the studied subjects were non visualization of gall bladder 60.5%, non visualization of common bile duct 50%, hepatomegaly 92%, and triangular cord sign at portahepatis 7.9%. In the present study final diagnosis seen by using the SCC was positive for BA in 30 (90.9%) cases and negative for BA in 3(9.1%) cases. The relation between the results of the SCC diagnosis and the final diagnosis of the study group had a p value 0.01, which was statistically significant. The SCC positively predicted BA in 30 cases out of 33 cases of proven BA (90.9%); also, the SCC excluded BA in 4 out of 7 cases who were proved not to have BA (57.1%). In accordance with this study²⁰ reported that out of 38 subjects 30 had pale-colored stool and 8 subjects had normal colored stool. Among the pale-colored stool 29 subjects were diagnosed as biliary atresia and 1 other than biliary atresia. Among the normal colored stool 3 were diagnosed as biliary atresia. Brown and Househam²⁴ also found similar findings in their study. 75 Presence of bile pigment in biliary atresia may be explained by the fact that in early stages of biliary atresia child may pass intermittent pale colored and normal colored stool. If bilirubin level is high it may ooze from gut wall and can pigment the stool. In female child pale stool sometimes mixed with dark urine and may give false impression of pigmented stool.²⁵ El-Shabrawai et al. demonstrated that the diagnosis using the SCC was positive for BA in 49 (45.4%) cases and negative for BA in 59 (54.6%) cases. On comparison of the SCC diagnosis with the final diagnosis, the SCC positively predicted BA in 43 cases out of 46 cases of proven BA (93.48%); also, the SCC excluded BA in 56 of out of 62 cases who were proven

not to have BA (90.32%). The present study showed that the sensitivity and specificity of the SCC were 90.9% and 77.1% respectively. The PPV was 90.9% and the NPV was 77.1%. The overall accuracy of the SCC was 85%. Sarker et al.²⁰ reported sensitivity of stool color in the diagnosis of biliary atresia was 90.6%, specificity 83.3%, accuracy 89.5%, positive predictive value 96.7% and negative predictive value 62.5%. Rouzrokh et al.²⁶ observed that detection of neonatal cholestasis by examining the color of the stool had a sensitivity and specificity of 100% and 83% respectively with positive predictive value and negative predictive value of 81% and 100% respectively. Chen et al.¹⁷ analyzed the reliability of stool color card and showed the sensitivity, the specificity, and positive predictive values of 89.7%, 99.9%, and 28.6%, respectively. El-Shabrawai et al. reported, the SCC had true results in 91.67% of cases and false results in 8.33% of cases. The sensitivity and specificity of the SCC were 93.48% and 90.32%, 76 respectively. The PPV was 87.76% and the NPV was 94.92%. The overall accuracy of the SCC was 91.67%. Thus, among all the diagnostic tools available for biliary atresia, stool colour card can play an important role in the diagnosis of biliary atresia, when stool samples are preserved and compared with SCC for 3 consecutive days. So from the findings of the study, it can be concluded that stool colour card can play an important role in the diagnosis of biliary atresia and is a reliable indicator for screening neonatal cholestasis namely biliary atresia.

Conclusion

Stool color card is found to have high sensitivity and positive predictive value along with high diagnostic accuracy. Therefore, it can be concluded that stool color card can be a reliable screening tool for diagnosis of biliary atresia.

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Case report

A case report of obstructed spigelian hernia

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Abstract

Abdominal wall hernias through the arcuate line termed spigelian hernias are rare. they constitute approximately 1% (range 0.1-2%) of all hernia. Developing via the spigelian fascia, thus called lateral, these types of hernia tend to go undetected and peak at about 50-60 years old. We present a case report of 63 years old Muslim female presented with history of gradually increasing lump and vague abdominal pain at right lower abdomen for past 6 months. On examination we found that a soft ill-defined swelling was palpable in the right illiac fossa slightly above and lateral to the deep inguinal ring without expansile cough impulse. CT scan in prone position was done and it finally revealed the defect adjacent to the semilunar line and at the lateral edge of the rectus muscle. There was a 3 cm defect lateral and superior to the deep ring under the external oblique aponeurosis and defect was sutured with 2-0 poly propylene by interrupted sutures. A 15 x 15 cm poly propylene mesh was placed over the defect under external oblique aponeurosis.

Introduction

Protrusion of viscus or a part of viscus through its containing cavity is known as hernia. Spigelian hernia is one of the rare abdominal hernia occurs through slit like defects in the anterior abdominal wall adjacent to the semilunar line which extends from the tip of the ninth costal cartilage to the pubic tubercle at the lateral edge of the rectus muscle inferiorly. Spigelian hernia is named after Adrian Van der Spigel who described semilunar like (lineaspigeli) in 1645.¹ Spigelian hernia located between the muscular layers of the abdominal wall and can be easily overlooked because of obesity. They are difficult to diagnose because of their location and lack of specific symptoms.² The diagnosis has been considerably aided by the introduction of ultrasonography and Computed Tomography.³ Spigelian hernia constitute about 0.12 to 0.2 % of all abdominal hernias usually found between 50 and 60 years, affecting both sides and both sexes equally.⁴ Spigelian hernia occurs anywhere on the spigelian fascia, but it is reported that more than 90% of these

hernias are located in the "Spigelian belt", which is a transverse 6-cm-wide zone in the lower abdominal wall (Fig. 1).⁵

Once diagnosed, spigelian hernia require operative repair due to risk of strangulation. Elective repair of uncomplicated spigelian hernia can be performed both laparoscopically and by an open technique, with the former reported to be associated with a lower morbidity and shorter hospital stay.⁶ The cause of spigelian hernia is generally thought to be multifactorial, involving both congenital and acquired factors. However, some reports suggest that up to 50% of spigelian hernia occur in patients with history of prior abdominal surgery.⁷

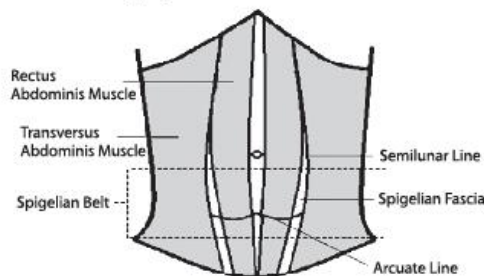


Fig-1: Figure showed the location of spigelian fascia and "Spigelian belt"

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Obstructed spigelian hernia are extremely unusual and difficult to diagnose because of non-specific symptoms and sign with very few reports in the literature. Here we document the case of an obstructed spigelian hernia in an elderly lady.

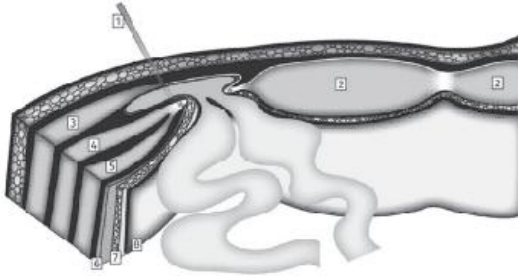


Fig.-II: Spigelian Hernia surgical anatomy. Drawing depicting a left sided Spigelian hernia, axial view. Note the Spigelian hernia penetrating the Spigelian fascia (red asterisks) with an intact External oblique aponeurosis. (1) Semilunar line, (2) Rectus abdominis muscle, (3) External oblique muscle with aponeurosis, (4) Internal oblique muscle, (5) Transverse abdominal muscle, (6) Fascia transversalis, (7) Pre-peritoneal fat, (8) Peritoneum.

Case report

A sixty three years old Muslim female, born in Kotowali, Dhaka presented to the outpatient department with complaints of gradually increasing lump and vague abdominal pain at right lower abdomen for past 6 months without any features of intestinal obstruction like severe abdominal pain, vomiting and constipation. She was a known case of hypertension for 8 years and known diabetic for the past 7 years and diagnosed as hypothyroid 5 years ago. She underwent total abdominal hysterectomy about 10 years ago with uneventful post operative period. but there was no history of trauma to abdomen. She did not have any other chronic medical illness or any known allergy to medications or food.

On examination, a soft ill-defined swelling was palpable in the right iliac fossa slightly above and lateral to the deep inguinal ring without expansile cough impulse. No impulse on cough could be appreciated at the deep ring. Swelling was approximately 4cm x 4cm in size, smooth overlying surface, no skin color change, slight tenderness present on palpation but no rebound tenderness. Swelling was irreducible. There were no

significant general examination findings. Ultrasonography was done and it revealed bowel loops through muscle gap. however due to its atypical location and diagnostic dilemma we investigated the patient with contrast enhanced CT scan. Initially conventional CT scan abdomen and pelvis in supine position was done. CT revealed a large right lower anterior parietal wall lipoma, where the hernia could not be appreciated, however we repeated the CT scan in prone position [Fig.-3] and it finally revealed the defect adjacent to the semilunar line and at the lateral edge of the rectus muscle. Other relevant investigations showed CBC-normal, RBS-5.3 mmol/l, S. Creatinine-0.9 mg/dl, SGPT-30 u/l, Na-142 meq/l, K-3.7 meq/l, Chloride-103 meq/l, Thyroid function test-normal, HBsAg-Negative, X-ray chest P/A view-normal, Urine R/E-normal. ECG within normal limit and Echocardiography also normal.

Pre-operative preparation was done and the patient underwent exploration of lump by a transverse skin incision under spinal anesthesia. There was a 3 cm defect lateral and superior to the deep ring under the external oblique aponeurosis. The muscular defect contains omental fat, covered by a sac. Content was reduced into abdominal cavity; sac was excised and defect was sutured with 2-0 poly propylene by interrupted sutures. A 15 x 15 cm poly propylene mesh was placed over the defect below external oblique aponeurosis. after securing all bleeding point, abdominal cavity was closed in layers. Patient was discharged on 4th postoperative day without any complications. Patient was advised to avoid strenuous activity. Patient came on 7th post operative day and we found superficial surgical site infection. After 10 days of dressing, infection was under control and we gave secondary suture by 2-0 polypropylene (vertical mattress). After 14 days of secondary suture, stitches were removed as the wound was healthy.



Fig.-III: CT scan showing the defect.

Discussion

Spigelian hernias occur secondary to a defect in the transversus abdominis muscle and rectus sheath aponeurosis, which allows abdominal contents to protrude through the linea semilunaris (less commonly known as the Spigelian line or belt), mostly occur just below the umbilicus where the aponeurosis is widest and weakest. Spigelian hernia contents most often includes small intestine, but can also include cecum, appendix, sigmoid colon or omentum.^{3,8} The clinical diagnosis of spigelian hernia is challenging since the symptoms can be variable and non-specific. Pain is the most common symptom and is usually more localized to that side of the abdomen.³ Ultrasound is recommended as first line imaging investigation, and CT scanning should be added in challenging cases.⁹ Other studies show that the CT scanning is better than ultrasound, because ultrasound is dependent by the operator.¹⁰ Still, it is reported that only 50% of cases are correctly diagnosed preoperatively.² Spigelian hernia occurs in two variants - acute and chronic incidental. In first type patient presents as acute abdomen, require urgent investigation and surgical treatment. In second type it is diagnosed incidentally while investigating recurrent and vague abdominal pain as in our case. Pre-operative clinical diagnosis is possible in patients with palpable mass along the spigelian aponeurosis, however, this may be difficult in those presenting with non-specific abdominal pain and have no visible or palpable mass due to reduction of hernia sac content or presence of intramural or inter parietal hernia.¹¹ The most common diseases that mimic spigelian hernia include rectus sheath hematoma, abdominal wall abscess and seroma, lipoma, peritoneal tumor, implants and pseudocyst at the end of the ventriculoperitoneal shunts.² Spigelian hernia is dangerous and the risk of incarceration is higher than other hernias because the defect can be small. It is reported that the risk of incarceration is up to 21% and thus patients should be offered prompt surgical repair.¹² Surgical procedures are generally classified as open and laparoscopic procedures. The laparoscopic approach should be applied in uncomplicated cases.¹³ If the defect is extensive (usually more than 5 cm), open surgery should be performed.¹⁴ Repairing the defect of spigelian hernia contains fascial closure or fascial suturing reinforced with synthetic mesh in the cases of large defects.^{15,16} Small hernia defects could be repaired by laparoscopic herniorrhaphy alone.¹⁷ Now a days, there is a positive trend of dealing with these

types of hernia with a minimally invasive method. It has been suggested that the choice method of surgery, whether open or laparoscopic, should rely on the experience of a surgeon and the stage of illness.¹⁴

Conclusion

A mass and pain in the right lower abdominal wall, spigelian hernia can be one of the differential diagnosis. Though spigelian hernia is rare, it can be missed hence a high index of suspicion is required for accurate diagnosis. The risk of strangulation of spigelian hernia is higher than other hernias due to narrow gap. Clinical diagnosis is challenging and CT scan is the diagnostic tool of choice. Surgical repair is the definitive treatment and involves primary or mesh repair of the defect as appropriate.

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