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INFORMATION TO AUTHORS

Focus

Chattagram International Medical College (CIMC) established on 2013 is one of the famous and reputed Medical College among the Private Medical Colleges in Bangladesh as reflected by the performances of students in examinations of Chittagong University. A very good number of academicians and researchers are performing in this institute.

Chattagram International Medical College commenced to publish a peer reviewed scientific Journal from 1st January 2016 which is recognized by BMDC and having International Standard Serial Number (ISSN) 2520-484X. The journal publishes article of authors from any part of the globe, but has a special interest in publishing research articles of authors from Bangladesh and of relevance to developing countries. It publishes Editorial, Original (Research) articles, Special articles, Review articles, Short Communications, Case report and letters on new findings of Medical Science.

Chattagram International Medical College journal is published in english, biannually eg. January and July with prior approval of Editorial board.

Appropriate measures has been taken to make the journal indexed / abstracted in major international indexing systems including the PubMed/MEDLINE, Index Medicus, Google Scholar, DOAJ, Hinari and Scopus etc.

The theme of Chattagram International Medical College Journal is

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Submission of Manuscript

Manuscript (Papers) are submitted to the Editor-In-Chief or authorised persons at any time. Papers accepted for publication are subjected to peer review and editorial revision. With full title (Title should be concise and informative) two copies of papers (Along with CD) accompanied by a covering letter signed by Principal and Co-authors including name, academic degrees, designation, the departmental and institutional affiliation. Complete address, Cell number including Email address of Corresponding author should be mentioned. Not more than 7 (Seven) authors will be accepted for all manuscripts.

Manuscript should be typed in English (Font size and style : 10, Times New Roman) on one side of white bond paper of A4 size with margins of at least 2.5 cm, using double space throughout.

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A structured abstract should not be of more than 250 words. It should be a factual description of the study performed organized with the heading of Background (Includes aim or objectives) Methods (Includes patient population, procedures and data analysis) Result and Conclusion. The abstract should contain the data to support the key findings or conclusions of the study and this should be self explanatory without references to the text. the first time an abbreviated term is used it should be spelled out in full form and follow with the abbreviation in parentheses for example :- BPH (Benign Prostatic Hyperplasia). Please do not cite any references in the abstract.

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Editorial : Its a invited article. Based on current affairs of Medical Science with any disciplines. Maxium length of the editorial may be with in 1500-2000 words and number of references maxium in 10 (Ten).

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Letter should be brief and to the point with in 500-600 words only.

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Reference citations in the text should be numbered in arabic numerals at the end of the sentence eg [1,2] consecutively in order in which they are mentioned in the text.

Book references should have the name of the authors, chapter title, editors, Book name, the edition, place of publication, the publisher, the year and the relevant pages.

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The first six authors of a work should be named, followed by 'et al' if there are more than six. If less than six authors the name of the all authors may be mentioned.

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- Significance values and other statistical data should be included beneath the table.

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Unmounted glossy print, B-2 size with good contrast (600 pixels). 3 Images / Photographys / Legends are allowed for whole text.

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Competing Interests

Chattagram International Medical College Journal requires authors to declare any competing financial or other interest in relation to their work. Where an author gives no competing interests, the listing will read the author (s) declare that they have no competing interests.

Editorial

Chattagram International Medical College Journal
Volume 8 Number 1 January 2023; 1-2

The Paradigm Shift of Teaching Approaches in MBBS Curriculum 2021: Time to Prepare Ourselves

Mehrunnissa Khanom[1*]

Abstract

Curriculum development means an evidence-based, multi-step, continuous process of methodical development intended to fulfil the educational objectives of a particular course. An updated curriculum focusses more on real life, intending to prepare community oriented and competency based physician. The new MBBS curriculum 2021 demonstrates and demands a paradigm shift in teaching strategy that requires a special attention to the academicians.

Journey of MBBS Curriculum in Bangladesh: The first ever documented curriculum was developed in 1988 through UNDP and WHO, supported by the Centre for Medical Education (CME). However, it was felt by the experts that this curriculum was neither community oriented nor competency based. The results of next 14 years of research, workshop and knowledge sharing subsequently generated the undergraduate medical curriculum 2012, which was implemented from 2012-2013. Subsequently, review and update over a decade undergone by combined efforts of the Centre for Medical Education (CME) Directorate General of Health Services (DGHS) and Bangladesh Medical & Dental Council (BM&DC) Ministry of Health and Family Welfare (MOH&FW) introduced the integrated, problem based, community oriented MBBS curriculum 2021, to be implemented on the newly admitted students of 2021-2022 session.

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The Highlights of Changes in Curriculum 2021 and the Recommendations: The MBBS curriculum 2021 focused more on real life situation, intending to prepare community oriented and competency-based physicians. The basic changes are as follows:

i) Changes in the Subjects within 2nd and 3rd Phase: Pharmacology & Therapeutic and Forensic Medicine & Toxicology became in 2nd phase, whereas Community Medicine & Public Health and Pathology & Microbiology became part of 3rd phase. There have been replacement changes among Pharmacology & Therapeutic and Community Medicine & Public Health. However, General pathology and general microbiology lectures and formative assessment will be taken in 2nd phase, that led to the remarkable changes in total teaching learning hours.

ii) Changes in Teaching-Learning Hours: There has been significant changes in teaching-learning hours in every phase. The key areas where those changes happened include integrated teaching, generic topics on medical humanities, ambulatory care teaching in clinical phases and Information and Communication Technology (ICT).

iii) New Structure of Integrated Teaching: Integrated teaching became a major focus in all phases, in a very structured and wider form. In comparison with previous curriculum, teachers will present in classes of integrated teaching rather than students. The total number of integrated teaching topics in new curriculum are 102, there has been a new inclusion of 'Departmental Integrated Teaching' of 42 topics in 4th phase subjects.

iv) Emphasis on Medical Humanities: Medical Humanities is a field of study that talks what it means to be human in the context of health and healthcare. It is a soft skill which cannot be solely acquired by traditional lecture-based classes or reading textbook.The MBBS curriculum 2021 has introduced 13 topics on medical humanities within all phases of MBBS and 3 topics in internship period.

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v) Encouraging Learning ICT: There has been inclusion of total 197 hours for Information and Communication Technology (ICT) classes distributed in all phases. The detailed lesson plan or course objectives has not been mentioned in curriculum 2021.

vi) Changes in Assessment Methods: There has been inclusion of Single Based Answer (SBA) as 50% of total MCQ. In written question, Structured Essay Question (SEQ) and Short Answered Question (SAQ) will comprise 25% and 75% of total marks respectively. Student who fail any subject of first phase in the first professional examination, he/she will not be able to continue clinical and other classes of second phase before passing first professional examination.

vii) Changes in Instructions for Internship: MBBS graduates must join internship within one month after passing the final professional MBBS examination. Duration of placement at Upazila Health Complex (UHC) has been extended to 1 month, which was 15 days in previous curriculum. 'Field Level' placement has become an alternative mention of UHC placement in the new curriculum. Timeline of completion of internship will be 'two years once after joining internship'.

Recommendations

i) Respective departments need to modify the course guides, item cards and teaching strategies accordingly to accommodate the new changes.

ii) Allocation and orientation of teachers as well as resource persons in newly included fields may make the adaptation with new curriculum easier.

iii) Teachers need intra-departmental and inter departmental communication as well as proper orientation for ensuring effective integrated teaching classes. An effective way needs to be created to make the integrated teaching an important part of overall assessment.

iv) The best way of learning medical humanity is through utilization of environment in the factual situation. Simulated environment for teaching medical humanities can provide learners with the opportunity to generate, develop and enhance communication skills and confidence in their own abilities without worrying about compromising patient safety.

v) It is necessary to ensure establishment of computer lab in medical colleges enriched with logistics and resource person for effective teaching on ICT. The teachers of each phase can prepare a list and lesson plan on "must know" of ICT compatible with defined hours; the digital corner of college library may play a key role here.

vi) Teachers need extensive training and orientation on new method of assessment system. Collaboration among peer medical colleges might enrich the faculty of institutions at regional and/ or national level.

vii) Since internship is the last and most important step before MBBS certification, internship monitoring system has to be strengthened to ensure safe physicians.

Curriculum development is a continuous, dynamic and never-ending process. There can never be a one-size-fits-for-all curriculum that fits for every situation, every learner or every teacher. Change is inevitable and intelligence lies in ability to adopt to the changes. The new curriculum looks forward with a vision to encourage and promote development of clinically, socially and culturally competent professionals motivated to serve the community with compassionate and dedication. Proper training, orientation, collaboration as well as exchange of ideas among teachers, departments, phases and institutions might make the practice of transition from old to new curriculum a smooth, effective one.

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Original Article

Chattagram International Medical College Journal
Volume 8 Number 1 January 2023; 3-7

Pattern of Semen Analysis among Healthy Males Complaining of Primary Infertility

Mst. Rukhsana Khatun[1*] Md. Rejaul Karim[2] Haimanti Shukla Das[4] Farhana Matin Iti[4]

Abstract

Background: The contribution of male factors to infertility is still to be evaluated in Bangladesh. The objective of this study was to assess the semen parameters of male partners among couples presenting with primary infertility.

Materials and methods: This study was a facility-based cross-sectional study conducted in the Department of Pathology, Barind Medical College, Rajshahi, over a period of six months from January 2022 to June 2022. A total of 243 male participants with a complaint of primary infertility who were advised to undergo semen analysis were included in this study according to selection criteria following informed written consent. Data collection was conducted through a semistructured case record form. The collected data were analyzed by SPSS V-21. Ethical issues were resolved according to the Declaration of Helsinki.

Results: The mean age of the studied participants was 32 years. Overall, 37.4% of the patients had abnormal semen quality according to the World Health Organization 2010 reference range. The mean semen volume, total sperm concentration, sperm motility and normal morphology were 3.63±1.46 (SD) ml, 59.03±30.81 (SD) million, 49.74±22.44 (SD) % and 56.88±32.01 (%), respectively. Abnormal levels of sperm motility were observed in 24.3%of participants, followed by abnormal morphology (12.3%) abnormal sperm concentration (11.5%) and abnormal semen volume (2.1%). Oligoasthenoteratozospermia (25.3%) and azoospermia (23.1%) were most common among patients with semen abnormalities.

Conclusion: More than one-third of the studied participants had semen parameters below the reference range, and inadequate sperm motility was the most common.

Key words: Infertility; Male infertility; Semen analysis; Seminal fluid analysis; Sperm motility; Sperm count.

Introduction

According to the World Health Organization, infertility is a medical condition of both sexes (Male or female) characterized by failure to conceive after regular unprotected intercourse for at least 12 months.[1] Infertility involves not only the individual but also the couple trying to conceive. It aggressively affects several aspects of life, including emotional, social, cultural, financial, physical health and even interpersonal relationships.[2,3] Worldwide, approximately 50 million couples are struggling with infertility.[4] Infertility could be attributed to only female factors, only male factors or a combination of both[2]. Here, male causes tend to be responsible for 30-40% of infertility, female causes for 30-40% and both factors combined for 35%, while 5% remains uncertain.[5,6]

Infertility in men refers to the reproductive system's inability to generate enough mature, motile, and functioning spermatozoa to fertilize a mature ovum.[7] It can result from congenital or secondary anatomical abnormalities of the urogenital system, inflammatory conditions in the urogenital system, increased temperature in the scrotum, metabolic disorder, presence of chronic disease, immunological disease etc.[8,9] Along with

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several definitive causes, some risk factors have been established as being responsible for male infertility in developed countries. Exposure to radiation and pesticides and the consumption of alcohol and tobacco have been observed as risk factors for male infertility.[10]

The exact prevalence of infertility in Bangladesh is still not known, but the World Fertility Survey conducted a review in SouthAsia and reported 4% infertility in Bangladesh[11].

The pattern of infertility differs across the population group.[12] To establish risk factors or predictors of male infertility in a specific population group, epidemiological studies regarding the baseline characteristics are critical. The pathogenesis of male infertility is very complicated and requires a meticulous approach to determine the cause. Analysis of seminal fluid is one of the major steps in the evaluation of male infertility, and it is the standard first-line investigation as it can determine the functional capability of sperm. Infertile men present some typical semen profile characteristics.[13,14]

The present study aimed to assess the seminal fluid analysis of males complaining of primary infertility.

Materials and methods

This cross sectional study was conducted in the Department of Pathology, Barind Medical College Hospital. This hospital is a corporate hospital situated in the division of Rajshahi in Northern Bangladesh. The study period was six months from January 2022 to June 2022.

Patients aged 18 who underwent semen analysis in the Department of Pathology, Barind Medical College Hospital during the evaluation of primary infertility were considered the study population. Patients with a history of drug consumption due to infertility, history of any sexually transmitted disease in the last six months, history of chronic medical conditions such as diabetes mellitus, hypertension, other metabolic disorders, history of exposure to radio and chemotherapy due to occupation or other reasons were excluded from this study. A total of 243 participants were included in this study according to inclusion and exclusion criteria and following informed written consent. The purposive sampling technique was considered a sampling technique.

Criteria of Semen Fluid Analysis[15]

For assessment of the criteria of semen fluid analysis, the WHO 2010 reference range was considered. The reference ranges are stated below:

Semen volume: ≥ 1.5 ml

Sperm concentration: ≥ 10 million

Sperm motility: ≥ 40%

Normal morphology: ≥ 4%

Overall semen quality was considered when ≥ 1 criterion was below the reference range.

A semistructured case record form was developed for data collection containing sociodemographic profiles and semen profiles. A detailed interview was held for each patient to obtain a sociodemographic profile. Information related to clinical history and semen analysis findings was obtained from medical records and laboratory reports. Principal researcher herself was directly involved in data collection.

Prior to conducting the study, ethical approval was obtained from the Ethical Review Committee of Barind Medical College.

Study variables were reported as the mean ± standard deviation in the case of continuous variables, while frequency and percentage were used in the case of categorical variables. Charts and tables were used to present the final results. Data were analysed by the software 'Statistical Package for the Social Sciences (SPSS) V-21'.

Results

In the present study, the mean age of the healthy male partners of couples with primary infertility was 32 years, with a majority in the age group 31-40 years. Slightly more than half of them resided in rural areas. Most of the participants were studied up to secondary school, and the most common occupation was business (Table I).

Table I Distribution of the respondents according to sociodemographic characteristics (n=243)

Variables	n (%)
Age group (Years)	
18-30	105 (43.2)
31-40	122 (50.2)
41-50	14 (5.8)
>50	2 (.8)
Mean±SD*	32.25±6.18

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Variables	n (%)
Area of residence	
Urban	103 (42.4)
Rural	139 (57.2)
Level of education	
No formal education	1 (.4)
Primary school	17 (7)
Secondary school	98 (40.3)
Higher secondary college	68 (28)
Graduation/Postgraduation	59 (24.3)
Occupation	
Student	6 (2.5)
Unemployed	60 (24.7)
Service holder	71 (29.2)
Business	106 (43.6)
No formal education	1 (.4)
Primary school	17 (7)

*Variables are expressed as the mean±standard deviation.

The duration of marriage was 1-6 years in almost one-third of the patients, followed by 6-12 years in 30.5% of the patients. The mean duration of marriage was 6.81±4.34 (SD) years. The mean duration of infertility was 5.33±3.75 (SD) years (Figure 1).

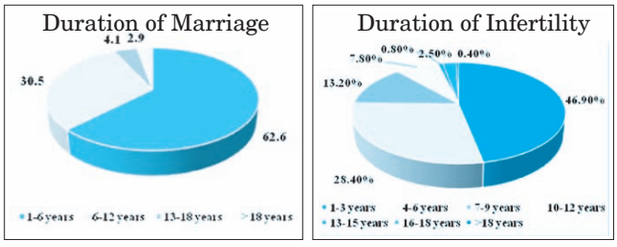

Figure 1 Duration of marriage and infertility among the respondents (n=243)

The mean semen volume, total sperm concentration, sperm motility and normal morphology were 3.63±1.46 (SD) ml, 59.03±30.81 (SD) million, 49.74±22.44 (SD) %, and 56.88±32.01 (%), respectively (Table II). Abnormal levels of semen criteria were observed in 2.1% of participants in semen volume, 11.5% in total sperm concentration, 24.3% in sperm motility and 12.3% in morphology (Table III).

Table II Characteristics of semen among the study population (n=243)

Characteristics of semen	Mean±SD
Semen volume (ml)	3.63±1.46
Total sperm concentration (Million)	59.03±30.81
Sperm motility (%)	49.74±22.44
Normal morphology (%)	56.88±32.01

SD: Standard Deviation

Table III Quality of semen among the study population (n=243)

Characteristics of semen	n	%
Semen volume		
Normal (≥1.5 ml)	238	97.9
Abnormal (<1.5 ml)	5	2.1
Total sperm concentration		
Normal (≥10^6 million)	215	88.5
Abnormal (<10^6 million)	28	11.5
Sperm motility		
Normal (≥40%)	185	75.7
Abnormal (<40%)	59	24.3
Normal morphology		
Normal (≥4%)	213	87.7
Abnormal (<4%)	30	12.3

Overall abnormal semen quality (≥1 criterion) was observed in 37.4% of the studied male participants (Figure 2).

Regarding the classification of abnormalities, oligoasthenoteratozospermia and azoospermia were the most common. Others were oligoasthenozoospermia, asthenozospermia, severe oilgozospermia, mild to moderate oligozoospermia, asthenoteratozoospermia and teratozospermia (Figure 3).

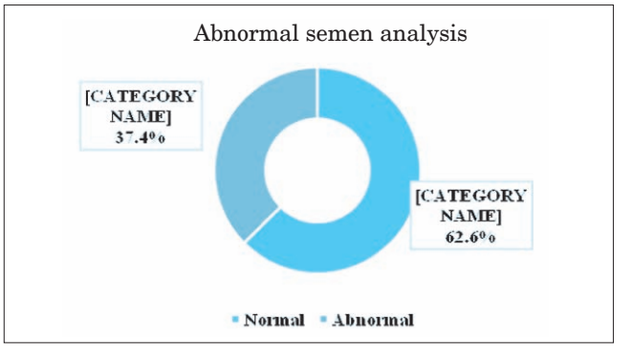

Figure 2 Frequency of abnormal semen analysis among the studied participants (n=243)

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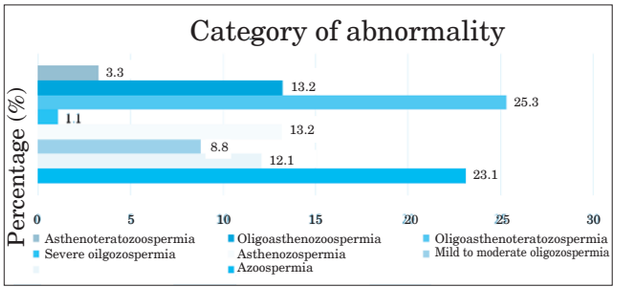

Multiple responses considered.

Figure 3 Category of semen abnormality (n=91)

Discussion

This study assessed semen fluid analysis of healthy male partners of couples seeking consultation due to primary infertility. According to the World Health Organization (WHO) 2010 criteria for semen analysis, slightly more than one-third of the participants had abnormal semen analysis. The frequency of abnormal semen analysis was observed in a variable range in previous studies. Kurudukar et al. and Jairajpuri et al. observed abnormal semen criteria in 45% and 84% male participants of infertile couples in India, respectively.[16,17] Both were much higher than the present study findings. In Jakarta, 33% of male participants among infertile couples had abnormal semen quality, which is similar to the results of the present study.[18] In Nepal, the percentage was 44% and in China, the percentage was 53%.[8,14] The deterioration of sperm quality could be linked to environmental, dietary, socioeconomic, hormonal or genetic factors.

The findings of seminal fluid analysis varied from population to population. Hypothalamic-pituitary-testicular axis failure, obstructed reproductive tracts, and faulty production of sperm cells result in abnormal semen parameters.[9] In the present study, among the semen parameters, abnormal sperm motility was most common and noted in almost one-fourth of the studied participants. Previous studies conducted in different states of India observed that a nearby frequency of patients had sperm motility below the reference range of WHO.[16,17,19] For an effective reproductive function, adequate sperm motility is essential, as spermatozoa fail to interact, travel and fertilize if they are less motile. Sperm concentration was inadequate in 11.5% of the patients, and the morphology was abnormal in 12.3% of the patients. Oligoasthenoteratozospermia and azoospermia were observed as the most frequent types of semen abnormalities in this study. The concentration of sperm is one of the absolute predictors of future fertility. In the present study, 23.1% of the patients with abnormal semen had azoospermia, 12.1% had severe oligospermia and 8.8% had mild to moderate oligospermia. The number of sperm cells with normal morphology triggers successful fertilization. The sperm concentration and morphology of the present study varied from those of previous studies.[20,21,10,16,22]

The contribution of male partner insufficiency to total infertility is 20-40%.[23] The present study was conducted among healthy males seeking consultation for primary infertility. The mean age of the patients was 32 years. There have been some factors that are supposed to have an effect on male infertility, including age, smoking, alcohol consumption, tobacco consumption, history of mumps in childhood, trauma or surgery in the groin.[10] The presence of any comorbidity, such as hypertension, diabetes mellitus and sexually transmitted infection, was also considered to be responsible.[10] In the present study, most of the patients were in the 3rd decade of their life, while most of them were hailed from rural areas and studied below graduation. This demographic parameter reflects the scenario of northern Bangladesh seeking consultation.

Limitation

Hence, the present study also has some limitations. This study was cross-sectional, so no association between cause and effect could be evaluated. Moreover, this was a single-center study containing a small sample size. Therefore, the participants were not generalized, which may generate statistically precise information.

Conclusion

More than one-third of the male partners of primarily infertile couples had abnormal semen criteria, and among them, inadequate sperm motility was prevalent.

Recommendation

The study findings indicate the necessity of more population-based and multicentered studies to assess the baseline semen profile of infertile male partners in the Bangladesh context.

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Disclosure

All the authors declared no competing interest.

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Original Article

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Comparison between Effects of Clonazepam and Fentanyl as Sedative in Elective Caesarean Section Under Subarachnoid Anaesthesia

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Abstract

Background: Regional anaesthesia has become an important anaesthetic technique now a days. The use of spinal anaesthesia is often limited by the unwillingness of patients to remain awake during surgery. Pharmacologically induced tranquility improves acceptance of regional technique. This study compares Clonazepam and Fentanyl in terms of onset and recovery of sedation, haemodynamic effects and adverse effects of both the drugs during elective Caesarian section under spinal anaesthesia.

Materials and methods: This randomized clinical trial included 60 ASA (American Society of Anaesthesiologists) grade I patients between age 20-40 years undergoing elective Caesarean sections under Subarachnoid anaesthesia during the period January 2022 to June 2022.Patients were randomly allocated to one of two groups: Clonazepam group (Group C, n=30), who received Clonazepam in a single dose of 0.015mg/kg and Fentanyl group(Group F, n=30), who received Fentanyl in a single dose of 0.5mcg/kg.

Results: There was no significant difference of mean blood pressure and mean heart rate between the two groups in different time intervals (p>0.05). Time of onset of sedation was significantly less with Clonazepam than Fentanyl (p <0.05). The arousal time i.e. duration of sedation was significantly longer with Clonazepam than Fentanyl (p<0.001).Fentanyl was associated with high incidence of some adverse effects like nausea, vomiting than Clonazepam (13.33% vs 46.66%, p<0.05). Significant percentage of patients was satisfied with Clonazepam than Fentanyl (80% vs 20%, p<0.001).Conclusion:The study showed that the time to reach effective sedation was less with Clonazepam than Fentanyl and the arousal time i.e. duration of sedation was significantly longer with Clonazepam which is beneficial for the patient in single dose technique for sedation.

Key words: Clonazepam; Fentanyl; Sedation; Subarachnoid anaesthesia.

Introduction

Spinal anaesthesia is the method of choice for elective Caesarean section. It allows mother to be involved in the child's delivery but also exposes them to awareness related stress during the procedure. The stress intensity is higher in women underwent a Caesarean section compared with women delivering spontaneously.[1] The use of pharmacological sedation after extraction of the foetus by Caesarean section under subarachnoid anaesthesia is useful in some patients e.g. those presenting with high stress. Enhanced stress can result from poor foetal health after delivery, discomfort associated with immobilization on the operating table, chills that accompany anatethesia, nausea, vomiting and environment of operating room.[2]

Sedation is a valuable tool to provide general comfort for the patient. Over sedation may jeopardize the safety of the patient. While levels of sedation progress in a dose response continuum, it is not always possible to predict precisely how an individual patient will respond to a particular dose.[3] Oversedation may be associated with untoward effect of respiratory and cardiovascular depression resulting in higher chances of airway

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instrumentation and hypotension leading to a prolonged stay in the post anaesthetic care unit, entailing increased burden on staff, bed availability and associated costs.[4,5] Thus judicious use of sedation can make surgeries under spinal anaesthesia more comfortable for the patient, the surgeon and the anaesthesiologist. As a result, it can increase the patient's acceptance of regional anaesthetic technique.[6]

Clonazepam is a long acting benzodiazepine which is primarily used to control seizure attack. It is highly lipophilic, allowing rapid onset of effects in the brain. It is also used as premedicant drug to relieve anxiety preoperatively. However, there is still little information on the efficacy of Clonazepam as sedative in patients undergoing surgery.[7,8] Fentanyl is a potent narcotic analgesic with rapid onset and short duration of effect following a single intravenous dose. It provides analgesia with sedation but it has the propensity of respiratory depression when used in higher doses.[9]

The aim of this study was to compare the time of onset and recovery from sedation with Clonazepam and Fentanyl, to evaluate and compare the properties of both drugs in terms of haemodynamics and adverse effects, as adjuncts to spinal anaesthesia.

Materials and methods

This randomized clinical trial included 60 ASA (American Society of Anesthesiologists) grade I patients between age 20-40 years underwent elective caesarean sections under subarachnoid anaesthesia during the period January 2022 to June 2022. The exclusion criteria were positive history of drug allergies, patients suffering from heart disease, hypertension, diabetes, spinal deformity, neurological disorder, any bleeding disorder and unwilling to accept sedation during spinal anaesthesia. Patients were randomly allocated to one of two groups: Clonazepam group (Group C, n=30) who received Clonazepam in a single dose of 0.015mg/kg and Fentanyl group (Group F, n=30) who received Fentanyl in a single dose of 0.5mcg/kg. Written informed consent were taken from all participants. Ethical approval was obtained from proper authority. They were fasted for a minimum of 6 hours before surgery. No preoperative opioid or prophylactic antiemetic were given. No other preoperative medication was allowed. All patients were monitored with electrocardiograph, non-invasive blood pressure and pulse oximeter monitor. Baseline vital parameters were recorded. Preloading was done with 300ml Ringer lactate within 5-10 minutes prior to block. Spinal anaesthesia was conducted by injecting a hyperbaric solution of 0.5% bupivacaine 3ml through a 25G spinal needle at L3-4 level. After spinal block, patients were placed on the operating table in horizontal position. Sedation with Clonazepam or Fentanyl was administered after extraction of the foetus. O_2 inhalation by ventimask was given when SpO_2 (Saturation percentage of arterial oxygen) came down below 90% and vasopressor was given if MAP (Mean arterial pressure) decreased beyond 20% of baseline. MAP was measured continually at 5 min interval and Heart Rate (HR) SpO_2 were monitored throughout the surgery. All parameters were documented at 5 min intervals until arousal of the patient. The onset of sedation i.e. time from iv injection of Clonazepam or Fentanyl to closure of eye lids (OAA/S score of 3) and the arousal time from sedation i.e. time from closing of the eye lids to OAA/S (Observer's Assessment of Alertness/ Sedation) score of 5 (Patient is awake clinically) were noted. Any complication during operation was documented. The patient's satisfaction with the sedation was assessed by the 5 point 'Likert verbal rating scale' with some questions like 'where will you put your experience with this sedation on the scale?' in a language which the patient understands, at a point of time when the patient had a mental state suitable for communication.

Observer's Assessment of Alertness/ Sedation (OAA/S) Scale

Category	Observation	Score Level
Responsiveness	Responds readily to name spoken in normal tone	5
	Lethargic response to name spoken in normal tone	4
	Responds only after name is called loudly and/or repeatedly	3
	Responds only after mild prodding or shaking	2
	Does not respond to mild prodding or shaking	1
	Normal	
	Mild slowing or thickening	
	Slurring or prominent slowing	5
Speech	Few recognizable words	4
	Normal	3
	Mild relaxation	2
	Marked relaxation (Slack jaw)	
Facial expression	Clear, no ptosis	5
	Glazed, or mild ptosis (Less than half the eye)	4
	Glazed and marked ptosis (Half of the eye or more)	3
Eyes		5
		4
		3

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Figure 1 Likert Scale for satisfaction

Data were analysed using Statistical Package for the Social Science (SPSS) for Windows (Version 12.0, SPSS Inc,. Chicago, IL, USA). Independent 't' test was used for age, weight, duration of surgery, time for recovery, heart rate, mean arterial pressure and SpO_2 at various time intervals. Chi square test was applied for adverse effects. Paired 't' test was applied for intra-group variation in heart rate and mean arterial pressure. Data were expressed in mean, SD and percentage. $p<0.05$ was taken to be of statistically significant.

Results

60 respondents (30 in each group) were included in this randomized clinical trial. The Group C (Clonazepam group) and Group F (Fentanyl group) were found to be comparable in respect of age, weight, duration of surgery (Time from surgical incision to surgical closure) (Table I).

There was no significant difference in Mean arterial pressure between the two groups before Spinal anaesthesia (Baseline), after spinal block and before sedative drug administration. Fall in mean arterial pressure was observed inboth the groupsafter drug administration but that was not statistically significant (Table II).

There was no significant difference in Mean heart rate between the two groups before Spinal anaesthesia (Baseline), after spinal block and before sedative drug administration. Rise in mean heart rate was observed inboth groupsafter drug administration but that was not statistically significant (Table III). Mean values of SpO_2 remained stable throughout the surgical procedure in both the groups, with no statistically significantaberrations ($p>0.5$).

Time of onset of sedation was significantly less in Clonazepam group ($p<0.05$). Duration of sedation i.e time for arousal from sedation was significantly more in Clonazepam group ($p<0.001$). Significant percentage of patient was satisfied with Clonazepam than Fentanyl (80% vs 20%, $p<0.001$) (Table IV).

Incidence of nausea and vomiting was significantly more in Fentanyl group ($p <0.05$). Other complications were comparable between the two groups (Table V).

Table I Demographic data of the patients under

Variable	Group C (n=30)	Group F (n=30)	p value
Age (Years)	28.53±5.4	30.46±4.5	0.664
Weight (Kg)	65.53±10.8	66.53±9.8	0.751
Duration of surgery (min)	50.66±5.6	48.66±3.6	0.681

Values are expressed in mean±SD
SD- Standard Deviation.

Table II Comparison of MAP (mmHg) in study groups at various time intervals (n=60)

Time Interval	Group C (n=30)	Group F (n=30)	p value
Before Anaesthesia (Baseline)	82.1±8.54	83.1±6.53	0.753
After Spinal block	75.8±6.47	77.5±5.69	0.641
Before drug administration	76.4±6.41	73.6±6.57	0.657
After drug administration	73.3±8.41	72.1±7.28	0.731

Values are expressed in mean±SD
SD- Standard deviation.

Table III Comparison of mean heart rate (bpm) in study groups at various time intervals (n=60)

Time Interval	Group C (n=30)	Group F (n=30)	p value
Before Anaesthesia (Baseline)	78.9±12.69	79.6±11.69	0.837
After Spinal block	87.4±11.97	86.5±11.97	0.851
Before drug administration	75.6±12.71	82.6±12.31	0.559
After drug administration	81.5±10.08	86.5±2.08	0.481

Values are expressed in mean±SD
SD- Standard Deviation.

Table IV Comparison of Sedation characteristics in study groups (n=60)

Variable	Group C (n=30)	Group F (n=30)	p value
Time required for onset of sedation (Eye closure) (min)	1.81±0.51	4.3±1.15	<0.05
Arousal time from sedation in min (OAA/S score of 5)	38.3±6.37	9.3±2.37	<0.001
Satisfaction with sedation (Good)	24 (80%)	6 (20%)	<0.001

Values are expressed in mean±SD
SD- Standard Deviation.

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Table V Incidence of complications in study groups (n=60)

Variable	Group C (n=30)	Group F (n=30)	p value
Nausea and Vomiting	4 (13.33%)	14 (46.66%)	<0.05
Chills	2 (6.66%)	3 (10%)	0.526
Restlessness	4 (13.33%)	6 (20%)	0.756
Pain in arm	3 (10%)	2 (6.66%)	0.689

Discussion

The most widely used technique for administering sedation in regional anaesthesia is the intermittent bolus dose technique. This technique has been shown to be associated with peaks and troughs in plasma concentration producing significant side effects and delayed recovery.[10] Continuous infusions have been proved to produce, lesser side effects, faster recovery, easy controllability over the desired depth of sedation but requires some especial equipments e.g. syringe pump, BIS monitor etc, which is expensive and not available everywhere. Moreover, it needs more expertise like interpretation of EEG.[11]

When using sedative medication during regional anaesthesia technique, the anaesthesiologist attempts to titrate the drug to optimize patient comfort while maintaning cardiorespiratory stability and intact protective reflexes. The assessment of depth of sedation has been traditionally performed by observing clinical parameters such as appearance, response to voice, and pain on surgical stimulation. These parameters are qualitative and assessment of response to voice requires patient stimulation, which may itself alter depth of sedation.[12]

We chose the OAA/S scale for assessment of sedation over other scales as it was easier to use, comprehensive and inclusive of parameters such as facial expression and eyelid ptosis in addition to speech and responsiveness, which are not there in other sedation scales.[13]

Benzodiazepines via GABAergic receptors produce anxiolysis as well as sedation and anterograde amnesia.Clonazepam is a benzodiazepine drug with anxiolytic, anticonvulsant, and muscle relaxant properties.It has long elimination half-life (19-60hrs). It does not have any active metabolite and may be kept at ambient temperature.[14] Opioids bind to specific receptors located throughout the central nervous system and other tissues. Four major types of receptors have been identified. Fentanyl bind mostly to mu (μ) receptor. Opioid receptor activation inhibits the presynaptic release and post synaptic response to excitatory neurotransmitters (e.g. Acetylcholine, substance P) from nociceptive neurons. The cellular mechanism for this neuromodulation may involve alteration in potassium and calcium ion conductance.[15] Minami et al. conducted a prospective clinical trial on safety and discomfort during bronchoscopy performed under sedation with Fentanyl and Midazolam. Fentanyl 20 mcg was administered to the patients just before bronchoscopy, and Fentanyl (10 mcg) and Midazolam (1mg) were added as needed during the procedure. A questionnaire was completed 2 hours after the examination. 70.2% patients agreed to undergo a second bronchoscopic examination and only 37.8% of the patients remembered the bronchoscopic examination. No severe complication was reported.[16] In our study, we compared the sedative effect between Clonazepam and Fentanyl during Caesarean section which showed more favorable sedative effect with Clonazepam. Fentanyl was associated with more adverse effects like nausea and vomiting than Clonazepam.

Frolich et al. conducted a double blinded, randomized, placebo controlled trial, where 60 healthy pregnant women received either a combination of Fentanyl (1mcg/kg) and Midazolam (0.02mg/kg) intravenously or an equal volume of iv saline at the time of their skin preparation for a bupivacaine spinal anaesthetic. Foetal outcome measures included Apgar Score, continuous pulse oximetry, and neurobehavioral Scores. Maternal outcomes included catecholamine levels, recall of anaesthesia and delivery. There were no between-group differences of neonatal outcome variables. Mothers in both groups showed no difference in their ability to recall the birth of the babies. So, they concluded that maternal analgesia and sedation with Fentanyl and Midazolam immediately prior to spinal anaesthesia is not associated with adverse neonatal effects.[17] In our study, we compared the sedative effect between Clonazepam and Fentanyl after delivery of the baby which showed more favorable sedative effect with Clonazepam than Fentanyl.

Shin et al. assessed the effect of adding Fentanyl to Midazolam on sedation level and Intraoperative Nausea and Vomiting (IONV) during Caesarean section under spinal anaesthesia. Following foetal delivery, patients were administered 0.05mg/kg of

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Midazolam plus 0.03ml/kg of normal saline (M group) or 0.05mg/kg of Midazolam plus 1.5mcg/kg of Fentanyl (MF group). The primary outcome was the incidence of IONV. The secondary outcomes were incidence of Post Operative Nausea and Vomiting (PONV) intraoperative sedation level and 5 point Patient Satisfaction Score (PSS).

They concluded that adding Fentanyl to Midazolam is effective for sedation and to prevent IONV in women who underwent Caesarean section under spinal anaesthesia.[18] In our study, we compared the adverse effects between Clonazepam and Fentanyl while used as sedative during Caesarean section. Incidence of Intra Operative Nausea and Vomiting (IONV) was significantly more in Fentanyl group. Our study did not include incidence of PONV. Patient satisfaction was significantly more with Clonazepam.

Limitations

The intervention was not placebo controlled and blinded to neither clinicians nor patients. Additionally, group sizes were small. Consequently the clinical relevance remains undetermined and further studies are necessary to confirm potential benefits between the two sedatives.

Conclusion

The study showed that the time to reach effective sedation was less with Clonazepam than Fentanyl and the arousal time i.e. duration of sedation was significantly longer with Clonazepam which is beneficial for the patient in single dose technique for sedation.

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Disclosure

All the authors declared no competing interest.

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Original Article

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Profile and Outcomes of Neonates Admitted to Rangamati General Hospital before and after SCANU

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Abstract

Background: Government of Bangladesh initiated the Special Care Newborn Units (SCANU) in 2011 at selected district hospitals followed by its scale up in other districts with support from UNICEF and other partners. A SCANU was established in Rangamati General hospital (RGH), Bangladesh, in December, 2021. This study aimed to compare the diseases pattern and outcome of the neonates admitted in RGH before and after the establishment of SCANU.

Materials and methods: This retrospective analytical study included 325 neonates admitted during October 2021 to February 2022. One hundred and fifty-seven cases were admitted in General Paediatrics Ward before establishment of SCANU and 168 cases were admitted in the SCANU. Data were extracted from the register and compared between two groups.

Results: The ratio between male and female was 1.6:1, 52% of the neonates admitted at first day of life. The reasons for admissions were 30.5% of neonatal jaundice, 26.2% preterm and low birth weight, 22.8% perinatal asphyxia, 22.2% prematurity, 8.9% neonatal sepsis and 3.1% for pneumonia. Out of all neonates survival rate was 78.5% (225) while 2.5% (8) ended with fatality, 15.1% (49) were referred to tertiary level hospital and 4% (13) were Left Against Medical Advice (LAMA). Though the LAMA and referral to higher center was lower in the SCANU period than the general ward period, the difference failed to reach statistical significance (p=0.184).

Conclusion: Optimal neonatal case service cannot be ensured by establishing a neonatal ward or unit but for that one needs to have a fully equipped and adequately staffed neonatal unit.

Key words: Disease profile; New-born; Outcome; SCANU.

Introduction

Neonatal mortality is an influential part of overall child mortality. A specific target of less than 12 neonatal deaths per 1000 live births in 2030 was included in the SDG.[1] There was a 3.1% decline in neonatal deaths between 2000 and 2015 in Bangladesh, and this rate of improvement would need to be maintained for achieving the child mortality target.[2] Although Bangladesh has substantially reduced neonatal mortality since 1990, increased efforts to improve progress are still needed to achieve the SDG target by 2030.[3]

To accelerate the reduction in neonatal mortality, SCANU have been started since 2011 at few selected hospitals.[4] These SCANUs have been scaled up by the government of Bangladesh with support from UNICEF and other partners.[5,6] To reduce neonatal mortality and childhood morbidity attempts are being made to improve neonatal services at RGH, a secondary level 150 Bed hospital in Rangamati Sadar of Rangamati Hill tracts of Bangladesh. A SCANU with a bed capacity of 20 was established in this hospital in December 2021. This study was undertaken to compare the disease pattern and mortality rates before and after establishment of a neonatal unit in the same hospital. To improve the hospital care of neonates it is imperative to know the disease pattern and their outcomes in the hospital setting.

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Materials and methods

This retrospective analytical study was conducted during October 2021 to February 2022. Ethical approval was taken from the ethical review committee of Rangamati Medical College. As the data collected retrospectively and did not contain personal informationthere was no need of informed consent of the legal representative of the neonates.

The study included 325 neonates admitted during the aforesaid period. One hundred and fifty-seven cases were admitted in General Paediatrics Ward before establishment of SCANU and 168 cases were admitted in the SCANU. Both inborn and out born within this period were included in this study. Neonates, who were kept under observation, including those referred from other facilities with suspected disease but labeled healthy after evaluation in SCANU were excluded from the study.

Data were collected from the medical records stored in the hospital record room and admission and discharge registrar of SCANU. Using a structured case record form, data including age and sex, weight and gestational age on admission, place, and mode of delivery, cause of admission, duration of hospital stay and outcomes (Discharge, death, referred or left against medical advice) were collected.

All statistical analyses were performed in SPSS version 23.0. Data were analyzed through Descriptive statistics (Frequency, percentage) and inferential statistics (Chi-square and Student's t test). A p-value less than 0.05 was considered statistical significance.

Results

In the SCANU the number of admissions increased from 157 to 168. Male admissions were more (61.2%) than female (38.8%) and ratio of M:F admission was same in general wards. Maximum admissions were on the 1st day of life (52%), followed by 2-7th day (32%), and the trend was similar before and after the establishment of SCANU. Though inborn neonates were more in both groups, the proportion was higher after establishment of SCANU. Similarly, higher proportion of hospital delivered neonates were admitted in the SCANU than in the general ward (Table I).

Table I Demographic Characteristics of the admitted neonates at RGH before and after the establishment of SCANU

Variables	Total (n=325)	Before SCANU (n=157)	After SCANU (n=168)	p value*
Age at admission, days				
0-1	169 (52.0)	86 (54.8)	83 (49.4)	0.641
2-7	104 (32.0)	47 (29.9)	57 (33.9)	
8-14	25 (7.7)	10 (6.4)	15 (8.9)	
15-28	27 (8.3)	14 (8.9)	13 (7.7)	
Sex				
Male	199 (61.2)	95 (60.5)	104 (61.9)	0.791
Female	126 (38.8)	62 (39.5)	64 (38.1)	
Ethnicity				
Bangali	189 (58.2)	90 (57.3)	99 (58.9)	0.770
Tribal	136 (41.8)	67 (42.7)	69 (41.1)	
Source				
Inborn	238 (73.2)	102 (65.0)	136 (81.0)	0.001
Out born	87 (26.8)	55 (35.0)	32 (19.0)	
Gestational age				
Preterm	293 (90.2)	140 (89.2)	153 (91.1)	0.561
Term	32 (9.8)	17 (10.8)	15 (8.9)	
Number of gestations				
Single	317 (98.1)	153 (97.5)	164 (98.8)	0.372
Multiple	6 (1.9)	4 (2.5)	2 (1.2)	
Place of delivery				
Home	85 (26.2)	60 (38.2)	25 (14.9)	<0.001
Hospital	240 (73.8)	97 (61.8)	143 (85.1)	
Mode of delivery				
Vaginal	238 (73.2)	115 (73.2)	123 (73.2)	0.994
Cesarean	87 (26.8)	42 (26.8)	45 (26.8)	

Data were expressed as frequency (%). *p values were derived from Chi-square test. Significant values were in bold face.

Table II shows that, neonatal jaundice was the major causes of admission, followed by preterm low birth weight, perinatal asphyxia, prematurity, neonatal sepsis, pneumonia, hypothermia, respiratory distress syndrome, and birth trauma. Though the disease pattern were similar among the neonates in general ward and neonates in SCANU, proportion of neonates with perinatal asphyxia was higher in the SCANU and opposite trend was observed for the neonates admitted only for prematurity.

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Table II Cause of neonatal admission at RGH before and after establishment of SCANU

Diagnosis	Total (n=325)		Before SCANU (n=157)		After SCANU (n=168)		p value*
	n	%	n	%	n	%	
Neontal Jaundice	99	30.5	45	28.7	54	32.1	0.521
PLBW	85	26.2	40	25.5	45	26.8	0.887
Perinatal asphyxia	74	22.8	30	19.1	44	26.2	0.013
Prematurity	72	22.2	42	26.8	30	17.9	<0.001
Neonatal sepsis	29	8.9	10	6.4	19	11.3	0.118
Pneumonia	10	3.1	4	2.5	6	3.6	0.987
Hypothermia	10	3.1	2	1.3	8	4.8	0.241
RDS	8	2.5	0	0.0	8	4.8	0.114
Birth trauma	5	1.5	2	1.3	3	1.8	0.994

Included multiple responses. PLBW: Preterm Low birth weight, RDS: Respiratory Distress Syndrome, *p values were derived from Chi-square test. Significant values were in bold face.

Table III shows that, more than half of the admitted neonates (56.6%) stay in the hospital for 3-7 days. The length of hospital stay was similar in both groups (p=0.401). The overall death rate was 2.5% (8/325), 255 (78.5%) neonates were discharged from hospital,13 (4.0%) had LAMA, and 49 (15.1%) referred to other hospital. Most of the babies with life threating surgical condition that requires immediate interventions, also severe RDS that require CPAP or ventilator management were referred.Though the LAMA and referral to higher center was lower in the SCANU period than the general ward period, the difference failed to reach statistical significance (p=0.184).

Table III Outcome of neonatal admission at RGH before and after establishment of SCANU

Outcome parameters	Total (n=325)	Before SCANU (n=157)	After SCANU (n=168)	p value*
Length of stay				
≤ 2 days	123 (38.9)	65 (41.9)	58 (36.0)	0.401
3-7 days	179 (56.6)	82 (52.9)	97 (60.2)	
>7 days	14 (4.4)	8 (5.2)	6 (3.7)	
Admission outcome				
Improved & discharged	255 (78.5)	118 (75.2)	137 (81.5)	0.184
LAMA	13 (4.0)	10 (6.4)	3 (1.8)	
Expired	8 (2.5)	4 (2.5)	4 (2.4)	
Referred to higher center	49 (15.1)	25 (15.9)	24 (14.3)	

*p values were derived from Chi-square test. LAMA: Leave Against Medical Advice.

Discussion

Recently, on December 14, 2021, 20 bedded SCANU (With Radiant warmer, phototherapy machine, CPAP, syringe pump, and oxygen concentrator) has been established in 150 bed General Hospital, Rangamati. Previously the neonates were treated in general ward. This retrospective analytical study was conducted targeting neonates admitted this hospital two months before and two months after SCANU establishment. During this period, a total of 325 neonates has been admitted in the hospital SCANU, among them 61.2% were male with a male to female ratio of 1.6:1. The male predominance, in this study is also consistent with other studies conducted in Bangladesh, Pakistan, India, and Ethiopia.[7-10] This indicates that male neonates are more vulnerable during the neonatal period; this might be due to higher biological survival rate of girls in the neonatal period. Additionally, cultural and social factors could also contribute to male babies getting more attention by parents than females.

Pattern of admissions indicates that bulk of the problems encountered by the neonates are on the 1st day of life and then there is a gradual decline in admission rate with increasing age of the baby, which was also similar to other studies.[7-13] Though inborn neonates were more in both groups, the proportion was higher in the SCANU period. Similarly, higher proportion of hospital delivered neonates were admitted in the SCANU than the general ward.Uppal et al showed inborn and out born admission rates were respectively, 69.2% and 30.8%, which agreed to our study.[14]

Main causes of admission was neonatal jaundice, followed by preterm low birth weight, perinatal asphyxia, prematurity, neonatal sepsis, pneumonia, hypothermia, respiratory distress syndrome, and birth trauma. The present study shows various differences in disease pattern after establishment of neonatal unit. Though the disease pattern were similar among the neonates in general ward and neonates in SCANU, proportion of neonates with perinatal asphyxia was higher in the SCANU and opposite trend was observed for the neonates admitted only for prematurity. The high rate of neonatal jaundice and preterm low birth weight baby and low rate of RDS was consistent with other studies conducted in Bangladesh.[11-13]

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The death rate in our study was 2.5% which is lower than the previous recent studies (10%-3.6%) done in different centers in Bangladesh.[7-13] Death rate of any neonatal medical care unit depend upon various factors aside from the clinical condition of the baby like the infrastructure, manpower and trained person on duty, etc. Hence the death rate reports vary widely in several studies from different regions. Most of the cases who had LAMA in general ward would have probably ended up in death, therefore, the high rate of LAMA in general ward gives a false impression of low mortality as compared to mortality in SCANU.

Limitations

The study had certain limitations. Duration of study period was short to determine the effect of SCANU on the overall outcome of the neonatal admission. Moreover, retrospective design was associated with selection bias and misclassification bias.

Conclusion

It is concluded from this study that neonatal mortality was low in the study site and the commonest cause of neonatal admission was neonatal jaundice and preterm low birth weight baby.Number of admissions increased after the establishment of neonatal unit but there was no decline in the mortality. Changes in disease pattern were observed particularly for perinatal asphyxia and preterm delivery.

Recommendations

Neonatal mortality and quality service without the need for referralcannot be ensured by establishing a neonatal ward or unit but for that one needs to have a fully equipped and adequately staffed neonatal unit.

Disclosure

All the authors declared no competing interest.

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Original Article

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COVID-19 Vaccination Status among the Students of a Non-Government Medical College in Chattogram City

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Abstract

Background: The COVID-19 pandemic in Bangladesh is part of the worldwide pandemic of Coronavirus disease 2019 (COVID-19). Medical students are among frontline healthcare providers likely to be exposed to COVID-19 patients. The aim of the study to evaluate the medical student's knowledge about COVID-19 Vaccine.

Materials and methods: The cross-sectional study was carried out to explore the Covid -19 vaccination status among the students of Chattagram International Medical College in Chattogram. The study period was from October to December, 2021. A total of 125 students were interviewed for the study and a non-probability sampling technique was used. Face to face interview method was applied for data collection by using pretested, predesigned, semi-structured questionnaires.

Results: The respondents belonged to the age group 19-23 years. The first main result from the study revealed that the vaccination coverage is 100% among the students of Chattogram International Medical College. The pain was the most commonly observed side effect (66%) following vaccination. Another important finding from our study revealed that 100% of study subjects wore masks, followed by 92% continued frequent hand wash. But only 56% maintained social distancing, which is quite regressive.

Conclusion: COVID-19 vaccination program should be implemented across the country to reduce the global burden of illness and death and preventive activities that have to be followed strictly to fight the deadliest disease in the 21st century.

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Key words: COVID-19; COVID-19 vaccine; Pandemic.

Introduction

The COVID-19 pandemic, also known as the coronavirus pandemic, is an ongoing global pandemic of Corona Virus Disease 2019 (COVID-19) caused by Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2). The novel virus was first identified in the Chinese city of Wuhan in December 2019, a lockdown there and in other cities is surrounding Hubei failed to contain the outbreak.[1] The world health organization (WHO) declared a public health emergency of international concern on 30 January 2020 and a pandemic on March 11, 2020. Multiple variants of the virus emerged, led by the alpha, beta, gamma, delta and omicron variants. As of 12 December 2021 more than 269 million cases and 5.3 million deaths have been confirmed, making pandemic one of the deadliest in the history.[2] As of 12 December 2021 more than 5.3 had been attributed to COVID-19. Official deaths from COVID-19 generally refer to people who died after testing positive. The first confirmed death was in Wuhan on 9 January 2020. The first reported death outside of China occurred on 1 February 2020 in the Philippines, The first reported death outside Asia was in the United States on 6 February 2020.[3,4] People at the greatest risk of mortality from COVID-19 are the elderly (age 65 years or older) and those with underlying conditions.[5] The COVID-19 pandemic in Bangladesh is part of the worldwide pandemic of corona virus disease 2019 COVID-19.[5] The virus was confirmed to have spread to Bangladesh in March 2020. The first three known cases were reported on 8 March 2020 by the country's epidemiology institute, IEDCR. Since then, the pandemic has spread day by day over the whole nation and the number of affected people has been increasing. Bangladesh is the second most affected country in South Asia after India. On 8 March the first three corona virus

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cases were confirmed.[6] They included two men that recently returned from Italy and a female relative. On 18 March, Bangladesh reported its first corona virus death.[7] The patient was aged over 70 and had other morbidities. By the end of March Bangladesh had reported 51 confirmed cases and five deaths. On 21 December 2020, the European Union approved the Pfizer Bio NTech vaccine H. Vaccinations began to be administered on 27 December 2020. The Moderna vaccine was authorized on 6 January 2021.The AstraZeneca vaccine was authorized on 29 January 2021. On 8 December, it was reported that the AstraZeneca vaccine is about 70% effective, according to a study. As of mid-August 2021, more than 4.6 billion doses of COVID-19 vaccines had been administered in over 190 countries.

The Oxford-AstraZeneca vaccine was the most widely used.[8] Bangladesh began the administration of COVID-19 vaccines on 27 January 2021, focusing initially on a pilot program of 500 health workers, while mass vaccination started on 7 February 2021.It was planned that 6 million doses would be administered in the first month and a further 5 million the following month.[9] An online registration portal was launched where citizens registered using their NID number. Initially, registration was open to those aged 55 and above, but due to lower than expected take-up, this was promptly lowered to ages 40 and above. On 5 July 2021 after the vaccination program had re-opened, DGHS announced the registration age would be lowered to 35 yearsand then 30 years on 19 July.[10] University vaccination or Univac was launched to vaccinate university students. Since the vaccination minimum age was reduced to 18, but many did not have NID to register at the main government vaccine website (https://surokkha.gov.bd) another website (https://univac.ugc.gov.bd) was launched to allow university students with birth certificates to register for the vaccine. On November 2nd, the campaign to vaccinate 12-17 year olds in school started. They had to register through their schools to be vaccinated. As of 13 December 2021, 8.47 billion COVID-19 vaccine doses have been administered worldwide, with 56 percent of the global population having received at least one dose. While 34.09 million vaccines were then being administered daily, only 7.1 percent of people in low-income countries had received at least a first vaccine by December 2021.As of 13 December 2021, 8.47 billion COVID19 vaccine doses have been administered worldwide, with 56 percent of the global population having received at least one dose. While 34.09 million vaccines were then being administered daily, only 7.1 percent of people in low-income countries had received at least a first vaccine by December 2021.[11] The aim of the study to evaluate the medical student's knowledge about COVID-19 Vaccine.

Materials and methods

This cross-sectional survey was conducted using an pre structured questionnaire. Medical students from Chittagong International Medical College were selected to participate through convenience sampling. Questionnaires were distributed to students' and collected data by face to face interview. Prior to the study, the students provided with an informed consent form. All students received information about the study purpose, and they were told that participation was voluntary and anonymous.

Inclusion criteria

- Medical students
- Eligible for COVID-19 vaccines
- Volunteered to participate in this study.

Exclusion criteria

- Infected with COVID-19
- Pregnant or breastfeeding women
- Diagnosed with diseases that prevented them from receiving the COVID-19 vaccines.

In total, 125 medical students completed our questionnaire from October to December 2021. The government of Bangladesh has been providing COVID-19 vaccines for college students since April 2021. Thus, all of the participants in this study have received COVID-19 vaccines. In total, 39 incomplete questionnaires were excluded and finally 125 questionnaires were analyzed. The survey questionnaire contained 3 parts and it took the students approximately 6 minutes to complete the survey. Medical students' demographic characteristics were collected A self-design, 14-item questionnaire was employed to evaluate the medical students' knowledge about COVID-19 vaccine (e.g Types of vaccines, vaccination eligibility, common side effects and precautions after vaccination). The questionnaire was developed through a literature review and group discussion. Furthermore, we investigated the sources of students' knowledge about COVID-19 vaccine.

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The reasons hindering COVID-19 vaccination among medical students were also investigated (e.g Side effects of vaccine, vaccine safety, convenience, vaccine efficacy and underestimating the risk of exposure to COVID-19).We used IBM SPSS Statistics 22.0 (IBM Corp., Armonk, New York) for statistical analysis. The value of $p < 0.05$ was considered statistically significant.

Results

The respondents belonged to the age group 19-23 years. The first main result from the study revealed that the vaccination coverage is 100% among the students of Chattagram International Medical College. The pain was the most commonly observed side effect (56%) following immunization. Another important finding from our study revealed that 100% of study subjects wore masks, followed by 92% continued frequent hand wash. But only 56% maintained social distancing, which is quite regressive.

Table I Distribution of the respondents according to knowledge about newly emerging disease

Knowledge	Frequency	Percentage
Yes	125	100%
No	00	00%
Total		100%

Table shows that all respondents knew about the newly emerging diseases (Table I).

Table II Distribution of the respondents according to the source of information

Source of information	Frequency	Percentage
Social media	100	80%
Newspaper	22	17.6%
Friends/Family	3	2.4%
Total	125	100%

Table shows that 80% of the respondents obtained the information from social media, followed by 17.6% from newspapers and 2.4% from friends/ family (Table II).

Table III Symptoms followed by COVID infection

Symptoms	Frequency	Percentage
Fever	69	55.2%
Pain	59	47.2%
Headache	35	28%
Cough	3	2.4%
Others	15	12%

Table shows that 55.2% of the respondents were suffering from fever, 47.2% from pain, 28% from headache and 2.4% from cough (Table III).

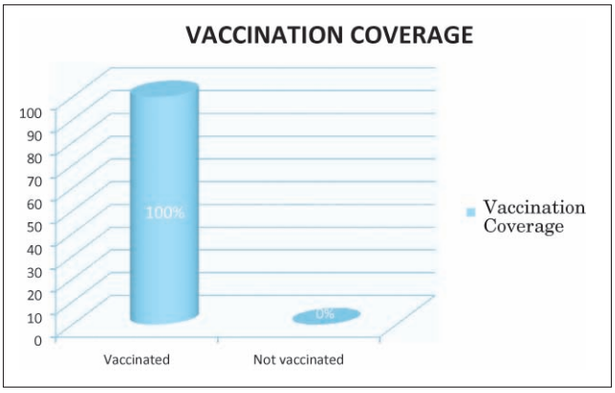

Figure 1 Status of Vaccination

The bar chart shows that all respondents were vaccinated against COVID-19 (Figure 1).

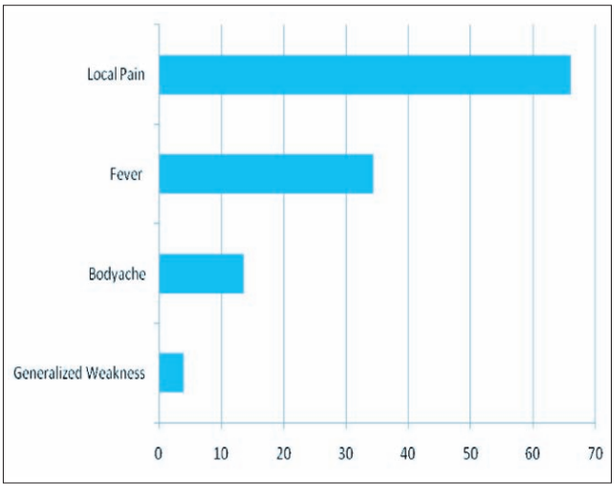

Figure 2 Distribution of the respondents according to complications following vaccination

The bar chart shows that the maximum respondents (66%) experienced local pain followed by 34.40% with fever, 13.60% with body ache and 4% with generalized weakness (Figure 2).

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Table IV Distribution of the respondents based on the following preventive measures

Preventive measures	Frequency	Percentage
Wearing mask	125	100%
Frequent hand wash	115	92%
Social distancing	70	56%

Table shows that 100% of study subjects wore masks, followed by 92% continued frequent hand wash, but only 56% maintained social distancing (Table IV).

Discussion

In this study, most of the respondents 98.40% were Muslim. This is a reflection of majority of inhabitants of Bangladesh. 56.0% respondents hailed from upper class followed by 37.6% from upper middle class. Among the study participants, 74.4% were from nuclear family and 22.4% from joint family. 100% respondents heard about COVID-19.

A major portion (80%) of them got information about COVID-19 and COVID vaccine through social networking sites where 17.6% respondents knew it from online news. Only a small portion of our study group (12%) was COVID positive. 55.2% respondents suffered from fever,47.2% from body ache, 28% complained headache. The first main result from the study revealed that, the vaccination coverage is 100% among the students of Chattagram International Medical College. All the participants got vaccinated from Chittagong Medical College. From the report regarding COVID-19 vaccination coverage in 84 medical and dental colleges published by DG Health, we observed that Chattogram International Medical College secured 17th position and our coverage was 94.44% since August. But it is exclaimed with joy that, the percentage of COVID-19 vaccination reached to 100%.

The result is not representing the whole country's vaccination status. Although Our government has started their vaccination strategy and inoculation program with an aim to bring about 80% of the total population under COVID-19 vaccination program but reaching its target is yet to far since till only 54.62% of total population has come under the vaccination program.[12] Moreover, findings of our study is not similar to a study done at university of Sao Paulo medical school, Brazil where overall vaccination rate was 74.7%.[13] Another study conducted at medical school in southeast Michigan where vaccination coverage was found far from optimal. After receiving the vaccine few minor side effects were observed among the vaccine receiver. Among them, 56% sufferd from local pain at the injection sites followed by 26.4% complained fever, 13.6% generalized weakness and 4% cough. These findings were found quiet similar to a prospective observational study with an aim to find out Vaccine side-effects and SARS CoV-2 infection after vaccination in users in the UK.[14] We found another similar findings in a study done at Sheikh Russel Gastro-liver Institute and Hospital, Dhaka, Bangladesh, 2021. Pain was the most common observed side effect (54.1%) following immunization.[15] Another important finding from our study revealed that, 100% of study subjects were wearing mask followed by 92 % continued frequent hand wash. but only 56% maintained social distancing which is quite regressive. One study conducted at 6 medical schools of Jordan where >80% of study participant showed positive attitude and practices toward wearing mask and frequent hand wash after vaccination but did not maintain social distance all the time.

Limitations

- The small portion doesn't reflect the overall immunization status of the community.
- Due to a shortage of time, some of the important aspects were not included in the questionnaire.

Conclusion

To conclude, all the study subjects were vaccinated and no serious or lifethreatening vaccine complications were observed. But after vaccination, a large portion of them was not maintaining social distancing. To control the pandemic and save lives, there is no doubt that a safe vaccine is a game changing tool at preventing serious illness, hospitalization and death from all current virus variants. But vaccination alone might not be enough to end the COVID 19 pandemic because it is still under research whether removal of pandemic precautions could lead to an increase in virus spread or not.

So, the COVID-19 Vaccination program should be implemented across the country to reduce the global burden of illness and death. Preventive activities have to be followed strictly to fight the deadliest disease in the 21st century.

Recommendations

- Raising public awareness through mass media.
- Demonstrating positive aspects of vaccination.
- Government, Heath providers, public health specialists should encourage the public to accept immunization.
- Mass Vaccination.
- Continue wearing masks, cleaning hands, ensuring good ventilation indoors, physically distancing and avoiding crowds.

Disclosure

Both the authors declared no competing interest.

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Original Article

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Feto-Maternal Outcome in COVID-19 Positive Pregnant Women : A Prospective Observational Study

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Abstract

Background: WHO has declared COVID-19 infection a health emergency of international concern on 11th March 2020. Pregnant women who become COVID-19 positive are usually either asymptomatic or mild to moderately symptomatic, similar to non pregnant women. Pneumonia is also one of the most common outcomes in COVID-19 positive pregnant women. Third trimester seems to be the most vulnerable period of infection. So, the objectives of the present study was to observe the fetomaternal outcome among the COVID positive pregnant women admitted in a tertiary care hospital, Chittagong, Bangladesh.

Materials and methods: This prospective observational study was conducted during the period October 2020 and September 2021 in Chattagram Ma-O-Shishu Hospital, Chattrogram, Sample size 52 pregnant patients with confirmed COVID-19 will be enrolled in one year period. Relevant data will be recorded in a preformed data collection sheet analyzed by SPSS version 20.

Results: In this study the most common symptoms were found fever and cough respectively 80.8% and 59.6%. Other symptoms were sore throat 11.5%, shortness of breath 26.9%, myalgia 15.4%, anosmia 5.8%, diarrhea 5.8% and asymptomatic 7.7%. In co morbidities 11.5% associated with anemia, 11.5% gestational diabetes mellitus and 9.6 % hypertensive disorders. There were 73% underwent caesarean section, 25% underwent vaginal delivery and 1.9% Vaginal Birth After Caesarean section (VBAC) done. The prevalence of missed abortion 5.8%, preterm delivery 19.2%. Maternal mortality 3.8%.

Conclusion: COVID-19 positive pregnant women have adverse fetomaternal outcomes. Proper monitoring and timely measures of pregnancies with COVID-19 improve fetomaternal outcome.

Key words: COVID-19; Fetomaternal outcome; Third trimester.

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Introduction

COVID-19 is a new pathogen of highly contagious infectious disease.[1] COVID-19 positive pregnant women are particularly susceptible to poor outcomes. Admission to intensive care is not uncommon and a case fatality rate of up to 35% has been documented.[2,3] During pregnancy make the mother more vulnerable to severe infections due to physiological changes in their immune, cardiopulmonary and coagulation systems.[4] Anatomical changes such as an increase in the transverse diameter of the thoracic cage and an elevated level of the diaphragm reduce maternal tolerance to hypoxia.[5] On account of the fetus and the newborn the immaturity of the innate and adaptive immune systems makes them highly susceptible to infections.[6,7] According to World Health Organization (WHO) almost 80-85% of COVID-19 infections are mild or asymptomatic and resolve completely like any other uncomplicated seasonal flu, 10-15% are severe illness needs hospitalization/oxygen supplementation and almost 5% are critical illness requiring intensive health care and mechanical ventilation.[8] This study was designed to evaluate the fetomaternal outcome of the pregnant patients with COVID-19.

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Materials and methods

The prospective observational study was conducted during the period from October 2020 to September 2021 in Chattagram Ma-O-Shishu Hospital (CMOSH) Medical College, Chattogram. Following the approval from the Ethical Review Committee of CMOSH Medical College (Memo No: CMOSHMC/IRB/2020/05) on August 8, 2020. Informed consent was obtained from competent patient before enrollment. Total 52 pregnant patients with confirmed COVID-19 will be enrolled in one year period. Relevant data will be recorded in a preformed data collection sheet and analyzed by SPSS version 20.

Results

Total patients were 52 with a mean age of 23 years, 39(75%) were in third trimester. Among them 25(48.1%) were in 37-40 weeks gestation and 7.7% were asymptomatic. Common symptoms were cough 59.6%, fever 80.8%, 3.8% patients had multiorgan failure and 6% patients underwent chest CT and had infiltrate in both lungs. Mild to moderate disease was common and 11.5% had severe disease, 6(11.5%) patients needed Corona HDU, ICU admission and 2% needed mechanical ventilation. Maternal mortality was 3.8%. There were 3(5.8%) spontaneous abortion, 35(72.2%) delivered during the study period. Among them 22(73%) underwent caesarean section, 13(25%) underwent vaginal delivery and 1(1.9%) Vaginal Birth After Caesarean section (VBAC). There was 30 live birth, 2 intrauterine death. There hospital stay was 12.2 days (SD±6.37)

Table I Demographic and clinical characterictics of pregnant women with COVID-19 (n-52)

General Characteristics	Percentage
Mean age 23 years (Range 18-40 years)	
Nulliparous	18(34.6%)
Multiparous	34(65.4%)
Signs & symptoms	
Asymptomatic	4(7.7%)
Cough	31(59.6%)
Fever	42(80.8%)
Sore throat	6(11.5%)
Shortness of breath	14(26.9%)
Myalgia	8(15.4%)
Anosmia	3(5.8%)
Diarrhoea	3(5.8%)
Multiorgan failure	3(3.8%)

Table II Distribution of co morbidities and admission of the patients (n-52)

Comorbidities	Frequency	Percentage
Anaemia	6	11.5%
Hypertensive disorder	5	9.6%
GDM	6	11.5%
Hypothyroidism	4	7.7%
Bronchial asthma	1	1.9%
Admission in COVID ward	43	82.7%
Admission in Obstetric ward	8	15.4%
Admission in ICU	6	11.5%

Table III Outcome of pregnant women with COVID-19 (n-52)

Outcome	Frequency	Percentage
Mild to moderate disease	46	88.5%
Severe disease	6	11.5
Need ICU admission	6	11.5
Delivered	36	68.8%
Ongoing Pregnancy	16	31.2%
Maternal death	2	3.8%
Normal vaginal delivery	13	25%
Caesarean section	22	73%
Instrumental delivery	0	0%
VBAC	1	1.9%
Abortion	3	5.8%
Live birth	33	63.5%
Preterm birth	10	19.2%
Need NICU admission	8	15.3%
Neonatal death	2	3.8%
Intrauterine death	2	3.8%
Mean Hospital stay	12.2 days (SD±6.37	

Discussion

The COVID-19 disease was first detected in Wuhan on December 31, 2019.[9] It began spreading in various countries around the world, first COVID-19 cases were detected by Bangladesh in Dhaka city on 8 March, 2020 using rRT-PCR testing. In Chattogram first COVID-19 cases detected on May 9, 2020 and SARS-CoV-2 was detected within the first week. At CMOSH Medical College began RT-PCR test on 11th July 2020. Corona virus is a new pathogen of high contagious abilities. Pregnant women are at increased risk due to physiologic changes in their immune, cardiopulmonary coagulation systems. But some authors suggested that pregnancy did not aggravate the symptoms or CT features of COVID-19 pneumonia.[10]

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L Chowdhury et al found 48% of patients were asymptomatic, cough (26%), fever (14%) were the most common symptoms.[7] In our study only 7.7% were asymptomatic, cough 59.6% and fever 80.8%.

Chevan NN et al found 48.22% preterm delivery, Chowdhury et al shwed 15.8% prematurity.[11,7] In our stydy 19.2% were preterm delivery.

Karim MM et al reported 68(63.6%) patients had Diabetes Mellitus (DM) followed by 64(59.8%) had hypertension, 27(25.2%) had Ischaemic Heart Disease (IHD) 1.4(13.1%) had chronic lung disease.[12]

Hasan et al showed DM24.8%, HTN 23.2%, IHD 9.8% bronchial asthma 9.6% and chronic kidney disease 4.3% were the most common comorbidities in patients with moderate to critical COVID-19.[13] In this study observed that majority 6(11.5%) patients had diabetes mellitus, 6(11.5%) had anaemia, 5(9.6%) had pregnancy induced hypertension and 4(7.7%) had hypothyroidism.

L Chowdhury et al presented 49.1% patients were infected in 3rd trimester, 64.2% delivered during study period, 7.4% patients developed severe disease with multiorgan failure and were treated in ICU, 3.7% of them required mechanical ventilation and 1.2% patients died.[7] Chevan NN et al found 51.78% were <37weeks gestation, delivery was done by LSCS in 76.78% and by vaginal delivery in 23.22%. Out of these 33.92% patients required ICU admission.[11]

In our study 25% were <28wks gestation, 26.9% in between 28-36 weeks pregnancy and 48.1% were more than 36wks pregnancy. Delivery was done by LSCS 73.1% and by vaginal in 25% and 1.9% Vaginal Birth After Caesarean Section (VBAC).

Chevan NN et al showed 40% babies delivered had birth weight <2.5Kg out of which 13.33% had IUGR and 26.66% were preterm. There was 13.33% still birth and 6.66% neonatal death. 1 maternal death has been reported But our study found 19.2% preterm delivery, 3.8% neonatal death and 3.8% still birth[11]. L Chowdhury et al presented 2(3.8%) neonatal death due to extreme prematurity. Rest of them were doing well. Neonatal COVID infection 7.6%.[7]

Although pregnant women do not seem to present an increasd risk to COVID-19 or more complications than non-pregnant adults. But several studies suggest that there may be at risk of adverse pregnancy outcomes, mostly preterm delivery, fetal distrtess low birth weight in the newborn. Further research is urgently needed to understand the real effect of COVID-19 on pregnant women and neonates. It may provide an evidence base for treatment and prevention of COVID-19 on pregnant women recommendations for obstetrician.

Conclusion

COVID-19 positive pregnant women have adverse fetomaternal outcomes. Proper monitoring and timely measures of pregnancies with COVID-19 improve fetomaternal outcome.

Disclosure

All the authors declared no competing interest.

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Original Article

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Outcome of Early Discharge and Home Management of Very Low Birth-Weight Neonates

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Abstract

Background: Management of very low birth weight neonates in developing countries can be, cumbersome, labor intensive and often requires a prolonged stay in hospital. The present study was intended to test whether very low birth weight neonates can attain optimum growth and development if they are discharged early from Hospital and appropriate management is given to them at home.

Materials and methods: This prospective observational study was conducted at Neonatal Unit of Department of Pediatrics in Shaheed Ziaur Rahman Medical College Hospital, Bogura over a period of twelve (12) months from January 2017 to December 2017. A total of 81 very low birth weight neonates admitted in the Neonatal Unit of the Hospital and & were discharged at or below 1500 grams. The neonates after discharge fed on three types of feeding regimens at home. The main exposure variable was feeding regimen (Expressed breast milk, mixed formula and infant formula only), while the main outcome variable was growth (In terms of increase in weight, length and OFC). The other outcome measures were morbidities like Retinopathy of Prematurity (ROP) Respiratory Tract Infection (RTI) diarrhea and anemia, visit to physician and readmission to hospital for the morbidities they encountered. The neonates were observed up to three consecutive follow-ups from their date of discharge at 6-weekly interval with end-point of study being 4 and ½ month from admission to last follow up visit.

Results: The median gestational age at birth was 31 weeks. Approximately 57% of the neonates were admitted within 72 hours of birth with median age at admission being 24 hours. Females were slightly higher (54.3%) than the males (45.7%). Of them 77 attended at first follow up, 75 at second and third follow ups. Three neonates died during follow up period and three could not be traced. The mean weight, length and OFC (Occiputo-Frontal Circumference) at admission were 1242 gm, 38 cm and 27.7 cm respectively. The study demonstrated a steady growth (In terms of weight, length and OFC) of the infants up to a median age of 4½ months with EBM being the fastest, infant formula the slowest and mixed formula in between them. However, all the three groups of neonates experienced RTI, diarrhea and anemia, where EBM group suffering the lowest, infant formula the highest and mixed feeding group in between them. The incidence of ROP was significantly higher in mixed feeding group (38.5%) compared to infant formula and EBM (12.5 and 3.5% respectively) (p=0.001). The frequency of visits to physician and hospital admission were significantly higher in the infant formula group (87.5%) followed by mixed feeding group (61.5%) and the least in EBM group (51.9%).

Conclusion: Breast milk alone is adequate to achieve a targeted growth for VLBW neonates. The higher frequency of breast feeding reduces the chance infection and its severity.

Key words: Neonates; Preterm; Very low birth weight.

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Introduction

Neonatal mortality has remained persistently high worldwide. The majority (75%) of neonatal deaths occur in the first week of life, with 25-45% of these occurring within the first 24 hours after birth.[1] This points to the need for appropriate care of these babies especially during the critical first few days of life. The leading causes of neonatal mortality are complications of preterm births and low birth weight.[2]

An estimated 15 million babies are born preterm, and the survival gap between those born in high- and low-income countries is widening, with one million deaths a year due to direct complications of preterm birth, and around one million more where preterm birth is a risk factor, especially amongst those who are also growth restricted. Most premature babies (>80%) are between 32 and 37 weeks of gestation, and many die needlessly for lack of simple care.[3]

Management of very low birth weight (Weighing < 1500 gm) infants has always been a cumbersome problem for both clinician and parents. In the developed world survival and outcome of these infants have improved tremendously in recent years accounting for 80-90% survival rates for infants weighing 750-1500 gm.[4,5] Early Neonatal Intensive Care Unit (NICU) discharge has been advocated for selected preterm infants to reduce both the adverse environment of prolonged hospital stay and to encourage earlier parental involvement by empowering parents to contribute to the ongoing care of their infants and thereby reducing costs of care. Although several studies have shown the benefits of early discharge from the hospital for premature infants, it is a common hospital practice to delay discharge of these infants until they reach a weight of 2000 gm or more.[6,7] The consequences of prolonged hospitalization are well-established:

i) Maternal deprivation affects the growth and development of the infants
ii) Skilled nursing time that should be devoted to sick infants are spent in the routine care of healthy infants
iii) Chances of nosocomial infection increase
iv) Considerable drain of scarce health resources.[8,6,9]

This study was intended to assess the growth (Weight, length, OFC) and neurodevelopment of the preterm neonates discharged early from the hospital at or below 1500 gms.

Materials and methods

It was a prospective observational study was carried out during the period from January to December 2017 in the Neonatal Unit of Department of Pediatrics in Shaheed Ziaur Rahman Medical College Hospital, Bogura over a period of twelve (12) months after acceptance of protocol. Neonates discharged at or below 1500 gm were the study population. Convenient and purposive sampling technique was employed.

Inclusion criteria

- Maintained a normal body temperature in an open crib
- Nipple feeding of at least 120 ml/kg/day
- Gaining weight consistently at least for 3 days
- Free from symptom and receive no medications for at least 3 days.

Exclusion criteria

- Congenital anomalies
- Required oxygen therapy of > 40% oxygen or assisted ventilation
- Discharged on request of their parents
- Belonged to joint families or who had multiple family members living in the same home
- Did not have basic utilities
- Parents of those neonates didn't give consent for the study.

Results

Table I Distribution of neonates by their demographic characteristics (n = 81)

Demographic features	Frequency (%)	Median ± SEM	Range
Gestational age (Weeks)	----	31.5 ± 1.3	29 – 33
Age at admission (Hours)			
≤ 12	77(95.1)	2.0 ± 0.5	0.5 – 20
> 12	4(4.9)		
Gender			
Male	34(42.0)	----	----
Female	47(58.0)		
Residence			
Urban	19(23.5)	----	----
Rural	62(76.5)		
Fathers' education			
Illiterate	1(1.2)		
Primary	44(54.3)		
SSC	23(28.4)		
HSC plus	13(16.0)		
Mothers' education			
Primary	55(67.9)		
SSC	17(21.0)		
HSC plus	9(11.1)		
Monthly family income (Taka)			
< 10000	10(12.3)		
≥ 10000	71(87.7)		
Median income			
13000 ± 425 1500-25000			

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Table II Anthropometric characteristics of the neonates at admission (n = 81)

Characteristics	Mean ± SD	Range
Weight (Kg)	1242 ± 136	1000 - 1450
Length (cm)	1242.0 ± 3.1	34 – 45
OFC (cm)	27.7 ± 2.5	25 – 31

Table III Showing the pattern of weight gain between SGA and AGA

Anthropometric variables	Weight of the neonates (gm)					F	p-value
	At admission (n = 75)	At discharge (n = 75)	1st follow up (n = 75)	2nd follow up (n = 75)	3rd follow up (n = 75)		
Weight (gm)	1248±140	1344±116	2245±255	3028±259	3735±930	5194.4	<0.001
Length (cm)	38.1 ± 3.0	39.6 ±2.6	43.6 ± 2.4	48.7 ± 2.1	52.7±2.9	29855.4	<0.001
OFC (cm)	27.7 ± 2.6	29.0 ± 1.8	31.4 ± 1.3	34.5 ± 1.3	37.0±4.6	23994.7	0.001

Data were analyzed using Repeated Measure ANOVA statistics and were presented as mean ± SD, # p-value refers to overall difference in weight gain between the two groups from admission to 3rd follow up.

After discharge to home, more than 70% of the neonates were fed on Expressed Breast Milk (EBF) alone, 17% on mixed formula and 12% on infant formula alone (Fig 1).

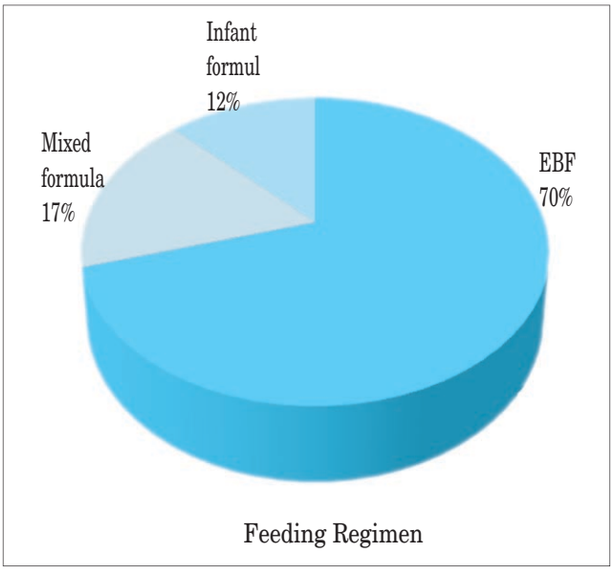

Figure 1 Neonates stratified by their feeding regimen at home

Table IV Anthropometric indices

Anthropometric indices	Feeding pattern			F	p-value
	Expressed breast milk (n = 26)	Mixed feeding (n = 31)	Infant formula (n = 12)		
1st Follow up					
Weight (gm)	1862 ± 216	1696 ± 131	1685 ± 87	5.736	0.005
Length (cm)	44.1 ± 2.4	42.1 ± 2.4	41.9 ± 2.5	5.429	0.006
OFC (cm)	31.7 ± 1.1	30.4 ± 1.6	31.0 ± 1.1	5.990	0.004
2nd Follow up					
Weight (gm)	2812 ± 475	2580 ± 130	2681 ± 233	1.750	0.181
Length (cm)	49.2 ± 2.1	47.6 ± 1.3	46.8 ± 1.6	7.313	0.001
OFC (cm)	34.8 ± 1.2	33.2 ± 1.5	34.2 ± 1.0	9.282	< 0.001
3rd Follow up					
Weight (gm)	3975 ± 596	3665 ± 372	3669 ± 294	4.445	0.049
Length (cm)	53.4 ± 2.1	50.7 ± 4.9	51.4 ± 1.2	6.257	0.003
OFC (cm)	37.9 ± 1.3	36.7 ± 1.3	37.1 ± 0.9	4.578	0.013

Data were analyzed using Chi-square (χ^2).
p-value refers to overall difference among the three groups.

Discussion

Several studies concurrently reported some behavioral criteria needed to be achieved before hospital discharge of the premature infant, namely temperature stability out of an incubator and ability to suck and gain weight on oral intake in an infant with no symptoms.[6,7,10] All these studies suggest that achieving these criteria, instead of attaining a targeted weight, are sufficient to augment normal growth, reduce the incidence of major illnesses (RTI and diarrhea) and recurrent hospitalization provided the feeding regimen is nutritionally sound.

Three possible milk regimens are advocated for these infants, namely, Expressed Breast Milk (EBM) preterm infant formula and mixed formula (EBM along with infant formula). However, different investigators claim different growth rates using these regimens.[11]

The World Health Organization (WHO) is in favor of mothers' milk alone during the first six months of life though research data from industrialized countries suggest that VLBW infants require additional nutrients which is unavailable in unmodified mothers' milk.[12,13] Another study reported that infants fed on Preterm Formula (PTF) grew significantly better than those fed on breast milk alone or in combination with PTF.

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These trials demonstrate that WHO feeding strategy is not enough for VLBW infants during the first month of life.[14] Faced with this background, the present study was intended to determine whether preterm neonates discharged early (At or below 1500 gm) can attain optimum growth at home care and its association with feeding regimens. The study was also undertaken to investigate the effects of neonatal feeding regimens on subsequent morbidity and mortality.

Experience in a tertiary level hospital shows that neonates weighing less than 1500 gm contributes a significant portion of neonatal admission. Although National Neonatal Strategy proposes neonates weighing <1800 gm should be cared in health facilities, they are being discharged from hospital below 1500 gm. Neonates less than 1500 gm requires several weeks of hospital stay to achieve >1800 gm of weight.[15] But it is not feasible in our over burdened tertiary hospitals to keep them up to that time. Most of them are unable to stay for that period of time, for various reasons. The consequences of prolonged hospitalization are maternal deprivation which affects future growth and development, chances of nosocomial infections, unnecessary use of skilled nursing time, high hospital cost etc.[16]

The decision of when to discharge an infant from the hospital after a stay in the NICU is cumbersome and is made primarily on the basis of the infant's medical status but is complicated by several factors.[17] These factors include the readiness of families for discharge, differing opinions about what forms of care can be provided at home, particularly in terms of feeding regimen and pressures to contain hospital costs by shortening the length of stay.

Traditionally preterm infants are discharged from the hospital when they reach a prefixed weight, although no published studies support the benefit of attaining a specific weight before discharge. Several published studies dating from as early as 1971 have presented data supporting earlier nursery discharge.[15,18] These studies have put emphasis on infant's capabilities related to maturity rather than weight as discharge criteria. All have selected infants on the basis of their ability to feed and maintain body temperature. In the present study as well, the infants were selected at discharge on the basis of their ability to maintain body temperature outside incubator, able to suck and gain weight on oral intake with no symptoms of systemic illness. Though the discharged neonates were encouraged for exclusive breast feeding, but were not performed properly by the caregivers. The neonates after discharge fed on three types of feeding regimens at home. The study demonstrated a steady growth of the infants up to a median age of 4 and a ½ months with EBM being the faster and infant formula and EBM slower. The World Health Organization (WHO) recommends mothers' milk alone during the first six months of life irrespective of their birth weight although, research data from industrialized countries suggest otherwise.[19] The VLBW infants require higher nutritional density than is available in unmodified mothers' milk if they are to achieve the recommended growth during the first month of life. Lucas and colleagues(14) in a large multi-center randomized trial in 1984 reported that infants fed on Preterm Formula (PTF) grew significantly better than those fed on breast milk alone or in combination with PTF.[14,13] Lucas in another trial conducted 15 years later found that VLBW infants fed on enriched milk during the first month of life grew faster with better neuro-developmental scores during the subsequent years.[20-23]

As retinopathy of prematurity (ROP) is not an uncommon morbidity in VLBW neonates (10% of the neonates were diagnosed as having ROP in this study) systematic examination of all VLBW by an experienced ophthalmologist is mandatory. Although, blindness resulting from ROP has become a rare occurrence, with an estimated prevalence of about 2%.[23]

Thus, the study findings showed that breast milk alone is adequate to achieve a targeted growth for VLBW infants. Although breast milk provides many benefits for preterm infants, breastfeeding rates are lower for preterm than term infants.

Limitations

The study was conducted on 81 neonates which was below the calculated sample size 138. Besides, the study was conducted in a single center. So caution is advised to generalize the findings to reference population.

Conclusion

From the findings of the study it can be concluded that very low birth weight neonates fed on expressed breast milk after discharge home from the NICU care grow well compared to their counterparts fed on either infant formula or mixed breast milk and infant formula.

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Recommendation

Further multicenter study would be needed to see the consistency of the findings of the present study.

Disclosure

All the authors declared no competing interest.

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Original Article

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Risk Assessment of Type 2 Diabetes among The Doctors of a Teaching Hospital in Chattogram

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Abstract

Background: Diabetes mellitus is one of the most important non-communicable diseases, the global diabetic population is 463 million in 2021 and expected to reach 552 million in 2030. Physicians generally bear a stress and unscheduled heavy workload with rotating nightshifts, which may contribute to poor lifestyle, stress, insufficient physical activity and unhealthy diets; all of which are risk factors for developing type 2 DM. The current study was aimed to assess the diabetes risk among the physicians of a teaching hospital in Chattogram, Bangladesh.

Materials and methods: It was a cross-sectional study conducted on the physicians of Chattagram International Medical College. The duration of study was 3 months (November 2021 to February 2022). Diabetes risk was assessed as per "Diabetes Risk Test" recommended by American Diabetes Association (ADA) based on 7 questionnaire including Age, Sex, Women with H/O GDM, H/O diabetes in first degree relatives, Hypertension, Physical activity and Weight.

Results: Eighty-four doctors participated in the study with a male: female ratio of 1:1.1. Remarkable findings in response of the questionnaire were positive family history in 73.8% participants, hypertension in 15.4% participants and physical inactivity in 35.7% participants. After applying the risk assessment tool, eighteen (21.4%) of the participants scored ≥ 5 and as such, had increased risk of type 2 DM.

Conclusion: This study presented a simple, non-invasive and accessible way to assess the risk of DM among physicians. Physician with high risk score should be referred for screening of DM and changes to healthy life style modification as well as management of co-morbidities.

Key words: Co-morbidities; Diabetes mellitus; Risk assessment; Screening; Risk assessment.

Introduction

Diabetes mellitus is a silent killer, oneof the most important non-communicable diseases. Over last decade, there has been a dramatic increase in prevalence of diabetes mellitus globally every year. The global diabetic population is 463 million in 2021 and expected to reach 552 million in 2030, either due to beta cell resistance or dysfunction.[1] Diabetes epidemic closely parallels the epidemic of obesity. Unfortunately, about 46% diabetic patient all over the world remains undiagnosed.[2] When left uncontrolled, Diabetes increases the risk of blindness, neuropathy, kidney diseases, cardiovascular complications, psychological problems and overall increase in health-related expenditures.[3,4] On the other hand, 'Prediabetes' is the term used for individuals whose glucose levels do not meet the criteria for diabetes but are too high to be considered normal. Patients with prediabetes are defined by the presence of Impaired Fasting Glucose (IFG) and/or Impaired Glucose Tolerance (IGT) and/or HbA1C 5.7–6.4% (39–47 mmol/mol).[5,6] Prediabetes should not be viewed as a clinical entity in its own right but rather as an increased risk for diabetes and Cardiovascular Disease (CVD). Early detection of Diabetes and prediabetes can prevent these complications.[7]

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Physicians generally bear a stress and unscheduled heavy workload with rotating nightshifts, which may contribute to poor lifestyle with insufficient physical activity and unhealthy diets; both of which are risk factors for developing type 2 DM.[7,8] The risk of developing type 2 diabetes and prediabetes increases with age, obesity, lack of physical activity, family history of DM in first degree relatives, high blood pressure and history of GDM in case of female etc. Hence prediction of prediabetes and diabetes risk can be assessed by risk stratification. Several risk assessment tools have been introduced worldwide, including the Australian Type 2 Diabetes risk assessment tool, the Cambridge risk assessment score, the Diabetes Algorithm, the Leicester risk assessment and the Finnish diabetes risk score and the diabetes risk test by ADA.[8] The current study applied the diabetes risk test by ADA on physicians of a teaching hospital in Chattogram, Bangladesh to determine the risk of type 2 DM among the physicians.

Materials and methods

It was a cross-sectional study conducted on the physicians of Chattagram International Medical College during observation of world diabetes day, 2021. The duration of study was 3 months (November 2021 to February 2022). The doctors who were not previously diagnosed as diabetes and who gave informed consent were included in the study, pre-existing diabetic cases were excluded from the study. On a seminar while observing world diabetes day, the audience were properly explained about a questionnaire to assess diabetes risk as per "Diabetes Risk Test" recommended by ADA based on 7 questionnaire including Age, Sex, Women with h/o GDM, H/O diabetes in first degree relatives, Hypertension, Physicalactivity and Weight (Figure 1).[5]

Eligible participants for the study were supplied with the form,the anonymous data were analyzed using SPSS 20.

1. How old are you? >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
   - Less than 40 years (0 point)
   - 40-49 years (1 point)
   - 50-59 years (2 point)
   - 60 years or old (3 point)
2. Are you a man or a woman? >>>>>>>>>>>>>>>>>>>>>>>>
   - Man (1 point) woman (0 point)
3. If you are a woman, have you ever been diagnosed with
   - gestational diabetes?>>>>>>>>
   - Yes (1 point) No (0 point)
4. Do you have a mother, father, sister or brother with
   - diabetes? >>>>>>>>>>>>>>>>>>>
   - Yes (1 point) No (0 point)
5. Have ever been diagnosed with high blood
   - pressure? >>>>>>>>>>>>>>>>>>>>.>>
   - Yes (1 point) No (0 point)
6. Are you physically active? >>>>>>>>>>>>>>>>>>>>>>>>
   - Yes (0 point) No (1 Point)
7. What is your weight category?
   - Total score>>

Figure 1 Diabetes risk test by ADA

Results

Eighty-fourdoctors participated in the study with a male: female ratio of 1:1.1. Table I demonstrates the demographics and the associations with risk factors. Among all, 51 (60.7%) were below 40 years and one participant (0.01%) was above 60 years.

Table I Association of demographic factors among the participants

	Male	Female	Total	p-value
Age in years				
<40	21 (41.2)	30 (58.5)	51(60.7)	0.401
40-49	11 (55)	9 (45)	20 (23.8)	
50-59	7 (58.3)	5 (41.7)	12(14)	
≥60	1 (100)	0 (0)	1(0.01)	
Total	40 (47.6)	44 (52.4)	84	
Family history diabetes			Total	
Yes	26 (41.9)	36 (58.1)	62(73.8)	0.080
No	14 (63.6)	8 (36.4)	22(26)	
HTN				
Yes	7 (53.8)	6 (46.2)	13(15.4)	0.625
No	33 (46.5)	38 (53.5)	71(84.5)	
Physical activity				
Yes	25 (62.5)	29 (65.9)	54(64)	0.135
No	15 (37.5)	15 (34)	30(35.7)	

Value in parentheses indicates percentage

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Remarkable findings in response of the questionnaire were positive family history in 73.8% participants, hypertension in 15.4% participants and physical inactivity in 35.7% participants (table I). Among forty-four female participants, 11.9% reported history of GDM;however, none of them had established DM at the time of data collection (Figure 2).

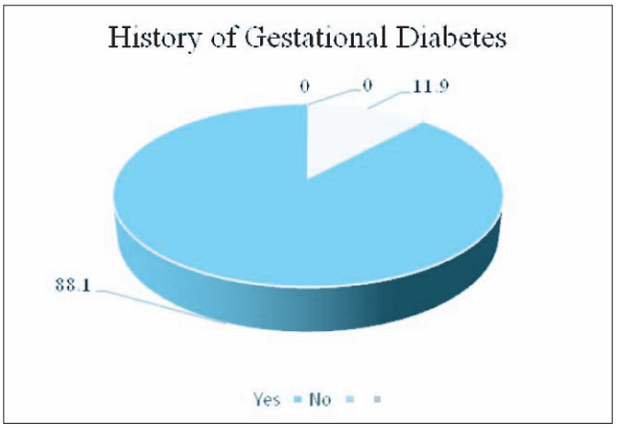

Figure 2 Distribution of Gestational diabetes among the female participants

After applying the risk assessment tool (Figure 1) Eighteen (21.4%) of the participants scored ≥5 and as such, had increased risk of type 2 DM and the risk was more in males than females (Table II).

Table II Distribution of participants at risk of diabetes mellitus

	Male	Female	Total	p- value
Risk	15 (37.5)	3 (6.8)	18 (21.4)	0.001
Without Risk	25 (62.5)	41 (93)	66 (78.6)	

Value in parentheses indicates percentage.

Discussion

The current study unveiled the diabetes risk assessment results among non-diabetic physicians in the study center. In this study, 21.4% physicians had risk for developing DM. The physicians being the health care provider, require more attention to self-care, improved life-style, control of modifiable risk factors and above all, awareness. Among all, the highest contributory risk factor was family H/O DM and absence of physical activity.

In a study conducted in Taiwan on 28,440 physicians, overall risk of DM was lower in physicians than the general population. However, emergency physicians and surgeons showed a higher risk for DM than other physician specialties, might be as a result of heavy workload poor lifestyle, night shift etc.[8]

In a cross-sectional study done on 192 physicians of Ondo state, Nigeria, using Finland Diabetic Risk Score form, ten-year risk of developing type 2 DM among physicians was 30%.[9] In another cross-sectional study done by Akter N on 205 randomly sampled adult subjects from outpatient department of a tertiary care hospital, Bangladesh; the FINDRISK risk assessment tool was used and the result showed 17.55% adult had moderate to high risk to develop type 2 DM.[10]

Conclusion

This studypresented a simple, non-invasive and accessible way to assess the risk of DM among physicians. The sample size was small and it might not be representative of regional or national scenario. However, the result of this study might add information to future study in a broader scale. Physician with high risk score should be referred for screening of DM and changes to healthy life style modification as well as management of co-morbidities.

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Disclosure

All the authors declared no competing interest.

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Original Article

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Analysis of Causes of Urinary Tract Infection and Evaluation of Pattern of Drug Sensitivity of Common Uropathogens among 100 Patients : A Prospective Study

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Abstract

Background: Urinary Tract Infections (UTI) are a common medical problem affecting millions of people worldwide every year and account for a large proportion of antibiotic consumption with huge socio economic impact. As most of the treatment begins or is done completely empirically, inappropriate use causes antibiotic resistance. This study aims to detect the pattern of organism involved in urinary tract infection and their sensitivity to antibiotic which may help to select more appropriate antibiotic therapy.

Materials and methods: This observational study was conducted at Chattogram International Medical College for a period of one year from January to December 2021 to analyses causes of urinary tract infection and to evaluate the pattern of drug sensitivity of common uropathogens among the patient suffering from urinary tract infection. 100 cases attending in the Department of Urology and Department of Surgery were selected on purposive convenient sampling method. Mid stream urine samples were collected and prepared as per standard operative procedure. Data regarding demography, clinical data and laboratory results was collected after informed written consent. Confidentiality, freedom of withdrawn and research ethics were maintained throughout the period.

Results: From a total 100 case 93 were cultured positive and 94 organisms of nine (9) species were isolated. Among the Gram negative organism E.coli (59.13%) was the most common and highly sensitive for Imipenem and Nitrofurantoin (81.82%) followed by Klebsiella (15.05%). Stap. aureus was the (15.05%) most frequent gram positive organism found and sensitive to Amikacin (85.71%) and Nitrofurantoin (64.29%). Nitrofurantoin is also sensitive for Klebsiella (57.15%) and Enterococcus (100%). Whereas commonly used antimicrobial Ciprofloxacin is showing increase resistance for E.coli (41.82%), Klebsiella (57.15%) and S.Aureus (35.71%).

Conclusion: Antibiotic resistance is increasing among pathogens causing UTI. Both Gram negative and Gram positive are now showing higher rate of resistant to conventional antibiotics and resistance is also increasing for newer antibiotics. Rational antimicrobial use and continuing surveillance of bacterial antimicrobial sensitivity tests at local level are necessary to reduce resistant bacteria. Further multi centre studies for long duration and on larger population are needed to reveal the actual scenario in the whole country.

Key words: Antibiotic sensitivity; Antibiotic resistance; Urinary tract infection; Uropathogens.

Introduction

Urinary Tract Infections (UTIs) are among the most common infections in the world, affecting all ages pediatric, adult, and elderly patients all subpopulations, and both sexes, with highest prevalence in females.[1-4] UTIs are a common health problem in primary care, general practice and Emergency Departments (EDs) in our country. Hospitalization is more common in women and

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younger children.[5-7] Community Acquired Urinary Tract Infection (CA-UTI) defined as an infection of the urinary tract that occurs in the community or within less than 48 hours of hospital admission and was not incubating at the time of hospital admission, is the second commonest diagnosed infection in the community.[8] The condition is generally associated with minimal morbidity, except among specific subpopulations, such as pediatric patients. Early diagnosis and treatment are essential to reduce acute morbidity and avoid the long-term complications associated with UTIs.[2,9] UTIs are a serious health problem affecting millions of people every year, and treatment involves considerable cost, both directly and indirectly. The global burden of UTIs is about 150 million people.[10] In the US, there was ~10.5 million ambulatory visits for UTIs in 2007, accounting for 0.9% of all ambulatory visits, and 21.3% of these visits were to hospital emergency departments.[11] The annual cost of treatment was ~$1.6 billion and the estimated annual direct treatment cost was $659 million in the US.[12,9] UTI is one of the most common infections for which antibiotics are prescribed.[13-15] The commonest organisms isolated in most CA-UTIs are Escherichia coli and Klebsiella spp, other bacteria isolated from UTI include the Enterococcus spp, Proteus spp, Pseudomonas aeruginosa and Staphylococci among others.[16-19] Because uropathogens largely originate from colonic flora, they are easy to predict. Possibly this is the rationale for empirical treatment in CA-UTI. The management of CA-UTI entails the prompt use of antibiotics to eliminate the pathogen to avoid complications including but not limited to scarring that could lead to hypertension and end-stage renal disease.[20] The antimicrobial susceptibility patterns of the organisms causing CA-UTI however, vary according to each region and from time to time due to the antibiotic prescription practices of Health Care Workers (HCWs). It is thus mandatory to document the risk factors of CA-UTIs, microbes and antimicrobial susceptibility patterns of pathogens causing CA-UTI. The massive and inappropriate use of antibiotics is one of the most important causes of the development of antimicrobial resistance.[7,15] The World Health Organization has estimated that 80% of antibiotics are used in the community, and that about 20%–50% of these antibiotics are used inappropriataly.[21] Antimicrobial resistance is a serious threat to public health throughout the world. It significantly impacts patient treatment and outcomes, increasing health care costs, morbidity, and mortality.[15,22,23] Appropriate antibiotic use is a key strategy to control antibacterial resistance. With the increasing prevalence of drug-resistant bacteria among the patient with CA-UTI in our country, it is no longer adequate to manage CA-UTIs on empiric regimen without revising the susceptibility patterns of common CA-UTI causative agents. The economic impact of inappropriate treatment extends beyond the costs attributable to morbidity and mortality. Antibiotic therapy is the core treatment for UTIs, so the selected antibiotic should be an efficacious, safe, and cost-effective antimicrobial agent. The empirical treatment limits opportunities for surveillance of antibiotic resistance among pathogens that cause CA-UTI, and also if regularly updated to match changing susceptibility patterns; empirical treatment is a convenient strategy for effective resource utilization. In Saudi Arabia, one study estimated the prevalence of Community-Acquired Urinary Tract infections (CA-UTIs) as 25% of all infections seen in the ED.[24] Possibly in our country we have no such study. In this study our aim is to identify

i) Common factors associated with CA-UTIs

ii) The common uropathogens causing UTI

iii) The drug sensitivity patterns of the common uropathogens cultured.

Findings from this study may help the current practice of empiric therapy of CA-UTI in Bangladesh. Moreover, an understanding of the most common host-associated factors to CA-UTIs in Bangladesh can help in developing preventive interventions against CA-UTIs, thus reducing on the disease burden and health cost.

Materials and methods

This prospective observational study was conducted at Chattogram International Medical College Hospital (CIMCH) for a period of one year from January to December 2021 to analyses causes of urinary tract infection and to evaluate the pattern of drug sensitivity of common uropathogens among the patient suffering from urinary tract infection. Study populations were the all patient suffering from UTI attending in the department of urology and department of surgery and 100 cases were selected on purposive convenient sampling method according to inclusion and exclusion criteria. All

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patients were evaluated clinically by detailed history and physical examination and diagnosis was confirmed by urine R/E and C/S. Mid-Stream Urine (MSU) samples were collected for urinalysis, culture and antibiotic susceptibility testing. The urine samples were processed at the microbiology laboratory of CIMCH and some other reliable lab in Chattagram. Data regarding demography, medical history including laboratory report was collected after informed written consent. After evaluation, all the data collected from the study population is being analyzed by using SPSS. Main outcome variables are frequency of isolates and pattern of sensitivity.

Inclusion criteria

Diagnosed case of urinary tract infection admitted in Urology dept. and Surgery Department of CIMCH. Participants who give consent and willing to comply with the study procedure were included.

Exclusion criteria

Patient who refused to be included in the study.

Results

Total 100 patients were selected according to inclusion and exclusion criteria by using the purposive sampling method. The age range was 2-85 years with a mean age of 45.11±19.41year. Female was predominant (61%) with mean age of 46.34±17.32 year (Table I). Most of the patient present with fever (32%) followed by dysuria (28%) and abdominal pain (22%).

Table I Age and Sex distribution of the population (n= 100)

Age in years	Male (%)	Female (%)	Total (%)
20	7	11	18
20-50	10	20	30
>5022	30	52	
Total	39	61	100
Mean± SD	47.23±18.43	46.34±17.32	45.11±
Range	2-85y	6-75y	19.41

Among the risk factors, thirty eight patients have recurrent UTI and 11 patients have previous history of catheterization (Table II).

Table II Distribution of risk factors (n=100)

Risk factor	Frequency
Catheterization	11
Diabetes mellitus	18
Immunosuppresion	3
Recent history of urogenital instrumentation	7
Recurrent urinary tract infection	38
Urolithiasis	15

Regarding laboratory data, mean white blood cell count was 11059.22±3682.71/µl with mean neutrophil count was 69.72 ±10.87%. Urine analysis shows 42 patients had plenty of pus calls and 8 patients had plenty of RBC. Out of 100 patients of UTI ninety three (93) were cultured positive and 94 organism of nine (9) species were isolated. Only one sample results more than one organism and had both E.coli and S.aureus. E.coli (n= 55, 59.13%) is the most predominant pathogen followed by Klebsiella (n= 14, 15.05%) and S.aureus (n= 14, 15.05%) (Table III).

Table III Distribution of pathogen (n= 93)

Pathogen	n (%)
Gram positive	20(21.5%)
Staphylococcus aureus	14(15.05%)
Enterococcus spp.	6(6.45%)
Gram negative	73(78.5%)
E. coli	55(59.13%)
Klebsiella	14(15.05%)
Enterobacter spp.	1(1.08%)
Pseudomonas	1(1.08%)
Proteus sp.	1(1.08%)
Acinetobacter sp.	1(1.08%)
Other	1(1.08%)
Candida	1(1.08%)

E.coli shows highest sensitivity to Nitrofurantoin and Imipenem (81.82%) followed by Amikacin (76.36%). Azithromycin was found most resistant (58.18%) followed by cefixime (47.2%) and Ciprofloxacin (41.82%) (Table IV).

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Table IV Antimicrobial sensitivity of E.coli (n= 55)

Antibiotic	Sensitive, n(%)	Resistant, n(%)	Intermediate, n(%)
Nitrofurantoin	45(81.82%)	4(7.27%)	-
Azithromycin	6(10.9)	32(58.18%)	4(7.27%)
Co-trimoxazole	23(41.82%)	17(30.9%)	-
Nalidixic acid	8(14.55%)	4(7.27%)	
Ciprofloxacin	30(54.5%)	23(41.82%)	-
Ceftriaxone	17(30.9%)	26(47.27%)	-
Cefixime	8(14.55%)	26(47.27%)	2(3.64%)
Imipenem	45(81.82%)	2(3.64%)	-
Amikacin	42(76.36%)	11(20%)	2(3.64%)
Levofloxacin	25(45.45%)	13(23.63%)	-
Gentamicin	23(41.82%)	11(20%)	2(3.64%)

Klebsiella was found 92.85% sensitive to Imipenem followed by Amikacin (85.71%) and was mostly resistant to Nalidixic acid (78.57%), Cefixime (64.29%) and Ciprofloxacin (57.15%) (Table V).

Table V Antimicrobial sensitivity of Klebsiella (n= 14)

Antibiotic	Sensitive (n, %)	Resistant (n, %)	Intermediate (n,%)
Azithromycin	5(35.71%)	7(50%)	-
Co-trimoxazole	6(42.86%)	5(35.71%)	-
Nitrofurantoin	8(57.15%)	5(35.71%)	1(7.14)%
Ciprofloxacin	6(42.86%)	8(57.15%)	-
Ceftriaxone	9(64.29%)	3(21.43%)	-
Cefixime	1(7.14%)	9(64.29%)	-
Imipenem	13(92.85%)	0	1(7.14)%
Amikacin	12 (85.71%)	2(14.29%)	0
Levofloxacin	6(42.86%)	5(35.71%)	-
Nalidixic acid	2(14.29%)	11(78.57%)	1(7.14)%
Gentamicin	3(21.43%)	4(28.57%)	-

S. Aureus was found highly sensitive to Amikacin (85.71%) and Nitrofurantoin (64.27%) and resistant to Cefixime (71.43%) and Azithromycin (57.15%) (Table VI).

Table VI Antimicrobial sensitivity pattern of (Staphylococcus aureus, n=14)

Antibiotic	Sensitivity n (%)	Resistant n (%)	Intermediate n (%)
Nitrofurantoin	9(64.29%)	-	2(14.29%)
Azithromycin	2(14.29%)	8(57.15%)	2(14.29%)
Co-trimoxazole	7(50%)	5(35.71%)	-
Nalidixic acid	7(50%)	5(35.71%)	
Ciprofloxacin	8(57.14%)	5(35.71%)	-
Ceftriaxone	7(50%)	5(35.71%)	-
Cefixime	2(14.29%)	10(71.43%)	-
Amikacin	12(85.71%)	0	2(14.29%)
Levofloxacin	9(64.29%)	2(14.29%)	-

Another Gram positive pathogen Enterococcus was found 100% sensitive to Nitrofurantoin and 83.33% sensitive to Imipenem and highly resistant to Cefixime and Azithromycin (66.67%) (Table VII).

Table VII Antimicrobial sensitivity pattern of (Enterococcus spp, n=6)

Antibiotic	Sensitive (%)	Resistant n (%)	Intermediate n (%)
Nitrofurantoin	6(100%)	0	0
Azithromycin	1(16.67%)	4(66.67%)	1(16.67%)
Co-trimoxazole	2(33.33%)	3(50%)	1(16.67%)
Nalidixic acid	2(33.33%)	3(50%)	1(16.67%)
Ciprofloxacin	4(66.67%)	1(16.67%)	1(16.67%)
Ceftriaxone	2(33.33%)	3(50%)	1(16.67%)
Cefixime	1(16.67%)	4(66.67%)	1(16.67%)
Amikacin	4(66.67%)	1(16.67%)	1(16.67%)
Levofloxacin	4(66.67%)	1(16.67%)	1(16.67%)
Imipenem	5(83.33%)	0	1(16.67%)

Discussion

In this study, the mean age of the patient was 45.11 ± 19.41 year with a range of 2-85 year. There was 61% female and 39% are male. Including male and female 52% patients were elderly. According to demographic data, UTI is more common in female[25]. Menyfah found 64.04% are female and Dias et al found 60.2% are female and more than 50% are elderly.[26,27] Anatomical and Physical factor such as a shorter urethra predispose women to UTI. This result is consistent with data from large epidemiological studies.[7,12,28] Most frequent presenting symptoms are Fever (32%), Dysuria (28%), and Abdominal pain (22%) which was very similar to study from Mahesh et al which was done on Indian population. Fever was found most common symptom in other studies worldwide.[29-32] Thirty eight (38) patients had recurrent UTI which is higher than other study and probably due to previous inadequate or inappropriate treatment received locally.[26] Diabetes Mellitus was the most common co morbidity in our study which was consistent with Erdem et al.[33] Other associated factors were Catheterization (11%) Urolithiasis (15%) as similar to Erdem et al and Mahesh et al.[29,33] We found that E.coli is the predominant bacterium in urine samples corresponding to 59.13% (n= 55) of the cases. This is similar to other previous studies.[34-36] Dias et al found 58% as similar to Mwaka et al (57.5%) and Erdem et al.[27,37,33]. But some studies found high frequency of

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E.coli. Mahesh et al found 71.7% and another study from Norway was found 81.5% E.coli.[29,38] This difference in the distribution of bacterial isolates in different setups may be due to the diversity of the study population and local antimicrobial use pattern which results in the emergence of pathogens that have the potential to resist antibiotics used currently. Gaston et al found E. coli in 62.77% in an elderly population.[39] In a more recent investigation, E. coli was responsible for 67.7% of the community-acquired UTI.[40,41] In our study E.coli was found sensitive to Nitrofurantoin (81.82%) and Imipenem (81.82%) followed by Amikacin (76.36%) and resistant to Ceftriaxone (58.18%) and Cefixime (47.27%). This finding is not different from many other studies worldwide. Kabuga et al found Nitrofurantoin sensitivity 78.6%.[42] Gaston et al found Imipenem was 100% sensitive to E.coli.[39] Another study from Mwaka et al found 100% sensitivity for Nitrofurantoin.[37] Although a recent study from Odongo et al has shown high resistant to Nitrofurantoin but other study also suggested that resistant to Nitrofurantoin remain infrequent.[43,28, 44-46] In current study, commonly used antimicrobial Ciprofloxacin was found 41.82% resistant to E.coli. In Argentina, from 2009 to 2013, an increasing ciprofloxacin resistance frequency (20-29.8%) was detected in UTI producing E. coli. In 2017, 51.9% of UTI in non-hospitalized elderly patients were reported to be caused by E. coli resistant to this drug.[40,41] In Italy and Romania, ciprofloxacin resistance presented a similar prevalence than the one in this study, 41.4% and over 50%, respectivaly.[47,48] In this research resistant to Gentamycin was 20%.Gaston et al found 13.8% resistance to Gentamycin.[39] Previously, a higher frequency of gentamicin resistance (22.6%) was reported for E. coli in elderly Argentinean patients and Italian elderly (Over 30%).[40] In contrast, a significantly lower average prevalence (3.7%) of gentamicin resistance was detected during a 5-year period for community urinary E. coli isolates from Australia.[49] We found lowest resistant to Imipenem and Nitrofurantoin (7.27%). Other studies carried out in South and Central America reported frequencies of Nitrofurantoin resistance below 10% in E. coli identified as etiologic agents of UTI, as was communicated in Argentina (0.9-6%), Colombia (4.2%) and Cuba (1.8%). However, in Mexico, in community-acquired UTI it was shown that resistance to this antimicrobial was higher (40%) than the reported in this investigation.[50-53] In this study the most common Gram positive and overall second most common organism was S. Aureus (n=14,15.05%) which was similar to Kabugo et al (15.4%).[42] Other study also found S. Aureus as an uropathogens in similar frequency.[37,54,55] However, this finding was different from Odongo et al who found S. Aureus as the most frequent (46.3%) uropathogen in their study.[43] In our study S. Aureus shows high sensitivity to Amikacin (85.71%) followed by Nitrofurantoin (64.29%) Levofloxacin (64.29%) which was similar to Kabugo et al and Mwaka et al.[42,37] On the other hand this organism was found resistant to Cefixime (71.43%) and Azithromycin (57.15%). Current study shows Ciprofloxacin was 57.14% sensitive to S. Aureus which was similar to Mwaka et al but Kabugo et al found 100% sensitive.[37,42] Second most frequent Gram negative pathogen isolated in this study was Klebsiella (n= 14, 15.05%). One study from the United States and European hospitals reported frequency of Klebsiella spp 16.7% and 11·2% (USA/EU). [56] Another study from Erdem et al found 18.7% frequency of Klebsiella.[33] In this study Klebsiella was found highly sensitive to Imipenem (92.85%) and Amikacin (85.71%) while resistant to Cefixime (64.29%) and also Ciprofloxacin (57.15%). Though another study found Nitrofurantoin 84% sensitive and Carbapenem 100% sensitive in this study Nitrofurantoin was found 57.15% sensitive to Klebsiella.[33] Another organism isolated was Enterococcus (6.45%) which has high sensitivity to Nitrofurantoin (100%) and Imipenem (83.33%) followed by Amikacin and Levofloxacin (66.67%) and resistant to Azithromycin, Cefixime (66.67%). A commonly used drug Ciprofloxacin shows significant resistant to E.coli (41.82%), Klebsiella (57.15%) and also for S. Aureus (35.71%) which may indicate resistant to this drug is increasing as it is commonly prescribed drug in our country. This thought was supported by another study done in India by Mahesh et al.[29] Prior fluoroquinolone use is a known risk factor for fluoroquinolone resistant E. coli infection; it is plausible that frequent fluoroquinolone prescriptions may be contributing to the observed resistance.[57,58] Aypak et al also suggested discouraging the empirical use of fluoroquinolones in UTI.[59]

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Limitation

This is a single centre study done with small sample size and does not proclaim the scenario of whole country.

Conclusion

Antibiotic resistance is increasing among pathogens causing UTI. Both Gram positive and Gram negative are now showing increase resistant to conventional antibiotics and resistant also increasing for newer antibiotics. These findings demonstrate that development of guidelines for the treatment of UTIs should be based on knowledge of the local prevalence of bacterial organisms and their sensitivities, rather than on universal guidelines. More appropriate antibiotic treatment will increase efficacy and cost-effectiveness. Further multi centre studies for long duration and on larger population are needed to reveal the actual scenario in the whole country. Prevalence and antibiotic-susceptibility studies need to be conducted regularly, and this will facilitate early detection of the development of antibiotic resistance and enable guidelines to be developed for appropriate and cost-effective treatment of UTIs.

Disclosure

All the authors declared no conflict of interest.

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Original Article

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Effects of Short Wave Diathermy Therapy in Patients with Adhesive Capsulitis of Shoulder

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Abstract

Background: There are varieties of management option for adhesive capsulitis. Short Wave Diathermy (SWD) is also an important option. The aim of the study is to determine effectiveness of SWD in order to improve the pain and range of motion in frozen shoulder.

Methods and methods: A total 56 subjects were selected for this randomized controlled trial done in the Department of Physical Medicine and Rehabilitation, Chittagong Medical College Hospital with adhesive capsulitis in a period of 6 months. The subject were divided into two intervention groups; one with conventional treatment plan with SWD and second group with conventional treatment only. Tool used for assessment were Visual Analogue Scale (VAS) to measure pain with Tenderness Grading (TG) and Pain and Disability Index Score (SPADI). The analysis was done to measure the difference of effectiveness of both interventions by independent t-test with SPSS-20.

Results: Among 56 patients regarding analysis of gender in both groups male and female were matched ($p>0.05$) and male to female ratio was 1.66: 1. Regarding socioeconomic status was found different in both groups where poor was 21.4%, middle class was 44.6% and rich was 33.9%. Among all patients 35.7% were housewives, 16.1% were service holder, farmers were 12.5% businessmen were 16.2% and laborers were 3.6%. Among all subjects 48.2% had right shoulder involvement, 50.0% had left side involvement and one patient had both sided disease. There were 92.7% patients who had localized pain and only 7.3% had radiation. Most of the pain in the evening (56.4%) and rest had pain at night (43.6%). Most of the patients in both groups had constant and intermittent type of pain (47.5% and 45.5%) other types were sharp and dull. Significant difference between Group A and Group B was found at week 2, week 4 and Week 6 follow-up ($p<0.05$) whereas initial follow-up was non-significant in VAS analysis ($p>0.05$). Significant difference between Group A and Group B was found at week 2, week 4 and week 6 follow-up($p<0.05$) regarding change of tenderness grading in Group A then Group B patients. Significant difference between Group A and Group B was found at week 2, week 4 and week 6 follow-up ($p<0.05$) regarding SPADI. .

Conclusion: When SWD is combined with conventional management of adhesive capsulitis it gives better reduction in pain and disability.

Key words: Adhesive Capsulitis; Pain; Short wave diathermy; Shoulder.

Introduction

Adhesive capsulitis is a condition characterized by painful and limited active and passive range of motion of the shoulder.[1] The American Shoulder and Elbow Surgeons Society agreed on the following definition of FS by consensus: a condition of uncertain etiology that is characterized by clinically significant restriction of active and passive shoulder motion that occurs in the absence of a known intrinsic shoulder disorder.[2]

Adhesive capsulitis has a prevalence of 2-5% in the normal population. In diabetic patients this is increased, with a prevalence of 10% in type I and

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22% in type II. It is more common between the ages of 40 and 60years.[3] The incidence of this condition is higher in women than in men. Approximately 70% of patients presenting with adhesive capsulitis are women.[4]

The pathology of adhesive capsulitis remains unclear. The disease process particularly affects the anterosuperior joint capsule and the coracohumeral ligament. Evidence shows a synovial inflammation with subsequent reactive capsular fibrosis. A dense matrix of type I and type III collagen is laid down by fibroblasts and myofibroblasts in the joint capsule. Subsequently, this tissue contracts. Growth factors, cytokines, and matrix metalloproteinases are involved in the inflammatory and fibrotic cascades seen in frozen shoulder.[5]

Adhesive capsulitis is usually classified into two etiological varieties. Primary or idiopathic adhesive capsulitis is not associated with a systemic condition or history of injury.[1] Secondary adhesive capsulitis is most commonly associated with diabetes mellitus. Secondary adhesive capsulitis may also be associated with conditions such as hyperthyroidism, hypothyroidism, and hypoadrenalism, Parkinson's disease, cardiac disease, pulmonary disease, and stroke.[6]

Reeves has described 3 stages of adhesive capsulitis[7]

i) Stage I It is mainly characterized by pain usually lasting 2-9 months.

ii) Stage II (Frozen stage) pain gradually subsides but stiffness is marked lasting 4-12 months.

iii) Stage III (Thawing phase) pain resolves and improvement in range of motion appears.

Diagnosis of adhesive capsulitis is mainly clinical. A diagnosis of FS is made in 75% of external rotation test positive patients and glenohumeral arthritis is the only other diagnosis (Which can be excluded by radiograph) that produces a positive external rotation test.[8] Codman discussed this entity describing a slow onset of pain, felt near the insertion of the deltoid, inability to sleep on the affected side, and restriction in both active and passive elevation as well as external rotation.[9] Idiopathic adhesive capsulitis is a common medical diagnosis for patients seeking physical therapy. Modalities used to treat adhesive capsulitis were dichotomized by pain predominant and stiffness-predominant classifications, which may be more useful than existing classifications.[10] Deep heat modalities like Shortwave Diathermy (SWD) are frequently used as an adjuvant treatment to exercise therapy in order to help the patient regain ROM and restore function to the affected shoulder. Studies have shown that a significant drop in tensile stress occurs with a rise in the temperature of soft tissues to between 40°C and 45°C, compared with that recorded at room temperature (25°C) and also findings suggest that deep heating (Using SWD) is effective than superficial heating (Using Hot packs)or stretching alone in improving shoulder pain and function in stage II adhesive capsulitis.[11] In this study an attempt has been made to see the effects of SWD in the treatment of adhesive capsulitis and their outcome. The information thus gathered may provide useful guidelines for further study about various aspects on adhesive capsulitis.

Adhesive capsulitis has an incidence of 3–5% in the general population and up to 20% in those with diabetes. This disorder is one of the most common musculoskeletal problems seen in physical medicine. Adhesive capsulitis is a poorly understood musculoskeletal condition that can be disabling.[12] Also in Bangladesh adhesive capsulitis is the commonest shoulder problem. There is no definite/ specific treatment for the condition but many options exist. Few studies showed the beneficial effects of physical agents including superficial and deep heat modalities with shoulder exercises on adhesive capsulitis. In fact SWD is a good modality of treatment in physical medicine especially to provide specific local analgesic effect for various musculoskeletal pains including adhesive capsulitis, in patients with peptic ulcer disease, bronchial asthma and renal impairment. To see the effect of SWD, if this study can show the beneficial effects on this disease in our country, then many patients will be benefitted from many physical medicine and rehabilitation centers of Bangladesh.

It's important to note that dosing the intensity of SWD is based on patient feedback and tolerance. The qualitative method of dosing intensity is widely accepted. The four dose levels are.[13]

Dose I: Just below any sensation of heat

Dose II: Mild perception of heat;

Dose III: Moderate (Comfortable) perception of heat

Dose IV: Vigorous heating (No pain or burning). If pain threshold is reached, immediately decrease output.

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Draper et al have led the way in SWD research in the United States. Their work focuses on using Pulsed Shortwave Diathermy (PSWD) as a heating agent. It often seems counterintuitive to clinicians that PSWD can heat, but it's clear from the research that it can heat efficiently and, when used in combination with a heating and stretching regime, it can improve flexibility in subjects with tight hamstrings and plantar flexors.[14,15]

Draper et al have been able to obtain this 4° Celsius increase using pulsed short-wave diathermy (Induction drum) for 15 to 20 minutes (Pulse width of 400 microseconds, pulse rate of 800 pps, average output of 48 W).Thermal SWD can serve as an efficient, safe deep heating agent that can enhance the effectiveness of passive stretching, joint mobilization or soft tissue manipulation.[16]

SWD is a modality that produces deep heating via conversion of electromagnetic energy to thermal energy. Oscillation of high frequency electrical and magnetic fields produces movement of ions, rotation of polar molecules, and distortion of nonpolar molecules with resultant heat generation.[17,18,20,21]. The Federal communications commission limits industrial, scientific and medical use to 13.56 MHz, 27.12MHz, 40.68MHz.67 The 27.12 MHz frequency is most commonly used. The heating pattern produced depends on the type of shortwave unit and on the water content and electrical properties of the tissue. Tissues can be grossly divided into those with high water content (Muscle, skin, blood) and those with low water content (Bone, fat).[19]

SWD units can be inductive or capacitive. Inductive applicators use inductive coils that apply a magnetic field to induce circular electrical fields in the tissue.[18] They achieve higher temperatures in water rich tissues with higher conductivity. These applicators typically have a cable or drum configuration.[20] Cables are semi flexible. Induction coils that can be formed to the contour of the area to be treated. Drum applicators consist of induction coils enclosed in a rigid housing or drum. For a capacitive applicator, the patient is placed between two metal condenser plates. The plates and the patients intervening tissue act as a capacitor and heat is generated by rapid oscillations in the electric field from one plate to the other. Capacitive applicators might achieve higher temperatures in water poor tissues such as subcutaneous adipose tissue.[18,20]

To evaluate the effect of SWD in order to improve the pain and range of motion in frozen shoulder.

Materials and methods

Study design was randomized clinical trial. Sampling technique was purposive sampling. 28 subjects in each group (56 in total) was given the power of 80% to detect significance at a probability level of p=0.05.

Inclusion criteria

i) Patients of adhesive capsulitis

ii) Age between 30 yrs to 70 yrs

iii) Painful restricted movement of shoulder less than 3 months

iv) Involvement of right or left or both shoulder's.

Exclusion criteria

i) Skin diseases around the affected shoulder

ii) History of fracture or dislocation of shoulder joint, stroke and other neurological deficits

iii) Pregnant women

iv) Patients on treatment for adhesive capsulitis

v) Patients with co-morbidity e.g. uncontrolled Diabetes, Hypertension, Asthma, Heart diseases, malignancy, neck pain or radiculopathy and rheumatologic diseases.

After taking the informed consent from the patient, details history was taken and a preset data form was filled up for every patient. Past history of illness & any systemic disease was inquired cautiously. A complete physical examination including general physical examination, examination of shoulder joint and neck was done. Base line investigations was done. e.g. CBC, 2HABF, Urine R/M/E, X-ray of cervical Spine A/P & Lateral View, CXR P/A & lateral view, X-ray of the right/left shoulder B/V was also done.

All reports were properly recorded in the data sheet.

For therapeutic trial patients was divided into two groups. Group A (SWD exercise and analgesic) and Group B (Exercise and analgesic only).

All included patients of both groups was given home shoulder mobilizing exercises – Codman/ pendulum, wall climbing, pulley and wand exercise 5 repetitions each type 3 times daily for consecutive 6 weeks following demonstration on 1st day of enrollment in the study and subsequent follow up

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was done whether they were doing the exercise properly. In addition, Group A patients were treated with SWD over the affected shoulder for 20 minutes daily for consecutive 10 days except holidays.

There were three visits and these evaluations were always performed by the same examiner. In each visit patients were assessed by the following parameters :

i) Visual Analogue Scale (VAS)

ii) Tenderness index

iii) Shoulder Pain and Disability Index (SPADI)

Use of Analgesics, shoulder mobilizing Exercises and SWD during treatment.

Analgesic (NSAIDS): Tab. Naproxen (250mg) twice daily after meal for pain relieve with Cap. Omeprazole (20mg) coverage for six weeks.

Ethical clearance was taken from the ethical committee of Chittagong Medical College.

After collection of information, these data was checked, verified for consistency and edited for finalized result. After editing and coding, the coded data was directly entered into the computer by using SPSS 20 version. Data cleaning validation and analysis was performed using the SPSS and graph and chart by MS excel. The result was presented in tables in mean, Standard Deviation (SD) and percentages. Statistical tests for significance of difference were done using unpaired t test. A "P" value <0.05 was considered as significant.

Results

Regarding analysis of gender in both groups male and female were matched (p>0.05) and male to female ratio was 1.66: 1.

Table I Gender distribution of study patients

	Gender		Group		Total
			Group A	Group B	
	Male	Count	16	19	35
		% within Group	57.1%	67.9%	62.5%
	Female	Count	12	9	21
		% within Group	42.9%	32.1%	37.5%
Total		Count	28	28	56
		% within Group	100.0%	100.0%	100.0%

Chi square value = 0.85, p= 0.913.

Socioeconomic status was found different in both groups where poor was 21.4%, middle class was 44.6% and rich was 33.9%.

Table II Socio economic condition

			Group		Total
			Group A	Group B	
Socio economic condition	Poor	Count	3	9	12
		% within Group	10.7%	32.1%	21.4%
	Middle class	Count	15	10	25
		% within Group	53.6%	35.7%	44.6%
	Rich	Count	10	9	19
		% within Group	35.7%	32.1%	33.9%
Total	Count		28	28	56
		% within Group	100.0%	100.0%	100.0%

Chi square value = 0.23, p= 0.607.

Among all patients 35.7% were housewives, 16.1% were service holder, farmers were 12.5% business were 16.2% and laborer were 3.6%.

Table III Occupation

			Group		Total
			Group A	Group B	
Occupation	House wife	Count	11	9	20
		% within Group	39.3%	32.1%	35.7%
	Service	Count	4	5	9
		% within Group	14.3%	17.9%	16.1%
	Farmer	Count	2	5	7
		% within Group	7.1%	17.9%	12.5%
	Businessmen	Count	4	5	9
		% within Group	14.3%	17.9%	16.1%
	Laborer	Count	2	0	2
		% within Group	7.1%	0.0%	3.6%
	Unemployed/ Retired	Count	2	2	4
		% within Group	7.1%	7.1%	7.1%
	Other	Count	3	2	5
		% within Group	10.7%	7.1%	8.9%
Total		Count	28	28	56
		% within Group	100.0%	100.0%	100.0%

Among all subjects 48.2% had right shoulder involvement, 50.0% had left side involvement and one patient had both sided disease.

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Table IV Site of involvement of shoulder

			Group		Total
			Group A	Group B	
Site of involvement of shoulder	Right	Count	15	12	27
		% within Group	53.6%	42.9%	48.2%
	Left	Count	12	16	28
		% within Group	42.9%	57.1%	50.0%
	Both	Count	1	0	1
		% within Group	3.6%	0.0%	1.8%
Total		Count	28	28	56
		% within Group	100.0%	100.0%	100.0%

Significant difference between Group A and Group B was found at week 2, week 4 and Week 6 followup ($p<0.05$) whereas initial followup was non-significant in VAS analysis ($p>0.05$).

Table V VAS score at different follow up

VAS	Group	n	Mean	Std. Deviation	p value
W0 VAS	Group A	28	7.79	1.548	<0.677
	Group B	28	7.96	1.644	
W2 VAS	Group A	28	5.79	1.686	<0.011
	Group B	28	6.86	1.627	
W4 VAS	Group A	28	4.46	1.753	<0.001
	Group B	28	6.32	1.634	
W6 VAS	Group A	28	2.14	1.880	<0.001
	Group B	28	5.43	1.834	

Significant difference between Group A and Group B was found at week 2, week 4 and week 6 followup ($p<0.05$) regarding change of tender grading in Group A then Group B patients.

Table VI Analysis of TG at different followup

	Group	n	Mean	Std. Deviation	p value
W0 T.G	Group A	28	2.93	.663	< 0.443
	Group B	28	3.07	.604	
W2 T.G	Group A	28	2.07	.716	< 0.001
	Group B	28	2.93	.716	
W4 T.G	Group A	28	1.64	.731	< 0.001
	Group B	28	2.68	.723	
W6 T.G	Group A	28	.68	.723	< 0.001
	Group B	28	2.18	.670	

TG: Tenderness Grading.

* p value calculated by independent sample t test.

Significant difference between Group A and Group B was found at week 2, week 4 and Week 6 followup ($p<0.05$) regarding SPADI.

Table VII Evaluation of SPADI at different follow-up

	Group	n	Mean	Std. Deviation	p value
W0 SPADI	Group A	28	68.97	14.517	<0.289
	Group B	28	73.32	15.866	
W2 SPADI	Group A	28	51.6957	12.32563	<0.001
	Group B	28	66.3821	14.67031	
W4 SPADI	Group A	28	39.9621	11.48095	<0.001
	Group B	28	61.3604	14.33536	
W6 SPADI	Group A	28	29.1654	12.35642	<0.001
	Group B	28	56.7671	13.99734	

Discussion

Regarding analysis of gender in both groups male and female were matched ($p>0.05$) and male to female ratio was 1.66: 1. Majority of my participants were males (62.5%) which contradict international studies where females are predominantly sufferers from adhesive capsulitis.[5] This reverse result is most probably due to more male patients seeking medical help than females suggested by unpublished data of patients in our department.

Socioeconomic status was found different in both groups where poor was 21.4%, middle class was 44.6% and rich was 33.9%. Here sampling was purposive and only those patients were taken who visited the OPD of Chattogram medical college hospital. So this socioeconomic scenario may not represent the actual scenario of Bangladesh.

Among all patients 35.7% were housewives, 16.1% were service holders, farmers were 12.5% businessmen were 16.2% and laborers were 3.6%. Despite male participants are slightly higher, most common occupation of the patients is Housewife. It is not clear from my study why housewives are so prone to develop adhesive capsulitis. This present scenario of occupational status of the study patients may not represent the actual scenario of Bangladesh as sampling technique was purposive and taken patients attending in a tertiary care hospital.

Among all subjects 48.2% had right shoulder involvement, 50.0% had left side involvement and one patient had both sided disease. As it has no specific prediction to site both the limb can be affected. There were 92.7% patients who had localized pain and only 7.3% had radiation. Most of the pain in the evening (56.4%) and rest had pain at night (43.6%). Most of the patients in both groups had constant and intermittent type of pain (47.5% and 45.5%) other types were sharp and dull. Different study support that findings regarding pain analysis.[21-23]

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Significant difference between Group A and Group B was found at week 2, week 4 and Week 6 followup ($p<0.05$) whereas initial followup was non-significant in VAS analysis ($p>0.05$). Significant difference between Group A and Group B was found at week 2, week 4 and week 6 followup ($p<0.05$) regarding change of tender grading in Group A then Group B patients. Significant difference between Group A and Group B was found at week 2, week 4 and Week 6 followup ($p<0.05$) regarding SPADI.

The result from 4th session assessment showed further reduction in pain both groups with patients reported mild pain with movement. Change in VAS was reported in the assessment in all the patients in group B from baseline assessment The result from independent t-test showed significant difference between the 2 intervention groups (All $p < 0.05$) at 95% confidence interval for both the dependent variables i.e. degree of pain and change in range of motion. Study suggest that the use of modalities with the mobilization and stretching exercise can increase the functional capacity of the shoulder joint as early as compared with the patient who only taking electrical modalities, similar study comparing the effectiveness of short wave diathermy (deep heating agent) and superficial heating in combination with stretching exercise suggested that using heating modalities in conjunction with stretching lead to early increase in range of motion.[21]

Limitations

- Single center study
- Small sample size.

Conclusion

Shoulder mobilizing exercises along with SWD use in adhesive capsulitis has better outcome in terms of pain and disability reduction in subsequent follow up.

Recommendation

SWD can be routinely used in the pain and disability management of adhesive capsulitis.

Disclosure

All the authors declared no competing interest.

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Case Report

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Umbilical Polyp Along with Vitellointestinal Duct Cyst in a 2 Years Old Boy

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Abstract

Background: The Vitellointestinal Duct (VID) remnant is a rare congenital anomaly associated with the primitive yolk stalk. Clinical presentation of the persistent VID anomalies is variable and depends upon the type of the remnant. Obstruction, secondary to VID cyst is one of the rare cause of intestinal obstruction. Surgical intervention must be planned in suspected abnormalities that is associated with remnant VID.

Case Presentation: A 2 years old boy weighting 8 Kg presented with reddish nodule at the umbilicus since birth with failure to thrive and occasional non bilious vomiting. Total excision under general anesthesia was planned as the clinical diagnosis was umbilical polyp. Peroperative finding was tubular VID cyst connecting proximally with ileum and distally with umbilical polyp by a fibrous cord. Total excision of umbilical polyp along with VID cyst and reposition of gut within the abdominal cavity with umbilicoplasty.

Conclusion: VID anomalies are uncommon, and their clinical diagnosis is difficult. All VID remnants are surgically excised to prevent complications.

Key words: Umbilical polyp; Vitellointestinal duct anomalies; vitellointestinal cyst.

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Introduction

The umbilicus is considered as a mirror of the abdomen.[1] In intrauterine life the umbilical cord contains paired umbilical arteries, umbilical vein, urachus and Vitellointestinal Duct (VID) and it is the lifeline between the fetus and the placenta.[2] VID connects the yolk sac to the primitive midgut, which normally regresses during the 5th to 9thweeks ofintrauterine life.[3-5]

VID remnants is a spectrum of anomalies like Meckel's diverticulum, umbilical sinus, umbilical polyp, VID cyst, VID fistula, persistent fibrous cord[6]. Persistence of distal part of VID at the umbilicus is known as umbilical polyp, andpersistence of central part of the VID with fibrous cord or band on both the ends is called VID cyst.[7-9] Obstruction secondary to VID cyst is a rare cause of small bowel obstruction.[10] Majority of VID anomalies are unrecognized due to asymptomatic, but symptomatic cases need surgical intervention to prevent complication.[11-12]

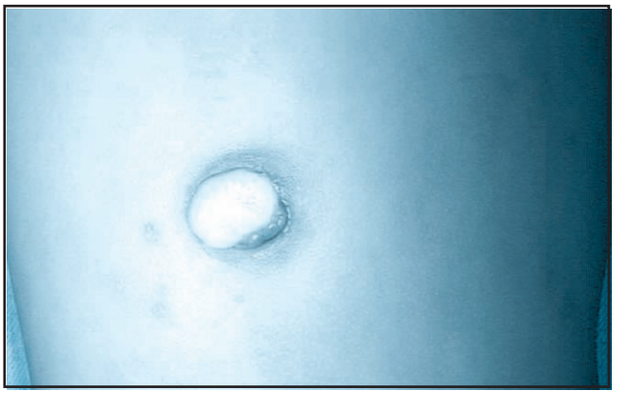

Figure 1 Umbilical polyp

Case Presentation

A 2 years old boy weighting 8 kg was admitted on 22nd November 2021 in the Department of Pediatric Surgery at Chattagram International Medical College Hospital (CIMCH) with a reddish nodule at the umbilicus soon after sloughing of the umbilical cord which was seen 14 days after birth. (Fig. 1).

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There was no discharge of urine or fecal material except mucous. Treated repeatedly with silver nitrate cauterization but there was no response. Mother additionally gave history of failure to thrive and occasional non bilious vomiting after meal. On examination baby was malnourished, mild anemic, anicteric, non-dehydrated other vitals were within normal limit. Upper abdomen mildly distended. A firm reddish nodule in the depth of the umbilicus measuring 1.5 x 1.5 x 1.5 cm. Abdominal USG shows no associated abnormality. X-ray abdomen in upright position revealed dilated small bowel, without air fluid level, and other biochemical reports were within normal limit. After taking written informed consent, laparotomy was done through a small infra umbilical incision. A cord like structure was attached to the polyp, with aninternal communication. After extension of incision, a tubular cyst measuring 5 x 2 cm which was attached distally with umbilical polyp & proximally with mid ileum by a thick fibrous cord (Fig. 2). Ileum was dilated & the cecum was sub-hepatic. The VID cyst was excised along with the polyp and specimen sent for histopathological examination. Reposition of gut within the abdominal cavity and wound closed in layer with an umbilicoplasty. After release, the patient party did not came with histopathological report, so we cannot supply the histopathological findings.

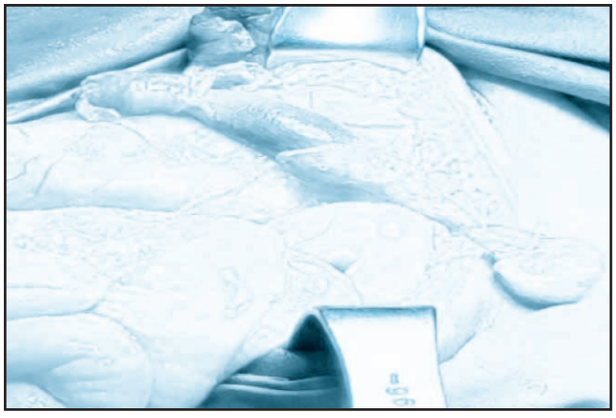

Figure 2 Peroperative findings; tubular VID cyst connecting with umbilical polyp with a fibrous cord, other cut end that was connected with ileum with a fibrous cord.

Discussion

VID remnants are congenital anomalies, which may present in approximately 2% in the first year of life, with equal frequency among the sexes, although the incidence of symptoms is higher in male.[5,13,14] VID anomaly may be asymptomatic or symptomatic as intestinal obstruction, umbilical abnormality, acute abdomen or rectal bleeding.[15] Obliterated VID remnant acts as an axis around which the bowel may twist.[16] In VID anomaly intestinal obstruction is due to either intussusception, volvulus or internal hernia, or a fibrous connection between the umbilicus and the ileum.[17] In VID cyst both ends i.e. umbilical and ileal ends are closed remaining central part of the duct. A fibrous cord or band develops when only fibrous tissue connects the ileum and umbilicus.[8,9] The umbilical polyp is usually reddish, firm nodules, with mucoid secretions which can be mistaken for granulomas. The umbilical granuloma is pinkish, soft nodules with mucopurulent secretions that response to topical silver nitrate.[18,19] VID anomalies may be associated with cardiac malformation, umbilical hernias, intestinal atresias, cleft lip, cleft palate, Omphalocele, trisomy 13 Patau's syndrome and Downs syndrome.[20-22] The umbilical or cutaneous VID anomalies are generally diagnosed by physical examination but abdominal USG, CT scan, Meckel's scintigraphy and fistulogram may help to diagnose VID abnormalities.[23-25]

Conclusion

Umbilical polyp can coexist with or without VID cyst and without probable symptoms. All cutaneous VID remnant should be surgically excised and surgeon should pay attention to the intra-abdominal findings to rule out any attachment.

Disclosure

All the authors declared no competing interest.

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