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Journal of Bangladesh College of Physicians and Surgeons (JBCPS)

INFORMATION FOR AUTHORS

MANUSCRIPT PREPARATION AND SUBMISSION

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Submit manuscripts as e-mail attachment to the editorial office at: journal.bcps@gmail.com.

A manuscript number will be mailed to the corresponding author within two working days.

The **cover letter** should include the corresponding author's full address and telephone/fax numbers and should be in an e-mail message sent to the editor, with the file, whose name should begin with the first author's surname, as an attachment.

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Five types of manuscripts may be submitted:

Editorials: It will be preferably written invited only and usually covers a single topic of contemporary interest.

Original Articles: These should describe new and carefully confirmed findings, and experimental procedures should be given in sufficient detail for others to verify the work. The length of a full paper should be the minimum required to describe and interpret the work clearly.

Short Communications: A Short Communication is suitable for recording the results of complete small investigations or giving details of new models or hypotheses, innovative methods, techniques , images in clinical practice, letter to editors, short reports or apparatus. The style of main sections need not conform to that of original article . Short communications are 2 to 4 printed pages (about 6 to 12 manuscript pages) in length.

Reviews: Submissions of reviews and perspectives covering topics of current interest are welcome and encouraged. Reviews should be concise and no longer than 4 to 6 printed pages (about 12 to 18 manuscript pages). It should be focused and must be up to date. Reviews are also peer-reviewed.

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Review Process:
All manuscripts are initially screened by editor and sent to selective reviewer. Decisions will be made as

rapidly as possible, and the journal strives to return reviewers' comments to authors within 3 weeks. The editorial board will re-review manuscripts that are accepted pending revision. The JBCPS editorial board will try to publish the manuscript as early as possible fulfilling all the rigorous standard journal needs.

I. A. Preparing a Manuscript for Submission to JBCPS

Editors and reviewers spend many hours reading manuscripts, and therefore appreciate receiving manuscripts that are easy to read and edit. Much of the information in this journal's Instructions to Authors is designed to accomplish that goal in ways that meet each journal's particular editorial needs. The following information provides guidance in preparing manuscripts for this journal.

Conditions for submission of manuscript:

- All manuscripts are subject to peer-review.
- Manuscripts are received with the explicit understanding that they are not under simultaneous consideration by any other publication.
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Ethical aspects:

- Ethical aspect of the study will be very carefully considered at the time of assessment of the manuscript.
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Preparation of manuscript:

Criteria: Information provided in the manuscript are important and likely to be of interest to an international readership.

Preparation:

1. Manuscript should be written in English and typed on one side of A4 (290 x 210cm) size white paper.
2. Margin should be 5 cm for the header and 2.5 cm for the remainder.
3. Style should be that of modified Vancouver.
4. Each of the following section should begin on separate page :
   - o Title page
   - o Summary/abstract
   - o Text
   - o Acknowledgement
   - o References
   - o Tables and legends

Pages should be numbered consecutively at the upper right hand corner of each page beginning with the title page-

I. A. 1. a. General Principles

- The text of observational and experimental articles is usually (but not necessarily) divided into the following sections: Introduction, Methods, Results, and Discussion. This so-called "IMRAD" structure is a direct reflection of the process of scientific discovery.
- Long articles may need subheadings within some sections (especially Results and Discussion) to clarify their content. Other types of articles, such as case reports, reviews, and editorials, probably need to be formatted differently.
- Electronic formats have created opportunities for adding details or whole sections, layering information, crosslinking or extracting portions of articles, and the like only in the electronic version.
- Authors need to work closely with editors in developing or using such new publication formats and should submit supplementary electronic material for peer review.
- Double-spacing all portions of the manuscript—including the title page, abstract, text, acknowledgments, references, individual tables, and legends—

and generous margins make it possible for editors and reviewers to edit the text line by line and add comments and queries directly on the paper copy.

- If manuscripts are submitted electronically, the files should be double-spaced to facilitate printing for reviewing and editing.
- Authors should number on right upper all of the pages of the manuscript consecutively, beginning with the title page, to facilitate the editorial process.

I. A. 1. b. Reporting Guidelines for Specific Study Designs

Research reports frequently omit important information. Reporting guidelines have been developed for a number of study designs that JBCPS journals ask authors to follow. Authors should consult the Information for Authors of this journal. The general requirements listed in the next section relate to reporting essential elements for all study designs. Authors are encouraged also to consult reporting guidelines relevant to their specific research design. A good source of reporting guidelines is the EQUATOR Network (http: //www.equator-network.org/home/) or CONSORT network (http:// www.consort-statement.org).

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The title page should have the following information:

1. Article title. Concise titles are easier to read than long, convoluted ones. Titles that are too short may, however, lack important information, such as study design (which is particularly important in identifying type of trials). Authors should include all information in the title that will make electronic retrieval of the article both sensitive and specific.
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- Structured abstracts are essential for original research and systematic reviews. structured abstract means introduction, methods, results and conclusion in abstract.
- Should be limited to 250 words.
- The abstract should provide the introduction of the study and blinded state and should state the study's purpose, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), principal conclusions. It should emphasize new and important aspects of the study or observations. Articles on clinical trials should contain abstracts that include the items that the CONSORT group has identified as essential (http://www.consort-statement.org).
- Because abstracts are the only substantive portion of the article indexed in many electronic databases, and the only portion many readers read, authors need to be careful that they accurately reflect the content of the article.

I. A. 5. Introduction

- Provide a context or background for the study (that is, the nature of the problem and its significance). It should be very specific, identify the specify knowledge in the aspect, reasoning and what the study aim to answer.
- State the specific purpose or research objective of, or hypothesis tested by, the study or observation; the research objective is often more sharply focused when stated as a question.
- Both the main and secondary objectives should be clear.
- Provide only directly pertinent primary references, and do not include data or conclusions from the work being reported.

I. A. 6. Methods

The Methods section should be written in such way that another researcher can replicate the study.

I. A. 6. a. Selection and Description of Participants

- Describe your selection of the observational or experimental participants (patients or laboratory animals, including controls) clearly, including eligibility and exclusion criteria and a description of the source population. Because the relevance of such variables as age and sex to the object of research is not always clear, authors should explain their use when they are included in a study report—for example, authors should explain why only participants of certain ages were included or why women were excluded. The guiding principle should be clarity about how and why a study was done in a particular way. When authors use such variables as race or ethnicity, they should define how they measured these variables and justify their relevance.

I. A. 6. b. Technical Information

- Identify the methods, apparatus (give the manufacturer's name and address in parentheses), and procedures insufficient detail to allow others to reproduce the results. Give references to established methods, including statistical methods (see below); provide references and brief descriptions for methods that have been published but are not well-known; describe new or substantially modified methods, give the reasons for using them, and evaluate their limitations. Identify precisely all drugs and chemicals used, including generic name(s), dose(s), and route(s) of administration.
- Authors submitting review article should include a section describing the methods used for locating, selecting, extracting, and synthesizing data. These methods should also be summarized in the abstract.

I. A. 6. c. Statistics

- Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals).
- Avoid relying solely on statistical hypothesis testing, such as P values, which fail to convey important information about effect size. References for the design of the study and statistical methods should be to standard works when possible (with pages stated).
- Define statistical terms, abbreviations, and most symbols.
- Specify the computer software used.

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- Present results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Please keep the result the sequence of specific objective selected earlier.
- Do not repeat all the data in the tables or illustrations in the text; emphasize or summarize only the most important observations. Extra or supplementary materials and technical detail can be placed in an appendix where they will be accessible but will not interrupt the flow of the text, or they can be published solely in the electronic version of the journal.
- When data are summarized in the Results section, give numeric results not only as derivatives (for example, percentages) but also as the absolute numbers from which the derivatives were calculated, and specify the statistical methods used to analyze them.
- Restrict tables and figures to those needed to explain the argument of the paper and to assess supporting data. Use graphs as an alternative to tables with many entries; do not duplicate data in graphs and tables.

- Avoid nontechnical uses of technical terms in statistics, such as “random” (which implies a randomizing device), “normal,” “significant,” “correlations,” and “sample.” Where scientifically appropriate, analyses of the data by such variables as age and sex should be included.

I. A. 8. Discussion

- Emphasize the new and important aspects of the study and the conclusions that follow from them in the context of the totality of the best available evidence.
- Do not repeat in detail data or other information given in the Introduction or the Results section.
- For experimental studies, it is useful to begin the discussion by briefly summarizing the main findings, then explore possible mechanisms or explanations for these findings, compare and contrast the results with other relevant studies, state the limitations of the study, and explore the implications of the findings for future research and for clinical practice.
- Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not adequately supported by the data. In particular, avoid making statements on economic benefits and costs unless the manuscript includes the appropriate economic data and analyses. Avoid claiming priority or alluding to work that has not been completed. State new hypotheses when warranted, but label them clearly as such.

I. A. 9. References

I. A. 9. a. General Considerations Related to References

- Although references to review articles can be an efficient way to guide readers to a body of literature, review articles do not always reflect original work accurately. Readers should therefore be provided with direct references to original research sources whenever possible.
- On the other hand, extensive lists of references to original work of a topic can use excessive space on the printed page. Small numbers of references to key original papers often serve as well as more exhaustive lists, particularly since references can now be added to the electronic version of published papers, and since electronic literature searching allows readers to retrieve published literature efficiently.
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I. A. 9. b. Reference Style and Format

- References should be numbered consecutively in the order in which they are first mentioned in the text.
- Identify references in text, tables, and legends by Arabic numerals in superscript.
- References cited only in tables or figure legends should be numbered in accordance with the sequence established by the first identification in the text of the particular table or figure.

I. A. 10. Tables

- Tables capture information concisely and display it efficiently.
- Use tables /fig that are relevant to study.
- Try to limit the number of tables/figure.
- Type or print each table with double-spacing on a separate sheet of paper. Number tables consecutively in the order of their first citation in the text and supply a brief title for each.
- Do not use internal horizontal or vertical lines. Give each column a short or an abbreviated heading. Authors should place explanatory matter in footnotes, not in the heading. Explain all nonstandard abbreviations in footnotes, and use the following symbols, in sequence:

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- Identify statistical measures of variations, such as standard deviation and standard error of the mean.
- Be sure that each table is cited in the text. If you use data from another published or unpublished source, obtain permission and acknowledge that source fully.

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- Figures should be either professionally drawn and photographed, or submitted as photographic-quality digital prints. In addition to requiring a version of the figures suitable for printing, (for example, JPEG / GIF).
- Authors should review the images of such files on a computer screen before submitting them to be sure they meet their own quality standards. For x-ray films, scans, and other diagnostic images, as well as pictures of pathology specimens or photomicrographs, send sharp, glossy, black-and-white or color photographic prints, usually 127 _ 173 mm (5 _ 7 inches).
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- Measurements of length, height, weight, and volume should be reported in metric units (meter, kilogram, or liter) or their decimal multiples.
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- Use only standard abbreviations; use of nonstandard abbreviations can be confusing to readers.
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- The spelled-out abbreviation followed by the abbreviation in parenthesis should be used on first mention unless the abbreviation is a standard unit of measurement.

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- If a paper version of the manuscript is submitted, send the required number of copies of the manuscript and figures; they are all needed for peer review and editing, and the editorial office staff cannot be expected to make the required copies.

- Manuscripts must be accompanied by a cover letter, conflicts of interest form, authorship and declaration, proforma of which is available in JBCPS web site.

Editing and peer review: All submitted manuscripts are subject to scrutiny by the Editor in-chief or any member of the Editorial Board. Manuscripts containing materials without sufficient scientific value and of a priority issue, or not fulfilling the requirement for publication may be rejected or it may be sent back to the author(s) for resubmission with necessary modifications to suit one of the submission categories. Manuscripts fulfilling the requirements and found suitable for consideration are sent for peer review. Submissions, found suitable for publication by the reviewer, may need revision/ modifications before being finally accepted. Editorial Board finally decides upon the publishability of the reviewed and revised/modified submission. Proof of accepted manuscript may be sent to the authors, and should be corrected and returned to the editorial office within one week. No addition to the manuscript at this stage will be accepted. All accepted manuscripts are edited according to the Journal's style.

Submission Preparation Checklist

As part of the submission process, authors are required to check off their submission's compliance with all of the following items, and submissions may be returned to authors that do not adhere to these guidelines.

Check Lists

Final checklists before you submit your revised article for the possible publication in the Journal of Bangladesh College of Physicians and Surgeons:

1. Forwarding/Cover letter and declaration form,
2. Authorship and conflicts of interest form,
3. Manuscript
   - o Sample of the above documents is available in the following links: http://www.bcpsbd.org (registration required for download)
   - o If you have submitted mention document (1, 2, 3) above, when you first submitted your article then you don't need to re-submit but if there is change in the authorship or related then you have to re-submit it.

- General outline for article presentation and format
  - Δ Double spacing
  - Δ Font size should be 12 in arial
  - Δ Margins 5 cm from above and 2.5 cm from rest sides.
  - Δ Title page contains all the desired information (vide supra)
  - Δ Running title provided (not more than 40 characters)
  - Δ Headings in title case (not ALL CAPITALS, not underlined)
  - Δ References cited in superscript in the text without brackets after with/without comma (,) or full stop (.)
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  - Δ Numerals from 1 to 10 spelt out
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- **Title**
  - Δ Complete title of your article
  - Δ Complete author information
  - Δ Mention conflict of interest if any
- **Abstract**
  - Δ Do not use subheadings in the abstract
  - Δ Give full title of the manuscript in the Abstract page
  - Δ Not more than 200 words for case reports and 250 words for original articles
  - Δ Structured abstract (Including introduction, methods, results and discussion, conclusion) provided for an original article and (Introduction, results and discussion , conclusion) for case reports.
  - Δ Key words provided – arrange them in alphabetical order (three – five)
- **Introduction**
  - Δ Word limit 150 -200 words
  - Δ Pertinent information only
- **Material and Methods**
  - Δ Study Design
  - Δ Duration and place of study
  - Δ Ethical approval
  - Δ Patient consent
  - Δ Statistical analysis and software used.
- **Result**
  - Δ Clearly present the data
  - Δ Avoid data redundancy
  - Δ Use table information at the end of the sentence before full stop between the small bracket
- **Discussion**
  - Δ Avoid unnecessary explanation of someone else work unless it is very relevant to the study
  - Δ Provide and discuss with the literatures to support the study
  - Δ Mention about limitation of your study
- **Conclusion**
  - Δ Give your conclusion
  - Δ Any recommendation
- **Acknowledgement**
  - Δ Acknowledge any person or institute who have helped for the study
- **Reference**
  - Δ Abide by the Vancouver style
  - Δ Use reference at the end of the sentence after the full stop with superscript
- **Legends**
  - Δ Table
  - Δ Figures

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CONTENTS

EDITORIAL

Morbid Placental Adhesion –A Nightmare for Obstetricians

Abnormal placentation (accreta, increta and percreta) has emerged over uterine atony as the leading indication for peripartum hysterectomy due to obstetric haemorrhage[1]. Once a rare occurrence, morbidly adherent placenta (Placenta accreta syndrome) is now becoming an increasingly common complication of pregnancy, mainly due to the increasing rate of Caesarean delivery about 10 times more over the past 50 years[2].

Placenta accreta syndrome is the abnormal adherence of the chorion of the placenta to the myometrium of the uterus. Normally there is tissue intervening between the chorionic villi and the myometrium, but in 'placenta accreta, the vascular processes of the chorion grow directly in the myometrium. Placenta accreta can progress into placenta percreta.

An incidence of 1 : 533 births for the period from 1982 to 2002, much greater than previous reports ranging from 1 : 4027 to 1 : 2510 births in the 1970s to1980s, suggesting that this increase is mainly the result of the increasing rate of cesarean delivery[3].

Women at greatest risk of placenta accreta are those who have myometrial damage caused by a previous cesarean delivery with either anterior or posterior placenta previa overlying the uterine scar. The authors of one study found that in the presence of a placenta previa, the risk of placenta accreta was 3%, 11%, 40%, 61%, and 67% for the first, second, third, fourth, and fifth or greater repeat cesarean deliveries, respectively[4]. Placenta previa without previous uterine surgery is associated with a 1–5% risk of placenta accreta.

Other reported risk factors include any condition resulting in myometrial tissue damage followed by a secondary collagen repair, such as previous myomectomy, endometrial defects due to vigorous curettage resulting in Asherman syndrome[5], submucous leiomyomas, thermal ablation, advanced maternal age, multiparity, hypertensive disorders of pregnancy, smoking, congenital or acquired uterine defects (such as uterine septa), ectopic implantation of placenta (including cornual pregnancy.

The exact pathogenesis of placenta accreta is unknown. But decidual maldevelopment or the absence of decidua is of greater importance in the pathogenesis[6]. The abnormal expression of growth, angiogenesis, and invasion-related factors in the trophoblast populations (the cytotrophoblast secretes factors that favor invasion)are the main factors responsible for the occurrence of placenta accreta[7].

The presence and increasing number of lacunae within the placenta at 15–20 weeks of gestation have been shown to be the most predictive ultrasonographic signs of placenta accreta in 2nd trimester , with a sensitivity of 79% and a positive predictive value of 92%[8] & should undergo follow-up imaging in the third trimester(32-34 weeks) with attention to the potential presence of placenta accreta.

Sonographic findings that may be suggestive of placenta accreta include:

1. Loss of normal hypoechoic retroplacental zone
2. Multiple vascular lacunae (irregular vascular spaces) within placenta, giving "Swiss cheese" or moth-eaten" appearance
3. Blood vessels or placental tissue bridging uterine-placental margin, myometrial-bladder interface, or crossing the uterine serosa
4. Retroplacental myometrial thickness of <1 mm
5. protrusion of the placenta into the bladder
6. Numerous coherent vessels visualized with 3-dimensional power Doppler in basal view and
7. Turbulent flow through the lacunae on Doppler ultrasonography[8].

The use of power Doppler, color Doppler, or three-dimensional imaging does not significantly improve the diagnostic sensitivity compared with that achieved by grayscale USG along[9].

MRI is considered an adjunctive modality & is able to outline the anatomy of the invasion and relate it to the regional anastomotic vascular system ,enabled confirmation of parametrial invasion and possible ureteral involvement with a very good sensitivity and specificity for this disorder but MRI is more costly than USG and requires both experience and expertise in the evaluation of abnormal placental invasion[10].

Women with placenta accreta are usually delivered by a cesarean section & except in specific cases, hysterectomy remains the treatment of choice for patients with placenta accreta.

It is better to perform the surgery under elective, controlled conditions rather than as an emergency without adequate preparation. Improved outcomes have been demonstrated when these patients give birth in specialized tertiary centers with all emergency facilities[11].

In addition, regardless of the management option made, prevention of complications ideally requires a multidisciplinary team approach .The multidisciplinary team should include a gynecologic surgeon experienced in pelvic surgery, maternal–fetal medicine specialist, a blood bank team prepared to administer multiple blood components, experienced anesthesiology personnel who are skilled in obstetric anesthesia, skilled urologists in case a bladder resection or repair might be required, experienced intensivists for postpartum care, and an experienced neonatologist.In cases where pelvic artery catheterizations are used, an experienced interventional radiologist is also required[12].

The timing of delivery in cases of suspected placenta accreta must be individualized depending on patient circumstances and preferences. This decision should be made jointly with the patient, obstetrician, and neonatologist. Patient counseling should include discussion of the potential need for hysterectomy, the risks of profuse hemorrhage, and possible maternal mortality & morbidity. The results of a recent decision analysis suggested that combined maternal and neonatal outcomes are optimized in stable patients with delivery at 34-35 weeks of gestation without amniocentesis in a view to avoid an emergency cesarean on the one hand and to minimize complications of prematurity on the other[11].

The American Society of Anesthesiologists task force on obstetric anesthesia suggested that general anesthesia may be the most appropriate choice in some circumstances, including cases where severe hemorrhage is anticipated[13]. The decision to administer antenatal corticosteroids and the timing of administration should be individualized. Generally, the recommended management of suspected placenta accreta is planned preterm cesarean hysterectomy, the standard approach is to leave the placenta in situ, quickly use a "whip stitch" to close the hysterotomy incision, and proceed with hysterectomy.

Data suggest that preoperative ureteric stent placement may help reduce the risk of ureteric injury. If bladder involvement is suspected, cystotomy may be needed to clarify the extent of invasion after devascularization of the uterus is achieved and to ensure ureteric patency if stents were initially not inserted[14].

Conservative management , which includes delivery by a cesarean section without hysterectomy that includes ligating the cord close to the fetal surface, removing the cord, and leaving the placenta in situ, potentially with partial placental resection to minimize its size. However, this approach should be considered only when the patient has a strong desire for future fertility as well as hemodynamic stability, normal coagulation status, and is willing to accept the risks involved in this conservative approach[15].

Postoperative complications reported with a conservative approach include severe PPH, postoperative DIC and infection resistant to antimicrobial therapy that may require laparotomy and hysterectomy. Conservative treatment required women adherence to treatment over along postpartum period, which suggests that women may continue to be at risk for severe morbidity and possibly mortality for weeks or even months after delivery[16].

En Block excision of placenta accreta was first described by palacios et al, in 2004 in a series of 68 cases[17]. This technique permitted resection of invaded myometrium when 50% or less of the anterior uterine circumference is invaded. After excision the resulting defect was repaired with myometrial pulley suture, similar to horizontal mattress suture. Even with these technique 26% needs hysterectomy[18]. Except in specific cases, hysterectomy remains the treatment of choice for patients with placenta accreta.

Current evidence is insufficient to make a firm recommendation on the use of balloon catheter occlusion or embolization internal iliac artery to reduce blood loss and improve surgical outcome[19].

Placenta accreta is becoming an increasingly scommon complication of pregnancy because of increasing incidence of caesarean section. So every attention should be paid to minimize the rate of primary caesarean section & to encourage the VBAC(vaginal birth after previous C. section).

As Prenatal diagnosis seems to be a key factor in optimizing the counseling, treatment, and outcome of women with placenta accreta. In addition, regardless of the management option made, prevention of complications ideally requires a multidisciplinary team approach. Cesarean hysterectomy is probably the preferable treatment. Conservative management should only be used in highly selected cases. Even though there may be a rationale to add adjuvant therapy in such cases, there is no evidence-based proof that such therapy is actually of benefit or that it is not in fact harmful.

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Chronic Arsenic Exposure through Drinking Water and Risk of Type 2 Diabetes Mellitus: A Study from Bangladesh

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Summery:

The well-documented fact that chronic arsenic exposure can lead to skin lesions, atherosclerotic diseases and cancers. The findings of association between arsenic exposure and diabetes mellitus indicate additional risk to human health.

The aim of this study was to observe the association of chronic arsenic exposure from drinking water and risk of development of type 2 diabetes mellitus. To this end, a cross-sectional study was conducted in Comilla district of Bangladesh where ground water is heavily contaminated with arsenic. The individuals unexposed to arsenic were recruited from the Jhenaidah district. People with arsenic-related skin lesions were defined as subjects exposed to arsenic. Diabetes was defined if fasting blood glucose (FBG)>6.1 mmol/L following World Health Organization (WHO) guidelines.

The common odds ratio for diabetes mellitus among subjects exposed to arsenic was 3.5 (95% confidence interval 1.1-10.9). After adjustment for age, sex and BMI, the Mantel-Haenszel weighted prevalence ratio was 3.5 (95% CI: 1.1-11.1); 3.7 (95% CI: 1.1-11.8) and 4.4 (95% CI: 1.1-17.2) respectively. The indicated relationships were significant (P<0.05).

The observations suggested, chronic arsenic exposure through drinking water may be a risk factor of type 2 diabetes mellitus.

Key Words: Arsenic, Drinking water, Diabetes mellitus, Bangladesh

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Introduction:

The contamination of groundwater with arsenic (As) is a big threat in various countries including Argentina, Australia, Bangladesh, Chile, China, Hungary, India, Mexico, Peru, Taiwan, and the United States of America. According to U.S. Environmental Protection Agency (USEPA) from 2001, the acceptable level of arsenic in drinking water is 10 ppb, though for many years the value was 50 parts per billion (ppb, equivalent to 50 micrograms per liter)[1]. However, the worst case scenario has been reported in Bangladesh and West Bengal of India[2]. Approximately 56% of the tube wells (out of 34,000) throughout Bangladesh contain Arsenic more than 10 ¼g/L and some 37% have greater than 50 ¼g/L[3]. It has been estimated that about 50 million people in Bangladesh are chronically exposed to arsenic through drinking water[4-6]. Public health problems related to chronic arsenic exposure through drinking water have been linked to increased risks of skin cancer[7] bladder, lung, and liver cancers[8, 9] as well as cardiovascular diseases[10, 11]. In further, arsenic exposure has been suggested to be associated with development of diabetes mellitus as well[12]. Another cohort study from Taiwan reported that a long-term exposure to arsenic is associated with diabetes mellitus in humans[13]. Similar report (inorganic arsenic exposure may be diabetogenic) was also from the state of Coahuila, Mexico[14]. More recently, a cross-sectional study from National Health and Nutrition Examination Survey (NHANES) reported that the OR for diabetes was 3.6 (95% CI, 1.2–10.8) when they compared par-ticipants at the 80th percentile with those at the 20th percentile for urinary arsenic[15]. As far as Bangladesh is concerned, a dose–response relationship between prevalence of diabetes mellitus and exposure to arsenic through drinking water was reported only a few studies[16, 17].

Not only drinking water exposure, several studies had reported occupational chronic arsenic exposures

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association with diabetes mellitus. For example, Swedish copper smelter workers revealed an increased risk of dying from diabetes mellitus with increasing arsenic exposure as compared to an unexposed control group[18]. In another study on Swedish art glass workers, the odds ratio of dying from diabetes mellitus was 1.8 for the exposed glass workers compared to unexposed ones[19]. Occupational exposure to arsenic was associated significantly with an increased level of glycosylated hemoglobin in Denmark[20]. Other studies had shown an increased morbidity and mortality of diabetic patients having exposed to arsenic at work when compared with general population or unexposed workers[18, 19, 21, 22].

However, in contrary, many studies opposed such association between chronic arsenic exposure and diabetes mellitus. For instance, no significant association was observed in a community-based studies in areas of low arsenic exposure in the USA[23, 24]. A study from Bangladesh in 2010 has reported that there is no association of chronic arsenic exposure, to diabetes, glycosuria, or blood HbA1c level[25]. Similarly, a couple of studies also reported no association of occupational arsenic exposures with increase mortality of diabetes mellitus in arsenic-exposed workers than the general population[26-29].

The aim of this study was to observe the possible association between chronic arsenic exposure and type 2 diabetes mellitus in areas of Bangladesh taking into account demographic, social and medical risk factors.

Methods:

This cross-sectional study was conducted in 4 villages viz. Eruen, Madhaya Eruen, Rajapur and Nagrapa from Lacksam Upazila of Comilla district as these areas have high arsenic levels in sources of drinking water. These locations were selected based on the Bangladesh arsenic Mitigation Water Supply Project's (BAMWSP) national survey report. The arsenic concentration of artesian well water in these villages ranged from 0.07 to 1.4 ppm with a mean concentration of 0.15 ppm. The standard for arsenic in drinking water set by the U.S. Environmental Protection Agency is 0.05 mg/L for Bangladesh[9]. As reference population we arbitrarily recruited unexposed individuals through a door-to-door visit from a village, Vespara, from Kaliganj Upazila of Jhenaidah district. The population of Jhenaidah is not known to be exposed to arsenic through drinking water, which is provided from the Water and Sewage Agency, Bangladesh.

A total of 150 subjects chronically exposed to arsenic-contaminated drinking water were recruited randomly from those who have skin manifestations such as keratosis, leucomelanosis and melanosis as skin lesions are a marker of pro-longed arsenic exposure. The lesions in skin were confirmed by the physicians of local health centre. The unexposed age (≥30 years) and sex matched reference population of 150 individuals were recruited from control area. One and 2 subjects with family history of hypertension in the exposed and non-exposed groups respectively were excluded. Three subjects in the exposed group and 1 subject in the non-exposed group was denied to participate in the study.

A semi-structured questionnaire was used to obtain information on socioeconomic, demographic characteristics, history of arsenic contaminated water consumption, height, weight, alcohol intake, cigarette smoking, physical activities, as well as personal, family history of hypertension and diabetes. The arsenic content of tube well water was taken from the report of BAMWSP survey. Type 2 diabetes was screened by a Glucometer. Diagnosis of DM was defined using the diagnostic criteria (FBG >6.1mmol/L) from the WHO guidelines.

Statistics

The data were stratified according to age (30-44, 45-59, and >60 years), sex, and body mass index (BMI); the BMI categories were less than 19, 19-22, and >22. Mantel-Haenszel weighted prevalence ratios (MH-PR) with 95 percent confidence intervals were calculated to determine the association of chronic arsenic exposure with type 2 diabetes mellitus. All the potential confounders were adjusted during the analysis.

Ethics

The study was approved by Khulna University, Khulna, Bangladesh as part of the graduation study. The study was performed following the Declaration of Helsinki principles and informed consent was given by all participants before enrolment.

Results:

This study was carried out in areas of high arsenic contamination in drinking water and compared with areas not containing arsenic in drinking water. The mean age of the As exposed group was 45.5 years and 45.7 in the reference group. Male and female participants in the exposure group were 26% and 74% respectively, and in the reference group, it was 30% and 70% respectively. The major occupations in the exposed group were housewife (74%) and farmer (12%) and in the reference group, the main occupations were also housewife (69%) and farmer (12%. In the As exposed

group, the age of most of the participants (53%) ranged from 30 to 44 years. This figure for ages between 30 and 44 in comparison group accounted for 51%. Subjects aging between 45 to 60 years were 35% and 37% in the exposed group and the comparison group respectively. In the As group, 74% had no formal education and in the control group, the corresponding figure was 70%. The comparison of socio-demographic characteristics between As exposed group and comparison group are presented in table 1.

The BMI in the As exposed group was lower than in control group (Table 1). The history of alcohol intake, cigarette smoking, physical activities, as well as personal and family history of hypertension and diabetes in the family in the AS exposed group was comparable with that in the control group (Table 1)

Table-I

Socio-demographic characteristics of participants exposed and not exposed to arsenic through drinking water (n=300)

Variables	Exposed group (n=150)		Not exposed group (n=150)	
	No	(%)	No.	(%)
Age (years)				
30-44	80	53.3	76	50.7
45-60	53	35.3	56	37.3
>60	17	11.3	18	12
Sex				
Male	39	26	45	30
Female	111	74	105	70
Occupation				
Cultivator	18	12	17	11.3
Day labor	5	3.3	11	7.3
House wife	111	74	103	68.7
Business	7	4.7	15	10
Service	6	4	2	1.3
*Others	3	0.21	2	1.3
Education				
No formal Education	111	74	105	70
Primary School	21	14	17	11.3
High School	12	8	21	14
SSC	5	3.3	4	2.7
HSC	1	0.7	3	2
Religion				
Islam	147	98	52	34.7
Hinduism	3	2	98	65.3
Marital Status				
Married	134	89.3	130	86.7
Widowed	14	9.3	20	13.3
Divorced	1	0.7	0	
Never Married	1	0.7	0	
Body Mass Index (BMI)				
<19	90	60	33	22
19-22	36	24	51	34
>22	24	16	66	44
Physical Activities				
Light	40	26.6	38	25.3
Moderate	79	52.6	73	48.6
Vigorous	31	20.6	39	20
Alcohol Intake	0	0	0	0
Cigarette Smoking	17	11.3	14	9.3

* Others =Rickshaw puller, member, tuition

Diabetes mellitus was diagnosed in 13 individuals among the As exposed subjects and in 4 persons among the subjects who drank arsenic free water. The crude prevalence ratio for diabetes mellitus was 3.5 (95% CI, 1.1-10.9) stating that the probability for developing diabetes mellitus exposed to As contaminated water is 3.5 times higher than that for an unexposed individual (Table 2).

In order to find out a precise association between chronic arsenic exposure and diabetes mellitus, the effects of potential confounding factors viz. Age, Sex and BMI were adjusted. After adjusting for age (Table 3), the Mantel-Haenszel weighted prevalence ratio (MH-PR) was 3.5 (95% CI: 1.1-11.1, p=0.031).

With adjustment for sex, MH-PR was 3.7 (95%CI: 1.1-11.8, p=0.029) (Table 4).When adjusted for BMI, MH-PR increased to 4.4 (95% CI: 1.1 - 17.2) p=0.032 (Table 5).

Table-II

Type 2 Diabetes in exposed and not exposed to arsenic through drinking water (n=300)

Arsenic exposure	Diabetes		
	Diabetic	Non diabetic	Total
Exposed	13 (8.7%)	137 (91.3%)	150 (100%)
Not exposed	4 (2.7%)	146 (97.3%)	150 (100%)
Total	17 (5.7%)	283 (94.3%)	300 (100%)
Fisher's Exact Test	0.043		
Mantel-Haenszel Common Odds Ratio	3.5		
95% Confidence Interval	1.1—10.9		

Table-III

According to age, type 2 diabetes mellitus in exposed and not exposed to arsenic through drinking water (n=300)

Age	Arsenic exposure	Diabetic status		
		Diabetic	Not diabetic	Total
30-44	Exposed	5 (6.2%)	75 (93.8%)	80 (100%)
	Not exposed	1 (1.3%)	75 (98.7%)	76 (100%)
Total	6 (3.8%)	150 (96.2%)	156 (100%)	
45-60	Exposed	5 (9.4%)	48 (90.6%)	53 (100%)
	Not exposed	3 (5.4%)	53 (94.6%)	56 (100%)
Total	8 (7.3%)	101 (92.7%)	109 (100%)	
>60	Exposed	3 (17.6%)	14 (82.4%)	17 (100%)
	Not exposed	0 (0%)	18 (100%)	18 (100%)
Total	3 (8.6%)	32 (91.4%)	35 (100%)	
Mantel-Haenszel Common Odds Ratio	3.5			
Exact Sig. (2-sided)	0 .031			
95% Confidence Interval	1.1-11.1			

Table-IV

According to sex, type 2 diabetes mellitus in exposed and not exposed to arsenic through drinking water (n=300)

Sex	Arsenic exposure	Diabetic	Non diabetic	Total
Male	Exposed	4 (10.3%)	35 (89.7%)	39 (100%)
	Not exposed	3 (6.7%)	42 (93.3%)	45 (100%)
Total	7 (8.3%)	77 (91.7%)	84 (100%)	
Female	Exposed	9 (8.1%)	102 (91.9%)	111 (100%)
	Not exposed	1 (1.0%)	104 (99.0%)	105 (100%)
Total	10 (4.6%)	206 (95.4%)	216 (100%)	
Mantel-Haenszel Common Odds Ratio		3.7		
Exact Sig. (2-sided)		0.029		
95% Confidence Interval		1.1-11.8		

Table-V

According to BMI, type 2 diabetes mellitus in exposed and not exposed to arsenic through drinking water (n=300)

BMI	Arsenic exposure	Diabetic	Non diabetic	Total
<19	Exposed	9 (10%)	81 (90%)	90 (100%)
	Not exposed	0 (0%)	33 (100%)	33 (100%)
Total	9 (7.3%)	114 (92.7%)	123 (100%)	
19-22	Exposed	2 (5.6%)	34 (94.4%)	36 (100%)
	Not exposed	1 (2%)	50 (98%)	51 (100%)
Total	3 (3.4%)	84 (96.6%)	87 (100%)	
>22	Exposed	2 (8.3%)	22 (91.7%)	24 (100%)
	Not exposed	3 (4.5%)	63 (95.5%)	66 (100%)
Total	5 (5.6%)	85 (94.4%)	90 (100%)	
Mantel-Haenszel Common Odds Ratio		4.4		
Exact Sig. (2-sided)		0.032		
95% Confidence Interval		1.1-17.2		

Discussion

The results of this study support the association between a long-term arsenic exposure and diabetes mellitus, as observed by other investigators[12, 13, 16, 18, 19].

Exposure to inorganic arsenic, as indicated by animal and in vitro model systems, can potentially increase the risk of developing diabetes through its implications on the inhibition of insulin-dependent glu-cose uptake[30], insulin signaling[31], impairment of insulin secretion, transcription in pancre-atic beta cells[32] and modification of the expression of genes involved in insulin resistance[33]. However, the concentrations of arsenic in most of these experiments are high, and the resulting effects may not be pertinent to populations chronically exposed to arsenic in the environment.

Nevertheless, the epide-miologic literature suggests that diabetes is an adverse outcome associated with prolonged exposure to high levels of arsenic (>500 μg/L) in drinking water[17]. Among patients with skin lesions, a marker of pro-longed exposure, the OR for diabetes in associ-ation with 500–1,000 μg/L and >1,000 μg/L was 2.2 and 2.6 respectively[17]. In a cohort study in southwestern Taiwan, the OR of diabetes was 2.1 comparing individuals with cumulative arsenic exposure >17,000 μg/L-years to those with <17,000 μg/L-years[13].

On the other hand, the relation between inorganic arsenic exposure and diabetes mellitus has been reported yet to be inconclusive particularly at low to moderate levels of exposure to arsenic[34]. Even no evidence of an association was found in a study in Bangladesh where 90% of study population was exposed to well water arsenic <300 μg/L when comparing the highest level of exposure (176–864 μg/L; mean, 291.2 μg/L) with the lowest (0.1–8 μg/L; mean, 2.4 μg/L). Therefore, this study suggests that arsenic exposure between 10 and 300 μg/L is not significant to pose a risk of diabetes[25].

Occupational studies have also been inconclusive. While in the studies at a copper smelter[18] and an art glass industry[19] in Sweden, an association between occupational arsenic exposure and diabetes has been reported, no relation has been observed in a US copper smelter[26] and in a UK tin smelter[35]. The experimental and epidemiologic evidence suggest that the adverse effects on diabetes may be dose specific and limited to populations with prolonged exposure to very high levels of arsenic exposure.

One of the main problems of published epidemiological studies is related to measurement errors. In several of the studies only glycosuria as a diagnosis of the disease was used[16, 17] or statistical records[36-39]. Only a couple of studies used glucose measurement after an oral glucose tolerance test[12, 13] but in one of them the comparison group was not studied concurrently with the exposed group[13]. In our study, glucose measurement after an oral glucose tolerance test was used to diagnose diabetes as advised by WHO.

Deficiencies of trace elements such as copper and zinc have been suggested to play a role in the pathogenesis of diabetes mellitus[40]; administration of cadmium has been shown also to cause hyperglycemia[41]. Arsenic has been reported to interact with these chemicals. Arsenic exposure can lead to a significant increase in renal copper excretion and can potentiate the effects of cadmium when arsenic and cadmium are used together[42]. Arsenic may also compete with zinc in metal-binding proteins that display vicinal dithiols contained in zinc fingers of DNA binding and repair proteins. This competitive binding causes conformational change and altered biological function in proteins[43]. However, it is not known whether these elements or other toxic trace elements are present in groundwater in the study area.

In this study all subjects were recruited from rural villages of almost similar occupation, socioeconomic status, and lifestyle. These variables were reasonably similar between exposed and unexposed people and it was, therefore, unlikely to influence glycosuria either in the presence or absence of skin lesions. The controls had higher BMI than As exposed people, despite that they had less frequently diabetes. A low body mass may be ascribed to the effect of As.

A weakness of the study is that we have no long term follow up of our cases.

Strength of the study is the availability of data on environmental exposure to arsenic. Unlike previous studies of lower-level arsenic exposure[15, 23, 24], this study popu-lation was well described with detailed data on the duration, source, and form of expo-sure. Another strength is that we have taken into account social and clinical risk factors as well as other risk factors like alcohol intake, cigarette smoking, physical activities, as well as personal and family history of hypertension and diabetes.

Conclusions:

Chronic arsenic exposure in drinking water may be a risk factor for type 2 diabetes mellitus.

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Arterial and end-tidal Carbon Dioxide Tension Changes during Spinal Anaesthesia in Upper Abdominal Laparoscopic Surgeries: A Comparison with General Anaesthesia

A MASUM[a], MR ALAM[b], M HAQUE[c], R YASMIN[d], SNH KHAN[e]

Summary:

Nowadays, laparoscopic surgeries are being performed under subarachnoid block (SAB) safely.

Aims: This study was to compare the arterial and end-tidal carbon dioxide (CO_2) tension changes during spinal and general anaesthesia (GA) in CO_2 pneumoperitoneum for upper abdominal laparoscopic surgeries.

Settings and Design: This was a prospective randomized comparative clinical study.

Materials and Methods: Eighty patients posted for upper abdominal laparoscopic surgeries were randomly allocated to two groups either to receive standard GA or lumbar SAB.

Results: The demographic profiles of both the groups were comparable. The $PaCO_2$ was increased gradually and sustained at its peaks within 20±4.37 minutes in both the groups. The mean±SD revealed to be higher in Group B (41.5500±2.1315) than Group A (40.8460±2.1136), but the difference between the two was not statistically significant (P=0.6142). There was a gradual increase in $ETCO_2$ over the initial 10±2.07 minutes and reached a plateau within 20±5.74 minutes in both the groups and declined faster after deflation of pneumoperitoneum in SAB group. The mean±SD was found to be higher in Group B (33.923±1.642) than Group A (33.408±1.772), but it was also not statistically significant (P=0.4492). The difference of the arterial blood pH between the groups was not statistically significant. Three (7.5%) patients developed transient urinary retention and 2 (5%) patients suffered from post-dural puncture headache in SAB group.

Conclusions: Arterial and end-tidal CO_2 tension changes during upper abdominal laparoscopic surgery under SAB remain within physiological limit and comparable to the CO_2 tensions under GA. However, per-operative complications in SAB are greater, while it is lesser in postoperative period in comparison to GA. SAB may be adopted in ASA physical status I patients with proper preoperative counselling.

Key-words: Upper abdominal surgery, Laparoscopic surgery, Subarachnoid block, General anaesthesia, CO_2 tension changes.

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Introduction:

Laparoscopic surgery has turned into a typical surgical practice in late decades[1]. Initially, all the laparoscopic procedures were being performed customarily under general anaesthesia (GA)[2]. Later on, the laparoscopic gynaecological interventions were shown safe under subarachnoid block (SAB) with or without epidural analgesia[3]. However, the reception of regional anaesthesia (RA) has risen as an alternative choice recently for even upper abdominal laparoscopy. Various reports in the literatures suggest the safety of the use of spinal, epidural and combined spinal-epidural anaesthesia in laparoscopic procedures[4]. Some centres have been using SAB as their first preference in laparoscopic surgery for a long time[5]. The benefits of a cognizant patient and usually an uneventful recuperation in one hand and the assurance from potential entanglements of GA then again are the principle explanations behind selecting SAB as a first decision.

Carbon dioxide pneumoperitoneum induces significant hemodynamic changes intra-operatively. The majority

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of pathophysiological changes is related to cardiorespiratory and cerebrovascular system and is caused by high intra-abdominal pressure due to CO_2 insufflations and hypercapnia resulted from increased peritoneal absorption of CO_2. It causes significant but promptly manageable hemodynamic changes even in the patients belonging to American Society of Anesthesiologists (ASA) physical status I and II[6]. The respiratory changes during lower abdominal laparoscopic procedures under SAB were analyzed[3]; but in PubMed search, no invasive study was found on respiratory parameters in upper abdominal laparoscopic procedures under SAB. As such, the present study was designed to assess and compare the arterial and end-tidal carbon dioxide tension changes between the patients undergoing SAB and the patients receiving standard GA for upper abdominal laparoscopic surgeries.

Materials and Methods:

This prospective, randomized comparative study was conducted at Combined Military Hospital Dhaka, a tertiary level hospital within a period of one year from July 2015 to June 2016. After getting due approval of the Hospital Ethical Committee, 80 patients of both genders, scheduled for routine upper abdominal laparoscopic surgeries, aged from 15 to 65 years, belonging to ASA physical status I and II were enrolled randomly along with their prior informed consent (Figure 1). The exclusion criteria were: (a) Cases with

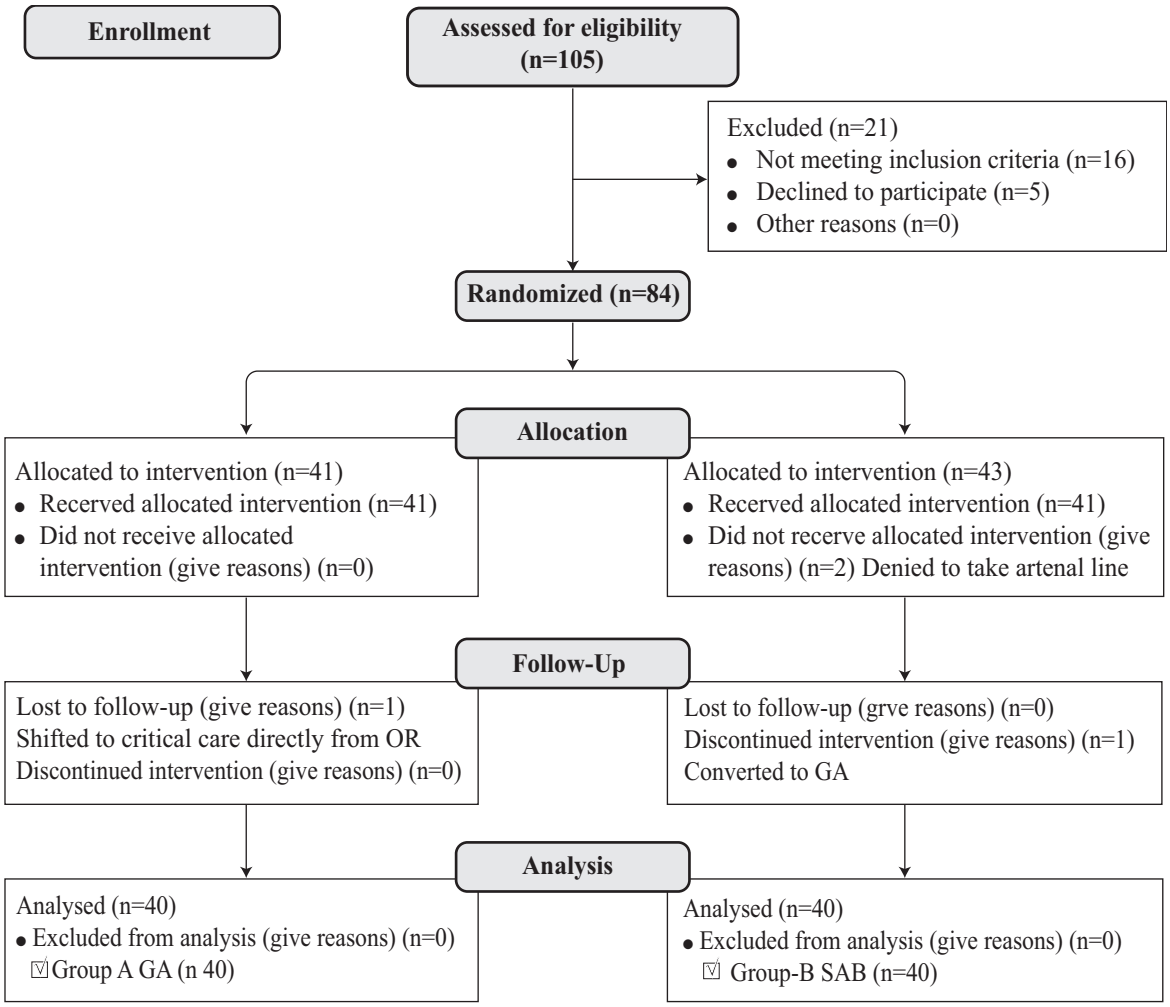

Fig.-1: *Consort diagram*

acute inflammation (b) Anxiety prone patients/ diagnosed psychological morbidity (c) Bleeding disorders (d) Local spinal deformity which precluded safe spinal anaesthesia (e) Cases of chronic obstructive pulmonary disease (f) Surgeries with duration of over one hour. The patients were divided into two groups of 40s by card sampling method.

Group A received standard GA with propofol 2 mg/kg, fentanyl 1.5 mcg/kg for induction; suxamethonium 1.5 mg/kg for intubation; halothane, nitrous oxide, oxygen and vecuronium bromide for maintenance. The respiratory rate was adjusted to maintain $ETCO_2$ between 32 and 36 mmHg. Residual neuromuscular blockade was antagonized with 0.05 mg/kg of neostigmine and 0.2 mg/kg of atropine at the end of the surgery. The patients were tried to extubate as smooth as to ensure an uneventful recovery.

Group B received lumber SAB in sitting position using 25G Quincke Babcock spinal needle at L_2 - L_3 interspace with all aseptic measures. A combination of 15 mg 0.5% hyperbaric bupivacaine and 25 mcg fentanyl was administered in the lumbar subarachnoid space. The patients were then placed in supine position with 15 degree head down tilt to achieve the sensory blockade upto T_5 dermatome (level of block was tested by pin prick stimulus) while the abdomen was prepared for Veress needle insertion simultaneously.

Group A patients were attached with $ETCO_2$ sensors which was fixed in between the endotracheal tube and the breathing circuit (Bain); and the $ETCO_2$ sensors were fixed on a soft sealing transparent facemask which was secured air tight over the faces of group B patients.

In both the groups, a 20-gauze polyurethane catheter was established in the left radial artery temporarily for periodical sampling of arterial blood in order to estimate the pH and $PaCO_2$ at an interval of 15 minutes. Pneumoperitoneum was produced by insufflating CO_2 gas and the intra-abdominal pressure was adjusted to have a comfortable working field [mean 10 (±2) cm H_2O]. Baseline heart rate, blood pressure, respiratory rate & SpO_2 were noted in all patients. Continuous ECG & pulse oximetry, noninvasive blood pressure, and $ETCO_2$ were recorded using multiparameter monitor every 5 minutes interval during the procedures. Patients of group B (SAB) who complained of neck pain, shoulder tip pain or both and for anxiety and abdominal discomfort were managed by intravenous midazolam 2 mg, ondansetron 8 mg, tramadol 100 mg and/or ketamine 25 mg. Electrocardiogram, pulse oximetry, noninvasive blood pressure were monitored and recorded at 10 minutes interval in the postoperative period. Any intra- and postoperative complications were observed and managed accordingly.

All results were expressed as mean ± standard deviation (SD) or in frequencies (percentage) as applicable and analyzed using Chi-Squared test for categorical data and unpaired t-test for quantitative data.

Results:

The demographic profiles of the patients of both the groups were comparable (Table 1). The $PaCO_2$ was increased gradually and sustained at its peaks within 20±4.37 minutes in both the groups (Figure 2). The mean ± SD was revealed to be higher in the patients of Group B (41.5500±2.1315) than Group A (40.8460±2.1136), but the difference between the two was not statistically significant (P=0.6142). There was a gradual increase in $ETCO_2$ over the initial 10±2.07 minutes and reached a plateau within 20±5.74 minutes in both the groups and declined faster after deflation of pneumoperitoneum in SAB group (Figure 3). The mean ± SD was found to be slightly higher in the patients of Group B (33.923± 1.642) than Group A (33.408± 1.772), but it was also not statistically significant (P=0.4492). The difference of the pH values of the arterial blood between the groups was not statistically significant (Table 2). The incidence of intra- and postoperative complications are shown in Table 3. Three (7.5%) patients developed transient urinary retention and 2 (5%) patients suffered from post-dural puncture headache in SAB group.

Table-I

Personal characteristics and duration of surgery

Variables	Group A (GA) n=40	Group B (SAB) n=40	P-value
Age (years)	36.20±4.55	34.03±5.58	0.0603
Gender (Male/Female)	21/19	17/23	1.0000
Weight (kg)	57.42±7.36	59.80±6.71	0.1347
Duration of surgery (in hours)	0.958±0.62	0.947±0.44	0.9273

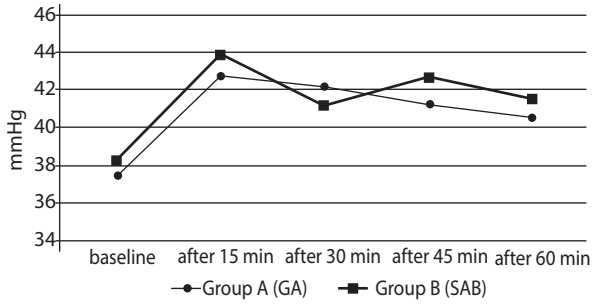

Fig.-2: *Arterial CO_2 tension changes*

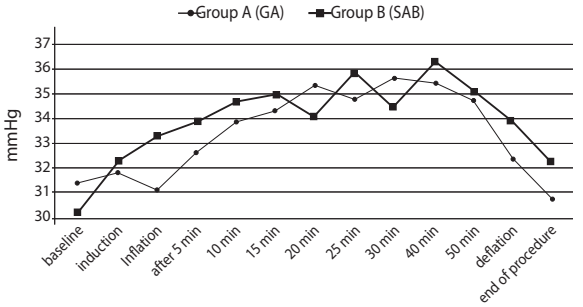

Fig.-3: *End-tidal CO_2 tension changes*

Table-II

Changes in Arterial blood pH

Timing	Group A	Group B	P-value
Baseline	7.401±0.011	7.398±0.023	0.4590
After 15 min	7.396±0.012	7.389±0.032	0.1990
After 30 min	7.372±0.064	7.385±0.098	0.4845
After 45 min	7.369±0.086	7.372±0.009	0.8269
After 60 min	7.350±0.016	7.363±0.097	0.4055

Table-III

Complications

Period	Complications	Group A (GA)	Group B (SAB)
Intra-operative	Discomfort		19 (47.5%)
	Shoulder tip .'Neck pain		11 (27.5%)
	Hypertension	7 (17.5%)	6 (15%)
	Nausea/vomiting		5(12.5%)
	Hypotension	1 (2.5%)	5(12.5%)
	Delirium		4 (10%)
	Bradycardia		3 (7.5%)
	Shivering		2 (5%)
	Arrhythmia		2 (5%)
Postoperative	PONV	6(15%)	15 (50%)
	Hypotension	3 (7.5%)	1 (2.5%)
	Hypoventilation	1 (2.5%)	
	Shivering	1 (2.5%)	1 (2.5%)
	Urinary retention		3 (7.5%)
	PDPH		2 (5%)

Discussion:

Acid-base alterations occur during laparoscopic abdominal surgeries by CO_2 insufflation. A decrease in blood pH and an increase in $PaCO_2$ are observed during the pneumoperitoneum even with standard controlled ventilation under GA[7]. This presumption, a real-time discomfort and an instinct fear of an insufflated abdomen were the principle factors of conceding SAB in laparoscopic surgery. The avoidance of SAB was also due to its possible suppressive effects on the respiratory muscle functions under increased abdominal pressure. But, it is presently being regarded and honed as a routine and safe anaesthetic technique and recommended for conducting laparoscopic cholecystectomy in hospital setups where cost issue is a major consideration, such as in the developing countries[8].

This study has compared essentially the arterial and end-tidal carbon dioxide tension changes during SAB with GA in upper abdominal laparoscopic surgeries. The changes in pH of arterial blood and the comparison of intra- and postoperative complications were the secondary outcomes. The values of both $PaCO_2$ and $ETCO_2$ were found to be raised in the patients who underwent SAB than those who underwent standard GA, but the difference were not statistically significant (Figure 2 & 3). This findings are complied with another study where no significant changes were observed in the ventilatory variables while on spontaneous ventilation during capnoperitoneum for laparoscopic surgery under epidural anaesthesia[9]. The arterial carbon dioxide level was kept nearly unaltered by increased minute ventilation and respiratory rate during CO_2 pneumoperitoneum. One of the proposed explanations is that the intrathecal fentanyl shifting the CO_2 response curve to the left.

In our study, the $PaCO_2$ and the $ETCO_2$ were elevating till 20 min in both the groups and stabilised thereafter without any further increment till the decompression of the capnoperitoneum. This duration of increase was observed to be 5 min more in comparison with the finding in lower abdominal laparoscopy[3]. The greater surface area of the upper abdominal peritoneum and the increased absorption of peritoneal fluid in the sub-diaphragmatic area could be certain explanations, but not yet settled[10]. We observed no further increase of

$PaCO_2$ and $ETCO_2$ tensions after 20 min which is reasonably conformed to another study where there was no demonstrable increase after the 15th min of capnoperitoneum in pelvic laparoscopy[11]. This results can be justified by the findings of a study where it was confirmed that an intra-abdominal pressure higher than the venous capillary pressure protects from further CO2 resorption by compressing the venous capillaries of the peritoneum[12].

We noticed a faster declining of $PaCO_2$ and $ETCO_2$ after deflation of pneumoperitoneum in SAB group. Because, GA decreases the sensitivity of respiratory rate to hypercarbia which otherwise restored intact in SAB. Berg et al. even demonstrated a further increment of $PaCO_2$ after desufflation of capnoperitonium after laparoscopic cholecystectomy under GA[13]. Whereas Beazley et al. in their animal study showed that after desufflation, respiratory rate exhibited an uptrend for next 15 min. The changes were within physiologically acceptable limits in those healthy, anaesthetised cats despite no artificial maintenance of minute ventilation[14].

The changes in arterial blood pH depicted an initial transient acidity in the patients of SAB group which was negligible (Table 2), but it was reversed quickly and maintained within the normal limits throughout the procedures. The differences of arterial blood pH between the groups were not statistically significant. These findings are also comparable to the results of the study projected by Critchley et al[15] on the patients underwent laparoscopic cholecystectomy under GA and to the reports provided by Ali et al[16]. on laparoscopic procedures under SAB.

Intra- and postoperative complications were diverse between the groups (Table III). In intra-operative complications, 7(17.5%) patients of Group A (GA) developed transient hypertension (Mean arterial pressure >105 mmHg) and 19 (47.5%) patients experienced discomfort principally due to shoulder tip/ neck pain [11(27.5%)] in Group B (SAB). Kar et al[17]. showed a higher incidence (88.51%) of shoulder tip pain during laparoscopic cholecystectomy under SAB with low-pressure pneumoperitoneum among which 90.08% were managed by right shoulder massage alone and 9.93% required additional administration of 100 mg tramadol intravenously. This shoulder tip pain is explained as the attritions due to the physical and chemical stimulation of the diaphragm by capnoperitoneum.

In the SAB group, 3(7.5%) patients developed urinary retention temporarily and 2(5%) suffered from PDPH for 2-3 days. Hence, there are reports of no incidence of PDPH following laparoscopic surgery under SAB[3,4,18], while Tiwari et al[8] found 3(2.72%) cases and Imbelloni[19] found 5(1.47%) cases of PDPH. But, in contrary, Vaghadia et al. observed 38% of postoperative headache and 70% of those were postural in nature[20].

There were some limitations in this study. We have not considered the height and body mass index of the patients which might be contributing factors to the level of central neuroaxial blockade, patients' discomfort and other perioperative complications. The monitoring of intracranial pressure which is affected by hypercarbia and which also may have a causative role to develop patients' per-operative uneasiness could be included in this study. Moreover, this series was quite smaller and selective; so, randomized study on larger scales are recommended to establish that the laparoscopic cholecystectomy under SAB is significantly safe and sound for the patients.

Conclusions:

Arterial and end-tidal CO_2 tension changes during upper abdominal laparoscopic surgery under SAB remain within physiological limit and comparable to the CO_2 tensions under GA. However, per-operative complications in SAB is greater, while it is lesser in postoperative period in comparison to GA. SAB may be adopted in ASA physical status I patients with proper preoperative counselling.

Key Messages: Arterial and end-tidal CO_2 tension changes during upper abdominal laparoscopic surgery under SAB remain within physiological limit and comparable to the CO_2 tensions under GA. However, per-operative complications in SAB are greater, while it is lesser in postoperative period in comparison to GA. SAB may be adopted in ASA physical status I patients with proper preoperative counselling.

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Efficacy and Safety of Carbetocin in Comparison to Oxytocin for the Prevention of Primary PPH during Caesarean Section: An Open Label Randomized Control Trial

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Summary:

Background: Postpartum hemorrhage (PPH) is a potentially life-threatening complication of both vaginal and caesarean delivery. The most frequent cause of postpartum hemorrhage is uterine atony, when the uterus fails to contract fully after delivery of the placenta. For the prevention of this uterine atony we need an effective uterotonic drug. Till now oxytocin is used for enhancing uterine contraction after delivery. But oxytocin has some limitations like shorter half-life, less contraction time and more side effects, whereas carbetocin has prolonged duration of action which ensures more contraction time and less adverse effects. So, carbetocin considered as a good alternative over oxytocin for the prevention of primary PPH in caesarean section.

The Aim of Study: To see the efficacy and safety of carbetocin over oxytocin for the prevention of primary PPH during caesarean section.

Patients and Methods: A randomized-controlled trial was conducted in the Institute of Child and Mother Health (ICMH), Dhaka, Bangladesh over a period of nine months from January to September 2016. Ninety-four patients who had got admitted in ICMH undergoing caesarean section at term were randomized into two groups receiving either 10IU oxytocin or 100µg carbetocin, after the operation. Outcome measures such as primary PPH, massive blood loss, need for additional uterotonic drug, additional blood transfusion as well as adverse effects were all documented.

Results: This study had shown that carbetocin is superior in comparison to oxytocin for the prevention of primary PPH following caesarean section. Each patient obtained either a single dose of 100 microgram carbetocin intravenously or 10 IU of oxytocin during caesarean section. Massive blood loss occurred in 6.4%patients, blood transfusion needed in 17% patients and additional uterotonic needed for 25.5% patients in oxytocin group but in carbetocin group no massive blood loss occurred, only 2.1% patient needed immediate blood transfusion and no patient was required additional uterotonics. There were no major adverse effects observed in both the groups. No patients had developed PPH in carbetocin group. But 12.8% patients had developed primary PPH in oxytocin group.

Conclusion: Carbetocin appears to be an effective new drug than oxytocin for the prevention of primary postpartum hemorrhage in caesarean section.

Key Words: Carbetocin, Oxytocin, Postpartum hemorrhage.

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Introduction:

Postpartum Hemorrhage (PPH) is a potentially life-threatening complication of both vaginal and cesarean delivery. PPH complicates 11 % of deliveries worldwide, and is annually responsible for 1, 32, 000 maternal deaths[1]. In developing countries, mortality from PPH remains high[2]. In low income setting, PPH accounting for 30% of maternal death[3], while in Bangladesh it is 31%[4]. The target of MDG-2015 was 143 deaths per 100,000 live births[5,6]. We have already achieved this target. The key contribution to this decrease was a drop-in mortality risk mainly due to improved access and use of health facilities. Now, building on the momentum generated by MDG-5, the sustainable development goals (SDGs) establish a transformative new agenda for maternal health towards ending preventable maternal mortality. Target of SDG

3 is to reduce the global maternal mortality ratio to less than 70 per 100 000 live births by 2030[7].

Use of an effective uterotonic drug for prevention of uterine atony as well as PPH is highly recommended. Primary PPH is the most common obstetric hemorrhage and is defined by theWorld Health Organization as the loss of blood estimated to be >1000ml from the genital tract after caesarean section within 24 hours of delivery[8].

Primary PPH is the most common one and up to 80% cases it occurs due to uterine atony[5],when the uterus fails to contract fully after delivery of the placenta. There are numerous reasons for the uterus failing to contract effectively; including exhaustion, sepsis etc. Other causes of PPH are suspected or proven placental abruption, known placenta previa, multiple pregnancy, preeclampsia, gestational hypertension, previous PPH, Asian ethnicity, obesity (BMI >35) and anaemia (<9g/dl). Intrapartum risks include: Delivery by emergency or elective caesarean section, induction of labour, retained placenta, mediolateral episiotomy, operative vaginal delivery, prolonged labour (> 12 hours), big baby (>4kg), pyrexia in labour, and age >40 years[9].

If obstetric hemorrhage is not managed efficiently and effectively, this will lead to shock, hemostatic failure from disseminated intravascular coagulation, and ultimately death[10].

Conventional uterotonics like oxytocin has used for preventing PPH but it has some limitations like shorter half- life[11], less contraction time and more side effects like fluid overload, convulsion, arrhythmia and pulmonary edema. In addition, the ergot alkaloids cannot be used in 10-15% of women who have gestational hypertension[12]. Further, oxytocin and ergot preparation require protection against light to preserve its effectiveness and stability[13]. In our country cold chain is not properly maintained for oxytocin. So, there is a chance of its effectiveness and stability problems. As a result, treatment failure may occur, bleeding due to uterine atony, can be prevented by an effective uterotonic agent[14]. Till now it is recommended that oxytocin should be used as uterotonic agent either in the form of intramuscular injection or intravenous infusion.

Carbetocin is a long-acting synthetic analogue of oxytocin with agonist properties[15,16]. Carbetocin has prolonged duration of action (approximately 1 hour) which ensures more contraction time and less adverse effect[17,18]. The clinical and pharmacological properties of carbetocin are similar to those of naturally occurring oxytocin. Carbetocin binds to oxytocin receptors present on the smooth musculature of the uterus, resulting in rhythmic contractions of the uterus, increased frequency of existing contractions and increased uterine tone[13].A single dose of carbetocin has been hypothesis to act up to 16 hours in comparison to intravenous oxytocin infusion regarding the increase in uterine tone and the reduction of the risk of PPH in caesarean section[12].Moreover, carbetocin ensures more effective contraction and less adverse effect like headache, tremor, hypotension, nausea, abdominal pain, and pruritus[13] .Several data of literature suggest that prophylactic administration of carbetocin may be a good alternative to oxytocin to prevent post-partum hemorrhage[19].We had conducted this clinical study to evaluate the efficacy and safety of Carbetocin for the prevention of primary PPH during caesarean section.Materials and Methods

This randomized control trial was done from January'2016 to Septembar'2016 in the Department of Obstetrics and Gynecology, Institute of Child and Mother Health (ICMH), Matuail, Dhaka, Bangladesh. About ninety-four pregnant women were included in this study. The participants were enrolled in the study after fulfilling the inclusion and exclusion criteria. According to computer generated randomization sequential number was allocated for the cases. A written informed consent was taken from eligible women on admission. The study protocol was approved by the ethical committee of Institute of Child and Mother Health (ICMH), Matuail, Dhaka, Bangladesh.

Inclusion criteria were women with a single pregnancy undergoing caesarean delivery above 36 weeks or greater (gestational age was recorded according to the last menstrual period and was confirmed by ultrasound report).Exclusion criteria were placenta previa, multiple gestation, placental abruption (determined by history and ultrasound report) hypertensive disorders in pregnancy, preeclampsia, and known case of cardiac, renal, liver diseases, epilepsy, moderate anemia and unwilling to participate in the study.

During the study period 47 women were enrolled who received Carbetocin100 ¼g I/V as a single dose and

47 women who received 10 IU of oxytocin after caesarean section. The primary outcome was measured by the amount of blood loss within 24 hours after delivery. Blood loss was estimated by the surgeon in the usual way (visual estimation, number of used sanitary pad and amount of aspirated blood. The secondary outcomes were massive blood loss, need for additional uterotonic drug, additional blood transfusion as well as adverse effects within 24 hours of delivery. Uterine tone was evaluated by palpation and administration of additional uterotonics was the decision of the investigator.

Analysis was performed by using a computer based statistical program SPSS (Statistical Package for Social Sciences) version 16. Quantitative data were expressed as means ±SD. 95% confidenceinterval was calculated and p value of <0.05 was considered as significance.

Result:

A total of 105 pregnant women with a single pregnancy were initially recruited for inclusion in this study. 11 cases were excluded (4 had pre-eclampsia,2 eclampsia,3 multiple gestation,2 severely anaemic). Thus 94 women formed the final study group and were included in the final analysis. Mean age of study population were 23.7 ± 3.7 in carbetocin group and 24.7 ±4.3 in oxytocin group(Table I). Among the study patients 38.3% (18) had mild anemia in Carbetocin group and 40.4% (19) had mild anemia in oxytocin group. Mean systolic BP of women were 108±8.6 mm of Hg and Diastolic BP were 71 ±5.4 mm of Hg in Carbetocin group and mean systolic BP were 105±7.2 mm of Hg and Diastolic BP were 70±6.2 mm of Hg in Oxytocin group. Mean gestational age at delivery were38.8±1.3 in Carbetocin group and 39± 1.5 in Oxytocin group (Table-1). Massive blood loss occurred in 6.4%cases, blood transfusion needed in 17% cases and additional uterotonic drug needed for 25.5% women in oxytocin group but in carbetocin group no massive blood loss, only 2.1% needed immediate blood transfusion and no patient was required additional uterotonics (Table-2). There were no major adverse effects observed in both the groups (Table-3). No patients had developed PPH in carbetocin group. But 12.8%(6) patients had developed PPH in oxytocin group (Table-4).

Table-1. Data are presented as mean ±SD. The mean differences were not statistically significant (P>0.05)

Table-2. Shows that massive blood loss occurred in 6.4% patients, blood transfusion needed for 17% patients and additional uterotonic drug needed for 25.5% patients in Oxytocin group but in carbetocin

Table-I

Baseline characteristics of study patients (n=94)

	Carbetocin Group (n=47)	Oxytocin Group (n=47)	P value
Age	23.7 ± 3.7	24.7 ±4.3	0.317
Mild Anemia	18(38.3%)	19(40.4%)	0.317
Systolic BP	108±8.6 mm of Hg	105±7.2	0.210
Diastolic BP	71 ±5.4 mm of Hg	70±6.2 mm of Hg	0.509
Gestational Age	38.8±1.3 weeks	39± 1.5 weeks	0.799

Table-II

Outcome of Third stage of Labour (n = 94)

Outcome of 3rd stage of Labour	Carbetocin	Group (n=47)	Oxytocin	Group(n=47)	P value
	Yes (%)	No (%)	Yes (%)	No (%)	
Massive blood loss	0(0%)	47(100%)	3(6.4%)	44(93.6%)	0.001
Blood transfusion	1(2.1%)	46(97.9%)	8(17%)	39(83%)	0.001
Need for additional uterotonics	0(0%)	47(100%)	12(25.5%)	35(74.5%)	0.001

group no massive blood loss occurred and blood transfusion needed only 2.1% patient and none of patient was required additional uterotonics. The mean differences were statistically significant (P<0.05).

Table-3. There were no major adverse effects observed in both groups. The differences were not statistically significant (P>0.05).

Table- 4. Showed no patients had developed PPH in carbetocin group. But 12.8% patients had developed PPH in oxytocin group. The mean differences were statistically significant (P<0.05).

Table-III

Adverse effects (n = 94)

Side effects	Carbetocin (n=47) n (%	Oxytocin (n=47)) n (%	P value
Nausea	(1)2.1%	1(2.1%)	0.50
Vomiting	1(2.1%)	0(0%)	0.30
Fever	0(0%)	0(0%)	0.50
Arrhythmia	0(0%)	0(0%)	0.50
Pulmonary edema	0(0%)	0(0%)	0.50
Abdominal Pain	4(8.5%)	5(10.6%)	0.72
Headache	0(0%)	1(2.1%)	0.30
Tremor	0(0%)	0(0%)	0.50
Hypotension	0(0%)	0(0%)	0.50
Pruritus	0(0%)	0(0%)	0.50

Table-IV

Outcome of the patient: Primary PPH (n = 94)

Outcome	Carbetocin	Oxytocin	P Value
(Primary PPH)	group (47)	group (47)	
Yes	0(0%)	6(12.8%)	0.001
No	47(100%)	41(87.2%)	

Discussion:

In the present study each patient obtained a single dose of 100 microgram carbetocin intravenously during cesarean section, immediately after the delivery of the baby and prior to the delivery of the placenta. Outcome measures such as primary PPH, massive blood loss, need for additional uterotonic drug, additional blood transfusion as well as adverse effects were documented.

Reyes OA and Gonzalez GM et al showed that mean age of study patient in carbetocin group were 26.5 years and 26.7 years in oxytocin group[20]. In this study mean age of study patients were 23.7 years in carbetocin group and 24.7 years in oxytocin group.A study from Philippine found that mean preoperative systolic BP of study patients in carbetocin group were 117±6.8 mm of Hg and diastolic BP were 69 ±7.7 mm of Hg and mean preoperative systolic BP were 118±8.3 mm of Hg and diastolic BP were 73±8.5 mm of Hg in Oxytocin group[21]. In this study, mean preoperative systolic BP of patients were 108±8.6 mm of Hg and diastolic BP were 71 ±5.4 mm of Hg in carbetocin group and mean systolic BP were 105±7.2 mm of Hg and diastolic BP were 70±6.2 mm of Hg in oxytocin group which were almost similar with previous study.All patients of both the groups were with normal blood pressure.

A study in Panama showed that the mean gestational age of study women in carbetocin group were 37.44 weeks and 36.93 weeks in oxytocin group[20] which is almost similar to this study; 38.8±1.3 weeks weeks in carbetocin group and 39± 1.5 weeks weeks in oxytocin group. They also showed that there was no significant difference between the two study groups regarding occurrence of adverse effects of both the drugs. In present study, there were no major adverse effects observed in both the groups.

In this study, only 2.1%(1)patient in carbetocin group was needed blood transfusion but in oxytocin group blood transfusion were required for 17%(8) patients which was almost similar to a previous study.[22]

Current study showed that, none of patients of carbetocin group were required additional uterotonics but in oxytocin group additional uterotonics were required for 25.5% patients. Similar results were also found in previous study.[21,22,23]

Occurrence of PPH were less in carbetocin group of this study .This result was similar to a previous prospective double-blinded randomized study conducted in Egypt.[25]

Primary postpartum hemorrhage (PPH) is the most common form of major obstetric hemorrhage[26]. It is the most common cause of maternal morbidity in developed countries and a major cause of death worldwide[27,28]. The most common point at which PPH

occurs is during the third stage of labour, when the uterus may suddenly loss its ability to contract. Around 80% of cases of postpartum hemorrhage occur due to uterine atony[29]. Bleeding due to uterine atony, can be prevented by an effective uterotonic drug[30].The promising findings suggested that carbetocin appears to be an effective new drug for the prevention of PPH in caesarian delivery. A single dose of 100 microgram IV carbetocin is more effective than oxytocin for maintaining adequate uterine tone, decreases blood loss and preventing postpartum hemorrhage in women undergoing caesarian delivery. Carbetocin can be considered as a good uterotonic agent over oxytocin for the prevention of primary PPH in caesarian section.

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Conflict of interest
The authors declare that there is no conflict of interests regarding the clinical trial.

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Clinicoepidemiological Profile and Short term Outcome of Abdominal Tuberculosis in Western Region of Bangladesh

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Summary:

Introduction: Abdominal tuberculosis is not uncommon in daily medical practice. This study was done focusing variable presentations of abdominal tuberculosis

Material and methods: Data of consecutive patients diagnosed as abdominal tuberculosis were analyzed. Their epidemiological features, presentations, laboratory findings, and response to therapy were analysed.

Result: Total 69 cases (male 43, 62.3%,and female 26, 37.7%), age ranging from 15 to 85 years (mean 36.23) were enrolled. Rural (55, 79.7%), poor (49,71%) and housewives (24, 34.8%) and people of 21-30 years age group (27, 39.1%) were more affected. Diagnosis was based on combinations of clinical, laboratory findings and therapeutic response. In this series 30 (43.5%), 23 (33.4%) and 12 (17.3%) were diagnosed as intestinal, peritoneal and disseminated tuberculosis respectively. Of them68 patients recovered with treatment. Five patients developed intestinal obstruction and one developed hepatitis and lost from follow up.

Conclusion: Diagnosis of abdominal tuberculosis is by combinations of clinical findings, without gold standard method. In our series intestinal tuberculosis and peritoneal tuberculosis were common clinical types with weight loss and abdominal pain as common clinical symptoms. And outcome of Treatment of TB was excellent

Key words: Abdominal tuberculosis, intestinal tuberculosis, peritoneal tuberculosis

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Introduction:

Tuberculosis is a life threatening disease which can affect any organ system[1]. Abdominal tuberculosis (ATB) is defined as an infection in the gastrointestinal tract, peritoneum or intra-abdominal solid organs by Mycobacterium tuberculosis. It constitutes about 12% of extra pulmonary tuberculosis and 1-3% of all cases of tuberculosis[2,3]. Abdominal tuberculosis although less common in western countries, constitutes a major public health problem in developing countries and associated with significant morbidity and mortality[4,5,6]. It can have varied presentations, frequently mimicking other common and rare diseases such as malignancy, bacterial infectious disease, and inflammatory diseases[7,8]. Approximately 15-25% of cases with abdominal tuberculosis have concomitant pulmonary tuberculosis [9,10]. The World Health Organization estimates that one third of world's population is infected with M. tuberculosis, with the highest prevalence of TB in South east Asia[11]. Abdominal tuberculosis is predominantly a disease of young adult. Two third of the patients are 21-40 year old with equal sex incidence[12]. Abdominal tuberculosis has a myriad of presentation. Presentation varies from asymptomatic state to surgical emergency. Abdominal pain, constipation and vomiting, recurrent attacks of sub-acute intestinal obstruction, localized or generalized ascites and abdominal distension, diarrhea, fever, weight loss, per rectal bleeding or melaena may be the presenting features[13]. Like other countries tuberculosis especially abdominal tuberculosis is also encountered in daily practice in our country, but

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epidemiological data is scanty. With this background this study was designed focusing clinical profile of patients of abdominal tuberculosis in North East Part of Bangladesh.

Materials and method:

This observational study was carried out from January 2012 to December 2016 in Sylhet. All patients diagnosed as abdominal tuberculosis in the department of Gastroenterology of North East Medical College Hospital, Sylhet , Bangladesh were included. Clinical informations, including age, sex, medical, personal history, symptoms, signs - physical findings, laboratory, reports, imaging findings, endoscopic or colonoscopic findings with histopathological reports, ascetic fluid analysis were retrieved. Depending on clinical and laboratory findings, diagnosis were made and treatment with anti-tubercular drugs were given with follow up.

Statistical analysis:

Statistical analysis was done using SPSS version 20. Descriptive analysis of the data was done by using frequency and percentage for categorical variables, and mean and standard deviation for quantitative variables.

Result:

Total 69 patients (male 43, 62.3% and female 26, 37.7%), age varying from 15 years to 85 years (mean 36.23 and SD 14.97) were enrolled. Among them 55 (79.7%) were from rural area. Of them housewives (24, 34.3%) were affected more, followed by farmers (10, 14.5%) and students and business men (9, 13%). In this series 49 (71%) were from poor economic group and 19 (27.7%) were from middle class group. Among all 44 (63.8%) and 24 (34.8%) were smoker and betel nut chewer respectively. In this series 11 (15.9%) had family history of tuberculosis.

Common symptoms were abdominal pain (42, 60.9%), weight loss (48, 69.6%), fever (22, 31.9%), ascites (25, 36.2%), diarrhea (23.2%) and abdominal mass (16, 23.2%). In this series 30 (43.5%) had intestinal tuberculosis, 23 (33.4%) had peritoneal tuberculosis. Disseminated tuberculosis was found in 12 (17.3%) cases. In addition one case of oesophageal (1, 1.4%), one case of duodenal (1, 1.4%), one case of splenic (1, 1.4%) and one case of pancreatic tuberculosis (1, 1.4%) were found in this study. Fifteen patient had foci of pulmonary tuberculosis and two had pleural effusion

Table-I

Showing demographic and clinical findingds

Variables		Frequency	Percentage
Age group	Up to 20 years	8	11.6%
	21-30	27	39.1
	31-40	11	15.9
	41-50	14	20.3
	51 and above	9	13
Sex	Male	43	62.3
	Female	26	37.7
Residence	Urban	14	20.3
	Rural	55	79.7
Occupation	student	9	13
	service	3	4.3
	Housewife	24	34.8
	Business	9	13
	Farmer	10	14.5
	Self employed	8	11.5
	Others	6	8.6
Economic group	Poor	14	20.3
	Lower middle class	35	50.7
	Middle class	19	27.5
	Rich	01	1.4
Personal habit	Tobacco chewer	24	34.8
	Smoker	25	36.2
Family history of Symptoms	Tuberculosis	11	15.9
	Diarrhoea	16	23.2
	Mass in abdomen	16	23.2
	Bleeding per rectum	1	1.4
	Ascites	25	36.2
	Intestinal obstruction	5	7.2
	dysphagia	1	1.4
	Constipation	1	1.4
	Fever	22	31.9
	Cough	7	10.1
	Weight loss	48	69.6
	Pain abdomen	42	60.9
Diagnosis	Intestinal TB	30	43.5
	Peritoneal TB	24	34.8
	Oesophageal TB	1	1.4
	Duodenal TB	1	1.4
	Splenic TB	1	1.4
	Pancreatic TB	1	1.4
	Disseminated TB	11	15.9

Table-II

Investigations

Variables		Frequency	Percentage
X-R ay chest P-A View n=47	Normal	29	
	TB	15	
	Hilar lymphadenopathy	1	
	Pleural Effusion	2	
USG of abdomen (N=56)	Ascites	31	
	Abdominal lymphadenoapathy	2	
	Abdominal masss	10	
	Splenic lesion	1	
	Normal	12	
Colonoscopy (n=40)	Ileo-caecal lesion	19	
	Ascending colonic lesion	18	
	Transverse colonic lesion	1	
	Ileal lesion	1	
	Left colonic lesion	1	
Upper GI endoscopy (n=2)	Oesophageal lesion	1	
	Duodenal lesion	1	
CT guided FNAC (n=2)	Splenic TB	1	
	Pancreatic TB	1	
Sputum for AFB	Positive	2	

Table-III

Findings of Patients with ascites

Variables	Range	Mean
Age	15-85	34.7 SD 17.62
Albumin in ascetic fluid	1.54 - 4.12 gm/dl	2.47 SD .52
SAG	0.35-1.05	0.82 SD0.227
Ascitic fluid ADA	30-165	67.87

Table-IV

Outcome after treatment

Outcome with treatment	Frequency	percentage
Recovered – no complication	63	91.6
Obstruction need surgery - recovered	03	04.2
Obstruction without surgery recovered	02	02.8
Hepatitis and lost from follow up	01	01.4

among 48 patients undergoing X-Ray chest examinations. Two patients had cervical lymphadenopathy. Two patients were sputum positive for AFB among those having pulmonary foci. ESR of patients varied from 06 mm to 153 mm of Hg in first hour (mean 51.41). In this series six patients with intestinal tuberculosis had ascites. Among intestinal tuberculosis, predominant sites of involvement were ileocaecal region(47.5%) and ascending colon(45%). Histopathology showed granulomatous lesion. Mantoux test was equal or more than 10mm in eight patients out of 13 (61.53%) cases having done.

Of 25 cases having ascites, SAG level varied from 0.35 to 1.4 (mean 0.82 and SD 0.22), lymphocyte counts varied from80% to 100% (total count 50 to 7500 per cubic mm, mean 1306.66) and ascitic fluid ADA level from 30- 165 (mean 67.87). Ascitic fluid culture for AFB was not done. But AFB saining of ascitis fluid were negative in all cases of ascites.Mantoux test was performed in 10 patients and found 10 or more in six (60%) cases

All the cases of intestinal, oesophageal, duodenal , splenic and pancreatic tuberculosis cases had lesion histopathologically or cytopathologically consistent with tuberculosis. Peritoneal tuberculosis was diagnosed on basis of clinical features, findings of Mantoux test , ascitic fluid analytic results positive response to anti-TB therapy. Disseminated tuberculosis cases were diagnosed by various combinations of clinical ndlabaoratory findings.

Most affected age group in this series is 21 -30 year (27, 39.1%). In this series one patient developed hepatitis and lost from follow up, five patients developed intestinal obstruction and three of them required surgery. At the end of six months treatment 68 patients recovered.

Discussion:

Tuberculosis is a chronic granulomatous disease caused by Mycobacterium tuberculosis. Pulmonary tuberculosis is most common form and it primarily involves the lungs, but any part of body can be involved by the disease 12. Among extra pulmonary tuberculosis, abdominal tuberculosis is one of the common disease 14,15,16. Abdominal tuberculosis constitutes a major public health problem in developing countries and carries significant morbidity and mortality [15,17,18,19,20].

In this study males were predominantly affected Which is consistent with other studies [12,20,21,22]. But from literature review the reason for this gender difference is not known. Majority of patients in this series were between 21 – 40 year age group followed by 41-50 year group and it is consistent with report from India[23]. The disease affects people at peaks of their productive life and causes considerable financial losses to the individual and family.

Common symptoms were abdominal pain and weight loss. Other symptoms were fever, abdominal swelling etc. Abdominal pain is a common symptom in other studies also.[20,23]. Intestinal tuberculosis and peritoneal tuberculosis are commonest form in this series which is also consistent with other reports [20,21,24]. Among intestinal tuberculosis, predominant site of involvement were ileocaecal region and ascending colon which supports the data from other studies [5, 21].

In our study fifteen patient had foci of pulmonary tuberculosis and two had pleural effusion on chest X-Ray examinations. Two patients were sputum positive for AFB. We cannot comment how many patients had primary abdominal tuberculosis as chest X-ray and other relevant investigations were not done in all cases.

In this series most of the patients represented poor economic class. Overcrowding, poor hygienic practice and poor nutritional status may play a role. In this series rural people are more affected and this could not be explained.

Limitations of the study:

Due to lack of facility and financial constrain culture for AFB and PCR for M. tuberculosis could not be done . So majority of the abdominal TB cases were diagnosed on the basis of clinical data, histopathological findings and respose to anti TB drug trial. Disseminated tuberculosis was found in 12 cases (27. 3%). Disseminated TB was higher (37.74%) in another study from Bangladesh [15]. In this study CXR , endoscopy of upper GIT and lower GIT and USG examinations were not done in all patients. And it might be the cause of lower rate of disseminated tuberculosis. We cannot say how many patients had drug resistant TB as culture and GeneXpert tests were not done. But 68 patients recovered with anti TB drugs suggesting that none had drug resistant TB.

Conclusion:

Abdominal tuberculosis is and important clinical entity among extra-pulmonary tuberculosis. Diagnosis of abdominal tuberculosis is by combinations of clinical findings, without gold standard method. In our series intestinal tuberculosis and peritoneal tuberculosis were common clinical types with weight loss and abdominal pain as common clinical presentation. And outcome of Treatment of TB was excellent

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REVIEW ARTICLE

Update on the Management of Morbid Adherent Placenta

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Summary:

Morbid adherent placenta collectively includes placenta accrete, increta, and percreta, according to the depth of invasion through the decidua-myometrial junction. Incidence is increasing due to increase in the incidence of scarred uterus. Scarred either due to caesarean section, myomectomy or repeated D&C. These conditions are responsible for massive obstetrics haemorrhage, associated complications like consumption coagulopathy, multisystem organ failure & death. Also there is a risk for peripartum surgical complication, such as injury to the bladder, ureter & bowel. There is also the need for relaparotomy, complication of blood transfusion, admission in intensive care unit. Indicated or emergency preterm delivery needs admission of the newborn to neonatal intensive care unit. Outcome can be improved by multi disciplinary expertise and experienced approach for delivery, including the conservative management to avoid peripartum hysterectomy. Such team approach by maternal-fetal medicine, gynaecological surgeon, vascular, trauma, urology surgeon, transfusion medicine, intensivist, neonatologist, intervention radiologist, anaesthesiologist, specialized nursing staff and ancillary personnel.

Key words: morbid adherent placenta, conservative management, obstetric haemorrhage.

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Introduction:

Obstetrics haemorrhage is one of the important causes of maternal death and morbidity. This morbidity and mortality is not always predictable or preventable. But advancement in obstetrics helps to identify the factors that are responsible for such unexpected events. Morbid adherent placenta which includes spectrum of placenta accreta, increta and percreta, is responsible for massive haemorrhage, associated multi system organ failure, acute respiratory distress syndrome, disseminated intravascular coagulation and death[1, 2]. Morbid adherent placenta occurs when placenta is abnormally adherent to the underlying myometrium, in the absence of decidua basalis. Abnormal vascularisation following uterine scarring, with secondary localised hypoxia leading to defective decidualisation with excessive trophoblastic invasion[3].

Incidence of morbid adherent placenta is increasing in all countries, <1 in 2000 live birth in 1980 and now it is 1 in 500 live birth in 2002. This increase is thought to be the outcome of concomitant rise in the rate of caesarean section, either primary or repeat[4].

The aim of this review article is to give emphasis on the need for antenatal diagnosis of placental invasion and formulating the plan of management before any emergency arises; to provide an overview of the conservative method of management and to discuss the clinical implication of this condition for both the patient and the clinician. Also to identify the area for further research.

Risk factors for morbid adherent placenta

1. Prior caesarean delivery specially multiple
2. Placenta previa
3. H/O uterine surgery including endometrial ablation
4. 1st and 2nd trimester vaginal bleeding with other risk factors.

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One prospective study revealed that the risk of placenta accrete was 3% in women with placenta previa and no prior caesarean, but 11% in women with placenta previa with one previous caesarean. The risk increases to 40% in those with 2 caesarean section and is >60% in those with 3 prior caesarean section. But risk of accrete is 1% in woman with 3 or more caesarean and no placenta previa[5].

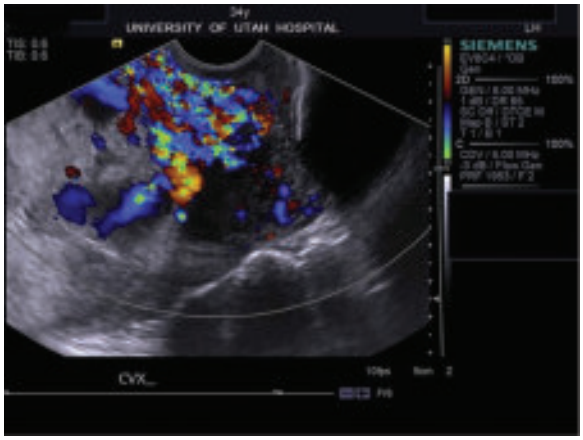

Fig.-1:

Ultrasound findings suggestive of morbid adherent placenta

In 1st trimester:

i. Gestational sac located in the lower uterine segment

ii. Multiple irregular vascular spaces noted within the placental bed

iii. Implantation of gestational sac embedded into the caesarean scar.

In 2nd trimester:

Multiple vascular lacunae within the placenta

In 3rd trimester:

i. Loss of normal hypo echoic retro-placental zone,

ii. presence of multiple vascular lacunae within the placenta (Swiss cheese appearance)

iii. Abnormalities in the uterine serosa bladder interface (interruption of line, thickening of line, irregularities of line & increased vascularity)

iv. Extension of villi into myometrium, serosa or bladder

v. Retro-placental myometrial thickness <1mm

vi. Doppler study showing evidence of turbulent blood flow through the lacunae, increased sub-placental vascularity, vessels bridging from placenta to uterine margins, gaps in myometrial blood flow[6].

vii. Obstetric sonography has been noted to be quite accurate for the diagnosis of placenta accrete, sensitivity ranges from 77%-97%[7].

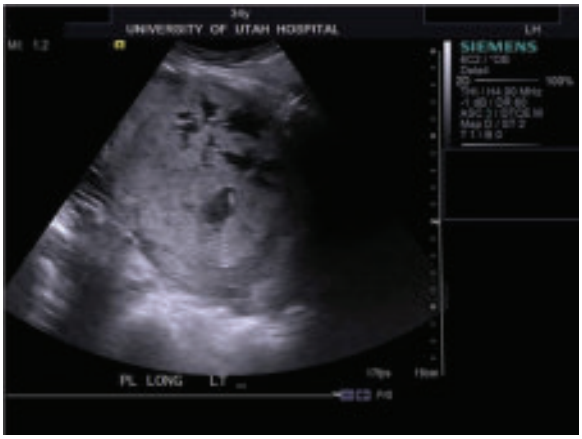

Fig.-2:

viii. MRI may be useful for antenatal diagnosis with 88-89% sensitivities, and about 88-100% specificity.

ix. According to Eunice Kennedy Shriver Institute for child health & human development workshop concluded that USG should be primary for diagnosis, MRI should not be done routinely. MRI may be useful in the cases of placenta previa, to assess the extent of invasion into the adjacent organ & in case of posterior previa if USG is non diagnostic[8].

x. Unexpected placenta accreta can be seen following laparotomy by viewing increasing tortuous vessels along the uterine surface, placenta extent at or beyond the lower uterine segment[9].

Management of morbid adherent placenta remains uncertain with regard of timing of delivery & optimal surgical approach. Surgical principle includes avoiding disruption of the hypervascular placenta, stepwise devascularisation, early comprehensive blood transfusion and judicious use of intervention radiologic technique such vascular embolization[10.11].

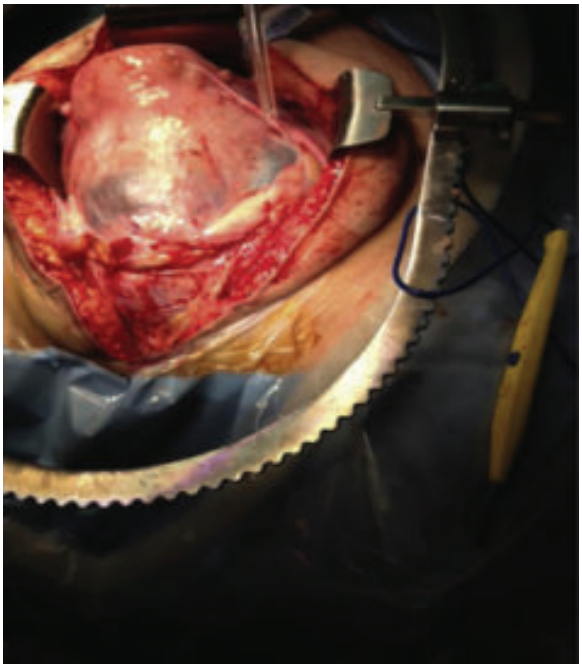

Fig.-3:

Studies show that 50% cases can be diagnosed by antenatal USG. Indicated preterm delivery at 34-35 weeks of gestation has been proposed as a means to decrease the risk of having emergency surgery as there is an increasing risk of spontaneous bleeding on >34 weeks of gestation[12].

According to a study conducted in Texas, 57 out of 90 cases were managed by multi disciplinary accreta team and delivery was done at 34-35 weeks, which decreased the incidence of emergency surgery significantly[13]. Many cases progress upto 36 weeks of gestation without any complications but issue remain controversial. Conservative management included resection of that portion of anterior uterine wall that includes the morbid adherent placenta followed by uterine reconstruction, caesarean delivery without removal of placenta, closure of hysterotomy and expectant management with the placenta in situ, caesarean hysterectomy[14].

Uterine Sparing Techniques.

Placenta kept in situ, umbilical cord ligated close to the placental insertion, along with adjunctive procedure such as use of uterotonics, compression sutures, ballon tamponade, uterine artery embolization or ligation, may reduce uterine perfusion, decrease PPH, and hasten placental reabsorption or sloughing & expulsion[15]. Time of spontaneous resolution from 9-12 months, with a mean 6 months, but delayed complications are haemorrhage, DIC, endomyometritis, sepsis, reported as major complications. Rare morbidity such as uterocutaneous fistula, choriocarcinoma[16].

On of the largest retrospective study shows among 167 cases 36 cases needs subsequent hysterectomy due to PPH, 10 patients suffer from severe morbidities like septic shock, Vesico-uterine fistula & uterine necrosis. Most of the maternal deaths were recorded to be due to complication following use of methotrexate & fertility outcome was not recorded[17].

Hysteroscopic resection of placental remnant has been described to expedite the resolution or treat bleeding or pelvic pain. Studies show in 1st series, 4 women who were managed conservatively underwent hysteroscopy, recovered within 1 week of procedure. 2 out of 4 cases subsequently conceived & delivered by caesarean delivery without any evidence of accrete. In 2nd series 12 women underwent hysteroscopy, for remaining placenta accrete using bipolar cautery with USG guidance. Result shows complete resolution occurs after single procedure in 5 patients (42%), after 2 attempts in 2 patients (17%), 3 attempts in 4 patients (30%). One patient required hysterectomy due to haemorrhage after 1st resection. Patient menstruations resumes and 4 subsequently become pregnant with 2 live birth[18].

Placental – Myometrial En Block Excision & Repair

En Block excision of placenta accreta was first described by palacios et al, in 2004 in a series of 68 cases[19]. This technique permitted resection of invaded myometrium when 50% or less of the anterior uterine circumference is invaded. After excision the resulting defect was repaired with myometrial pulley suture, similar to horizontal mattress suture. The defect was covered with absorbable mesh. Uterine conservation was completed in 50 of 68 women (74%). Of this 42 had 3 years follow up- 10 become pregnant and were delivered at 36 weeks with schedule caesarean section & even with these technique 18 patient (26%) needs hysterectomy[20].

Adjunctive Procedure

Arterial Occlusion & Methotrexate Administration.

Arterial occlusion temporarily reduce blood loss[21], but due to rich collateral feeding vessels arising from

cervico-vaginal branch of uterine artery, superior vesical artery, inferior epigastric or femoral & deep circumflex illeal artery[22]; routine intravascular occlusion remain controversial. Methotrexate in the management of placental accreta was first described in 1986[23]. It is dihydrofolate reductase inhibitor that targets rapidly developing cells, most commonly used for the treatment of an ectopic pregnancy & trophoblastic diseases. Some experts have used it as an adjunct to the conservative treatment of placenta accreta and also suggest that it helps rapid expulsion of placenta[24]. But methotrexate is contraindicated during breast feeding. Largest cohort reported no convincing evidence to currently support the efficacy of methotrexate in cases of placenta accreta left in situ and methotrexate related pancytopenia, nephrotoxicity are possible adverse effects[25].

Management of unsuspected placenta percreta discovered during laparotomy

Delay the uterine incision if anything appears abnormal- distorted or ballooned lower segment, blood vessels of the uterine serosa, invasion of placenta into the bladder/surrounding tissues. Then assess location & extent of placental invasion visually, evaluate the presence of active bleeding, inquire availability of blood, blood products, surgical assistance and equipments.

If the patient is stable and facilities is not currently prepared – cover the uterus with the laparotomy pack and await assistance and supplies, before proceeding with operative intervention, or fascial incision, place staple in skin and consider transfer to tertiary facilities with experienced in management of placenta accreta.

Proposed criteria to identify failed trial of conservative management

Ongoing haemorrhage despite conservative management (no limit, may be hours to weeks following delivery) cardiovascular instability or sign of haemorrhage shock, DIC (immediate/late). Identification at the time of delivery of any contraindications to conservative management (lateral to deep cervical invasion) development of complications as a result of conservative technique requiring abandonment of the approach (i.e. arterial injury, after attempted intra arterial ballon occlusion or embolization), severe pain following conservative management, maternal request to definitive surgical management (hysterectomy) after attempted conservative management[26,27].

Long term consideration

Risk of recurrence after conservative management – retrospective multi centred cohort sentilhes et. al. identify 21 of 96 women who undergone conservative management of accreta – later conceive. Of this 6 (29%) have recurrence of accrete, 3 patient (14%) had severe uterine synaechia & amenorrhoea. 1 case report of uterine rupture in pregnancy, following conservative management. To perform caesarean hysterectomy/ peripartum hysterectomy which need to be expertise & team approach include trauma/ general surgeon, urologist also included in the team. [28].

Conclusion:

Clearly planned, coordinated delivery & care help us to prevent morbidity & mortality of women with placenta accreta. The importance of maintaining a high level of suspicion & of early referral for antenatal imaging whenever accreta is suspected cannot be overstated. The combined team, a well resourced blood bank and a support of numerous nurses technologist and support of staff are truly lifesaving when it comes to placenta accreta.

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Dengue Co-Infection Microfilaria Presenting with Intestinal Obstruction: A Case Report

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Summary:

In the recent years morbidity caused by dengue epidemic has been devastating. Confection of dengue malaria and filaria has been reported in literature where in filarial antigen was detected in the patient. Concurrent infection by dengue and filaria with high parsetemic microfilariae load in a single individual is very rarely known. The varied clinical profile in dengue is multifactorial and concurrent co-infection may be one of them. Here in this case of concurrent infection with dengue and filarial, the patient presented with intestinal obstruction which responded dramatically with diethylcarbamizine while other clinicalsyndrome took a long time. Furthermore, if single vector can harbour both the infectious agent, the etio-pathogenesis may completely take a different turn and at times project alarming condition.

Key words: Dengue, Microfilaria, Intestinal obstruction, dengue hepatitis.

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Introduction:

Dengue is a serious global public health problem, with 2.5 billion people at risk and an annual range of 50 to 390 million infections.Between 2006 and 2012, around 20,474 dengue cases reported annually in India. Morbidity and mortality caused by dengue is also an issue of great concern. In a recent study from Philippines(2016)mortality related to dengue deaths were found to be around 3%. Coinfection of dengue, malaria and filaria has been reported inliterature where in filarial antigen was detected in the patient[1]. Concurrent infection by dengue and filaria with high parsetemicmicro-filarialload in a single individual is rarely known. Furthermore, pathogenesis of this co-infection is not much known in the literature. It can present with a very challenging clinical profile to medical professionals.Filaria is chronic infection while dengue is an acute infection; so, in filarial endemic areas causality of many atypical and severe dengue cases might go unnoticed. We present here a case of dengue and microfilaria co-infection presenting as intestinal obstruction which is not known in literature and once reviewed, proved an alarming index case scenario and raises a great entomological aspect.

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Case report:

A 20-year-old man resident of central India presented with 20 days history of dry cough with three-day illness of fever, abdominal distension and pain and two episodes of vomiting. On examination, he had mild icterus. Vitals were normal. There was no evidence of lymphangitis, lymphedema, or acute adeno lymphangitis. On systemic examination, there were rhonchi on chest auscultation, distended abdomen with increase bowel sounds on auscultation, suggestive of intestinal obstruction. His relevant lab reports have been tabulated in Table 1.

Table-I

Investigation details of reported case

Parameters/Test	Day 1	Day 4	Day 8	Day 15
Haemoglobin(gm/dl)	17.4	13.8	12.4	12.2
WBC(cells/mm^3)	23.5×10^3	43×10^3	38×10^3	9.3×10^3
Platelets(cells/mm^3)	13×10^3	14×10^3	75×10^3	130×10^3
Haematocrit (%)	52	43	38	38
AEC	1504	515	404	558
SGOT(IU/L)	1011	807	241	163
SGPT(IU/L)	467	370	216	153
Bilirubin(mg/dl)	3	2.3	2.9	1.8
ALP(IU/L)	654	599	751	400
Albumin(gm/dl)	3	3.1	3	3
Urea(mg/dl)	51	19	10	22
Creatinine(mg/dl)	0.2	0.4	0.2	0.3
Dengue Ns1	-VE			
IgM for Dengue	-	+	+	
HBs Ag	-	-	-	
Ani-HCV	-	-	-	
IgM for Typhoid	-	-	-	
Malarial Ag	-	-	-	
PT-INR	1.3	1.5	1.2	1.1

IU/L— International units per litre; (+) = Positive; (–) = Negative.

His x-ray erect (Figure 1.) abdomen depicted multiple air fluid levels suggestive of intestinal obstruction with mentioned symptomatology above. Ultrasound abdomen was suggestive of gall bladder wall oedema with mild ascites and bilateral pleural effusion. He was tested IgM for dengue by Elisa to be positive on day seven of his total duration of illness. He was tested negative for malaria, typhoid, hepatitis B and hepatitis C. His blood peripheral smear was surprisingly demonstrated high parasetemic load of microfilaria of *Wuchereria Bancroft*.

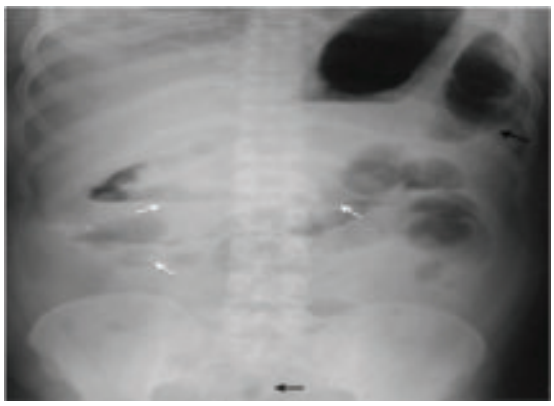

Fig.-1: *Plain radiograph of the abdomen (erect position) reveals few small air-fluid levels (white arrows) predominantly in the mid abdomen. Note that there is presence of air in the large bowel (black arrows).*

Findings to be noted are leucocytosis, eosinophilia, polyserositis, dengue hepatitis (jaundice, transaminitismore than 20 times), respiratory wheeze, long term hospital stay, (admitted for almost 15 days for him to be discharged), slow response to treatment.He was managed conservatively with initially given bowel rest; keeping him nil per orally and gradually built up from liquid to semisolid to normal diet, adequate fluid resuscitation and diethylcarbamazine. Apart from symptoms of intestinal obstruction which showed a dramatic response with diethylcarbamazine in initial days;rest of the clinical syndrome needed prolonged admission.The final diagnosis was microfilaremia and severe dengue infection with multiorgan involvement and dengue hepatitis.

Discussion:

Dengue has emerged as a rapidly growing and widespread public health problem in the past two decades, with more than half of the world's population and countries at risk[2]. Our caseseems the first clinical case of dengue with warning signs which turned out to be a case of intestinal obstruction.

Clinical symptomatology of dry cough for last 20 days, abdominalpain along with little air fluid level on abdominal x-ray needed more explanation and insight. Dengue often present with transaminitis but high level of enzymes is rare in classical dengue fever without shock[3,4]. Jaundice is also not frequently present in dengue fever. Dry cough in the preface for 20 days and respiratorywheeze on clinical examination may be contributed to the eosinophilia as secondary to high blood load of microfilaria of *WuchereriaBancrofti* which seems responded with diethylcarbamazine therapy.It is observed that dengue virus-reactive T cellsactas a effector in the development of dengue hemorrhagic fever (DHF)[5]. The major immunological feature of lymphatic filariasis is an antigen determinedT-helper cells type 2 (Th2) response and IL-10 producing CD4 (+) T cells with associated decreased Th1 response. This decreased response of T-cell appears to be responsible for the sustained infection often with high densities ofparasite[6]. So, dengue viral load may be high in filarial co-infection case, which probably is responsible for more severe infestation of dengue.We can only presume at this point of time that these atypical findings along with intestinal obstruction and slow recovery may be contributed to the complex immune mediated prolongedinflammation and severe inflammation (bowel oedema with lymphedema) caused by high microfilarial load along with capillary leak syndrome and haemoconcentration caused by dengue co-infection[7].

Concurrent infectionswith two shown infectious agents may have an overlappingand or atypical syndrome, giving rise to a condition where treatment may need caution and individualised approach. So, while dealing with severe casesin dengue high suspicion should be kept for other co infection; and filarial should be an important consideration especially in filarial endemic zones[8].

While reviewing very interestingfact came up which makes this case scenario very significant for future research. Concurrent feed of microfilariae (mf) and arboviruses by mosquitoes can enhance the transmission of virus compared with when virus is ingested alone by decreasing external incubation period of dengue to half due to a proven process called as microfilarial enhancement of arboviral transmission[7, 8]. Though the endemic zones of dengue[9] and filaria[10] have some overlap but still with some distinction in India. *Aedes* can be vector for *W. Bancrofti* in the given geographical distribution[11]and it is rationale to presume that it can ingest both the microfilarie and dengue virus if feeds on co-infected person like this case.

Conclusion:

Filarial co-infection can be a risk factor of severity in dengue. High prevalence of severe dengue may be observed in a filarial endemic zone due to combination of lymphatic channel involvement and capillary leakage.Polyserositis, multi-organ involvement and hypotension are severe manifestation in dengue, however intestinal obstruction is a rare manifestation of dengue which in our case was due to filarial co-infection. Severe and atypical dengue cases should be worked for microfilaria also specially in filarial endemic zones. In such cases if intervened early withdiethylcarbamazine and proper symptomatic management for dengue, a due course of morbidity and mortality can be prevented as was in this case; which otherwise would further add into increase overall mortality with dengue related illness. The spread of dengue in an endemic zone of filariae could be faster as extrinsic incubation period of dengue is decreased to half in *Aedes* mosquito in presence of microfilarial parasites.

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Tuberculous Parotid Abscess in an 11-Year-Old Girl

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Summary:

This case is being reported because tubercular involvement of the parotid gland in the pediatric population is extremely rare even in the TB endemic country like Bangladesh. Here, a case of an 11 year old girl with tuberculous abscess of the right parotid gland is reported who presented with right sided earache, headache and fever for two months followed by development of a swelling in front of the right ear for one and half months. There was no history of running nose, drooling of saliva, pain on deglutition, prolonged cough or hemoptysis, loss of appetite or weight loss. Patient came from an area where many known TB patients reside. General and systemic examination revealed no abnormality except the swelling. Her BCG mark was present and BMI was age appropriate. Tuberculin test (MT) was positive and chest x-ray revealed no abnormality. The diagnosis of tuberculous parotid abscess was initially made by histopathology of the swelling. Treatment was commenced with a six months anti-TB regimen according to the national TB guideline. Finally, TB was confirmed upon the clinical response to anti-TB therapy. Therefore, it is recommended to consider TB in the differential diagnosis of parotiditis and chronic swelling of this salivary gland especially in TB endemic countries.

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Introduction:

Tuberculosis (TB) results in a range of clinical disorders and is one of the most frequent infectious causes of mortality and morbidity in the world. Although TB is a major health problem in developing countries, tuberculosis of the parotid gland is rarely encountered. Clinical differentiation between a parotid neoplasm, pyogenic parotiditis and tuberculosis is difficult and hence the diagnosis is usually histological[1]. Clinical manifestation of chronic parotiditis includes non-tender swelling and enlargement of the gland. In infections such as TB, there could be fistula and drainage of pus. However, it is notable that clinical features are not sufficient to differentiate various diseases of the parotid gland[2]. We reported a similar case in which a patient suspected to have bacterial parotiditis initially turned out to be parotid tuberculosis later on. In developing countries where TB is common, parotid gland could also be involved; sometimes appearing as primary tuberculosis of parotid gland. Involvement of the parotid gland especially in the form of abscess is very rare; as a result of which, diagnosis could be delayed[2].

Case Report:

An 11 year old adolescent girl was referred to 250 Bedded TB Hospital, Shyamoli, Dhaka, from the department of Otolaryngology, Saheed Suhrawardi Medical College Hospital (ShSMCH). She first attended the OPD of ShSMCH due to pain in the right ear, headache and fever for two months and gradual swelling in front of the right ear for one and half months. There was no history of running nose, drooling of saliva, pain on deglutition, prolonged cough or hemoptysis, loss of appetite or weight loss, alteration in bowel habit. She was from Bihari camp of Mohammadpur where different types of TB patient including smear positive pulmonary TB patients reside. Her general and systemic examination revealed no abnormality except the swelling, BCG mark was present and BMI was age appropriate. Initially she was diagnosed as a case of parotid abscess clinically, pus was aspirated in the OPD and was sent for culture sensitivity (C/S). She was also advised for FNAC of the swelling. Pus for C/S revealed no growth and FNAC report showed acute suppurative inflammation (Parotid

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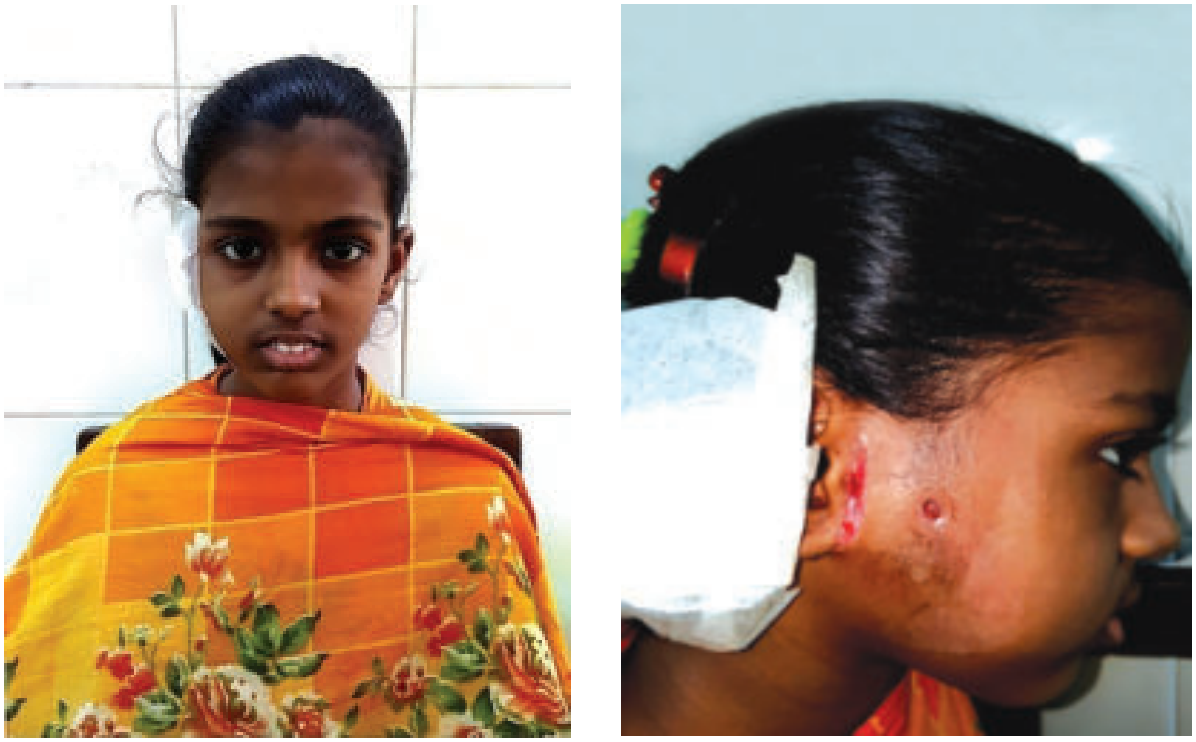
Abscess). So she was admitted after availability of the reports and treated with injectable Ceftriaxone and Metronidazole along with analgesics for 4 days followed by oral antibiotics for another 7 days upon discharge. Despite of a total 11 days antibiotic therapy, pus was discharging continuously from that wound and previous symptoms were not resolving completely. She revisited the OPD and was admitted again for surgical intervention. Meanwhile, investigations were done including CBC (Hb- 7.4gm%, ESR 117 mm in 1st hour, TC- 6,500/mm3, poly- 68%, lym-25%), CXR- normal, USG of parotid region- right parotid is diffusely enlarged, having heterogenous parenchymal echotexture and internal debris measuring about (19.8 x 23.6) mm^2, submandibular lymphadenopathy present, MT- 20 mm. Operation was done under local anesthesia and the specimen was sent for histopathology which revealed pieces of abscess wall showing dense infiltration of acute and chronic inflammatory cells along with ill-defined epitheloid granuloma and necrosis with

presence of Langhan's type giant cells and no evidence of malignancy, suggestive of tuberculous abscess of right parotid gland. Based on the histopathology report she was referred to TB hospital for anti-TB therapy. Anti-TB therapy was commenced for a period of six months as per the national TB guideline and her clinical response to treatment was monitored time to time. During the first follow up visit on day 15th of anti TB she was afebrile, regaining appetite, surgical wound and discharging sinus were getting healed. During the second visit on day 90th, she mentioned to have no fever for last 90 days, appetite good, gained weight by 5 kg and wound healed completely. She was also investigated for the side effects of anti-TB (SGPT, Serum Bilirubin, Serum Creatinin) during the follow up period and the results found to be normal. Last follow up was given at the end of six months of treatment and she was declared 'cured' clinically.



(a) (b)

Fig.-1: *(a) Mim, 11 year old girl with parotid swelling, (b) Discharging sinus in the parotid gland (before treatment)*

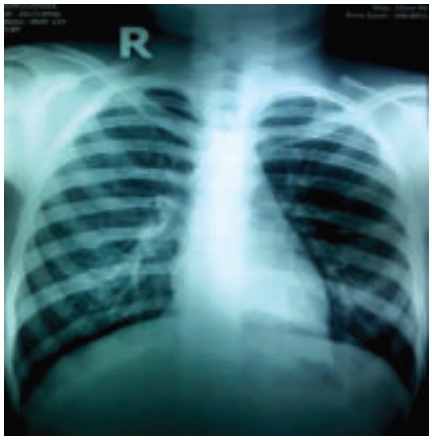


Fig.-2: *CXR of Mim*

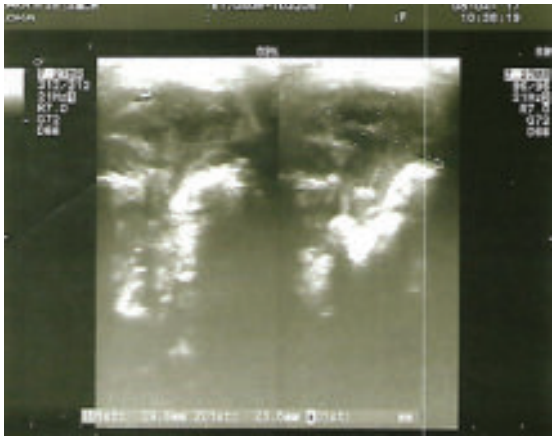
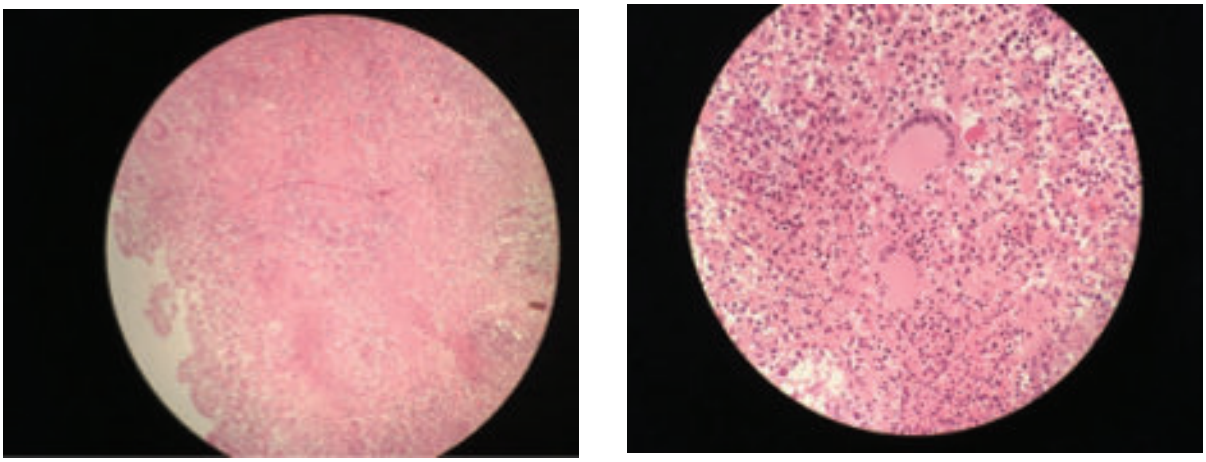
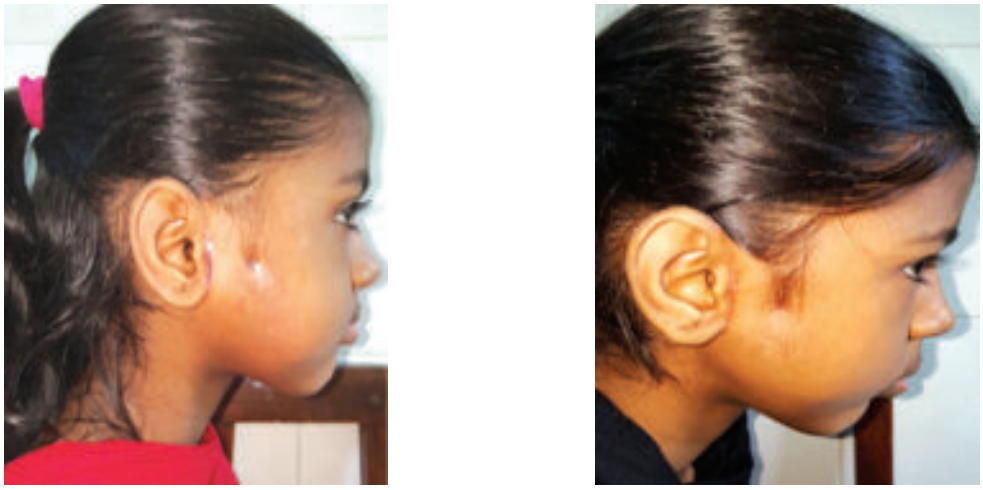


Fig.-3: *USG of the right parotid gland*



(a) (b)

Fig.-4: *(a) Photomicrograph of section of parotid tissue, (b) Presence of caseous necrosis with macrophages and epitheloid cells along with Langhan's giant cell.*



(a) (b)

Fig.-5: *(a)After 15 days of anti-TB, (b) After 90 days of anti-TB*

Discussion:

Involvement of the salivary gland in tuberculosis is extremely rare. First case of parotid gland tuberculosis was reported in 1893 by C De Pauli, and since then only about 100 cases have been reported in world literature[3]. Salivary glands are relatively immune to tuberculosis due to the presence of thiocyanate ion and proteolytic enzyme like lysozymes which have antibacterial property[4]. Moreover, persistent flow of saliva also prevents lodging and growth of mycobacteria inside the glands. Tubercular involvement of the parotid gland occurs in two ways- the commoner type is involvement of intra-glandular lymph nodes and the other variety is involvement of the parenchyma[4]. Through the path the mycobacteria reach the parotid is still unclear[5], some suggested autoinoculation with infected sputum through the Stensen's duct, hematogenous or lymphatic spread from cervical lymph nodes or infected tonsils or external auditory canal[5-7].

Parotid gland can be involved concurrently with pulmonary tuberculosis (PTB) or can be the primary site without PTB like this case. It most commonly presents as a localized mass, resulting from infection of intra-capsular or peri-capsular lymph nodes[8]. It may also present as an acute sialadenitis with diffuse gland enlargement or even as a periauricular fistula or an abscess[1].

A case of a parotid swelling is a diagnostic dilemma since we have to differentiate between a neoplasm and an infective lesion like tuberculosis[1]. If we can diagnose tuberculosis clinically or with minimal invasive investigations, potential complications of parotidectomy like facial nerve damage can be avoided. High resolution USG is able to differentiate whether the lesion is within the gland or in the periparotid area and whether it is malignant or benign neoplasm[8]. The color Doppler is not specific for detecting the site of the lesion[8]. Non invasive procedures are sensitive but not specific in detecting intraparotid TB[8]. On the contrary, fine needle aspiration cytology (FNAC) has high sensitivity and

specificity for diagnosis. Ziehl Neelsen (ZN) staining of the fine needle aspirate can further increase the specificity[1]. In this case ZN staining was not done because TB parotiditis is an extreme rare condition and hence it was not a differential diagnosis initially. However, if the minimal invasive test like FNAC is inconclusive then we can go for a surgical procedure. In this case, diagnosis of tuberculosis of the parotid gland was made only after histological analysis which is similar to the case reported by Wantanabe M[5]. Handa has documented 5 cases of parotid tuberculosis by FNAC[9]. Finally, the disease was confirmed in this patient by observing the therapeutic response to anti-TB therapy. What more could be done in this case were Gene Xpert and Culture of the surgical specimen to detect mycobacterium. From the clinical presentation of this case it can be emphasized that a high index of suspicion for tuberculosis is necessary in investigating a case of parotid swelling, so that we may be able to avoid parotidectomy and its potential complications.

From this case report it can be recommended to consider tuberculosis as one of the causes of parotid swelling especially in endemic countries like Bangladesh and to perform AFB Staining, Gene Xpert and Mycobacterial culture of the tissue obtained from the swelling.

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Pregnancy with Severe Anaemia and Pulmonary Hypertension: A Presentation of Hb E –ß Thalassemia

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Summary:

The interaction of HbE with ß-thalassaemia results in HbE-ß-thalassaemia, an extremely heterogeneous clinical condition. HbE-ß-thalassaemia is the most common form of ß-thalassaemia in Southeast Asia and accounts for approximately 50% of cases of transfusion –dependent cases of haemolytic anaemia. Still an undiagnosed population exist in our midst often presenting with complications of chronic haemolysis along with anaemia. Obstetricians are further perplexed while managing these patients in pregnancy with added foetal risks. Pulmonary hypertension, cardiac arrhythmia, systemic iron overload from chronic blood transfusion usually evolves from the disease itself.The risk of the foetus inheriting the trait of either ²-thalassemia or Hb-E exists(25% in each pregnancy) along the possibility of being homozygous for this disorder if the father bears the carrier status(25 % in each pregnancy) cannot be overlooked. Here we report a 20-year old primigravida with Hb E- ß thalassemia presenting at 40 weeks of pregnancy with severe anaemia (4 gm/dl) and respiratory distress. The patient also had hepatosplenomegaly and cholelithiasis. The patient had remained undiagnosed upto the time of presentation and had remarkably received no blood transfusion since childhood despite the history of recurrent jaundice. The patient was further investigated and found to have moderate pulmonary hypertension and mild tricuspid regurgitation. After correction of her anaemia and supportive cardiac care, she delivered a male child of 2.75kg by caesarean section. Her cardiac condition also significantly improved after delivery.

Key words: Thalassemia, Hb E-â thalassemia, pregnancy, pulmonary hypertension.

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Introduction:

Thalassemia is among the most common monogenetic disorder worldwide.Among the variants of Haemoglobinopathies, Haemoglobin E- beta thalassemia closely resembles ²- thalassemia major with its long-term sequels, producing transfusion - dependent anaemia. Therefore, a microcytic hypochromic blood picture with evidence of haemolysis along with MCH less than 80fL and MCHC less than 28 pg mandates Haemoglobin electrophoresis for confirmation of the Haemoglobin variant.Haemoglobin electrophoresis is the gold standard for confirming Hb E-² thalassemia.[1]Still a large undiagnosed burden of thalassemia lurks in our society and they present for the first time in pregnancy with features of complications of chronic haemolysis/ anaemia, due to the high adolescent pregnancy rate in our country. Screening for haemolytic anaemia during antenatal booking is not a routine practise. Recent epidemiologicalsurvey published by Thalassemia International Foundation (TIF) shows that Bangladesh is among one of the most highly affected country with haemoglobin disorder in Asia with the carrier and frequency rates: Thalassaemia Trait – 4.1 %,Haemoglobin E trait – 6.1 %, Anticipated new affected births annually: 6435 based on carrier rate, population size and other demographic indices and Living patient with thalassaemia – 50000 to 60000.[2]Hepatosplenomegaly, cholelithiasis and pulmonary arterial hypertension (PAH), conduction defects/arrhythmia and/or cardiomyopathy due to hemosiderosis may evolve with time. Thorough cardiac evaluation which includes an echocardiography is part of the obstetric care package in patients suffering from chronic haemolysis. In this context, pulmonary hypertension is one of the leading causes of morbidity,

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though there is very limited data related to the prevalence and impact of PAH associated with haemolytic disorders in the developing world.[3]

Case report:

A 20- year old primigravid patient, hailing from Sylhet presented at 40 weeks 4 days of pregnancy with generalized oedema, exertional dyspnoea and shortness of breath at rest for one month and dry cough for 2 days. She was on infrequent antenatal check-up. After a quite unremarkable antenatal periodat 39th week of gestation, she was detected to be hypertensive with no associated proteinuria and was on Tab ±-Methyl–dopa (250 mg) twice daily. Family history revealed that her elder sister died during pregnancy at term due to dyspnoea and suspected heart failure. Her father died of blood cancer. She is third among 4 sisters and 2 brothers, none of whom have been subjected to any screening procedures. From childhood she suffered from repeated episodes of jaundice but was never evaluated/ diagnosed.She had never received blood transfusion. Examination revealed severe anaemia, facial features: malar prominence with facial puffiness, marked bipedal and sacral oedema and bilateral basal crepitations. The obstetric examination revealed foetal growth corresponding to the gestational age and average liquor volume and reactive CTG(cardio-tocopgraph). Collaborative consultation was done with internal medicine and cardiologists and they suggested the following investigations which revealed: Haemoglobin % 4.41 gm/dl at admission, MCV 67.8fL, MCH 19.4 pg, MCHC 28.7 gm/dl, RDW (Distribution of reticulocyte width) 31.7%, PBF (Peripheral blood film): Haemolytic anaemia with neutrophilic leucocytosis. ANA(Anti-nuclear antibody) negative, Haemoglobin electrophoresis: Hb F 34.6%, Hb E 60 % and Hb A_2 5.2%. Comment: Hb E/^{20} thalassemia (As no Hb A).Serum Ferritin 90.2 ng/ml, Bilirubin Total 1.4 mg/dl,Direct 0.58 mg/dl, Indirect 0.82 mg/dl, LDH1,863U/L (normal value 230-460 U/L),Uric acid 8.8 mg/dl (normal value 2.4-5.7 mg/dl), Urine R/M/E and C/S: Plenty of pus cell with Enterococcus colony count > 10^5/ml, resistant to all cephalosporin.

Ultrasonography of the whole abdomen revealed moderate hepatosplenomegaly with homogenous parenchyma withcholelithiasis, normalpancreatic outline with uniform tissue character. Spleen: moderately enlarged 170x78 mm, dilated portal vein 13mm along with 36^+ weeks gravid uterus. ECG showed sinus tachycardia with ST- T abnormality and poor progression of R wave in V_1-V_3. Echocardiography performed on the day of admission revealed mild pericardial effusion (6mm), Left Atrium and Left Ventricle are dilated; other chamber dimensions are normal, mild Tricuspid Regurgitation with moderate pulmonary hypertension (RVSP right ventricular systolic pressure 55.1 mm Hg) with good left ventricular systolic function (EF 55% at rest).The patient was managed according to the advice of the internal medicine specialists and cardiologist. She received Inj. Frusemide 160mg I/V 12 hourly after admission for the management of pulmonary congestion/heart failure. The anaemia was corrected with 4 units of packed cell transfusion to 10.7 gm/dl. The patient received nebulisation with Salbutamol 6 hourly, Inj. Meropenem for cystitis. Foetal monitoring with CTG (cardio-tocography) was reactive. As her symptoms improved with supportive care, Lower uterine caesarean section (LUCS) was performed three days after admission. She delivered a 2.75 kg male child with good APGAR score. She had a normal post-operative convalescence and was discharged on the 6th post-natal day. Echocardiography repeated in the post-partum state showed moderate reduction of the pulmonary hypertension (RVSP 35.4mm of Hg). The patient was prescribed tablet Ambrisentan 5 mg once daily after delivery by the cardiologist. The patient was advised to maintain contact with cardiologist and medicine specialist. She was also advised to have cholecystectomy for cholelithiasis and seek surgical opinion regarding necessity of splenectomy.

Discussion:

Pulmonary arterial hypertension (PAH) is a chronic progressive disease of the pulmonary vasculature, characterized by elevated pulmonary arterial pressure and secondary right ventricular failure.The estimated incidence of secondary pulmonary hypertension is 1case per 272,000 persons. About 1,000 new cases of pulmonary arterial hypertension are diagnosed each year in the US. Pulmonary hypertension is more common in women than in men (ratio: 1.7 to 1).[2]The non-specific nature of symptoms such as dyspnoea, fatigue, syncope, dizziness, palpitations, orthopnoea and chest pain associated with PH also mimic those of

moderate to severe anaemia, as in this case.[3,4] The progression and reversibility of pulmonary hypertension depend on the nature of the pulmonary vascular lesion and the aetiology. Chronic haemolytic anaemia has been placed in the Dana point 2008 updated clinical classification as an associated condition (1.4.6) [4,5]rendering it to be responsible for this clinical presentation in this case.

Retrospective studies have reported that 10- 75 % of patients with thalassemia have elevated pulmonary artery systolic pressure (PASP).[6,7]Our case suffered from moderate to severe PAH during pregnancy. Compared with normal patients, the rate ratio for death for moderate PAH and severe PAH was4.4 and 10.6 respectively.[8] Prospective study of outcome of patients with thalassemia major/sickle cell trait revealed that 14 % of patients with PAH and 2% of patients without PAH died during a 2- year follow-up period, defining PAH to be an independent risk factor for mortality. [9]

A study by Weiss et al demonstrated a 30% to 50% mortality rate of pregnancy complicated by primary PAH. According to current guidelines, pregnancy should be avoided or terminated early to reduce stress in women with PAH. [10]But in undiagnosed cases of PAH presenting for the first time in advanced pregnancy as in our case, the management must be individualized and outcome carefully guarded.

The pathogenesis of PH in haemolytic disorder is multifactorial.[11] The central risk factor is haemolysis. Free Haemoglobin inactivates Nitric oxide NO (the intrinsic vasodilator) and releases arginase, which depletes L- Arginine, the substrate of NO synthesis. Phosphatidyl serine released from lysed RBC micro-vesicles activates micro-thrombosis and enhances red cell adhesion to endothelin in the pulmonary vasculature, thereby inducing fibrotic parenchymal change, resulting in PAH.[12]Here Ambrisentan acts as anEndothelin receptor antagonist and gradually improves symptoms of exertional dyspnoea.However, it is highly teratogenic and therefore contraindicated in pregnancy.[13,14] Our patient considerably improved post-partum with supportive care and this specific therapy.

Conclusion:

Pregnancy with unexplained anaemia with shortness of breath should be carefully evaluated and regarded as a high-risk pregnancy, particularly at term.The probabilities of cardiac cause, haematologic dyscrasia and SLE should be excluded and the patient should be dealt by a multidisciplinary team to optimize outcome and ensure comprehensive management. Since advanced pulmonary hypertension is less responsive to therapy, early identification and management of pulmonary hypertension is recommended.The awareness of Thalassemia and its implications on the carrying female can help to prevent the spread of an autosomal recessive disease pattern in our community; thereby contribute to a future healthier generation.

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A Young Male with Blurring of Vision

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Mr. X, a 24-year-old non-diabetic, normotensive man, hailing from Kaliganj presented in DMCH with the complaints of several episodes of vomiting for one day and blurring of vision for the same duration of time after ingestion of 180 mL (6 units) of vodka (ethyl alcohol) mixing with other agent on the previous night. The patient also complained of blurring of vision of his left eye which occurred suddenly, was painless, involving both eyes within a few hours. It progressed for the next 24 hours after which it started getting better. The patient admits to drinking alcohol every two to three months; however, is not a habitual drinker. These episodes involve binge drinking with smoking tobacco.

There was no history of trauma, orbital tenderness, quandrantic or altitudinal hemianopia, dryness, grittiness, headache, facial pain, weakness, tinnitus or hearing difficulties. There was no hematemesis, melena, head trauma, headache, neck stiffness, altered mental status and the patient denied a history of migraine. His vomiting was not voluntarily induced and occurred spontaneously.

On examination, he was ataxic, incoherent speech. The patient admits to drinking alcohol every two to three months; however, is not a habitual drinker. These episodes involve binge drinking with smoking tobacco.Visual acuity was 6/60, field of vision is impaired peripherally, color vision was distorted, Opthalmoscopy revealed bilateral retinal whitening, flakes peripherally in all four quadrants. An MRI revealed hyperdensity in frontal and basal ganglion areas with haemorhhagic area in rt lentiform nucleus. Patient was diagnosed as Methanol poisoning with CNS and Eye toxicity.

The characteristic MRI findings in methanol toxicity are bilateral putaminal hyperdensity and Haemorrhagic manifestation as a result of necroses. This finding is although not specific to methanol toxicity but is commonly observed [1]. These findings are usually result from the direct toxic effects of methanol metabolites and metabolic acidosis in the basal ganglia[2]. Cerebral and intraventricular hemorrhage, cerebellar necrosis, diffuse cerebral edema, bilateral subcortical white matter necrosis or edema, and optic nerve necrosis all have been described in severe methanol intoxication, [2,3]. Optic nerve demyelination secondary to formic acid has been suggested as responsible for optic nerve damage with or without axonal loss.

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Fig.-1: *(a) Opthalmoscopy after the treatment, (b) MRI showing methanol effect in Brain*

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LETTER TO THE EDITOR

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Serum Procalcitonin as a Predictor of Bacteremia in Burn Injury.

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Introduction:

Sepsis is a clinical syndrome that is caused by a dysregulated inflammatory response to infection, which can lead to multiple organ failure and eventual death. It involves physiologic, biologic, and biochemical abnormalities.[1] Early identification of sepsis in a burns patient would ensure that appropriate management is provided early. Bacteremia, a dreaded complication of burn injury often seen in sepsis, is associated with an increased risk of bacterial spread to multiple end organs thereby increasing the risk of morbidity and mortality. Early evidence of bacteremia is often not readily available, as it would require a thorough and time-consuming blood culture bacterial growth analysis. Hence, a reliable and accessible tool to predict the possibility of bacteremia in burn injury would help guide physicians in the care of critically ill patients. In this study, we evaluate the clinical role of serum procalcitonin as an early predictor of bacteremia in burn patients.

Methods:

In our institution, we maintain a prospective database of all burns patients. In this study, we performed a review of patients who were admitted to our Burns Intensive Care Unit over a 3-year period (June 2013 to June 2016).

Data analyzed included the Total Body Surface Area (TBSA) on admission, serum procalcitonin level within the first 48 hours and incidence of bacteremia within the first 10 days of admission when there is bacterial growth in blood culture. At our centre, measurement of TBSA is guided by Lund and Browder Chart[2]; and serum procalcitonin and blood culture samples were sent if the patient was febrile i.e. body temperature more than 38.5 degrees Celsius.

Data compiled was analyzed using Statistical Package for the Social Sciences® Version 20.0.

Results:

During the 3-year period analyzed in our study, 67 patients were admitted to our Burns Intensive Care Unit. Patients with no serum procalcitonin level within the first 48 hours were excluded. A total of 39 patients were included in our study.

While the main aim of the study is to assess the relationship between serum procalcitonin and bacteremia, the authors do recognise the possible added relationship between TBSA and serum procalcitonin on admission. Hence, we have grouped the patients into 3 groups according to the TBSA (A: <20%, B: 20-40% and C: >40%) to study and account for the possible correlation.

In a review by Meisner M[3], which also included non-burn injury patients, a high procalcitonin level (>0.5 to >2.0ng/mL) is proposed to have a high positive predictive value for sepsis, severe sepsis or septic shock while normal or very low procalcitonin levels (<0.25 to <0.5ng/mL), have a high negative predictive value to rule out sepsis. In our study, serum procalcitonin levels were subcategorized into 2 groups: Low procalcitonin (<2.0ng/ml) and High procalcitonin (≥2.0ng/ml).

Groups A, B and C had 11, 8 and 20 patients respectively. Tables 1 and 2 below shows the number of patients included in the study, grouped into the respective categories according to TBSA, and the data studied.

Based on the data compiled, as illustrated in the Figure 1, there is a positive correlation between raised serum procalcitonin (≥2.0ng/ml) and the presence of

bacteremia. When statistical analysis was performed using Chi-squared test, this relationship is statistically significant (p-value=0.047; p<0.05). An analysis of the relationship between TBSA and serum procalcitonin also showed a possibility that there is a correlation between the initial TBSA with the initial procalcitonin levels (Figure 2).

Discussion:

In conclusion, the authors believe that serum procalcitonin can serve as a realiable early predictor of bacteremia. We were able to identify a statistically significant positive correlation between raised serum procalcitonin (≥2.0ng/ml) within the first 48 hours of admission and the presence of bacteremia within the first 10 days of admission.

We do recognize that there are many factors that can influence procalcitonin levels and also the presence of bacteremia. Our study also highlighted a positive correlation between TBSA and serum procalcitonin. A review of the current literature highlights the possible validity of this relationship. Patients with ≥20% TBSA are at a higher risk of bacteremia[4] with a yield of 18.6 % positive cultures compared to a yield of 1.1 % positive blood cultures for TBSA burn <20 %[5].

The authors believe that while serum procalcitonin levels can provide a quick way to predict the presence of bacteremia and thereby predict the possibility of sepsis, a detailed study to identify reference values of procalcitonin for burn injury of different TBSA would be very helpful. This will allow early initiation of empiric antibiotics before further colonization of bacteria in the patient[6].

Conclusion:

The authors hope that procalcitonin can be used to further improve the care provided in burn injury by pre-empting the occurrence of complications. We do recognize that the statistical validity of our study can be further improved with future studies involving larger study populations. With a large sample size, we can also aim to identify a reference value of serum procalcitonin to guide in the predicting of bacteremia in burn injury. While elevated procalcitonin level may predict likelihood of bacteremia, a study of the direct relationship between sepsis and other factors including TBSA, mechanism of injury and time to treatment would also allow for a more comprehensive analysis.

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FROM THE DESK OF EDITOR in CHIEF

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Happy new year 2019 for all the members of BCPS family. May Allah help us to fulfill our aim of getting international recognition in this year.

To improve the quality of review process we are now regularly organizing peer reviewers workshop. We are going to start online review of journal in near future.

I again thank all our members for your continuous support to improve the quality of the journal

Prof Ferdousi Islam