J

A

M

C

J

Journal of Army Medical College Jashore

BMDC
Approved

ISSN : 2789-1135 (Print)

JOURNAL OF ARMY MEDICAL COLLEGE JASHORE

Volume - 3
Number - 2
July 2022

An Official Organ of Army Medical College Jashore

Website: https://amcjbd.org

Journal of Army Medical College Jashore (JAMCJ)
July 2022 | Volume 3 | Number 2
ISSN: 2789-1135 (Print)

Name of the Reviewers

Back Cover Inner

Journal of Army Medical College Jashore (JAMCJ)
July 2022 | Volume 3 | Number 2
ISSN: 2789-1135 (Print)

Table of Contents

Front Cover Inner

J

A

M

C

J

Journal of Army Medical College Jashore

BMDC
Approved

ISSN : 2789-1135 (Print)

JOURNAL OF ARMY MEDICAL COLLEGE JASHORE

Volume - 3
Number - 2
July 2022

An Official Organ of Army Medical College Jashore

Website: https://amcjbd.org

Journal of Army Medical College Jashore (JAMCJ)
July 2022 | Volume 3 | Number 2
ISSN: 2789-1135 (Print)

Name of the Reviewers

Back Cover Inner

Journal of Army Medical College Jashore (JAMCJ)
July 2022 | Volume 3 | Number 2
ISSN: 2789-1135 (Print)

Table of Contents

Front Cover Inner

JOURNAL OF ARMY MEDICAL COLLEGE JASHORE

July 2022 | Volume 3 | Number 2

ISSN: 2789-1135 (Print)

Journal of Army Medical College Jashore (JAMCJ) is leading, open access, peer-reviewed scientific journal on medical science for rapid publication of articles published Army Medical College Jashore, Jashore Cantonment, Bangladesh. This journal provides quick initial decisions followed by a high-quality medical editing service and an excellent publishing service to its authors. This journal has been launched since January 2020 and is continuing. **JAMCJ** is published 2 times per year. This journal aims to publish scientifically written, evidence-based articles from all disciplines of medical sciences and clinical practice, preventive medicine, epidemiology as well as healthcare research. It provides a great scope to publish different kinds of articles including original research papers, reviews of specific topics, case reports and short research communications. Submissions of basic and clinical research both are considered. Manuscripts should present novel findings addressing significant questions in clinical medicine research and practice, in the form of original research articles, editorial, review articles, short communications, case reports, letter to the editor, and others. In addition to that **JAMCJ** publishes studies performed by multi-center groups in the various disciplines of medicine, including clinical trials and cohort studies from large patient populations, specifically phase I, phase II, and phase III studies performed under the auspices of groups such as general clinical research centers, cooperative oncology groups, etc. Reports of patients with common presentations or diseases, especially studies that delineate the natural history and therapy of important conditions are also published. Reviews oriented to the practicing internist and diagnostic puzzles, complete with images from a variety of specialties are also published. Careful physiological or pharmacological studies that explain the normal function or the body's response to disease as well as analytic reviews such as meta-analyses and decision analyses using a formal structure to summarize an important field are acceptable to publish.

It is printed on acid free paper.

Please contact editorial office for further inquiry:

Prof. Dr. Omma Hafsa Any
Executive Editor
Journal of Army Medical College Jashore
Jashore Cantonment Jashore, Bangladesh
ISSN: 2789-1135 (Print)
Email: amcj.journal.editorinchief@gmail.com
Website: https://amcjbd.org

Journal of Army Medical College Jashore (JAMCJ)
January 2023 | Volume 4 | Number 1
ISSN: 2789-1135 (Print)

Published By
Brig Gen Mahbuba Sultana
Principal
Professor & Head, Paediatrics
Army Medical College Jashore
Jashore Cantonment Jashore, Bangladesh

Correspondents
Prof. Dr. Omma Hafsa Any
Professor & Head
Pharmacology & Therapeutics
Army Medical College Jashore
Jashore Cantonment Jashore, Bangladesh
Cell: +8801707543140
Email: omma.hafsa.anee@gmail.com

https://amcj-bd.org/
Journal of Army Medical College Jashore
July 2022, Vol. 3, No. 2, Page: 42-43
ISSN : 2789-1135 (Print)

Editorial ***Open Access***

Conventional Teaching- Learning Tools in Anatomy and Modern Alternatives

Raj Mohon Hira

Professor & Head, Department of Anatomy, Army Medical College, Jashore, Bangladesh

Usage of cadavers for purpose of Anatomical dissection is an essential part of learning for a freshman year medical school student. The perks of dissection include gathering practical skills such as appreciation of the human body, first-hand observing anatomical variability, team working and peer interaction, as well as ultimately gaining a real-life concept of appreciation of human life through the first-hand understanding of death and dying[1]. Furthermore, for teaching purposes, a dead body dissection has also been the only teaching tool of Professors and Lecturers of Anatomy. It is no wonder that to learn about the human body, a dead human body dissection gives us the opportunity to investigate a human being and learn the structures contained in it. However, obtaining a dead body ethically is becoming tough day by day due to the increasing number of medical schools and the increasing number of medical students globally. Currently, there are over hundreds of government & private medical colleges in Bangladesh with over ten thousand medical students each year. The number is increasing day by day to meet the need for recommended physicians for the ever-growing population. This is the primal reason for the increasing demand for cadavers in medical colleges. Although some modern digital and artificial teaching tools are being used as adjuncts, still cadaver dissection remains the most practiced teaching-learning tool in anatomy. Therefore, finding and implementing alternate teaching-learning tools in the anatomy department is becoming a MUST today and in the near future.

According to Merriam-Webster dictionary, dissection (from Latin dissecare "to cut to pieces", also called anatomization) means the act or process of preparing an anatomical specimen from a dead body. Dissection has been the traditional teaching-learning tool for anatomy since 3rd century B.C. Greek scientists Herophilus of Chalcedon and his younger brother contemporary Erasistratus of Ceos were carried out systematic dissections of dead human bodies[2]. We find anatomical dissection practices flourished during 7th and 8th century in ancient India. At that time, medical education was standardized but religious taboo was strong. Further down in the history, the practice of dissection was stunted by Islam[3]. Before the 10th century, dissection was not performed on human dead bodies[4]. The book Al-Tasrif, written by Al-Zahrawi in 1000 A.D.,details surgical procedure that differed from the previous standards. The book contained detailed illustrations and was an exceptional text of medicine and surgery[5]. So, it is speculated that human dissection continued amidst religious barriers and social stigma. Throughout Christian Europe, Mondino de Luzzi was the first person to carry out public dissection around 1315[6]. Andreas Vesalius in the 16th century carried out numerous dissections in his extensive anatomical investigations. Vesalius was the first to lecture and dissect the cadaver simultaneously[7]. At 19th Century, the number of medical schools increased, and private medical schools didn't have access to cadavers. Therefore, cadaver obtaining from legal means was proven insufficient. This led to a thriving black market of cadavers and body parts. Body snatching was becoming a terror that was described in the infamous tale of "Burke and Hare murders" in 1828. As per the record, 16 people were murdered for their dead bodies that were sold to anatomists. The incident led to public outcry and the "Anatomy Act 1832" was passed which not only put a halt to the body snatching but also increased legal supply of cadavers in dissection[8-9]. Still now, anatomical dissection is considered as the cornerstone of learning anatomy with relevant clinical correlates.

The process of collecting dead bodies is not same in every country. In contrast to the body donation in the first world countries, main source of cadavers in medical colleges of Bangladesh acquire cadavers from involuntary sources such as unclaimed or unidentified bodies in hospital morgues, body of dead criminals and sometimes dead old people. Although there is no formal study that what percent of cadavers end up in an anatomical dissection class from donation, but still, it is not hard to assume that a country of strong religious belief like Bangladesh is not popular for body donation. The only advantage of acquiring dead bodies through involuntary means is zero liability. For the greater good of learning anatomy, anatomists try to utilize the dead bodies that have been obtained involuntarily. However, the disadvantages outweigh far that advantage. First, it's completely unethical to obtain dead bodies in this way. It's a great show of disrespect to the cadaver who might not have provided consent. Second, an involuntarily acquired dead body hardly possesses the normal structure. Many dead bodies have noticeable defects that might occur due to accidents, homicides or gunshots. Third, the bodies usually aren't "prepared well" for anatomical purposes. The dead bodies may contain HIV or Hepatitis viruses and can cause serious diseases in nascent medical students. Fourth, preserving dead body requires the supply of corrosive

Correspondence: Prof. Dr. Raj Mohon Hira, Professor & Head, Department of Anatomy, Army Medical College, Jashore, Bangladesh; Email: drmhira@gmail.com; Cell No.: +8801712-537095

substances like Formalin which damages the skin of the person who dissects. Also, it is a potent irritant of the respiratory tract of students and teachers. It also requires extra cleaning of the dissection room due to foul odor. Finally, studying a non-ideal dead body can be misleading and students may not be able to correctly correlate it with proper information.

Modern alternatives to traditional anatomical dissection include Computer 3D models, 3D plastic models, Lectures, Illustrations drawn by Artists and 3D models of organs. Pictorial and audio-visual lectures and 3D models are currently used as tools that cover most of the conceptual topics. For more than 10 years, Professors are now able to deliver General and Topological anatomy lectures and video clips through Projectors. Sophisticated models of Eyeball and Brain 3D plastic models are popular among both students and teachers. These body parts are hard to preserve and harder to obtain. Histology classes are taken by Professors and Lecturers through pre-made slides under a microscope and digital color pictures of slides. Bones on the other hand are not easily decomposed as soft tissues and can be reused lots of time. It is worth mentioning that 3D live anatomical dissection videos explain the process so much that many students often use it before performing actual dissection. Atlases drawn by renowned artists are also excellent learning tools.

There is some limitations of Human Cadavers in near future. Each year the number of medical colleges are ever increasing, and more medical students are enrolled to meet the nation's shortage of qualified practicing physicians. Prevailing social norms and professional demands have always influenced the attitude towards dissection in medical education[10]. Current ideals of the medical profession are such that physicians are developing more humanistic attitudes and behaviors in acquiring scientific knowledge and skill[11].So unauthorized involuntary acquisition of cadavers is going to decline in near future. It's important to notice that donating dead bodies in near future will also not be contributing much to the next generation medical students. So, it's high time we implemented modern technology and replaced traditional cadavers.

There is a latest Technological advancement in the teaching tool of anatomy named Syn Daver©. A study conducted on students of three hospitals of Singapore regarding the increased popularity of plastinated and three-dimensional printed (3DP) models concluded that students perceived plastinated specimens as more real and authentic, whereas 3DP models were easy to use and preferred for learning basic anatomy[12]. Currently, synthetic bodies are being made using materials that match closely with human tissues. SynDaver© is such American-based company that develops synthetic cadavers for medical students. Each model is also a simulator as it mimics real-life response of corresponding muscles, vessels and nerves. Models like this could be the very future of cadaveric dissection. These models are reusable, removes the necessity of acquiring dead bodies and its echo friendly. Preserving cadavers are no longer a necessity and it will save a lot of space too. Only issue is that these models are expensive and without government incentive towards acquiring these models it is not an option for low incoming countries including Bangladesh right now. However, giving proper training to teachers of Anatomy to understand this teaching tool and in near future we hope to see the implementation of the synthetic cadavers into anatomy classes to better learn without the actual need of human body.

Importance of cadaver dissection has always been acknowledged in both Anatomy and Surgery. However, acquiring through donations has limitations and using alternative approaches including synthetic 3D models, computer simulation and plastinated model teaching should replace conventional human cadaver dissection in the near future. The aim of this article was to highlight the necessity of replacing the current methods and introduce the latest adaptation of synthetic human dissection. Each human life is precious and social and religious norms are part of humanity as well. Therefore, positive actions must be taken now to implement alternative methods of teaching-learning tools in Anatomy.

References

1. Granger NA. Dissection laboratory is vital to medical gross anatomy education. The Anatomical Record Part B: The New Anatomist: An Official Publication of the American Association of Anatomists. 2004;281(1):6-8

2. Von Staden H. The discovery of the body: human dissection and its cultural contexts in ancient Greece. The Yale journal of biology and medicine. 1992;65(3):223

3. Jacob TG. History of teaching anatomy in India: From ancient to modern times. Anatomical sciences education. 2013;6(5):351-8

4. Mohammed M, Kharoshah MA. Autopsy in Islam and current practice in Arab Muslim countries. Journal of forensic and legal medicine. 2014;23:80-3.

5. Chavoushi SH, Ghabili K, Kazemi A, Aslanabadi A, Babapour S, Ahmedli R, Golzari SE. Surgery for gynecomastia in the islamic golden age: Al-Tasrif of Al-Zahrawi (936–1013 AD). International Scholarly Research Notices. 2012;2012.

6. Ghosh SK. Human cadaveric dissection: a historical account from ancient Greece to the modern era. Anatomy & cell biology. 2015;48(3):153-69

7. O'Malley CD. Andreas Vesalius' Pilgrimage. Isis. 1954;45(2):138-44.

8. Rosner L. The Anatomy Murders: Being the True and Spectacular History of Edinburgh's Notorious Burke and Hare and of the Man of Science Who Abetted Them in the Commission of Their Most Heinous Crimes. 2009, University of Pennsylvania Press

9. Hutton F. The working of the 1832 Anatomy Act in Oxford and Manchester. Family & Community History. 2006;9(2):125-39

10. Dyer GS, Thorndike ME. Quidne mortui vivos docent? The evolving purpose of human dissection in medical education. Academic medicine. 2000 Oct 1;75(10):969-79.

11. Gregory SR, Cole TR. The changing role of dissection in medical education. JAMA. 2002;287(9):1180-1.

12. Radzi S, Chandrasekaran R, Peh ZK, Rajalingam P, Yeong WY, Mogali SR. Students' learning experiences of three-dimensional printed models and plastinated specimens: a qualitative analysis. BMC Medical Education. 2022;22(1):1-0

[Journal of Army Medical College Jashore, July 2022;3(2):42-43]

JOURNAL OF ARMY MEDICAL COLLEGE JASHORE

INSTRUCTIONS TO AUTHOR(S)

ISSN: 2789-1135 (Print)

Aims and Scopes of the Journal

Journal of Army Medical College Jashore (JAMCJ) is an open access, peer-reviewed, scholarly, scientific medical journal. This journal aims to publish scientifically written, evidence-based articles from all disciplines of medical sciences, clinical practice, nursing, preventive medicine, epidemiology and healthcare research. Manuscripts should present novel findings addressing significant questions in clinical medicine research and practice, in the form of original articles, editorial, reviews, short communications, case reports, letter to the editor and others. In addition to that **JAMCJ** publishes studies performed by multi-center groups in the various disciplines of medicine, including clinical trials and cohort studies. Careful physiological or pharmacological studies that explain normal function or the body's response to disease as well as analytic reviews such as meta-analyses and decision analyses using a formal structure to summarize an important field are acceptable to publish.

Peer Review Process: This journal is committed to peer-review and upholding the highest standards of review. Once the submitted paper has been assessed for suitability by the editor, it will then be double blinded peer reviewed by independent, anonymous expert referees. The quality, validity, and relevance are assessed by independent peers within the relevant field.

Submission of Manuscript: Authors should submit electronic version (Microsoft word doc) of the manuscript to the editor via editor email (amcj.journal.editorinchief@gmail.com). Accepted papers will be acknowledged and will be processed further; if the papers are rejected, the decision will be informed the corresponding author. Acceptance or rejection of the manuscript for publication in journal will be decided after peer review or by the decision of editorial team and will be informed to corresponding author within 72 working hours from the time of submission.

Preparing a Manuscript: Authors should keep their manuscripts as short as they reasonably can (the total number of words should not exceed 3500 to 7500). Page number should appear in the upper right hand corner of each page, beginning with the title page. The language of manuscript must be simple and explicit. Author's and Co-author's name or any other identification should not appear anywhere in the body of the manuscript to facilitate blind review.

Types of Manuscript: The following categories of manuscripts are accepted for this journal like Original Research Articles, Systematic Review or Meta-Analysis, Review Articles, Short communications, Case reports and Letter to Editor.

Original Research Articles: It should be arranged into the following sections:

Title Page: It should be paginated as page 1 of the paper. It should carry the title, authors' names and their affiliations, running title, address for correspondence including Email address, mobile number and ORCID Id.

Title: Must be informative, specific and short and should not exceed 100 words.

Authors and Affiliations: The names of authors and their appropriate addresses should be given. It should be made clear which address relates to which author.

Running Title: It is a short title typed in the journal at the right top corner of right hand page of the article (except the lead page). A short running title of not more than 40 characters should be given.

Address of Correspondence: The corresponding author's contact address should be given in the title page. The fax number (if available) may be mentioned. The Email ID and mobile number of the corresponding author must also be provided.

Abstract and Keywords

Abstract: It must start on a new page carrying the following information: (a) Title (b) Abstract body (c) Key words (d) Running title. It should not exceed 350 words excluding the title and the keywords. The abstract must be concise, clear and informative rather than indicative. The abstract must be in a structured form consisting of background, objectives, methodology, result and conclusion.

Keywords: A list of 3-8 keywords should be provided. The words found in title may be given as keywords. All keywords should be provided according to MeSH terms at: http://www.nlm.nih.gov/mesh/MBrowser.html.

Introduction: This section should state the relevance and background to the study, its rationale and general objective. It should not exceed 450 to 500 words. Last sentence of this section will be the general objective of the study.

Methodology: This section should deal with how the work was carried out. The procedure adopted should be described in sufficient detail to allow the study to be interpreted and repeated by the readers, if necessary. The number of subjects, the number of groups studied, the study design, sources of drugs with dosage regimen or instruments used, statistical methods and ethical aspects must be mentioned under the section in text format not in structured format. The details of statistical analysis used and the level of significance should be stated.

Results: The results should be stated concisely without comments. It should be presented in logical sequence in the text with appropriate reference to tables and/or figures. The same data should not be presented in both tabular and graphic forms. Simple data may be given in the text itself instead of figures or tables. Avoid discussions and conclusions in the results section.

Discussion: This section should deal with the interpretation, rather than recapitulation of results. It is important to discuss the new and significant observations in the light of previous work. Discuss also the weaknesses or pitfalls in the study.

Conclusion: Conclusion must be drawn considering the strengths and weaknesses of the study.

Acknowledgements: Acknowledge only persons who have contributed to the scientific content or provided technical support. Sources of financial support should be mentioned.

References: Papers which have been submitted and accepted but not yet published may be included in the list of references with the name of the journal and indicated as "In press". The "unpublished observations" and "personal communications" may not be used as references but may be

inserted (in parentheses) in the text. References are to be cited in the text by superscripted number and should be in the order in which they appear. References cited only in tables or in legends to figures should be numbered in accordance with a sequence established by the first identification in the text of the particular table or illustration. The references must be verified by the author(s) against the original documents. The list of references should be in the Modified Vancouver style.

Tables: The number of table should be 3 or 4 in number. Each table must be self-explanatory and presented in such a way that they are easily understandable. It should be typed with double spacing and numbered consecutively with Arabic numerals. Provide a short descriptive caption above each table with foot notes and/or explanations underneath. The number of observations, subjects and the units of numerical figures must be given.

Figures: Each figure must be numbered and a short descriptive caption must be provided. For graphs and flow charts, it is not necessary to submit the photographs. A manually prepared or computer drawn figure with good contrast on a good quality paper is acceptable. The approximate position of each figure should be marked on the margin of the text.

Systematic Review or Meta-Analysis: These should be critical assessments of current evidence covering a broad range of topics of concern to those working in the specific field of journal. Systematic reviews should be 4000-5000 words (abstracts to be structured as above). Authors should report systematic reviews and meta-analyses in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement.

Meta-Analysis of RCT: A MOOSE checklist is required for meta-analysis of RCT.

Review Articles: These should contain title page, abstract (need not be structured) and key words. The text proper should be written under appropriate sub-headings. The total number of text words should not exceed 10000 and the total number of figures and tables should not be more than 7.

Short Communications

The manuscript should not be divided into sub-sections. It may have up to 1200 words (including a maximum of 5 references) and one figure or one table.

Case Reports

The case report should contain abstract (need not be structured), keywords, introduction, case presentation, discussion, conclusion & references (including a maximum of 20 references) in a sequential way. The number of case may be one or two, not more than three.

Letter to the Editor

A letter can have a maximum of 1000 words (including a maximum of 25 references) with one simple figure or table. The manuscript should not have sub-sections.

Address of Editorial Office
Prof. Dr. Omma Hafsa Any
Executive Editor
Journal of Army Medical College Jashore
Jashore Cantonment Jashore, Bangladesh
ISSN: 2789-1135 (Print)
Email: amcj.journal.editorinchief@gmail.com
Website: https://amcj-bd.org

AUTHORSHIP/ WHO WILL BE THE AUTHORS OF THE ARTICLE?

Papers should only be submitted for consideration once the authorization of all contributing authors has been gathered. Those submitting papers should carefully check that all those whose work contributed to the paper are acknowledged as contributing authors.

Authorship credit should be based on

1. substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
2. drafting the article or revising it critically for important intellectual content; and
3. final approval of the version to be published.

Authors should meet conditions 1, 2, and 3.

When a large, multicenter group has conducted the work, the group should identify the individuals who accept direct responsibility for the manuscript. These individuals should fully meet the criteria for authorship/contributorship defined above, and editors will ask these individuals to complete journal-specific author and conflict-of-interest disclosure forms.

When submitting a manuscript authored by a group, the corresponding author should clearly indicate the preferred citation and identify all individual authors as well as the group name. Journals generally list other members of the group in the Acknowledgments.

TYPES OF CONFLICT OF INTEREST

The followings are examples of possible conflicts of interest:

1. Source of funding
2. Paid consult to sponsor
3. Study investigator funded by sponsor
4. Employee of sponsor
5. Board membership with sponsor
6. Stock holder for mentioned product
7. Patent inventor for mentioned product
8. Any financial relationship to competitors of mentioned product

This information will be kept confidential. The Editor will discuss the method of disclosure of any potential conflict of interest with corresponding authors on an individual basis.

Author	No Conflict	Conflict (Please specify)
_____	_____	_____
_____	_____	_____
_____	_____	_____

RESEARCH ETHICS REGULATION

A. Researchers should be honest about their research. Researchers need to have a high ethical standard at all times during the research, in areas such as receiving funds for research, publishing research results, and fairly compensating participants. More specifically, research papers that are forged, altered, plagiarized, overlapped, and/or dishonest cannot be published either online or in journal and are not eligible for research funds.

1. Forgery, Alteration, Plagiarism

a. Forgery: making up data or research results that do not exist
b. Alteration: fabricating research materials, equipment, or processes, or changing/deleting research results intentionally to distort research contents or results.
c. Plagiarism: using other's ideas, research (process and contents), and/or results without proper authorization or citation.

2. Overlapped Publication and Dishonest Research

a. Publishing research papers that contain the same or similar contents to that which were/are published in other journals or books in the society's memoir, or publishing research papers that are/were published in the society's memoir in other journals or books.
b. Multiple or duplicate publication can be allowed after a review from the Publication Council, if it is qualified under the Uniform Requirements for Manuscripts Submitted to Biomedical Journals (http://www.icmje.org)
c. Wrongful Research Paper Author Indication: either refusing to grant a qualification to publish (without proper reasons) to a person who contributed science and/or technology with his/her research contents or results, or granting qualification to publish to a person who did not contribute to science and/or technology because of a wish to express appreciation or honor.

B. If a research object is human, researchers should follow the Declaration of Helsinki (http://www.wma.net). Details are as follows:

1. Researchers should fully explain the purpose and methods of research as well as possible mental and physical harm that could occur during research participation. If he/she is to publish the research results, he/she has to indicate that on the paper
2. Researchers cannot write down participants' names or initials. In case of possible disclosure of participants' identification through pictures face or anything similar, researchers should receive written informed consent from the participants or their guardians
3. Research should receive an approval from Institutional Review Board and indicate it on the paper if one wishes to publish the research results
4. Any research that deals with clinical trial should be registered to the primary national clinical trial registration site such as http://ncrc.cdc.go.kr/crics, or other sites accredited by WHO or International Committee of Medical Journal Editor.

C. If a research object is animal, researchers should follow these general rules.

1. Researchers should indicate what he/she did to minimize the pain or discomfort that experiment subjects went through.
2. Researchers should indicate that he/she did not violet NIH guideline (NIH Guide for the Care and Use of Laboratory Animals).
3. When necessary, the society can ask for a written consent and an approval letter issued by Animal Ethics Committee.

D. Conflicts of interest or financial support should be indicated on the paper.

Copyright Options: Copyright allows you to protect your original material, and stop others from using your work without your permission. This journal offers a number of different license and reuse options, including Creative Commons licenses preferably CC By-NC.

Copyright Assignment: You assign copyright in your article to the publisher or society. They manage the intellectual property rights (IPR) in your article, maintain your article as the Version of Record, and can represent your article in cases of copyright infringement.

Complying with Ethics of Experimentation: Please ensure that all research reported in submitted papers has been conducted in an ethical and responsible manner, and is in full compliance with all relevant codes of experimentation and legislation. All papers which report in vivo experiments or clinical trials on humans or animals must include a written statement in the Methods section. This should explain that all work was conducted with the formal approval of the local human subject or animal care committees (institutional and national), and that clinical trials have been registered as legislation requires. Authors who do not have formal ethics review committees should include a statement that their study follows the principles of the Declaration of Helsinki.

Consent: All authors are required to follow the ICMJE requirements on privacy and informed consent from patients and study participants. Please confirm that any patient, service user, or participant (or that person's parent or legal guardian) in any research, experiment, or clinical trial described in your paper has given written consent to the inclusion of material pertaining to themselves, that they acknowledge that they cannot be identified via the paper; and that you have fully anonymized them. Where someone is deceased, please ensure you have written consent from the family or estate. Authors may use Patient Consent Form, which should be completed, saved, and sent to the journal if requested.

Health and Safety: Please confirm that all mandatory laboratory health and safety procedures have been complied with in the course of conducting any experimental work reported in your paper. Please ensure your paper contains all appropriate warnings on any hazards that may be involved in carrying out the experiments or procedures you have described, or that may be involved in instructions, materials, or formulae. Please include all relevant safety precautions; and cite any accepted standard or code of practice. Authors working in animal science may find it useful to consult the International Association of Veterinary Editors' Consensus Author Guidelines on Animal Ethics and Welfare and Guidelines for the Treatment of Animals in Behavioural Research and Teaching. When a product has not yet been approved by an appropriate regulatory body for the use described in your paper, please specify this, or that the product is still investigational.

DECLARATION AND COPYRIGHT TRANSFER FORM
(To Be Signed By All Authors)

To
The Editor
Journal of Army Medical College Jashore

Subject: Declaration and Copyright Transfer Form

I/We, the undersigned author(s) of the manuscript entitled……..... hereby declare that the above manuscript which is submitted for publication in the **Journal of Army Medical College Jashore (JAMCJ)** is NOT under consideration elsewhere. The manuscript is NOT published already in part or whole (except in the form of abstract) in any journal or magazine for private or public circulation. No part of this manuscript (referenced or otherwise) has been copied verbatim from any source. Reproduced text, if any has been given in italics and within quotes.

I/we give consent for publication in any media (print, electronic or any other) and transfer copyright to the **Journal of Army Medical College Jashore (JAMCJ)**. I/we do not have any conflict of interest (financial or other) other than those declared*.

I/we have read the final version of the manuscript and am/are responsible for what is said in it. I/we are ready to take public responsibility for the content of the paper. The work described in the manuscript is my/our own and my/our individual contribution to this work is significant enough to qualify for authorship. No one who has contributed significantly to the work has been denied authorship and those who helped have been duly acknowledged. I/we also agree to the authorship of the article in the following sequence:

Author's name	**Signature**
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____

Note: All authors are required to sign this form; No addition, deletion or change in the sequence of authors is allowed at a later stage without valid reasons; If the authorship is contested before publication the manuscript will be either returned or kept in abeyance till the issue is resolved; This form may be photocopied and used.

*Conflicts of interests if any, the details must be declared in a separate sheet.

https://amcj-bd.org/
Journal of Army Medical College Jashore
July 2022, Vol. 3, No. 2, Page: 44-48
ISSN : 2789-1135 (Print)

Original Article ***Open Access***

Comparison of Midazolam and Lorazepam as Premedication for Reduction of Anxiety among Elective Surgery Patients under General Anaesthesia

Md. Enayet Karim[1], Arif Imtiaz Chowdhury[2], Reza Ershad[3], RAM Mustafizur Rashid[4], RAM Manas Kanti Mazumder[5]

[1]Classified Specialist, Department of Anaesthesiology, Combined Military Hospital, Chattogram, Bangladesh; [2]Graded Specialist, Department of Anaesthesiology, Combined Military Hospital, Chattogram, Bangladesh; [3]Professor, Department of Anaesthesiology, East West Medical College and Hospital, Dhaka, Bangladesh; [4]Graded Specialist, Department of Anaesthesiology, Combined Military Hospital, Chattogram, Bangladesh; [5]Assistant Professor, Department of Anaesthesia, Analgesia and Intensive Care Unit, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

Abstract

Background: The majority of patients admitted to hospital for elective surgery experience anxiety preoperatively which can adversely influence the surgical procedure as well as the patient's recovery. Reduction of anxiety and fear at preoperative period in patients of elective surgery is essential for surgical preparation. **Objective:** This study was undertaken to evaluate and compare the anxiolytic effects of oral Midazolam and Lorazepam as premedication before elective surgery under General Anaesthesia. **Methodology:** This randomized clinical trial was carried out among 60 consecutive, randomly selected patients, aged 18 to 60 years who were admitted for the elective surgery under General Anaesthesia in Combined Military Hospital, Chattogram, Bangladesh during the period September 2019 to February 2020 for a period of six months. Patients who received Midazolam (n=30) or Lorazepam (n=30) as preoperative medication were taken as study population. Anxiety was scored using VAS (Visual Analogue Scale); sedation was scored by using Ramsay Sedation Scale and anterograde amnesia was by asking preoperative events after 24 hours of premedication. **Results:** Mean anxiety reduction was significantly more in Lorazepam group compared to Midazolam group (P value 0.04 vs 0.48). Sedation level was less achieved with Midazolam compared to Lorazepam (mean 1.86 vs 2.53, P<0.05). Significant percentage of patients could not recall preoperative events in Lorazepam group compared to Midazolam group (average 67.76% vs 27.76%, P<0.05). Overall incidence of side effects was significantly more in Lorazepam group compared to Midazolam group (23.33% vs 3.30%, P<0.001). **Conclusion:** The standard administration of Midazolam before surgery provides patients with a moderate reduction of periprocedural anxiety and less adverse effects. *[Journal of Army Medical College Jashore July, 2022;3(2):44-48]*

Keywords: Midazolam; lorazepam; premedication

Introduction

Many patients develop negative emotions when they are scheduled for a surgical procedure. These may include anxiety, depression, aggression, fatigue and physical complaints. Anxiety is the most well-known and prominent preoperative complaint. Preoperative anxiety can have adverse effects on the perioperative course because it correlates with high postoperative anxiety, increased postoperative pain, increased need for analgesics, postoperative nausea and vomiting and prolonged hospital stay. Furthermore it has been shown that preoperative anxiety has a negative effect on the induction of anaesthesia and recovery[1-3]. Drugs of different classes like sedative-anxiolytic drugs, opioids, anticholinergics, neuroleptics, H2 blocker and antiemetics have been used for premedication. The purposes of preoperative medication are to prevent psychic shock, to regulate

Correspondence: Correspondence: Colonel Md Enayet Karim, Classified Specialist, Department of Anaesthesiology, Combined Military Hospital, Chattogram, Bangladesh; Cell no.: +8801739988644; Email: enayet852@yahoo.com;
ORCID ID.: https://orcid.org/0000-0001-5061-7648

metabolism, elimination of any stage of excitement, and the possibility of maintaining a lighter degree of anaesthesia or of using a less toxic anaesthetic that would otherwise be required.[4] Preoperative treatments also aim at reducing the emergence agitation occurring during recovery.[5-6]

Incidence of anxiety has been found variable in different studies. Overall rate of anxiety was observed in 72.7% patients scheduled for elective caesarian section.[7] Around 23.4% patients were found to be anxious regarding General Anaesthesia(GA). Female showed a higher incidence of anxiety (35.1%) than male(11.1%). The incidence is high in those having lower educational level.[8-9]

Anxiolytic premedication by benzodiazepines could be a useful treatment for patients who suffer from preoperative anxiety. Benzodiazepines increase the effect of the natural neurotransmitter gamma-aminobutyric acid at the receptor site in the brain, which initiates a reduction of neuron excitability with consequently anxiolytic, sedative and amnesic effect.The effectiveness of anxiolytic premedication critically depends on the anaesthesiologist's ability to detect anxiety during the preoperative visit.[10] This study had been undertaken with a view to evaluate the comparative efficacy of Midazolam and Lorazepam regarding onset, duration and degree of anti-anxiety, sedation and amnesia during elective surgery under general anaesthesia.

Methodology

The study was carried out in series of 60 consecutive, randomly selected patients, aged 18-60 years, admitted for elective surgery under General Anaesthesia after obtaining written consent, in Combined Military Hospital, Chattogram during the period September 2019 to February 2020. Patients who received Midazolam and Lorazepam as preoperative medication were included in the study. Patient of either sex, different ages with mild to moderate systemic disease (ASA I and ASA II); all the patients for elective surgery under GA were taken as subjects. Exclusion criteria were pregnant or lactation female, patients with decompensated hepatic or renal disease, those unable or willing to give informed consent, hypersensitive to or had contraindications to the use of benzodiazepines or any CNS depressant for any reason, history of alcohol, benzodiazepines or other drug abuse. Thirty patients were premedicated with Midazolam (7.5mg) orally two hours before surgery and 30 patients were premedicated with Lorazepam 1mgorally. The assessment of anxiety and vital signs were done immediately before drug administration. The efficacy assessment like anxiety and sedation were done after drug administration before taking the patient in Operating Room (OR). However, the anterograde amnesia was assessed after 24 hours of premedication. Anxiety was scored using VAS(Visual Analogue Scale), sedation was scored by using Ramsay Sedation Scale and anterograde amnesia by asking preoperative events after 24 hours of premedication.[11] Patient completed the VAS in the presence of doctors who were available to assist if necessary. The patient self-reported level of education was recorded and categorized into low (less than 10 years of education), intermediate (between 10 and 12 years of education), and high (more than 12 years of education).

Statistical Analysis: Data was recorded on predesigned proforma and statistical analysis (student's 't' test and Chi-square test) was done to carry out the output. Data were expressed in mean, SD and percentage. The value $p<0.05$ was considered statistically significant. Statistical analysis was done using SPSS software version 17.0.

Results

60 patients (30 in each group) were included in this randomized clinical trial. The mean age of the group Midazolam and Lorazepam were 39.42 and 38.5 years respectively (Table I)

Table I: Demographic Data of the Patients under Study (N=60)

Variables	Midazolam (n=30) (mean±SD)	Lorazepam (n=30) (mean±SD)
Mean age (in years)	39.42±9.85	38.50±8.32
Mean weight (in Kg)	51.33±9.31	50.62±10.13
Male	12(40%)	13(43.33%)
Female	18(60%)	17(56.66%)
ASA grade I	17(56.66%)	19(63.33%)
ASA grade II	13(43.33%)	11(36.66)
Types of Surgery		
Cholecystectomy	14(46.66%)	16(53.33%)
Appendicectomy	6(20%)	4(13.33%)
Septoplasty	3(10%)	4(13.33%)
Mastectomy	1(3.33%)	0
Gastrojejunostomy	1(3.33%)	0
Subtotal thyroidectomy	2(6.66%)	4(13.33%)
Tonsillectomy	3(10%)	2(6.66%)

Anxiety reduction from baseline to pre-procedure was found to be statistically significant in Lorazepam group. While evaluating mean anxiety reduction only, mean reduction was greater in the Lorazepam group compared to that of Midazolam(TableII). Anxiety reduction was defined as the absolute difference in VAS score between baseline and pre-procedure.

Table II: Prevalence of anxiety in patients under study (N=60)

Variables	Midazolam (n=30) (mean±SD)	Lorazepam (n=30) (mean±SD)	P value
VAS Baseline	4.1±2.4	4.4±2.3	<0.05
VAS preprocedure	3.8±2.3	3.0±2.1	
P value	0.47	0.04	

Table IV:Assessment of Anterograde Amnesia in Patients under Study (N=60)

Preoperative events	Midazolam (n=30)		Lorazepam (n=30)		P value
	Yes	No	Yes	No	
Being taken into operation theatre	20(66.66%)	10(33.33%)	08(26.66%)	22(73.33%)	<0.05
Being shifted from Stretcher to Operation Table	22(73.33%)	08(26.66%)	10(33.33%)	20(66.66%)	<0.05
Being shown Operation Theatre Surgical Light	21(70%)	09(30%)	11(36.66%)	19(63.33%)	<0.05

Patients receiving Midazolam were found to bemore anxious, less tranquil thanLorazepam. Sedation level was less achieved with Midazolam (Table III).

Table III:Assessment of Sedation in Patients under Study (N=60)

Sedation Level	Midazolam (n=30) (mean±SD)	Lorazepam (n=30) (mean±SD)
1	5(16.66%)	0
2	24(80%)	18(60%)
3	1(3.33%)	8(26.66%)
4	0	4(13.33%)
P value	<0.05	

In the Lorazepam group, significant percentage of patients could not recall preoperative events (Table IV).

Adverse drug effects were uncommon in participants premedicated with Midazolam (3.3%, 1/30). In contrast a significant percentage of participants premedicated with Lorazepam (23.33%, 7/30) experienced one or more side effects like drowsiness, dizziness, low peripheral oxygen saturation, physical agitation (Figure |1).

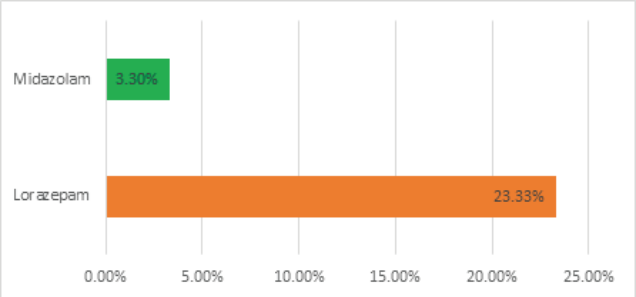


Figure 1: Incidence of Adverse Drug Effects for Different Premedications (N=60)

Discussion

Vlastraet al[12] found that use of lorazepam generated highest anxiety reduction (ΔVAS=-2.0±2.9, p=0.007). The use of midazolam (ΔVAS=-1.9±3.3, p=0.13) did not lead to significant anxiety reduction compared with no premedication. In the study by Woodhead et al[13] anxiety was stated to be equal in all groups. Nevertheless this was measured with a single question that did not quantify anxiety level.

Kazemisaeid et al[14] conducted a placebo controlled double blind randomized controlled trial, which showed a significant increase in anxiety reduction (measured in VAS score) in patients premedicated with intravenous midazolam compared with both diazepam with intramuscular promethazine and a placebo. However, this could possibly be attributed to the fact that patients with higher preprocedural anxiety were premedicated with midazolam, rather than the anxiolytic effect of midazolam itself. Additionally they did not report an increase of side effects in patients premedicated with midazolam. A study by Bergeron et al[15] used the VAS score at two points in time to access anxiety in patients premedicated with diazepam and lorazepam but did not compare these results to a control group.

Kandelet al[11] while examining mean anxiety reduction between two groups (diazepam and midazolam), showed that midazolam has higher mean reduction value from baseline at various time periods. Midazolam showed better antianxiety effect and sedative effect compared to diazepam. The study also showed that intramuscular midazolam rapidly produces an appropriate degree of sedation and better quality of sedation than diazepam in patients awaiting surgery. They also showed that midazolam produces better anterograde amnesia than diazepam. But in that study, diazepam was given orally and midazolam was given intramuscularly.

Axel et al[16] performed the PremedX study to better understand the relationship between administration of preoperative anxiolytic medication and the overall patient experience. They found that preoperative sedation with lorazepam did not improve the perioperative experience or overall patient satisfaction. Compared with placebo, lorazepam did reduce patient anxiety upon arrival to the operating room. Because there was no overall benefit from preoperative anxiety treatment, it is possible that anxiety arising upon arrival to the operating room does not influence overall patient satisfaction. They also found that preoperative sedation with lorazepam was associated with greater satisfaction with perioperative pain for all patients and less satisfaction with the attention received from caregivers among patients with high levels of preoperative

anxiety. A study comparing intramuscular midazolam with placebo as preoperative sedation reported improved postoperative psychological and pain recovery. The mechanisms on which these effects rely were unclear. Additionally, they found that compared with placebo and no premedication lorazepam was associated with more amnesia. Lorazepam administration was associated with a prolonged time to extubation and decreased rate of cognitive recovery in the PACU (post anaesthesia care unit). Prolonged recovery could limit the use of sedative premedication in patients receiving day stay surgery.

Grant et al.[17] and Mijderwijk et al.[18] described reduced PONV after perioperative administration of midazolam. These effects may improve the quality of recovery. Maurice-Szamburski et al1 found no improvement in self-reported experience after premedication with oral lorazepam before elective surgery.Mijderwijk et al.[19] also showed that premedication with lorazepam in day surgery settings had no beneficial effect on quality of recovery.Patients treated with lorazepam showed even more postoperative anxiety and aggression. Next to a rebound effect, their results could be explained by the fact that day surgery induces less anxiety than major procedures.

Earlier studies reported beneficial effects of non-pharmacological interventions to reduce periprocedural anxiety. In three small randomized controlled trials, beneficial effects were seen on periprocedural self-reported anxiety in patients who received massage and/or guided imagery prior to the procedure. Similarly a compilation of relaxing music provided by an audio pillow was associated with lower anxiety levels in the time period around the procedure. Finally two small studies showed possible positive effects aromatherapy as well as mindfulness based interventions of anxiety.[20,21,22,23] We did not study these effects, and it is difficult to compare these effects with premedication strategies.

Conclusion

The standard administration of Midazolam before procedure provides patients with a moderate reduction of periprocedural anxiety. However, adverse effects are negligible. Therefore in our opinion standard prophylactic use of midazolam seems fair. Lorazepam is more effective in reducing preoperative anxiety. But premedication of Lorazepam is associated with a high incidence of adverse effects. Therefore, this study recommends routine use of Midazolam as premedication to reduce anxiety before surgery under General anaesthesia.

Limitations of the study

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

Acknowledgements
We express our heartfelt gratitude to Commandant, Combined Military Hospital, Chattogram, for his support during the study. We are also grateful to the anonymous participants and anaesthesia staff for their co-operation during the study.
Conflict of interest
No conflict of interest.
Financial Disclosure
The author(s) received no specific funding for this work.
Authors' Contributions
Lt Col RAM Mustafizur Rashid and Major Arif Imtiaz Chowdhury contributed to the analysis of the data, interpretation of the results and critically reviewing the manuscript.
Brig Gen (Retd) Reza Ershad involved in the manuscript review and editing. All authors read and approved the final manuscript.
Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

How to cite this article
Karim ME, Chowdhury AI, Ershad R, Rahman RAMM. . Comparison of Midazolam and Lorazepam as Premedicant for Reduction of Anxiety among Elective Surgery Patients under General Anaesthesia. J Army Med Coll Jashore, 2022;3(2):44-48
Publication History
Received on: 7 April 2022
Accepted on: 24 May 2022
Published on: 1 July 2022

References

1. Maurice-Szamburski A, Auquir P, Viarre-Oreal V. Effect of sedative premedication on patient experience after general anaesthesia: a randomized clinical trial. JAMA. 2015; 313: 916-25.
2. Kain ZN, Sevarino FB, Rinder C. Preoperative anxiolysis and postoperative recovery in women undergoing abdominal hysterectomy. Anesthesiology. 2001;94: 415-22.
3. Ahn EJ, Kang H, Choi GJ, Back CW, Jung YH, Woo YC. The effectiveness of midazolam for preventing postoperative nausea and vomiting: a systematic review and meta-analysis. Anesth Analg. 2016; 122: 664-76.
4.Huang A, Tanbonliong T. Oral sedation Post discharge adverse events in paediatric dental patients. Anaesthesia Progress. 2015; 62(3): 91-99.
5.Trintafillidis JK, Merikas E, Niokolakis D, Papalois AE. Sedation in gastrointestinal endoscopy: current issues. World journal of Gastroenterology.2013; 19(4): 463-481.
6.Sheta SA, Sarheed M. Oral midazolam premedication for children undergoing General Anaesthesia for dental care. International Journal of Paediatrics. 2009; 1-7.
7.Bae JH, Koo BW, Kim SJ, Lee DH, Lee ET, Kang CJ. The effect of midazolam administered postoperatively on emergence agitation in paediatric strabismus surgery. Korean Journal of Anaesthesiology. 2010; 58(1): 45-49.

8.Maheshwari D, Ismail S. Preoperative anxiety in patients selecting either general or regional anaesthesia for elective cesarean section. J Anaesthesiol Clin Pharmacol. 2015; 31(2): 196-200.
9.Anxiety of adult patients undergoing general anaesthesia and their myths and beliefs. Available at: https//www.researchgate.net/publication/276040019. Accessed on 03 January 2019.
10.Barash PG, Cullen BF, Stoelting RK. Clinical Anesthesia. Lippincott & Wilkins, Fourth Edition 2001.
11. Kandel S, Thapa R. Assessment and comparison of efficacy of midazolam and diazepam as preoperative medication. Int J Pharm Sci Res. 2016; 7(8): 3355-60.
12. Vlastra W, Delewi R, Rohling WJ. Premedication to reduce anxiety in patients undergoing coronary angiography and percutaneous coronary intervention. Open Heart. 2018; 5: 1-8.
13. Woodhead J, Harding SA, Simmonds M. Premedication for cardiac catheterization and percutaneous coronary intervention: does it increase vascular access site complications? Cardiovasc Nurs 2007; 22: 466-71.
14.Kazemisaeid A, Zeinali AH, Davoodi G. Premedication for coronary angiography: effects of anxiety and haemodynamic status. Indian Heart J. 2007; 59: 454-8.
15.Bergeron, Enns D. Effects of routine premedication for cardiac catherization on sedation, level of anxiety and arterial oxygen saturation. Can J Cardiol. 1995; 11: 5.
16. Axel MS, Pascal A, Veronique VO, Philippe C, Michel C, Jaques R, Stephane H et al. Effect of sedative premedication on patient experience after general anaesthesia: A randomized clinical trial. JAMA. 2015; 313(9): 916-25.
17. Grant MC, Kim J, Page AJ, Hobson D, Wick E, Wu CI. The effect of intravenous midazolam on post-operative nausea and vomiting: a meta analysis. Anesth Anal. 2016; 122: 656-63.
18. Mijderwijk H, Van BS, Duivenvoorden HJ, Stolkler RJ. Effectiveness of benzodiazepine premedication on recovery in day case surgery: a systematic review with meta-analysis. Minerva Anesthesiol. 2016; 82: 438-64.
19. Mijderwijk H, Van BS, Klimek M, Duivenvoorden HJ, Grine F, Stolker RJ. Lorazepam does not improve the quality of recovery in day case surgery patients: a randomized placebo controlled clinical trial. Eur J Anaesthesiol. 2013; 30: 743-51.
20.Armstrong K, Dixon S, May S. Anxiety reduction in patients undergoing cardiac catheterization following massage and guided imagery. Complement Ther Clin Pract. 2014; 20: 334-8.
21.Peng S, Ying B, Chen Y. Effects of massage on the anxiety of patients receiving percutaneous coronary intervention. Psychiatr Danub. 2015; 27: 44-9.
22.Weeks BP, Nilsson U. Music interventions in patients during coronary angiographic procedure: a randomized controlled study of the effect on patients anxiety and well being. Eur J Cardiovasc Nurs. 2011; 10: 88-93.
23.Nyklicek I, Dijksman SC, Lenders PJ. A brief mindfulness based intervention for increase in emotional well-being and quality of life in percutaneous coronary intervention patients: the Mindful Heart randomized controlled trial. J Behav Med. 2014; 37: 135-44

https://amcj-bd.org/
Journal of Army Medical College Jashore
July 2022, Vol. 3, No. 2, Page: 49-52
ISSN : 2789-1135 (Print)

Original Article ***Open Access***

Clinico-Demographic Profiles of Patients presented with Spontaneous Subarachnoid Haemorrhage

Jalal Uddin Mohammad Rumi[1], Nur Mohammad[2], Kalim Uddin[1], Sadia Jabeen Khan[3], Patoary Mohammed Faruque[4]

[1]Assistant Professor, Department of Neurosurgery, National Institute of Neurosciences and Hospital, Dhaka, Bangladesh; [2]Senior Consultant, Department of Radiology and Imaging, Comilla Medical College Hospital, Comilla, Bangladesh; [3]Assistant Professor, Department of Obstetrics & Gynaecology, National Institute for Cancer Research & Hospital, Dhaka, Bangladesh; [4]Consultant Neurosurgeon, Bangladesh Specialized Hospital, Dhaka, Bangladesh

Abstract

Background: Spontaneous subarachnoid haemorrhage can occur with different clinical presentation. **Objectives:** The purpose of the present study was to see the clinical and demographic profiles of patients presented with spontaneous subarachnoid haemorrhage. **Methodology:** This cross-sectional study was carried out in the Department of Neurosurgery and Cath Lab of DMCH in collaboration with private diagnostic centre from September 2013 to February 2015 for a period of six (06) months. Adult patients diagnosed as a case of spontaneous SAH based on clinical features and confirmed by plain CT evidence of subarachnoid blood were included as study population. Patients having current history of trauma, poor clinical grade and agitated patient, patient with renal insufficiency, known allergy to iodinated contrast agent and patients who were not willing participate in the study were excluded from this study. Clinical features of the patients were recorded in data collection sheet. Then both CTA and DSA were done in order to detect the cause of bleeding and was made a treatment planning. **Result:** A total number of 37 patients presented with spontaneous subarachnoid haemorrhage were recruited. The mean age of patients was 58.53±7.54 years. Majority (57.0%) were male. The common clinical presentation were headache, vomiting, photophobia, cranial nerve palsy, limb weakness and previous history of seizure which were 94.59%, 43.24%, 40.54%,18.92%, 24.32% and 10.81% respectively. GCS score ≤ 14 was in 12(32.43%) patients and >14 was in 25(67.57%) patients. Hunt and Hess Grade was 1 in 25(67.57%) patients, 2 in 7(18.92%) patients and 3 in 05(13.51%) patients. **Conclusion:** In conclusion majority of the study population are elderly male patients presented with headache, vomiting, photophobia, cranial nerve palsy and high GCS score. *[Journal of Army Medical College Jashore, July 2022;3(2):49-52]*

Keywords: Clinico-demographic profiles; spontaneous subarachnoid haemorrhage; headache

Introduction

Spontaneous Subarachnoid haemorrhage (SAH) is an acute leakage of blood into the subarachnoid spaces[1]. The risk of spontaneous SAH is extremely low in children and increases with age, peaking in the 5th and 6th decades, and is associated with relatively high morbidity and mortality rates[2]. The commonest cause of non-traumatic SAH is rupture of an aneurysm (80.0%); the remaining 20.0% includes peri-mesencephalic haemorrhages, rupture of cerebral arterio-venous malformations (AVM) and some rare, but recognized causes such as coagulopathies, drug abuse, pituitary apoplexy and cerebral sinus thrombosis[3]. Cerebral aneurysms are focal out pouching of the wall of the arteries mainly located at the level of Willis Circle or less frequently in other intracranial districts like middle cerebral artery, pericallosal artery and vertebro-basilar circle. The prevalence of cerebral aneurysms in the general population is reported between 1.0% and 5.0% cases[4] and it is considered to be an acquired condition favored by several risks factors, such as arterial hypertension, cigarette smoking, alcohol abuse and some associated conditions such as autosomal dominant

Correspondence: Dr Jalal Uddin Mohammad Rumi, MBBS MS (General Surgery) MS (Neurosurgery), Junior Consultant, Department of Neurosurgery, National Institute of Neurosciences and Hospital, Sher-E-Bangla Nagar, Agargaon, Dhaka-1207, Bangladesh; Email: jumrumi.gs@gmail.com; Cell no.: +8801716985666; ORCID ID: https://orcid.org/0000-0003-2364-715X

polycystic kidney disease, Marfan Syndrome, fibromuscular displasia, Elhers-Danlos type IV Syndrome and intracranial vascular malformations[5].

Symptomatic cerebral aneurysms mainly present with a severe headache frequently defined as the worst headache of my life due to rupture of the aneurysmatic sac which causes the subarachnoid hemorrhage (SAH). Furthermore, also asymptomatic aneurysms exist, frequently detected by imaging modalities performed for other reasons. The purpose of the present study was to see the clinical and demographic profiles of patients presented with Spontaneous subarachnoid haemorrhage.

Methodology

Study Settings & Population: This cross-sectional study was carried out in the Department of Neurosurgery and Cath Lab of Dhaka Medical College Hospital (DMCH), Dhaka, Bangladesh in collaboration with private diagnostic centre from September 2013 to February 2015 for a period of six (06) months.

Study Procedure: Purposive and convenient sampling technique was used to collect the patients. All adult patients with both gender who were admitted with spontaneous subarachnoid haemorrage were selected as study population. Adult patients diagnosed as a case of spontaneous SAH based on clinical features and confirmed by plain CT evidence of subarachnoid blood were included as study cases. Patients having current history of trauma, poor clinical grade and agitated patient, patient with renal insufficiency, known allergy to iodinated contrast agent and patients who were not willing participate in the study were excluded from this study. The study was started in neurosurgery ward. Clinical features of the sample were recorded in data collection sheet. Four vessels DSA were performed via a femoral approach in DMCH Cath Lab. All DSAs was performed and interpreted by our interventional neurosurgical team. CTA results were compared with DSA findings in all cases.

Statistical Analysis: Data were analyzed using standard contingency tables. Appropriate data were collected by using a preformed data sheet. All other needed data were collected from history sheet and investigation papers. Data were modified to be compatible to input in SPSS program version 21. Statistical analysis was performed by using a commercially available statistical package (SPSS version 21; SPSS, Chicago, Ill). Quantitative variables were expressed as mean ± standard deviation, and categorical variables were expressed as frequencies or percentages. Approval from the Institutional review board of DMCH was taken before commencement of this study.

Results

A total number of 37 patients presented with spontaneous subarachnoid haemorrhage were recruited for this study after fulfilling the inclusion and exclusion criteria.

Table 1: Age Distribution of the Study Population

Age group	Frequency	Percent
41 to 50 years	06	16.22
51 to 60 years	12	32.43
61 to 72 years	19	51.35
Total	**37**	**100.00**
Mean ±SD (Range)	58.53±7.54 41 to 72 years	

Table 1 showed that mean age of patients was 58.53±7.54 years; majority age group was 60 to 72 years which was 51.35%. Minimum age was 41 years and maximum age was 72 years.

Figure I showed sex distribution of the study population majority 57.0% were male and 43.0% were female. The male and female ratio was 1.31:1.

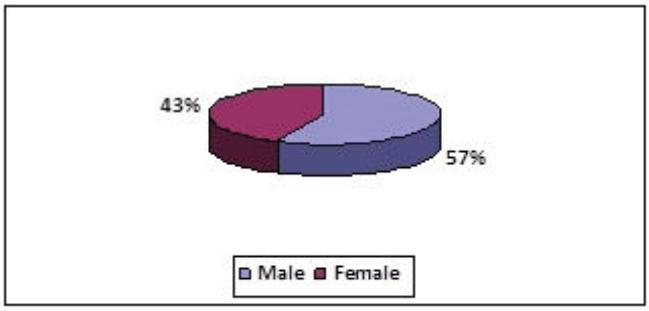


Figure I: Sex distribution of the study population

Table 2 showed common clinical presentation were headache, vomiting, photophobia, cranial nerve palsy, limb weakness and previous history of seizure which were 94.59%, 43.24%, 40.54%,18.92%, 24.32% and 10.81% respectively.

Table 2: Clinical presentation of the study population

Clinical Presentation	Frequency	Percent
Headache	35	94.59
Vomiting	16	43.24
Loss of consciousness	11	29.73
Neck rigidity	17	45.95
Photophobia	15	40.54
Cranial nerve palsy	07	18.92
Limb weakness	09	24.32
History of seizure	04	10.81

Table 3 showed GCS score ≤14 in 12(32.43%) patients and >14 in 25(67.57%) patients.

Table 3: Distribution of GCS score of the study population

GCS score	Frequency	Percent
≤ 14	12	32.43
>14	25	67.57
Total	**37**	**100.00**

Table 4 showed that Hunt and Hess Grade was 1 in 25(67.57%) patients, 2 in 7(18.92%) patients and 3 in 05(13.51%) patients.

Table 4: Hunt and Hess Grade of the study patients

Hunt and Hess Grade	Frequency	Percent
1	25	67.57
2	7	18.92
3	5	13.51
Total	**37**	**100.0**

Discussion

Patients with non-traumatic subarachnoid haemorrage are commonly encountered in Dhaka Medical College Hospital. Subarachnoid haemorrhage (SAH) is associated with relatively high morbidity and mortality rates[2]. The commonest cause of non-traumatic SAH is rupture of an aneurysm (80.0%). In patients presenting with spontaneous SAH, early diagnosis and detection of the underlying cause is considered critical in order to favour the prognosis. Early identification of an underlying ruptured aneurysm and adequate treatment may eliminate the risk of re-bleeding, which is a major mortality factor[6].

Medical imaging for the evaluation of patients with a ruptured intracranial aneurysm involves three main aspects like imaging of the aneurysm itself[4]. This includes the artery of origin, the demonstration of the sac and neck and if possible the surrounding vascular anatomy. Another is imaging of the aneurysm characteristics. The orientation of the sac is according to the bony structures of the skull base, the morphological features of the sac, the presence or not of intraluminal thrombus or peripheral calcifications, accurate measurements of the sac and neck[7]. Temporal imaging includes aneurysm filling and parent artery identification.

The present study aims to assess the diagnostic efficacy of CTA in a preoperative clinical setting in patients with SAH with emphasis in detection of aneurysms. In the study period all patients of neurosurgery department of Dhaka Medical College Hospital who fulfill the inclusion and exclusion criteria was included in the study. Then both CTA and DSA were done in order to detect the cause of bleeding and make a treatment planning.

This study group initially included 40 patients with spontaneous SAH. Three patients passed away immediately after CTA scan, thus excluded from the study. Thus there were a total of 37 patients that underwent both CTA and DSA and was formed the study group. There were 16(43%) men and 21(57%) women with male: female ratio 1:1.3. Similar gender distribution of spontaneous SAH observed in several studies[7-9].

The mean age of patients was 58.5±7.54 years; in a range of 41 to 72 years. In study of Karamessini et al[7] mean age was 49.0±15.0 years with age range of 15 to 76 years. The risk of spontaneous SAH is extremely low in children and increases with age, peaking in the 5th and 6th decades, and is associated with relatively high morbidity and mortality rates which are similar to this present study[2].

All patients underwent brain CT-scan that established the diagnosis of spontaneous SAH. Most of the patients presented with intractable headache (95.0%). Other presentation includes vomiting (73.0%), photophobia (40.0%), cranial nerve palsy (19.0%), limb weakness (24.0%) and previous history of seizure (11.0%). Symptomatic cerebral aneurysms mainly present with a severe headache due to rupture of the aneurysmatic sac which causes the subarachnoid hemorrhage[10-11].

According to Glasgow Coma Score (GCS) patients were divided into two groups. GCS was >14 in 25(67.5%) patients and in 12(32.5%) patients GCS were ≤14. The clinical status of 37 patients, according to the Hunt and Hess Grade for SAH, was classified as follows: 25(67.5%) patients grade I, 7(19%) patients grade II, 5(13.5%) patients grade III. Patients with the Hunt and Hess Grade ≥ 4 were excluded from the study.

Conclusion

In conclusion elderly patients are most commonly suffering from spontaneous subarachnoid haemorrhage. In this study, male is predominant than female. The most commonly reported clinical features are headache, vomiting, photophobia, cranial nerve palsy and limb weakness. These observations are based on a small sample size obtained from single centre. Large scale, multi-centres study should be under taken to establish a protocol for evaluation of spontaneous SAH.

Acknowledgements
None
Conflict of interest
No conflict of interest.
Financial Disclosure
The author(s) received no specific funding for this work.
Authors' Contributions
Jalal Uddin Mohammad Rumi conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript; Sadia Jabeen Khan, Nur Mohammad and Kalim Uddin: contributed to the analysis of the data, interpretation of the results and critically reviewing the manuscript; Patoary Mohammad Faruque: involved in the manuscript review and editing. All authors read and approved the final manuscript.
Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

How to cite this article
Rumi JUM, Mohammad N, Kalim Uddin, Faruque PM, Khan SJ. Clinico-Demographic Profiles of Patients presented with Spontaneous Subarachnoid Haemorrhage. J Army Med Coll Jashore, 2022;3(2):49-52
Publication History
Received on: 7 April 2022
Accepted on: 24 May 2022
Published on: 1 July 2022

References

1. de Rooij NK, Linn FH, van der Plas JA, Algra A, Rinkel GJ. Incidence of subarachnoid haemorrhage: a systematic review with emphasis on region, age, gender and time trends. Journal of Neurology, Neurosurgery & Psychiatry. 2007;78(12):1365-72
2. Johnston SC, Selvin S, Gress DR. The burden, trends, and demographics of mortality from subarachnoid hemorrhage. Neurology. 1998;50(5):1413-8
3. Van Gijn J, Kerr RS, Rinkel GJ. Subarachnoid haemorrhage. The Lancet. 2007;369(9558):306-18
4. Wiebers DO, International Study of Unruptured Intracranial Aneurysms Investigators. Unruptured intracranial aneurysms: natural history, clinical outcome, and risks of surgical and endovascular treatment. The Lancet. 2003 Jul 12;362(9378):103-10
5. Østergaard JR, Høg E. Incidence of multiple intracranial aneurysms: influence of arterial hypertension and gender. Journal of neurosurgery. 1985;63(1):49-55
6. Säveland H, Hillman J, Brandt L, Edner G, Jakobsson KE, Algers G. Overall outcome in aneurysmal subarachnoid hemorrhage: a prospective study from neurosurgical units in Sweden during a 1-year period. Journal of neurosurgery. 1992;76(5):729-34
7. Karamessini MT, Kagadis GC, Petsas T, Karnabatidis D, Konstantinou D, Sakellaropoulos GC, et al. CT angiography with three-dimensional techniques for the early diagnosis of intracranial aneurysms. Comparison with intra-arterial DSA and the surgical findings. European journal of radiology. 2004;49(3):212-23
8. Kokkinis C, Vlychou M, Zavras GM, Hadjigeorgiou GM, Papadimitriou A, Fezoulidis IV. The role of 3D-computed tomography angiography (3D-CTA) in investigation of spontaneous subarachnoid haemorrhage: comparison with digital subtraction angiography (DSA) and surgical findings. British journal of neurosurgery. 2008;22(1):71-8
9. Taschner CA, Thines L, Lernout M, Lejeune JP, Leclerc X. Treatment decision in ruptured intracranial aneurysms: comparison between multi-detector row CT angiography and digital subtraction angiography. Journal of Neuroradiology. 2007;34(4):243-9
10. Feigin VL, Rinkel GJ, Lawes CM, Algra A, Bennett DA, van Gijn J, et al. Risk factors for subarachnoid hemorrhage: an updated systematic review of epidemiological studies. Stroke. 2005;36(12):2773-80
11. Kivisaari RP, Salonen O, Servo A, Autti T, Hernesniemi J, Öhman J. MR imaging after aneurysmal subarachnoid hemorrhage and surgery: a long-term follow-up study. American Journal of Neuroradiology. 2001;22(6):1143-8

https://amcj-bd.org/
Journal of Army Medical College Jashore
July 2022, Vol. 3, No. 2, Page: 53-56
ISSN : 2789-1135 (Print)

Original Article ***Open Access***

Risk Assessment among Patients presented with Right Ventricular Infarction

AKM Mohiuddin Bhuiyan[1], KAM Mahbub Hasan[2], Partha Pratim Saha[3], Sayeda Sadia Fathema[4], Najmul Huda Biplob[5]

[1]Associate Professor & Head of the Department, Department of Cardiology, Ibn Sina Medical College & Hospital, Dhaka, Bangladesh; [2]Medical Officer, Department of Cardiology, National Institute of Cardiovascular Diseases, Dhaka, Bangladesh; [3]Assistant Registrar, Department of Cardiology, National Institute of Traumatology, Orthopedics and Rehabilitation, Dhaka, Bangladesh; [4]Senior Registrar, Ibn Sina Medical College & Hospital, Dhaka, Bangladesh; [5]Consultant (Neurology), Asgor Ali Hospital, Dhaka, Bangladesh

Abstract

Background: Early risk stratification of patients with right ventricular infarction is crucial for appropriate management and reduction of adverse cardiac events. **Objective:** The purpose of the present study was to evaluate the prognostic value of TIMI risk score analysis on admission in patients with right ventricular infarction. **Methodology:** This prospective observational study was conducted in the Department of Cardiology, National Institute of Cardiovascular Diseases (NICVD), Dhaka, Bangladesh from May 2007 to April 2008 for a period of one year. All the patients who were admitted into coronary care unit of NICVD with acute inferior myocardial infarction with or without anterior myocardial infarction were selected as study population. Inclusion Criteria were patients admitted in CCU (NICVD) with acute inferior myocardial infarction with right ventricular infarction. Patients were categorized into two groups according to the extent of TIMI risk score. Patients with low TIMI risk score (0 to 3) were included in Group I and patients with high TIMI risk-score (4 to 14) were include in group II. Patients were followed up in their hospital stay to see the incidence of major cardiac events. **Results:** A total number of 60 patients with right ventricular infarction of which 30 consecutive patients with low TIMI risk score (0 to 3) were in Group I and 30 consecutive patients with high TIMI risk score (4 to 14) were in Group II. About 48.3 % patients were uneventful in the study period but 51.7 % patients had complications. All the complications were more in group II patients.2% patients in group I and 96.7% patients in group II developed complications. These were statistically significant ($p<0.05$). **Conclusion:** In conclusion the prognostic value of TIMI risk score analysis is very useful during admission in patients with right ventricular infarction. *[Journal of Army Medical College Jashore, July 2022;3(2):53-56]*

Keywords: Early risk assessment; right ventricular infarction; TIMI; risk score

Introduction

Immediate risk stratification of patients with myocardial infarction, at the time of initial presentation, is important for their optimal emergency treatment[1]. Risk stratification may be especially important where resources are limited. It is also useful for allowing the clinician to place the patients to the optimum location of medical care unit or ward. Scores represent a simple, convenient method of risk stratification, in which a number of risk factors on presentation are shown to have prognostic significance[2]. The development of TIMI risk score has provided a useful tools to diagnose quickly and easily to stratify the patients[3]. TIMI risk score is a simple bed side scoring system that has broad applicability and easy to calculate at bed side on admission. Early risk stratification of patients with right ventricular infarction is crucial for appropriate management and reduction of adverse cardiac events[4].

Inferior myocardial infarction complicated by right ventricular infarction is associated with a greater risk of in-hospital mortality and cardiovascular related complications including ventricular arrhythmias, electromechanical dissociation, cardiac arrest, heart failure, cardiogenic shock, and mechanical

Correspondence: Dr A K M Mohiuddin Bhuiyan, Associate Professor & Head, Department (Cardiology), Ibn Sina Medical College & Hospital, 1/1-B Kallayanpur, Mirpur road, Dhaka -1207, Bangladesh; Cell number: +8801711822986; Email: mbhuiyan14@yahoo.com

complications[5]. Immediate risk stratification of patients with myocardial infarction, at the time of initial presentation is important for their optimal emergency treatment[6]. The development of TIMI risk score has provided a useful tool to quickly and easily stratify, patients with right ventricular infarction[7].

TIMI risk score is a simple bed side scoring system that has broad applicability and is easy to calculate at bed side on admission[7]. In developing country, like Bangladesh medical facilities are very limited and various investigation procedures are not widely available, very often costly and time-consuming[8]. In this situation, TIMI risk score is likely to be clinically useful to predict the prognosis of right ventricular infarction and to give effective management. Keeping this in mind the present study was carried out to evaluate the prognostic value of TIMI risk score analysis on admission in patients with right ventricular infarction.

Methodology

This prospective observational study was conducted in the Department of Cardiology, National Institute o Cardiovascular Diseases (NICVD), Dhaka, Bangladesl from May 2007 to April 2008 for a period of one year. Al the patients who were admitted into coronary care unit o NICVD with acute inferior myocardial infarction with o without anterior myocardial infarction were selected a study population. The patients with right ventricula infarction of which 30 consecutive patients with low TIM risk score (0 to 3) were in group I and consecutive patient with high TIMI risk score (4 to 14) were in group II. The study protocol was approved by the Institutional Review Board. Informed consent was obtained from each patient Inclusion Criteria were patients admitted in CCU (NICVD with acute inferior myocardial infarction with right ventricular infarction. Exclusion Criteria were patients with associated congenital anomalies, cardiomyopathy, known valvular heart disease, associated severe co-morbidity like malignancy, patients who were not thrombolysed. Risk factors of ischaemic heart disease like diabetes mellitus, hypertension, smoking, dyslipidemia and family history were noted. Clinical profiles were pulse, blood pressure, auscultation of lung bases were recorded. Baseline laboratory investigations like random blood sugar, blood urea, serum creatinine, lipid profile, serum electrolyte, CK-MB, 12 lead ECG, echocardiography were done for each patient. Criteria for diagnosis of RVI was the presence of a clinical suspicion of RVI and any of the following which was present within 24 hours of presentation with ST elevation more than 1 mm in V3R or V4R on right-sided precordial chest leads and evidence of right ventricular infarction or dilatation with hypokinesis on echocardiography. TIMI risk scoring was done. Patients were categorized into two groups according to the extent of TIMI risk score. Thirty consecutive patients with low TIMI risk score (0 to 3) were included in Group- I and Thirty consecutive patients with high TIMI risk score (4-14) were include in group- II. Patients were followed up in their hospital stay to see the incidence of major cardiac events.

Statistical Analysis: All data was analyzed by using computer based SPSS (statistical programme for social science) programme. Continuous data was expressed as mean±SD. Dichotomous data was expressed as percentage. Comparison between groups was done by unpaired t ¬test to continuous variable. Categorical data was analyzed by chi¬ square (X2) test. P value <0.05 was considered as significant.

Results

A total number of 60 patients with right ventricular infarction of which 30 consecutive patients with low TIMI risk score (0 to 3) were in Group I and 30 consecutive patients with high TIMI risk score (4 to 14) were in Group II.

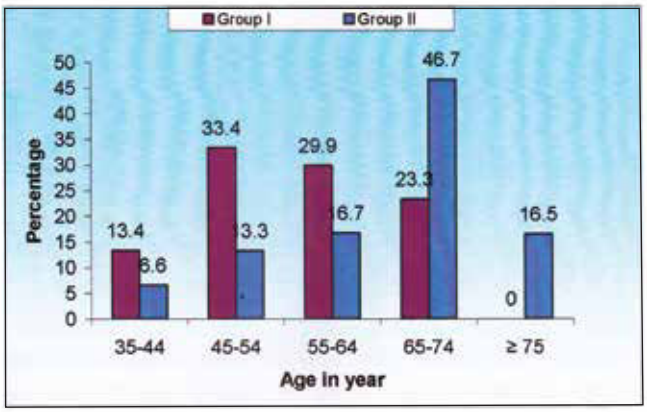


Figure I: Distribution of patients by age (n=60)

Table 1 showed the mean duration of hospital stay of the patients. Mean duration of hospital stay was more in group II patients 8.6±4.Odays. It was 5.5±2.2 days in group I patients. Statistically significant difference in hospital stay was revealed between the two groups (p<0.05).

Table 1: Distribution of patients by mean duration of hospital stay (Mean ± SD)

Variable	Group I	Group II	P value
Duration (days)	5.3 ±1.6	8.6 ±4.0	
Range (Min, max)	3 to 13	1 to 15	0.001

Table 2 showed the distribution of the patients by in¬-hospital outcome. About 48.3% patients were uneventful in the study period but 51.7 % patients had complications. All the complications were more in group II patients. About 2% patients in group I and 96.7% patients in group II developed complications. These were statistically significant (p<0.05).

Table 2: Distribution of patients by in-hospital outcome (N=60)

In-Hospital Outcome	Group I	Group II	P value
Uneventful	28(93.3%)	1(3.3%)	
Complication	2(6.7%)	29(96.7%)	0.001

Group 1= Score (0-3) Group II= core (4-14); p value reached from chi square test

Discussion

Cardiovascular Diseases (CVD) are the leading cause of death worldwide. Coronary Heart Disease (CHD) is the most common CVD and the major cause of death in middle aged and older people[9]. CHD will hold first place in the WHO's list of leading cause of disability[10]. The prevalence of CAD in Bangladesh was estimated as 3.3 per thousand in 1976 and 17.2 per thousand in 1986 indicating five-fold increase in the disease by 10 years[11]. Three small-scale population-based studies showed the average prevalence of ischaemic heart disease 6.5 per thousand population of Bangladesh[12].

Acute myocardial infarction (AMI) is a major component of acute coronary syndrome and is usually due to anterior and or inferior wall involvement. Inferior wall AMI accounts for 40.0% to 50.0% of all AMI[13]. The incidence of right ventricular infarction (RVI) in acute Inferior MI settings is about 30.0% cases[14]. The right coronary artery is almost always the culprit vessel with occlusion proximal to right ventricular branch.

Right ventricular involvement should always be considered and should always be specifically sought out in inferior MI with clinical evidence of low output because the therapeutic approaches are quite different in presence of right ventricular involvement from those for predominantly left ventricular failure.

Inferior wall MI is usually regarded as having a better prognosis in both the short and long-term outcomes than anterior wall MI. This is because the amount of myocardium supplied by the right coronary artery or left circumflex artery is much less than the left anterior descending artery. When there is right ventricular involvement in-hospital complication increase and it has prognostic implication[15].

The mortality of patients with only inferior wall MI is 5.0% to 6.0%, which increases to 25.0 to 30.0% along with the involvement of right ventricle[16]. Inferior myocardial infarction complicated by right ventricular infarction is associated with a greater risk of in-hospital mortality and cardiovascular related complications including ventricular arrythmias, electromechanical dissociation, cardiac arrest, heart failure, card iogenic shock, and mechanical complications[5].

Conclusion

In conclusion the prognostic value of TIMI risk score analysis is very useful during admission in patients with right ventricular infarction. All the complications were more in group II patients. Thus, the patients of group I are reported uneventful in hospital outcomes. Further large scale study should be carried out.

Acknowledgements
None
Conflict of interest
The authors have no conflicts of interest to disclose
Financial Disclosure
The author(s) received no specific funding for this work.
Authors' Contributions
Bhuiyan AKMM, Hasan KAMM conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript. Saha PP, Fathema SS contributed to the analysis of the data, interpretation of the results and critically reviewing the manuscript. Saha PP, Fathema SS, Biplob NH involved in the manuscript review and editing. All authors read and approved the final manuscript.
Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

How to cite this article
Bhuiyan AKMM, Hasan KAMM, Saha PP, Fathema SS, Biplob NH. Risk Assessment among Patients presented with Right Ventricular Infarction. J Army Med Coll Jashore, 2022;3(2):53-56
Publication History
Received on: 7 April 2022
Accepted on: 24 May 2022
Published on: 1 July 2022

References

1. Williams BA, Wright RS, Murphy JG, Brilakis ES, Reeder GS, Jaffe AS. A new simplified immediate prognostic risk score for patients with acute myocardial infarction. Emergency Medicine Journal. 2006;23(3):186-92
2. Haque MA, Khan MR, Momen A, Rahman Z, Chowdhury AW, Shahabuddin M, Faruque GM. Early Risk Assessment In Right Ventricular Infarction By TIMI Risk Score. Cardiovascular Journal. 2012;5(1):51-6
3. Morrow DA, Antman EM, Parsons L, de Lemos JA, Cannon CP, Giugliano RP, et al. Application of the TIMI risk score for ST-elevation MI in the National Registry of Myocardial Infarction 3. JAMA 2001;286(11):1356-9.
4. Khan SQ, Quinn P, Davies JE, Ng LL. N-terminal pro-B-type natriuretic peptide is better than TIMI risk score at predicting death after acute myocardial infarction. Heart 2008;94(1):40-3.
5. Gumina RJ, Wright RS, Kopecky SL, Miller WL, Williams BA, Reeder GS, Murphy JG. Strong predictive value of TIMI risk score analysis for in-hospital and long-term survival of patients with right ventricular infarction. European heart journal. 2002;23(21):1678-83
6. Morrow DA, Antman EM, Charlesworth A, Cairns R, Murphy SA, de Lemos JA, et al. TIMI risk score for ST-elevation myocardial infarction: a convenient, bedside, clinical score for risk assessment at presentation: an intravenous nPA for treatment of infarcting myocardium early II trial

substudy. Circulation. 2000;102(17):2031-7
7. Bradshaw PJ, Ko DT, Newman AM, Donovan LR, Tu JV. Validation of the Thrombolysis in Myocardial Infarction (TIMI) risk index for predicting early mortality in a population-based cohort of STEMI and non-STEMI patients. Canadian Journal of Cardiology 2007;23(1):51-6
8. Truong QA, Cannon CP, Zakai NA, Rogers IS, Giugliano RP, Wiviott SD, et al. Thrombolysis in Myocardial Infarction (TIMI) Risk Index predicts long-term mortality and heart failure in patients with ST-elevation myocardial infarction in the TIMI 2 clinical trial. American Heart Journal. 2009;157(4):673-9
9. Yusuf S, Hawken S, Ôunpuu S, Dans T, Avezum A, Lanas F, McQueen M, Budaj A, Pais P, Varigos J, Lisheng L. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. The lancet. 2004;364(9438):937-52
10. Murray CJ, Lopez AD. Mortality by cause for eight regions of the world: Global Burden of Disease Study. The lancet. 1997;349(9061): 1269-76.
11. Bedetti G, Gargani L, Sicari R, Gianfaldoni ML, Molinaro S, Picano E. Comparison of prognostic value of echocardiacgraphic risk score with the Thrombolysis in Myocardial Infarction (TIMI) and Global Registry in Acute Coronary Events (GRACE) risk scores in acute coronary syndrome. The American journal of cardiology. 2010;106(12):1709-16
12. Acute Coronary Syndrome: Guideline for Management 2004, Bangladesh Cardiac Society, Dhaka, Bangladesh.
13. Carter T, Ellis K. Right ventricular infarction. Critical Care Nurse. 2005;25(2):52-62
14. Majumder AA, Haque A, Haque M, Haque SA, Chowdhury S. Right ventricular involvement in acute myocardial infarction: course, complications and management-an experience at a teaching Hospital. Journal of Institute of Postgraduate Medicine & Research. 1996;11:22-5.
15. Khan S, Kundi A, Sharieff S. Prevalence of right ventricular myocardial infarction in patients with acute inferior wall myocardial infarction. International journal of clinical practice. 2004;58(4):354-7
16. Joshi P, Islam S, Pais P, Reddy S, Dorairaj P, Kazmi K, Pandey MR, Haque S, Mendis S, Rangarajan S, Yusuf S. Risk factors for early myocardial infarction in South Asians compared with individuals in other countries. Jama. 2007;297(3):286-94

https://amcj-bd.org/
Journal of Army Medical College Jashore
July 2022, Vol. 3, No. 2, Page: 57-60
ISSN : 2789-1135 (Print)

Original Article ***Open Access***

Clinico-Demographic Characteristics of Women Presented with Early Pregnancy Loss attended at a Tertiary care Hospital in Bangladesh

Rabeya Parvin[1], Gulshan Ara[2], Rebeka Khanam[3], Sadia Rahman[4], Mst. Hasina Akther[5]

[1]Assistant Professor, Department of Obstetrics and Gynaecology, Shaheed Suhrawardy Medical College, Dhaka, Bangladesh; [2]Professor & Head, Department of Obstetrics and Gynaecology, Enam Medical College, Savar, Dhaka, Bangladesh; [3]Assistant Professor, Department of Obstetrics and Gynaecology, Mugda Medical College, Dhaka, Bangladesh; [4]Senior Consultant, Department of Obstetrics and Gynaecology, 250 Bedded Naogaon General Hospital, Naogaon, Bangladesh; [5]Assistant Professor, Department of Obstetrics and Gynaecology, Shaheed Ziaur Rahman Medical College, Bogura, Bangladesh

Abstract

Background: Early pregnancy loss is one of the most common clinical problems. **Objective:** The purpose of the present study was to see the clinical properties and demographic characteristics of women presented with early pregnancy loss. **Methodology:** This cross-sectional study was conducted in the Department of Obstetrics and Gynaecology in Shaheed Ziaur Rahman Medical College Hospital, Bogra, Bangladesh from January 2007 to December 2007 for 12 months. Women with early pregnancy loss who were fulfilling the selection criteria were selected as the study population during the study period. Women of first-trimester pregnancy loss were selected for this study. Gestational age was measured from 1st day of last menstruation according to menstrual history and trans abdominal ultrasonography. A medical history was taken and a physical examination was performed. All the relevant information's for each of the study subjects were recorded in predesigned data collection sheet. **Results:** A total of 200 women with first trimester pregnancy loss were recruited for this study. Most of the women belonged to age group 20 to 25 years (55%). The mean with the SD of the study population was 24.95±4.17 years. Parity showed that 50% cases were nulliparous. Considering the gestational age most of cases were between 9 to 12 weeks 117(58.5%), between 7 to 8 weeks 42(22%) and ≤6 weeks 41 (20.5%). Clinical types of pregnancy loss were mostly incomplete abortion, 80(40%) missed abortion 60(30%) inevitable 30(15%) and anembryonic pregnancy 30(15%). **Conclusion:** In conclusion most of the nulliparous young women are presented with early pregnancy loss. *[Journal of Army Medical College Jashore, July 2022;3(2):57-60]*

Keywords: Clinical profiles; demographic characteristics; early pregnancy loss

Introduction

Early pregnancy loss is one of the most common clinical problems that we encounter in daily gynaecological practice[1]. It has been estimated that over 10.0% to 20.0% of pregnancies end up in miscarriages and most of these occur in the first trimester, is known as early pregnancy loss[2]. The most common clinical types of early pregnancy loss include, threatened abortion, inevitable abortion, incomplete abortion, complete abortion, missed abortion, septic abortion and blighted ovum[3].

Correspondence: Correspondence: Dr. Rabeya Parvin, Assistant Professor, Department of Obstetrics and Gynaecology, Shaheed Suhrawardy Medical College, Sher-E-Bangla Nagar, Dhaka, Bangladesh; Email: rabeyaparvin@ymail.com; Cell No: +8801711385311; ORCID ID: https://orcid.org/0000-0002-0495-769X

The spontaneous abortion is defined as any recognized, involuntary pregnancy loss occurring before fetal viability[4]. Approximately 80% of all spontaneous abortion occur before 12 weeks and are called early abortions[5]. The rest occur between the thirteen and the twenty-fourth week and are called late abortions. The classification of abortions as early and late has some clinical values because the majority of early abortions correspond to anembryonic pregnancies or blighted ova, whereas most of the abortions with a fetus present occur in the second trimester. However, many blighted ova do not give symptoms and are not discovered until after 12 weeks and some abortions with a fetus present occur before 12 weeks[6-7]. For more than 50 years, the standard management of early pregnancy loss has been surgical evacuation like dilation evacuation and curettage, electric

vacuum aspiration, manual vacuum aspiration of the uterus[8]. It is considered to be safe but carries a small risk of complications related to anesthesia and of surgical complication such as excessive per vaginal bleeding, cervical injury, uterine perforation, pelvic infection and intrauterine adhesion[9-11].

Virtually every maternal medical disorder has been associated with abortion[12]. Poorly controlled diabetes is associated with increased risk of abortion, whereas well-controlled and subclinical diabetes can rarely be considered a cause. Overall, only a small fraction of all pregnancy losses can be considered attributable to severe maternal disease. Cigaratte smoking has been positively correlated with abortion and a review of the effects of nicotine on ovarian, uterine and placental function suggests that cigarette smoking has an adverse effect on trophoblast invasion[13-15]. Cocaine use has also been reported as increasing the risk of abortion. There is evidence to suggest that even moderate maternal alcohol consumption is associated with increased risk of abortion.

Some chemical agents, including lead, ethylene oxide, solvents, pesticides, vinyl chloride and anesthetic gases, have been shown to have some association with fetal loss[16]. Radiotherapy and chemotherapeutic agents are accepted cause of abortion. There is a small increase in the risk of abortion with general anesthesia and incidental surgery during the first and second trimester, although this is higher with gynecologic surgery. The purpose of the present study was to see the clinical properties and demographic characteristics of women presented with early pregnancy loss.

Methodology

This was a cross-sectional study. This present study was conducted in the Department of Obstetrics and Gynecology in Shaheed Ziaur Rahman Medical College Hospital, Bogura, Bangladesh from January 2007 to December 2007 for a period of 12 months. Women with early pregnancy loss who were fulfilling the selection criteria were selected as study population during the study period. Women presented with missed abortion of ≤12 weeks of gestation, women with incomplete abortion of ≤12 weeks of gestation with minimum P/V bleeding and anembryonic gestation were included in this study. Women with incomplete abortion or missed abortion of more than 12 weeks of gestation or threatened abortion or history of medical disorders, like cardiac, respiratory renal, hepatic or adrenal disease. History of thromboembolism, hypertension, coagulopathy, pregnant women with fibroid uterus o incomplete abortion with excessive per vaginal bleeding and anemic patient with the hemoglobin level of 8 gram/dL were excluded from this study. Women with first trimester pregnancy loss were selected for this study. Gestational age was measured from 1st day of last menstruation according to menstrual history and transabdominal ultrasonography. A medical history was taken and a physical examination was performed. All the relevant information for each of the study subjects was recorded in a predesigned data collection sheet. Data were analyzed using computer-based programme statistical package for social science (SPSS) for windows version 12. The written informed consent was obtained from all patients were enable to respond or attendants unable to respond.

Results

A total of 200 women with first trimester pregnancy loss were randomly assigned to give treatment with misoprostol. Most of the women belonged to age group 20 to 25 years (55%). The mean with the SD of the study population was 24.95±4.17 years (Table 1).

Table 1: Demography of the Study Population

Age group	Frequency	Percent
15 to 20 Years	55	27.5
20 to 25 Years	110	55
25 to 30 Years	20	10
30 to 35 Years	15	7.5
Total	**200**	**100.00**
Mean ±SD (Range)	24.95±4.17	

Parity showed that (50%) were nulliparous, 63 (36.5%) primiparous and 37(13.5%) were multiparous (Table 2).

Table 2: Parity of the Study Population

Parity	Frequency	Percent
0	100	50
1	63	36.5
2	37	13.5
Total	**200**	**100.0**

Considering the gestational age most of cases were between 9 to 12 weeks 117(58.5%), between 7 to 8 weeks 42(21%) and ≤6 weeks 41 (20.5%) (Table 3).

Table 3: Demography of the Study Population

Gestational Age	Frequency	Percent
≤6 weeks	41	20.5
7 to 8 weeks	42	21
9 to 12 weeks	117	58.5
Total	**200**	**100.0**

Clinical types of pregnancy loss were mostly incomplete abortion, 80(40%) missed abortion 60(30%) inevitable 30(15%) and anembryonic pregnancy 30(15%) (Table 4).

Table 4: Showing clinical types of pregnancy loss

Clinical types	Frequency	Percent
Missed abortion	60	30
Incomplete abortion	80	40
Inevitable abortion	30	15
Anembryonic pregnancy	30	15

Discussion

According to the clinical and ultrasonographic findings it is possible to separate early pregnancy losses into two groups[17]. Blighted ova- those early pregnancy losses in which fetal development is not observed with ultrasound and fetal tissue is absent on the histologic examination of the products of conception and early fetal demise- those early pregnancy losses in which fetal development is clearly observed by ultrasound and fetal tissue is found on the histologic examination[18-20].

Genetic anomalies are the most frequent and important causes of early pregnancy losses[21]. The majority of genetically originated abortions occur before 8 weeks is blighted ova. The abnormal zygote found in a blighted -ovum results from error in maternal or paternal meiosis I or II, from superfecundation of an egg by two spermatozoids, or from a chromosome division in the absence of cytoplasmic division[22-23].

A series of complex hormone interactions provide adequate support for the development of early pregnancy[16]. Failure in any of the hormones involved in this process theoretically may lead to spontaneous abortion. Progesterone deficiency has been an obvious candidate as an eti-ologic factor of early pregnancy loss because of its well-known effect in maintaining uterine quiescence. Most of the evidence incriminating progesterone deficiency in early pregnancy loss comes from studies demonstrating that luteal phase deficiency occurs more frequently in patients with recurrent abortions than in control patients[13].

Measurement of thyroid stimulating hormone (TSH) and free thyroxine are almost routine in patients with a history of repeated pregnancy losses. However, it is rare that a deficiency or an excess of thyroid hormone is the etiology of early pregnancy loss. Patients with thyroid dysfunction are affected instead by preterm labor, usually occurring after 24 weeks[17].

Controversy surrounds the question of whether women with insulin-dependent diabetes have higher than normal risk of spontaneous abortion. Some investigators believe that diabetes is not a cause of early pregnancy loss[19]. However, a large multi-center, controlled study found that diabetics with both an elevated blood glucose and hemoglobin A1c, in the first trimester have a significantly increased risk of spontaneous abortion, whereas those with good metabolic control had a risk similar to that of control subjects. The frequency of fetal congenital abnormalities is larger in diabetics, but most of these abnormalities or not cause early fetal losses[20].

A rare endocrine etiology for early pregnancy losses is maternal hyper androgenicity. Aparently the excessive androgen produces corpus luteum dysfunction. Patients are usually hirsute and have elevated serum levels of testosterone and dihydro epi androsterone sulfate (DHEAS). The pregnancy loss is usually an early fetal demise occurring at about 14 weeks[24].

Spontaneous abortions occur more frequently in patients with polycystic ovary syndrome (PCO) than in normal control subjects. It seems that the elevated se¬rum luteinizing hormone concentration that characterizes this syndrome has a deleterious effect on the corpus luteum. Pituitary suppression with gonadotropin-releasing agonists followed by HCG administration has been found to the useful in the prevention of this type of miscarriage[25].

Infection is a relatively uncommon cause of early pregnancy loss[26]. Infections causing abortion are usually ascending and facilitated by some degree of cervical incompetence. In a minority of patient hematogenous infections with varicella, parvovirus, rubella, toxoplasmosis, herpes sim-plex, treponema, listeria, chlamydia, and mycoplasma are an unexpected finding on fetal autopsy or in histologic or bacteriologic examination[26].

Conclusion

As this was a small study, conducted only a very small number of cases, the study may not reflect the real picture. A largescale study is needed to be performed to find out the best route, dose and frequency of using this drug for complete expulsion of product of conception of early pregnancy loss with safety.

Acknowledgements
None
Conflict of interest
No conflict of interest.
Financial Disclosure
The author(s) received no specific funding for this work.
Authors' Contributions
Parvin R, conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript. Ara G, Khanam R, contributed to the analysis of the data, interpretation of the results and critically reviewing the manuscript.
Rahman S, Akther MH involved in the manuscript review and editing. All authors read and approved the final manuscript.
Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

How to cite this article
Parvin R, Ara G, Khanam R, Rahman S, Akther MH. Clinico-Demographic Characteristics of Women Presented with Early Pregnancy Loss attended at a Tertiary care Hospital in Bangladesh. J Army Med Coll Jashore, 2022;3(2):57-60

Publication History
Received on: 7 April 2022
Accepted on: 24 May 2022
Published on: 1 July 2022

References

Laferia JJ. Spontaneous abortion. Clinobstel Gynaecol 1986;13:105-114.
2. Hertin AT, Livingtone RG. Spontaneous, threatened and habitual abortion: there pathogenesis and treatment. N Engl J Med 1994;230:797-806.
3. Demetroulis C, Saridogan E, Kunde D, Naftgatin AA. A prospection randomized trial comparing medical & surgical treatment for early pregnancy failure vacuum report 2001;16(2):365-369.
4. Granziosi GCM, Vander steeg TW, Reuwer Pttw, Drogtrop AP, Bruinse HW, Moi BWJ. Economic evaluation of misoprostol in the treatment of early pregnancy failure compared to curettage after an expectant management. Human reproduction 2005;201067-1071.
5. Bagratee Js, Khullar V, Regan L, Moodley J, Kagoro H. A randomized controlled trial comparing medical and expectant management of first trimester miscarriage. Human Reproduction 2004;19:266-271.
6. Misoprostol.org. Misoprostol. http://www.misoprostol. org/File/availability:php.html.
7. Tang OS, Schwer H, Seyberth HW. Pharmacokinetics of different routes of administration of misoprostol. Human Reprod 2002;17:332-336.
8. Ngoe NTN, Blum J, Wsthiemer E, Quan TTV, Winikoff B. Medical treatment of missed abortion using misoprostol. International Journal of Gynaecology and Obstetrics 2004;87:138-42.
9. Pang MW, Lee TS, Chung TKH. Incomplete miscarriage: a randomized controlled comparing oral with vaginal misoprostol for medical evacuation. Human Reproduction 2001;16:2283-2287.
10. Tang OS, Lau WNT, Ng EHY, Lee SWH, Ho PC. A prospective randomized study to compare the use of repeated doses of vaginal and sublingual misoprostol in the management of first trimester silent miscarriage. Human Reproduction 2003;18:176-181.
11. WHO. WHO essential drug list 2005. http/ whqlibdoc.who.int/hq/2005/a87017
12. Bagratee Js, Khullar V, Regan L, Moodley J, Kagoro H. Randomized controlled trial comparing medical and expectant management of first trimester miscarriage. Human Reproduction 2001;19:266-271.
13. Zhang J, Gilles Jm, Barnhart K, Creining MD, Wsthoff C, Fredrick MM. A comparison of medical management with misoprostol and surgical management for early pregnancy.
14. Baird D. Mode of action of medical methods of abortion. JAMWA 2000;35(3):S121-126.
15. Weeks A, Alia G, Blum J, Winikoff B, Ekwarum P, Durocher J, Mirembe F. A randomized trial of misoprostol compared with manual vacuum aspiration for incomplete abortion. Obstetrics & Gynaecology 2005;106(3):1-8.
16. Unsafe abortion: global and regional estimates of the incidence of unsafe abortion and associated mortality in 2004. 4th ed. Geneva: World Health Organization 2004.
17. Fernando A. Early pregnancy loss. Practical guide to high-risk pregnancy and delivery, 2nd ed. 1997;55-95.
18. Ratnam SS, Khasker K, Arulkumaran S. Prostaglandins. In: Obstetrics and gynaecology for prostgraduates. Orient Langman 1999;161-82.
19. Howie PW. Abortion and ectopic pregnancy. In: Whitefield CR, editor. Dewhurst's textbook of obstetrics and gynaecology for the prosgraduates. London. Blackwell Scientific Publication 1986;165-87.
20. Mackenzie IZ. Prostaglandins and mid-trimester abortion. In: Erife JO, Calder AA, editors. Prostaglandins and the uterus. London: Springer-Verlag 1992;117-33.
21. Rafaey H, Calder L, Wheatley DN. Cervical priming with prostaglandin E1 analogue misoprostol and gemeprost: Lancer 1994;343:1207-9.
22. Zhang J, Gilles JM, Barnhart K, Creinin MD, Westhoff C, Fredrick MM. A comparison of medical management for early pregnancy failure. The New England Journal of Medicine 2005;353:761-769.
23. Zalanyi S. Vaginal misoprostol alone is effective in the treatment of missed abortion. Br J Obstet Gynaecol 1998;105:1026-1035.
24. Crenin MD, Moyer R, Guido R. Misoprostol for medical evacuation of early pregnancy failure. Obstet Gynaecol 1997;1(89):768-772.
25. Rokey Begum, Barua S, Nhar S. Misoprostol for msised abortion. Bangladesh J Obstet Gynaecol 2004;19(2):61-65.
26. D. Ayers-de-Campos. Texixeira-da-Silva J, Campos I, Partrico B. Vaginal misoprostol in the management of first trimester missed abortions. Int J Obstet Gynaecol 2000;71(1):53-57

https://amcj-bd.org/
Journal of Army Medical College Jashore
July 2022, Vol. 3, No. 2, Page: 61-64
ISSN : 2789-1135 (Print)

Original Article ***Open Access***

Comparative Study of Trans-Epicondylar Distance in Adult Bangladeshi Male and Female

Mst. Roksana Begum[1], Uttam Kumar Paul[2], Md. Rafiqul Alam[3], Rawshan Naznin[4], Sharna Moin[5], Tamanna Mahmud Urmi[6], Tahmina Akter[7]

[1]Senior Lecturer, Department of Anatomy, United Medical College, Dhaka, Bangladesh; [2]Professor & Head, Department of Anatomy, Universal Medical College, Dhaka, Bangladesh; [3]Professor & Head, Department of Anatomy, United Medical College, Dhaka, Bangladesh; [4]Associate Professor, Department of Anatomy, United Medical College, Dhaka, Bangladesh; [5]Assistant Professor, Department of Anatomy, Army Medical College Jashore, Jashore Cantonment, Jashore, Bangladesh; [6]Assistant Professor, Department of Anatomy, Anwar Khan Modern Medical College, Dhaka, Bangladesh; [7]Assistant Professor, Department of Anatomy, Popular Medical College, Dhaka, Bangladesh

Abstract

Background: The elbow is one of the largest and uniaxial joints in the body. The trans-epicondylar distance (TED) is the distance from the medial most point of the medial epicondyle to the lateral most point of the lateral epicondyle of humerus. It varies from person to person depending on race, age, sex & stature. It is used in the management of reconstructive surgery, epicondylar fracture, and prosthetic elbow replacement and also in medico-legal practice statements, it is essential to have sex determination. It is also an important factor for the evaluation of various upper limb dysmorphisms. **Objectives:** This study was aimed to measure the trans-epicondylar distance among adult Bangladeshi people and to find out the variations between the male and female. **Methodology:** This analytical cross-sectional study was carried out in the Department of Anatomy at Sir Salimullah Medical College, Dhaka, Bangladesh from July 2018 to June 2019 for a period of one year. Digital radiographs of elbow joint anterior and posterior (A/P) view and lateral view were taken from 80 consented medical students (40 male and 40 female) aged between 21 to 25 years. Then the trans-epicondylar distance (TED) was measured by using the "MB Ruler" software and was recorded on a data sheet. **Results:** A total number of 80 consented medical students were recruited for this study of which 40 male and 40 female. The present study showed that the trans-epicondylar distance (TED) was significantly higher ($p<0.001$) in the male than in the female. **Conclusion:** In conclusion trans-epicondylar distance (TED) shows sexual dimorphism. *[Journal of Army Medical College Jashore, July 2022;3(2):61-64]*

Keywords: Radiographic anthropometry; trans-epicondylar distance; adult Bangladeshi

Introduction

The elbow is a compound joint that provides a mechanical link in between the arm and forearm. This joint acts as a platform for the upper limb that is designed uniaxial to serve the hand to perform desired work. In conjunction with the shoulder and wrist joint, the elbow gives the arm much structural durability[3].

The medial epicondyle forms a blunt palpable projection that is directed medially and slightly backward. The posterior surface of the base of the medial epicondyle is grooved for the lodgment of the ulnar nerve. A surgeon can approach this level for the repair of the ulnar nerve injury. The lateral epicondyle projects a less prominent projection which is directed laterally and slightly forward. An imaginary line joining both epicondyles of the humerus form the base of the cubital fossa that has great clinical significance in the operative procedure[2,8].

Radiographic measurement of trans-epicondylar distance (TED) is clinically important for surgeons during the fixation of condylar fracture of the elbow. Determination of age and sex from the skeleton is important in medicolegal investigations. Invariably anatomists, medicolegal experts, and forensic anthropologists need trans-epicondylar distance to examine the fragmented skeleton to establish their identity. In ergonomics, knowledge of measurements of the elbow is essential for

Correspondence: Dr. Mst. Roksana Begum, Senior Lecturer, Department of Anatomy, United Medical College, United City, Madani Avenue, Satarkul, Dhaka, Bangladesh; Cell no.: +8801710316848; Email: roksaif2014@gmail.com; ORCID ID: https://orcid.org/0000-0003-0084-1806

the proper designing of a prosthetic elbow[1].

Skeletal growth is a fundamental process of physical maturation. The normal distance between the epicondyle varies during embryogenesis and after birth in accordance with the bony development. In achondroplasia, there are congenital skeletal deformities where certain cases have a higher distance between two epicondyles due to fusion defects in respect of age[7]. There is no published article regarding the measurement of trans-epicondylar distance (TED) among Bangladeshi people. Therefore, the aim of the present study was to compare between adult male & female.

Methodology

Study Settings and Population: This was a cross-sectional analytical study that was performed in the Department of Anatomy at Sir Salimullah Medical College, Dhaka, Bangladesh from July 2018 to June 2019 for a period of one year. The study was carried out on medical students. Their age ranged from 21 to 25 years. The ossification of all bones of the elbow is completed by the age of twenty-one years. So, fully ossified bones of the elbow joint achieve its adult form and fixed measurements after this age. So, study subjects included in the study were between 21-25 years of age.

Study Procedure: At first the nature of the work was explained to the study subject both male and female. A written informed consent was taken from each study subject. Information was collected from each study subject with the help of a questionnaire. Age of the study subject was recorded from birth certificate or from national identity card. According to the international agreement for the unification of anthopometric measures on the living for paired measurements, it is recommended to operate on the left side[5]. The digital radiograph of left elbow joint in Anteroposterior view were taken in Radiology & Imaging Department of Sir Salimullah Medical College & hospital. The subjects were instructed to sit at the end of the radiographic table, so that the arm, elbow, and forearm were resting on the table and kept the hand supinated and palm directed upwards. The X-ray beam centered approximately on the midpoint between the epicondyles of the left elbow joint[11]. Subject with known case of congenital and acquired bony anomaly of elbow, history of trauma or surgery in elbow with pathologic conditions such as genetic disorders like Turner syndrome or endocrine disorders like growth hormone deficiency or other underlying systemic diseases were excluded only by observation and history taking. No biochemical test was carried out to exclude these disorders. The digital radiograph of elbow was imaged with a digital camera according to scale and was transferred to a computer. Before taking image, one variable (trans- epicondylar distance for A-P view) was measured by a scale (in mm). After transferring the image to the laptop, the image was enlarged keeping the trans- epicondylar distance in A-P view were fixed by using "MB Ruler" software, as same as previous measurements.

Procedure of Measuring Trans-epicondylar Distance (TED): The distance from the medial most point of the medial epicondyle to the lateral most point of the lateral epicondyle of humerus[10]. To get the trans-epicondylar distance, the most medial point of the medial epicondyle and the most lateral point of the lateral epicondyle of the humerus were identified in an anteroposterior digital radiograph of left elbow joint. Then the transverse distance between these two points was measured by using the "MB Ruler" software and was recorded on data sheet.

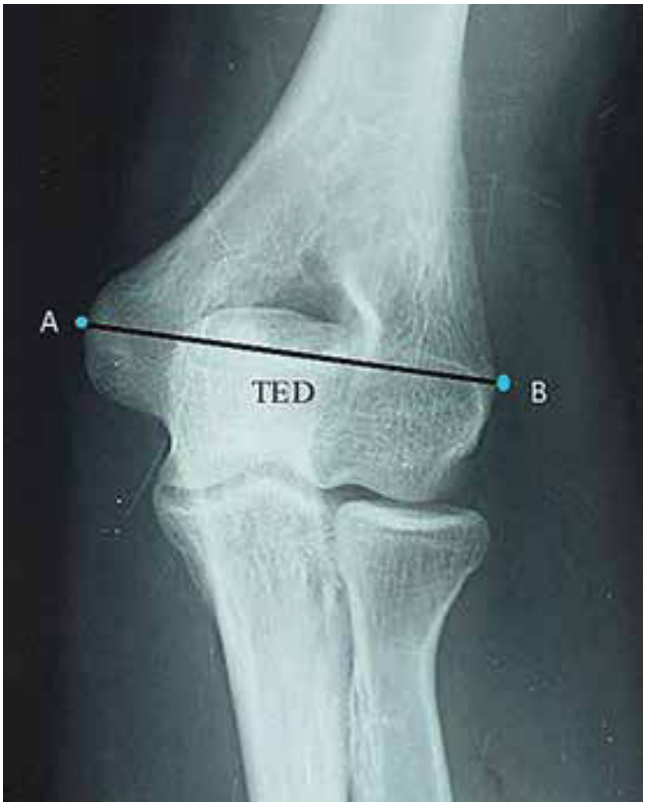


Figure I: Photograph of digital radiograph of left elbow joint in antero- posterior view showing the measurement of trans-epicondylar distance. A- medial most point of the medial epicondyle of the humerus, B- lateral most point of the lateral epicondyle of the humerus, AB line- trans- epicondylar distance (TED).

Results

The study was carried out on 80 medical students (40 male and 40 female). Table 1 showed the values of trans-epicondylar distance (TED) of both male and female. In male, the mean ± SD of trans- epicondylar distance was 62.43 ± 2.51 mm (range 58.10 mm to 67.10 mm) and in female, the mean ± SD of trans- epicondylar distance was 55.25 ± 4.11 mm (range 47.90 mm to 62.10 mm (Table 1). It was evident that the mean trans-epicondylar distance was significantly higher ($p<0.001$) in the male than in the

female (Figure I).

Table 1: Trans-Epicondylar Distance (mm) in Male and Female (Mean ± SD)

Gender	Mean ± SD	Range	P value
Male	62.43 ± 2.51	58.10 to 67.10	<0.001
Female	55.25 ± 4.11	47.90 to 62.10	

Figure in parenthesis indicate range; Comparison was done by unpaired Student 't' test

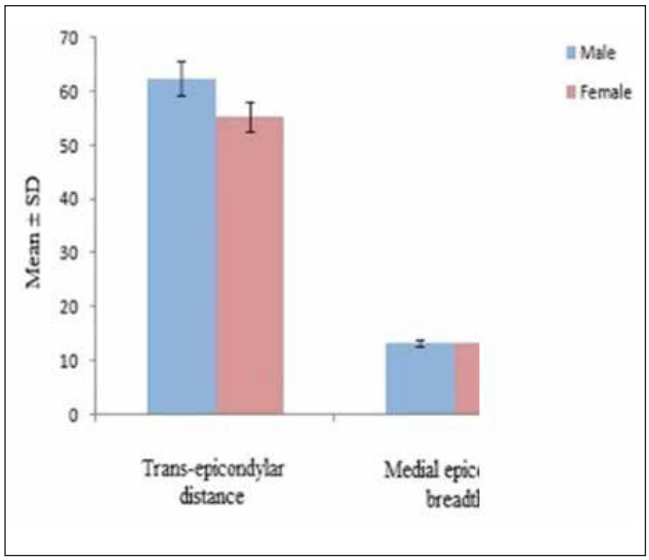


Figure I: Bar diagram showing Trans-Epicondylar Distance (mm) in Male and Female

Discussion

In this study, the radiographs of the distal end of humerus were examined that represent a simple method for investigations for both male & female. X-ray films enable the investigator to take the measurements more easily, especially in case of irregular bones such as the lower end of humerus. The determination of sex from bones plays an important role in identifying unknown bodies, parts of bodies or skeletal remains[6]. The recovery of the identity of unknown body needs a simple and easy way for biological profiling. Also in medico-legal practice statements it is essential to have sex determination techniques applicable to different parts of the body[9].

Results of radiographic variable of trans-epicondylar distance were compared with the other studies from different countries like Egyptian population, English people and Germany people. The study showed mostly similar with other studies when the mean value of trans-epicondylar distance was compared.

In the present study, the mean value of TED in male was 62.43±2.51 and in female was 55.25±4.11 which was significantly higher in the male than in the female and when compared, statistically significant (P value <0.001). This observation was similar to that of Egyptian population (p<0.0001), English people (p<0.001) and Germany people (p<0.05). However, the values may be differs due to variation in geography, race, nutritional and environmental factors.

Conclusion

In conclusion, trans-epicondylar distance (TED) is significantly higher in the male than the female and also showed significant sexual dimorphism. Data of the present study were compared with those of other countries. This may contribute to the relative status of the present study population in the context of the radiographic variations of other study population around the world. Further similar studies are recommended to conduct a larger sample to enhance the authenticity and accuracy of the findings of the present study.

Acknowledgements
The authors are grateful to Professor Manindra Nath Roy and Associate Professor Dr. Fatema Johra for their valuable opinion & advices and constructive suggestions throughout this study. Our earnest thanks to Dr. Saiful Islam Saif for his continuous technical support. And last but not the least, our special thanks for the students of Sir Salimullah Medical College for voluntarily participating in this study.

Conflict of interest
All the authors declared no competing interests.

Financial Disclosure
The author(s) received no specific funding for this work.

Authors' Contributions
Mst. Roksana Begum conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript. Uttam Kumar Paul conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript. Saiful Islam saif contributed to the analysis of the data, interpretation of the results and critically reviewing the manuscript. Sharna Moin involved in the manuscript review and editing. All authors read and approved the final manuscript.

Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

How to cite this article
Begum MR, Paul UK, Alam MR, Naznin R, Moin S, Urmi TM, Akter T. Comparative Study of Trans-Epicondylar Distance in Adult Bangladeshi Male and Female. J Army Med Coll Jashore, 2022;3(2):61-64

Publication History
Received on: 7 April 2022
Accepted on: 24 May 2022
Published on: 1 July 2022

References

1. Abd Razak et al. Biomechanics principle of elbow joint for transhumeral prostheses: comparison of normal hand, body-powered, myoelectric & air splint prostheses. BioMedical Engineering Online, 2014; 13:134.
2. Chummy SS. Last's Anatomy (Regional and Applied). 12th edition, 2011; Elsevier Ltd, China
3. Fornalski S, Gupta R, Lee TQ. Anatomy and biomechanics of the elbow joint. Sport Medic Arthros Review. 2003;11: 1–9.
4. Hegazy, A. A. Radiographic morphometric study of the normal distal humerus in adult Egyptians. International Journal of Advanced Research, 2013;1(9), pp.155-161.
5. MacCurdy, G.G. International Congress of Prehistoric Anthropology and Archeology, Geneva. Wiley on behalf of the American Anthropological Association. 1912.
6. Mall G, Hubig M, Buttner A, Kuznik J, Penning R, Graw M. Sex determination and estimation of stature from the longbones of the arm. Forensic Science International, 2001;117:23–30.
7. Saraf and Khare. Late presentation fractures of the lateral condyle of humerus in children. Indian Journal of Orthopaedics, 2011; 45:39-44.
8. S. Standring. Gray's Anatomy: The Anatomical Basis of Clinical Practice. 41st Edition, 2016; Churchill Livingston Elsevier.
9. Steyn M, İşcan MY. Osteometric variation in the humerus: sexual dimorphism in South Africans. Forensic science international, 1999; 106:77-85.
10. Wadia F, Kamineni S, Dhotare S, Amis A. Radiographic Measurements of Normal Elbows: Clinical Relevance to Olecranon Fractures. Clinical Anatomy, 2007; 20:407–410.
11. Whitley A.S., Sloane C., Hoadley G., et al. Clark's positioning in radiography. 2005; 12th edition, London, Hodder Arnold Publication.

https://amcj-bd.org/
Journal of Army Medical College Jashore
July 2022, Vol. 3, No. 2, Page: 65-70
ISSN : 2789-1135 (Print)

Original Article ***Open Access***

Association of Lipid Accumulation Product with Metabolic Syndrome in Type 2 Diabetes Mellitus Patients in Bangladesh

Roksana Yeasmin[1], Md. Nizamul Hoque Bhuiyan[2], Fahmida Islam[3], Farjana Aktar[4], Murshida Aziz[5], Tohfa-e-Ayub[6], Rokibul Hasan[7]

[1]Associate Professor, Department of Biochemistry, Ibrahim Medical College, Dhaka, Bangladesh; [2]Professor, Institute of Nutrition and Food Science, University of Dhaka, Bangladesh; [3]Assistant Professor, Department of Biochemistry, Ibrahim Medical College, Dhaka, Bangladesh; [4]Assistant Professor, Department of Biochemistry, Ibrahim Medical College, Dhaka, Bangladesh; [5]Assistant Professor, Department of Biochemistry, Ibrahim Medical College, Dhaka, Bangladesh; [6]Assistant Professor, Department of Biochemistry, Ibrahim Medical College, Dhaka, Bangladesh; [7]Research Assistant, BIRDEM General Hospital, Dhaka, Bangladesh

Abstract

Background: Lipid accumulation product (LAP) is a novel biomarker of central lipid accumulation related to the risk of diabetes and cardiovascular disease. **Objective:** This study was done to evaluate the relationship between lipid accumulating product (LAP) with insulin resistance and metabolic syndrome in type 2 Diabetic population in Bangladesh. This study also aimed to evaluate the lipid accumulation product index as a marker for metabolic syndrome in the Bangladeshi population where the prevalence of the condition is steadily increasing. **Methodology:** This retrospective study was done with 375 T2DM patients as case selected from BIRDEM, OPD & 375 healthy individuals as control selected from workers & employees of BIRDEM, IMC & residential hall campus of DU with age range 30 to 60 years from 2015 to 2020. In this study sex distribution in both case & control was 175. Associations of LAP with fasting glucose, insulin, insulin resistance index, and lipid profile levels, were assessed. **Results:** A total number of 375 cases were recruited for this study. This study showed that mean values of FBS, ABF, Insulin, HbA1c, HOMA-IR, HOMA-B%, Secret-HOMA, TAG, and LAP values were significant ($p<0.001$) higher in T2DM subjects than the control. Correlation of LAP with BMI, WHR, SBP, and DBP showed a positive significant correlation where the r value was 0.399, 0.344, 0.202, and 0.207 respectively. Moreover, this current study also showed a positive significant ($p<0.001$) correlation in lipid accumulation products with TAG where r=0.807. However, lipid accumulation products also showed a significant correlation with FBS, ABF, HbA1c, insulin, and HOMA-IR where the r values were (0.176,0.112, 0.113, 0.209, and 0.239) respectively. **Conclusion:** In conclusion, lipid accumulation product is significant in T2DM subjects and it is significantly correlated with higher glycemic and lipidemic parameters in the study population. *[Journal of Army Medical College Jashore, July 2022;3(2):65-70]*

Keywords: Triglyceride; insulin resistance; metabolic syndrome; HbA1c; LDL-C; HDL-C; SBP; DBP; HOMA IR.

Introduction

Diabetes Mellitus is a clinical condition characterized by persistent hyperglycemia due to absolute or relative deficiency of insulin[1]. Non-insulin-dependent diabetes mellitus (NIDDM) is a type 2 diabetes caused by reduced sensitivity of the target tissues to insulin metabolic effects. This decreased insulin sensitivity is also called insulin resistance[1-2]. Type 2 diabetes mellitus is the frequent form of diabetes accounting for 85.0 to 95.0% of all cases worldwide and is characterized by a disorder of insulin action and secretion, either of which may be the predominant feature. These individuals are frequently resistant to the action of insulin[3-4].

Metabolic syndrome (MetS) is a complex of interrelated risk factors for cardiovascular disease and diabetes, including dysglycemia, elevated blood pressure, elevated levels of triglycerides (TG), low levels of high-density lipoprotein cholesterol (HDL-C), and obesity[5]. Metabolic syndrome (MetS) contains interrelated risk factors that,

Correspondence: Dr. Roksana Yeasmin, Associate Professor, Department of Biochemistry, Ibrahim Medical College, Shahbag, Dhaka, Bangladesh; Email: roksanayeasminster@gmail.com; Cell No.: +8801819913270; ORCID ID: https://orcid.org/0000-0001-7070-5725

together, contribute to an increased risk of cardiovascular (CV) complications[6].

Lipid accumulation product (LAP) index, a recently developed biomarker of central lipid accumulation, has been suggested as an accurate and self-determining indicator of the risk of insulin resistance, metabolic syndrome, type 2 diabetes, and, cardiovascular disease[3-7]. LAP is usually measured based on the combination of waist circumference (WC) and triglyceride levels, and is compared to anthropometric measures, including body mass index (BMI), WC, waist-to-hip ratio, has which recently been observed as a better predictor of all-cause and cardiovascular mortality as well as diabetes development in different ages and ethnic populations[6-8]. Recent studies report that higher LAP in seemingly healthy individuals is associated with irregular glucose homeostasis and insulin resistance, as well as elevated alanine aminotransferase, an indication of the hepatic role of metabolic syndrome[9-10]. Compared to BMI, the LAP index has been stated to be a stronger indicator of diabetes and cardiovascular risks[11-12]. In polycystic ovarian disease (PCOD) patients, it has been extensively investigated, emerging as a reliable marker of the adverse cardiovascular risk profile[13]. In this study, we assessed the association of LAP with glycemic, lipid profile, and some clinical parameters of type 2 diabetic and control subjects.

Methodology

Study Settings and Population: A retrospective study was done with 375 T2DM patients as case selected from BIRDEM, OPD, & 375 healthy individuals as control selected from workers & employees of BIRDEM, IMC & residential hall campus of DU with age range 30 to 60 years from 2015 to 2020. In this study sex distribution in both case & control was 175. These T2DM patients were selected from the outpatient departments of BIRDEM. The type 2 diabetic patients were defined based on fasting blood glucose (FBG) and 75 g oral glucose tolerance test (OGTT). Three hundred and fifty normal healthy participants with a negative history of diabetes or other chronic illness were recruited as control. Controls were selected from workers of BIRDEM and employees of the residential hall campus of Dhaka University. The type 2 diabetic subjects were matched by age and sex with the control subjects. The sociodemographic, clinical, and biochemical data, including gender, age, area of residence, systolic blood pressure (SBP), diastolic blood pressure (DBP), body mass index (BMI), Lipid Accumulation Product (LAP), Waist and Hip Ratio (WHR), fasting blood glucose (FBG), 2 hours after breakfast blood glucose (ABF), HbA1c, and duration of diabetes, exercise history, hypertension, drug history, smoking history and fast food taking history/week were collected from the people who participated in the study, during the time of whole blood collection. Anthropometric parameters such as weight, height, and waist and hip circumference were measured for each of the subjects using standard methods, according to the WHO guidelines[6]. The inclusion criteria of case and control were T2DM subjects, aged 30 to 60 years, and duration of diabetes (2 to 10) years were considered as case and non-diabetic healthy volunteers, aged 30 to 60 years were considered control. The exclusion criteria of both case and control were evidence of any kind of acute infection, other systemic disorders, and hepatic & renal dysfunction.

Anthropometric Measurements: Height was measured by a meter scale, and weight was measured using a calibrated weight machine by following the standard procedure. Body Mass Indexes (BMI) of the subjects were calculated using the following formula like BMI= Weight in kg/Height in m^2. Waist Measurement was done horizontally at the narrowest point between the lower end of the rib cage and the iliac crest in centimeters. Hip circumference was measured at the greatest horizontal circumference below the iliac crest at the level of the greater trochanter in centimeters using a standard measuring tape. The waist-hip ratio was calculated using the standard formula[13,14].

Blood Specimen Collection: Blood was drawn by venipuncture under the overnight fasting condition (10 to12 hours) and after 2 hours after breakfast. After 30 minutes, samples were then centrifuged at 3000 rpm for 10 minutes to produce serum. The serum was preserved in the freezer (-20 ^{o}C to – 80 ^{o}C) for biochemical analysis. Five-milliliter blood samples were stored.

Biochemical Analysis: The glucose oxidase method was used to measure the serum glucose level. Serum total cholesterol (TC), triglyceride (TG), and HDL-C were measured using cholesterol oxidase assay, glycerophosphate oxidase assay, and cholesterol oxidase assay, respectively. To calculate serum LDL-C, Friede-wald's equation was used.[20] Fasting serum insulin levels were determined using the ELISA method (Linco Research Inc., USA)[15]. We employed homeostatic model assessment (HOMA) to measure b-cell functional deficiency (HOMA B%), insulin sensitivity (HOMA S%), and insulin resistance (HOMA IR) based on fasting serum glucose and fasting serum insulin level. HOMA IR and HOMA B% were obtained using the following formulas[21] (a) HOMA-IR ¼ Glucose x Insulin/22.5 (b) HOMA-B % ¼ 20 x Insulin/Glucose-3.5, if the glucose in molar units (mmol/L). LAP was calculated as [waist circumference (cm)–65] × [triglycerides (mmol/L)] in men, and [waist circumference (cm)–58] × [triglycerides (mmol/L)] in women[15].

Statistical Analysis: The data were expressed as mean ± SD (Standard deviation). The statistical significance of differences between the values was assessed by univariate and multiple regression analysis as well as one-way ANOVA was carried out using Statistical Package for

Social Science (SPSS) version 22. At the same time, a t-test was performed to analyze the relationship between lipid profile and type 2 diabetes. Statistical analysis was also performed using Graph Pad Prism version-6 software. The odds ratios (OR) were used as a measure of relative risk at 95% confidence intervals. Fisher's exact test was performed to analyze the association of respective gene polymorphisms with type 2 diabetes. The p-value of <0.05 was considered statistically significant.

Results

Table 1 showed the fasting blood glucose (FBG) levels were 8.77±3.0 (mmol/L) and 4.82±1.21 (mmol/L), 2 hours after breakfast (ABF), 12.13±4.05 (mmol/L), 6.93±1.21(mmol/L), and HbA1c% were 7.26±1.76 and 5.23±0.74 in the T2DM and control group, respectively. FBG, ABF, and HbA1c% levels of the diabetic group were significantly (p <0.001) higher than the control group. To investigate insulinemic status, fasting serum insulin was estimated by a standardized method, and beta-cell function (HOMAB%), insulin resistance (HOMA IR), and insulin secretory capacity (Secretory HOMA) was calculated. The Fasting serum insulin level of the case group (23.22±15.73) (μU/L) was significantly (p<0.001) higher than the control (16.03±10.79) (μU/L). On the other hand, the HOMA B% (101.34±26.12vs 309.12±47.23; p<0.001); HOMA-IR(9.19±7.62 vs 3.39±2.65; p<0.001), and secretory HOMA (103.01±102.79vs 357.04±101.42; p<0.001) were significantly lower in the diabetic group compared to control; whereas insulin was significantly higher (23.22±15.73 vs 16.03±10.79; p<0.001) in the T2DM group than in control. The TG level was significantly (p<0.001) higher (189.45±106.31 mg/dL) in the diabetic group than that of the control group (142.57±87.28 mg/dL). The total cholesterol level was 184.92±42.86 mg/dL and 180.00±40.49 mg/dL in the diabetic and control groups, respectively. Although the cholesterol level was lower in control subjects than that of T2DM, the difference was not statistically significant. The HDL level was significantly (p<0.001) lower in the T2DM group (38.20±7.34 mg/dL) compared to the control (45.69±17.14 mg/dL); and the LDL level was non-significantly higher (p>0.05) in the T2DM group (113.42±42.03 mg/dL) compared to control group (105.38±79.31 mg/dL). LAP was significantly (p<0.001) higher in the T2DM group (4813±186) compared to the control (3764±160). There were no significant differences in LDL-C and total cholesterol levels between the two groups (Table 1).

Table 2 showed the correlation of LAP with anthropometric and clinical parameters in the study population and showed that LAP was a positive significant correlation with BMI, waist-hip ratio (WHR), SBP, and DBP in T2DM subjects.

Table 1: Biochemical (Glycemic and Insulinemic) and (Lipidemic) Characteristics of the Study Subjects

Variables	Study Subjects (n=700)	
	T2DM (n=350)	Control (n=350)
FBG (mmol/L)	8.77±3.00**	4.82±1.21
ABF (mmol/L)	12.13±4.05**	6.93±1.21
Fasting Insulin (μU/L)	23.22±15.73**	16.03±10.79
HbA1c (%)	7.26±1.76**	5.23±0.74
HOMA IR	9.19±7.62**	3.39±2.65
HOMA-B%	101.34±26.12**	309.12±47.23
Secr HOMA	103.01±102.79**	357.04±101.42
Triglycerides (mg/dL)	189.45±106.31**	142.57±87.28
Cholesterol (mg/dL)	184.92±42.86	180.00±40.49
HDL- Cholesterol (mg/dL)	38.20±7.34**	45.69±17.14
LDL- Cholesterol (mg/dL)	113.42±42.03	105.38±79.31
LAP	4813±186**	3764±160

Values were presented as Mean ±SD; FBG: Fasting blood glucose; ABF: 2 hours after breakfast; HOMA B%= Beta Cell Function; HOMA-IR: Homeostasis Model of Assessment Insulin Resistance; Secretory HOMA: Secretory Homeostasis Model of Assessment; HDL= High-Density Lipoproteins and LDL= Low-Density Lipoproteins; TC= Total Cholesterol; LAP: Lipid accumulation product index; SBP: systolic blood pressure; DBP: Diastolic blood pressure; p-value was obtained from individual sample t-test, **p<0.001; level of significance was set to p<0.05

Table 2: Correlation of LAP with Anthropometric and Clinical Parameters in The Study Population

Parameters	Control (n=350)		T2DM (n=350)	
	r value	P value	r value	P value
BMI	0.152**	0.004	0.399**	0.000
WHP	0.120*	0.03	0.344**	0.000
SBP	0.057	0.288	0.202**	0.000
DBP	-0.038	0.474	0.207***	0.000

Table 3 showed the Correlation of LAP with glycemic parameters in the study population and it showed that LAP

Table 3: Correlation of LAP with Glycemic and Lipidemic Parameters in the Study Population

Parameters	Control (n=350)		T2DM (n=350)	
	r value	P value	r value	P value
FBS	0.167**	0.001	0.176**	0.002
ABF	0.107	0.036	0.112*	0.04
HBA1C	0.103	0.05	0.113*	0.03
Insulin	0.091	0.089	0.209**	0.000
HOMA-IR	0.161**	0.003	0.239**	0.000
HOMAB%	0.022	0.688	-0.016	0.763
Secret-HOMA	0.022	0.688	0.993	0.000
TAG	0.188**	0.000	0.807**	0.000
Cholesterol	0.029	0.593	0.082	0.127
HDL-C	-0.162**	0.002	-0.022	0.688
LDL-C	-0.011	0.835	0.037	0.488
VAI	0.385**	0.000	0.741**	0.000

was positively and significantly correlated with FBS, ABF, HbA1C, Insulin, HOMA-IR, and Secret-HOMA respectively. This table also showed the correlation of LAP with lipidemic parameters of the study population and showed that TAG and VAI were significantly correlated with T2DM.

Figure I showed a comparative box plot diagram between LAP value the study (case and control) population and showed that the mean LAP value was significantly higher in the T2DM patients than in the control group.

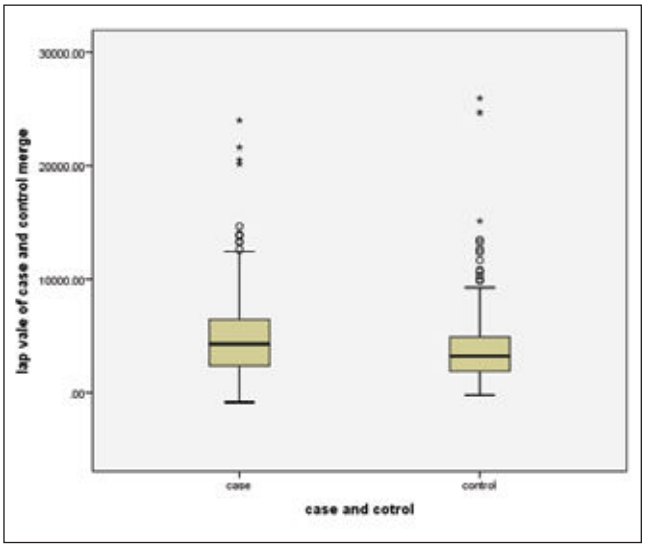


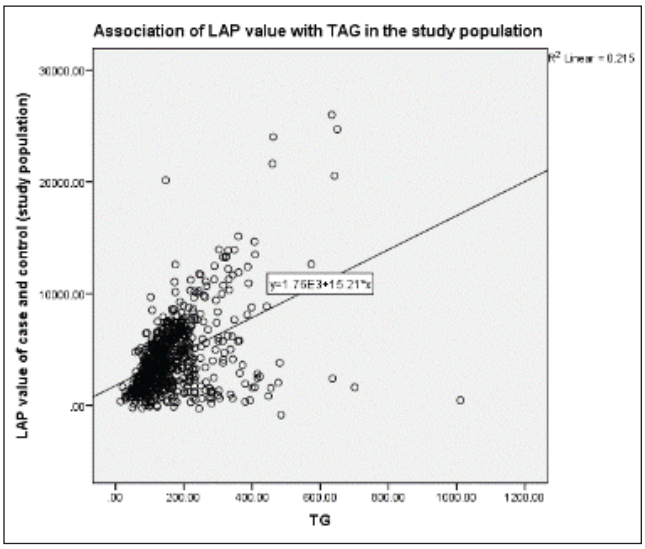
Figure I: Comparative Box Plot Diagram between the Case and Control Group

Figure 2 (a, b) showed the association of LAP with TAG and LDL in the study population where the r2 value was=0.215 and 2.826 respectively.

Discussion

The creation of low-cost risk-determining factors for early diagnosis has become a cornerstone of initiatives to reduce morbidity and death as the prevalence of Met-S has increased[16-17]. Although obesity is one of the primary causes of death, it is central obesity, as indicated by WC, that is linked to a worse cardiometabolic profile than overall obesity[7]. The visceral adipose tissue, one of the components of central obesity, has been related to metabolic abnormalities and a significant risk of cardiovascular disease[18]. According to previous studies, visceral adipose tissue produces larger quantities of adipocytokines such interleukin-6 and plasminogen activator inhibitor-1, as well as having a faster rate of lipolysis[19]. As a result, having a simple signal for calculating visceral fat is beneficial for better assessing cardiovascular disease risk in patients and avoiding expensive imaging procedures for evaluating visceral obesity[9]. Anthropometric tests such as BMI and WC, on the other hand, cannot distinguish between visceral and subcutaneous adipose tissue. In this context, the LAP index, which combines serum TGs and WC into its calculation, thereby including the triglyceridemic waist, has been substantially linked to visceral fat[20-21]. The purpose of this study was to look into the relationship between the LAP index and MetS, as well as to compare the LAP index to other regularly used anthropometric indices in terms of their relationship with the development of MetS in the Bangladeshi population.

This research has found that the LAP index, BMI, and WC were considerably higher in the MetS group than in controls, indicating that MetS has more visceral adiposity than controls. This is in line with a study conducted in Iran



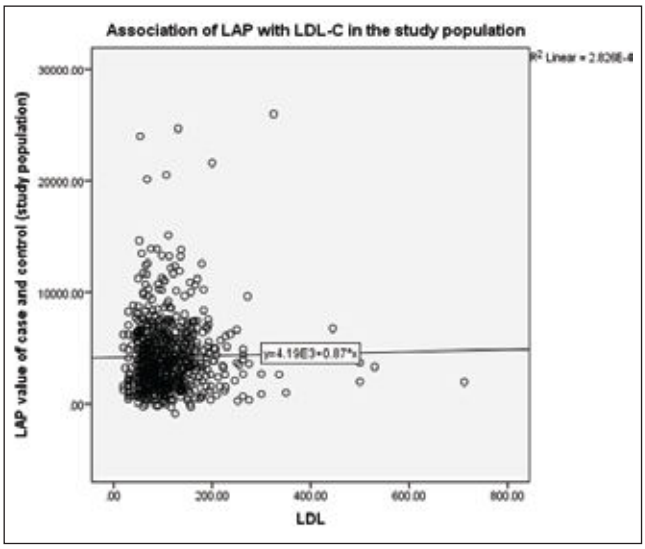


Figure II 2(a) Association of LAP with TG in the study population; 2(b) Association of LAP with LDL in the study population

among polycystic ovarian syndrome (PCOS) patients, which found that patients with MetS had a considerably higher LAP index and WC than those without MetS[22]. They found no significant difference in BMI between the two groups, on the other hand[23-24]. This disparity could be explained by our larger sample size and varied study sample selection criteria. LAP index and WC were also higher in cases compared to controls in a Brazilian study that looked at LAP index as a measure of cardiovascular risk in PCOS patients[25].

Furthermore, a study of 768 healthy Spanish people found that the LAP index had the best diagnostic ability in MetS defined by NCEP ATP-III and International Diabetes Federation standards.[26] Other research has found a strong link between the LAP index and the development of MetS, diabetes, and cardiovascular illnesses.[27–28] Insulin resistance (IR) has been observed in many patients with visceral obesity, regardless of blood glucose levels.[6] IR has also been suggested as a possible cause of MetS[29]. Furthermore, the LAP index was found to be positively connected with the HOMA-IR (homeostasis model assessment for insulin resistance) index, which is a marker for IR, in a Brazilian study[30]. After correcting for many confounding factors such as age and family history of diabetes, a Korean study indicated that the LAP index had a greater odds ratio for impaired glucose regulation than the BMI[31]. Given that many of these studies have conclusively demonstrated that the LAP index is a better marker of IR, it's tempting to hypothesize that the LAP index's greater predictability in the development of MetS is linked to its underlying cause of IR[32].

This study has shown that LAP was positively and significantly correlated with FBS, ABF, HbA1c, Insulin, HOMA-IR, and Secret-HOMA respectively in T2DM compared to control. Moreover, this present study also has shown the correlation of LAP with lipidemic parameters of the study population and showed that TAG and VAI were significantly correlated with T2DM compared to control. This was the same as the result of the Taiwanese study[33-34].

This study has shown the correlation of LAP with anthropometric and clinical parameters in the study population and showed that LAP was a positive significant correlation with BMI, Waist-Hip Ratio (WHR), SBP, and DBP in T2DM subjects compared to control. This was in agreement with Nigerian's study[35].

Among type 2 diabetics and people over the age of 40, the LAP index was found to be a more important predictor of metabolic syndrome than other obesity markers such as visceral adiposity index, WC-TG index, and product of TG and glucose30-31. Thus, our findings suggest that the LAP index, which can be easily calculated from WC and TG, is a low-cost and accurate MetS marker, a conclusion backed up by other research on both general and specialized populations[10,21,26–28,36–37].

Conclusion

In this study serum glycemic parameters (FBS, ABF, Fasting insulin, Hb A1C, HOMA IR, HOMA-B%, and secr HOMA) is significantly higher in T2DM compared to the control & lipid accumulation product (LAP) is significantly correlated with glycemic parameters in T2DM subjects. LAP is significantly correlated with anthropometric parameters (BMI, WHP), clinical parameters (SBP, DBP), and lipidemic parameters (TAG) in T2DM.

Acknowledgements
Special thanks to the Head of the DU, BIRDEM & IMC Biochemistry laboratory.
Conflict of interest
No conflict of interest.
Financial Disclosure
The author(s) received no specific funding for this work.
Authors' Contributions
Roksana Yeasmin, Md. Nizamul Hoque Bhuiyan, conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript; Roksana Yeasmin, Fahmida Islam, Farjana Aktar contributed to the analysis of the data, interpretation of the results and critically reviewing the manuscript; Roksana Yeasmin, Murshida Aziz, Tohfa-e-Ayub, Rokibul Hasan involved in the manuscript review and editing.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

How to cite this article
Yeasmin R, Bhuiyan MNH, Islam F, Aktar F, Aziz M, Tohfa-e-Ayub, Hasan R. Association of Lipid Accumulation Product with Metabolic Syndrome in Type 2 Diabetes Mellitus Patients in Bangladesh. J Army Med Coll Jashore, 2022;3(2):65-70
Publication History
Received on: 7 April 2022
Accepted on: 24 May 2022
Published on: 1 July 2022

References

1. Guyton AC, Hall JE. Textbook of medical physiology, 11th edition, Saunders Elsevier Inc. 2006, p. 972.
2. Tune JD, Goodwill AG, Sassoon DJ, Mather KJ. Cardiovascular consequences of metabolic syndrome. Transl Res. 2017;183:57–70.
3. Wakabayashi I, Daemon T. A strong association between lipid accumulation product and diabetes mellitus in Japanese women and men. J AtherosclerThromb 2014;21:282-8.
4. Xiang S, Hua F, Chen L, Tang Y, Jiang X, Liu Z. Lipid accumulation product is related to metabolic syndrome in women with polycystic ovary syndrome. Exp Clin Endocrinol Dia¬betes 2013;121:115-8.
5. Kahn HS. The lipid accumulation product performs better than the body mass index for recognizing cardiovascular risk: a population-based comparison. BMC Cardiovasc Disord 2005;5:26.
6. Ioachimescu AG, Brennan DM, Hoar BM, Hoogwerf BJ. The lipid accumulation product and all-cause mortality in patients at high cardiovascular risk: a PreCIS database study. Obesity (Silver Spring)

2010;18:1836-44.
7.Wehr E, Pilz S, Boehm BO, Marz W, Obermayer-Pietsch B. The lipid accumulation product is associated with increased mortality in normal-weight postmenopausal women. Obesity (Silver Spring) 2011;19:1873-80.
8. Yang C, Guo ZR, Hu XS, Zhou ZY, Wu M.A prospective study on the Association between lipid accumulation product or body mass index and diabetes.Zhonghua Liu Xing Bing XueZaZhi 2010;31:5-8.
9. Oh JY, Sung YA, Lee HJ. The lipid accumulation product is a useful index for identifying abnormal glucose regulation in young Korean women. Diabet Med 2013;30:436-42.
10. Ji BL, Li R, Zhang SH, Gong LL, Wang ZH, Ren W, Li QF. The lipid accumulation product is highly related to serum alanine aminotransferase level in male adults. Nutr Res 2012;32:581-7.
11. Kahn HS. The lipid accumulation product is better than BMI for identifying diabetes; a population-based comparison. Diabetes Care 2006:29:151–153.
12. Kahn HS. The lipid accumulation product performs better than the body mass index for recognizing cardiovascular risk; a population-based comparison. BMC Cardiovascular Disord 2005;5:26
13. Tehrani FR, Moore S, Azizi F. Comparison of various adiposity indexes in women with polycystic ovary syndrome and normal-ovulatory non-hirsute women: A population-based study. Eur J Endocrinol 2014;171:199–207
14. Wiltgen D, Benedetto IG, Mastella LS, et al. Lipid accumulation product index: A reliable marker of cardiovascular risk in polycystic ovary syndrome. Hum Reprod 2009;24:1726–1731
15.Yamada Y, Matsuo H, Segawa T, Watanabe S, Kato K, Kameyama T, Yokoi K, Ichihara S. Assessment of genetic factors for type 2 diabetes mellitus.Int J Mol Med 2006;18: 299-308
16. Ferreira JP, Verma S, Fitchett D, Ofstad AP, Lauer S, Zwiener I, George J, Wanner C, Zinman B, Inzucchi SE. Metabolic syndrome in patients with type 2 diabetes and atherosclerotic cardiovascular disease: a post hoc analyses of the EMPA-REG OUTCOME trial. Cardiovascular Diabetology. 2020;19(1):1-9.
17. Ray L, Ravichandran K, Nanda SK. Comparison of lipid accumulation product index with body mass index and waist circumference as a predictor of metabolic syndrome in Indian population. Metabolic syndrome and related disorders. 2018;16(5):240-5
18. Liu L, Wu X, Liu L, Geng J, Yuan Z, Shan Z, Chen L. Prevalence of diabetic retinopathy in mainland China: a meta-analysis. PLoS One. 2012;7(9):e45264.
19. Cheung N, Mitchell P, Wong TY. Diabetic retinopathy. Lancet. 2010;376(9735):124–136
20. Wakabayashi I, Daemon T. A strong association between lipid accumulation product and diabetes mellitus in Japanese women and men. J Atheroscler Thromb. 2014;21(3):282–288
21. Xiang S, Hua F, Chen L, Tang Y, Jiang X, Liu Z. Lipid accumulation product is related to metabolic syndrome in women with polycystic ovary syndrome. Exp Clin Endocrinol Diabetes. 2013;121(2):115–118
22. Liu L, Wu J, Yue S, et al. Incidence density and risk factors of diabetic retinopathy within type 2 diabetes: a five-year cohort study in China (Report 1). Int J Environ Res Public Health. 2015;12(7):7899–7909
23. Chobanian AV, Bakris GL, Black HR, et al. The seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure: the JNC 7 report. JAMA. 2003;289(19):2560–2572
24. American Diabetes Association. Standards of medical care in diabetes–2014. Diabetes Care. 2014;37(Suppl 1): S14–S80
25. Wong TY, Klein R, Islam FM, et al. Diabetic retinopathy in a multi-ethnic cohort in the United States. Am J Ophthalmol. 2006;141(3):446–455
26. Beddhu S, Pappas LM, Ramkumar N, Samore M. Effects of body size and body composition on survival in hemodialysis patients. J Am Soc Nephrol. 2003;14(9):2366–2372
27. Li W, Katzmarzyk PT, Horswell R, et al. Body mass index and stroke risk among patients with type 2 diabetes mellitus. Stroke. 2015;46(1):164–169
28. Oreopoulos A, Padwal R, Kalantar-Zadeh K, Fonarow GC, Norris CM, McAlister FA. Body mass index and mortality in heart failure: a meta-analysis. Am Heart J. 2008;156(1):13–22
29. Romero-Corral A, Montori VM, Somers VK, et al. Association of bodyweight with total mortality and with cardiovascular events in coronary artery disease: a systematic review of cohort studies. Lancet. 2006;368(9536):666–678
30. Carnethon MR, Rasmussen-Torvik LJ, Palaniappan L. The obesity paradox in diabetes. Curr Cardiol Rep. 2014;16(2):446
31. Tan GS, Gan A, Sabanayagam C, et al. Ethnic differences in the prevalence and risk factors of diabetic retinopathy: the Singapore epidemiology of eye diseases study. Ophthalmology. 2018;125(4):529–536
32. Calle EE, Rodriguez C, Walker-Thurmond K, Thun MJ. Overweight, obesity, and mortality from cancer in a prospectively studied cohort of U.S. adults. N Engl J Med. 2003;348(17):1625–1638
33. Bener A, Al-Laftah F, Al-Hamaq AO, Daghash M, Abdullatef WK. A study of diabetes complications in an endogamous population: an emerging public health burden. Diabetes Metab Syndr. 2014;8(2):108–114
34. Manaviat MR, Rashidi M, Afkhami-Ardekani M. Four years incidence of diabetic retinopathy and effective factors on its progression in type II diabetes. Eur J Ophthalmol. 2008;18(4):572–577
35. Chan JCY, Chee ML, Tan NYQ, Cheng CY, Wong TY, Sabanayagam C. Differential effect of body mass index on the incidence of diabetes and diabetic retinopathy in two Asian populations. Nutr Diabetes. 2018;8(1):16
36. Bastawrous A, Mathenge W, Wing K, et al. The incidence of diabetes mellitus and diabetic retinopathy in a population-based cohort study of people age 50 years and over in Nakuru, Kenya. BMC Endocr Disord. 2017;17(1):19
37. Xia C, Li R, Zhang S, et al. Lipid accumulation product is a powerful index for recognizing insulin resistance in non-diabetic individuals. Eur J Clin Nutr. 2012;66(9):1035–1038

https://amcj-bd.org/
Journal of Army Medical College Jashore
July 2022, Vol. 3, No. 2, Page: 76-80
ISSN : 2789-1135 (Print)

Original Article ***Open Access***

Factors Influencing the Utilization of Maternal Health Care Services in a Rural Community of Bangladesh

SM Masum Iqbal[1], Refat Zahan[2], Farhana Ferdaus[3], Md. Bellal Hossain[4], Heera Laal Roy[5], Masood Mohammad Abdul Aziz[6], Shireen Akter[7]

[1]Assistant Professor & Head, Department of Community Medicine, Khulna Medical College, Khulna, Bangladesh; [2]Assistant Professor and Head, Community Medicine, Ad-din Akij Medical College, Khulna, Bangladesh; [3]Assistant Professor and Head, Community Medicine Khulna City Medical College Khulna Bangladesh; [4]Assistant Professor, Department of Paediatrics, Ad-din Akij Medical College, Khulna, Bangladesh; [5]Associate Professor, Biochemistry, Khulna City Medical College, Khulna, Bangladesh; [6]Associate Professor and Head, Biochemistry, Khulna City Medical College, Khulna, Bangladesh; [7]Assistant Professor, Dermatology, Khulna Medical College, Khulna, Bangladesh

Abstract

Background: Many women in developing countries experience life-threatening and other serious health problems related to pregnancy and childbirths **Objective:** This study was conducted with a view to determining factors influencing the utilization of maternal health care services at Kharnia village of Dumuria upazilla, Khulna, Bangladesh. **Methodology:** This was a cross-sectional type of descriptive study carried out on women who had at least one live birth within last 5 years. Their selection was made by purposive sampling and data was collected by face-to-face interviews with the help of semi-structured questionnaire. **Results:** Among 695 respondents, 574(82.59%) received anti-natal care (ANC), of which 267(38.42%) received partial anti-natal care, 307(44.18%) full anti-natal care and the rest 121(17.41%) did not receive any anti-natal care. The highest receiving anti-natal care (full) was the age group of 25 to 29 years (50.96%), rich class of society (75.0%) and was above the secondary level of education (74.57%). Regarding to postnatal care, 392(56.4%) respondents received post-natal care. **Conclusion:** The result reveals that educational status, socio-economic status and exposure to mass media are significant predictors in explaining anti-natal, intra-natal and postnatal care. *[Journal of Army Medical College Jashore, July 2022;3(2):76-80]*

Keywords: Maternal health; influencing factors; rural community.

Introduction

The availability of maternal health care continues to be a major problem in developing countries[1]. A very ominous result has been revealed by a study conducted by WHO, where it is estimated that more than half a million women die during the process of reproduction in 2014. Worldwide about 2, 95,000 women died during and following pregnancy in 2011[2]. The vast majority of these deaths (94%) occurred in low-resource setting countries. Sub-Saharan Africa and southern Asia accounted for approximately 8the 6% of the estimated global maternal deaths in 2017. Where Southern Asia accounted for nearly one-fifth (58,000) of total deaths. In addition, many women suffer from short and long-term disabilities following delivery which is estimated about 30.0% to 50.0% in the year 2001 due to inadequate maternal health care[3].

A study done by 'Family Care International' in the year 2002, revealed the low percentage of utilizing maternal health services at developing country like Bangladesh. It shows that 97% pregnant woman receive Antenatal care(ANC) and 99.0% of woman receive obstetric services at delivery in developed countries whereas in developing country the rate in 65% and 53% respectively which is much more awful at rural areas. On the other hand, the utilization of maternal health services helps to reduce the mortality & morbidity of pregnant mother. But utilization of these services in developing countries like Bangladesh is constrained due to different cultural, socio-economic and demographic factors like age of mother, education of mother, family condition, monthly income, presence of health facility, standard of living,

Correspondence: Dr. SM Masum Iqbal, Assistant Professor & Head, Department of Community Medicine, Khulna Medical College, Khulna, Bangladesh; Email: ismmasum@gmail.com; Cell No.: +8801712091733; ORCID ID: https://orcid.org/0000-0002-8617-9763

religion, exposure to mass media, presence of trained birth attendance.

Although there has been much improvement in maternal health care services since this issue was adopted by the United Nations of MDG in 2000, this matter remains an important & pressing issue that needs to be addressed in developing countries such as Bangladesh. Having actively worked on finding ways to decrease maternal mortality rates for 15 years, the UN included this goal in its SDG's in 2015. Indices of mother's health conditions are very important for the achievement of these goals because they indicate not only the effectiveness of each countries health care system but also the state of countries overall social & financial environment[4]. This study was conducted with a view to determining factors influencing the utilization of maternal health care services at Kharnia village of Dumuria upazilla, Khulna, Bangladesh.

Methodology

This cross-sectional study was conducted to assess the factors influencing utilization of maternal health care services in a rural community of Dumuria Upazila, Khulna & its relationship with some of the socio-demographic characteristics. Purposive sampling technique was used to collect data from 695 respondents by face to face interview with semi-structured questionnaire. No sensitive or privacy invasive questions were asked. They were interviewed after full filling the informed consent form. All the data were checked and edited after collection.

Statistical Analysis: Results were analyzed by using SPSS for Windows' XP program version 17.0. An analysis plan was developed keeping in view with the objectives of the study. Appropriate statistical tests were done according to the need of the study objectives where and whenever required.

Results

Figure 1 showed that among the 695(100%) respondents, 14(2%) respondents were below 18 years of age, 272(39.1%) were in the age group of 18 to 24 years, 208(29.9%) respondents were in the age group of 25 to 29 years and rest of the 201(28.9%) respondents were in the group above 30 years of age.

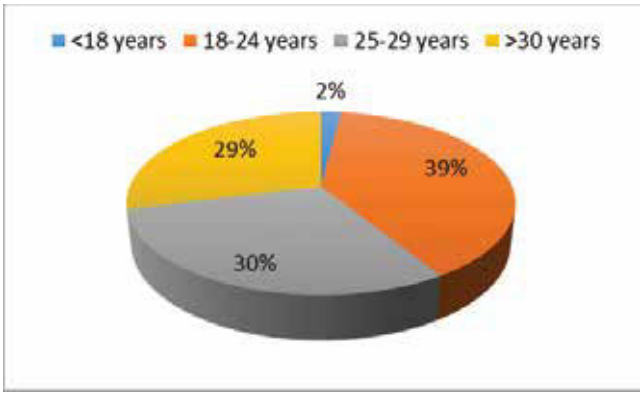


Figure I: Distribution of Respondents According to Age Group of Respondents

Figure II showed that about 289(41.6%) respondents had only 1 child, 356(51.2%) were having 2-3 children and the rest 50(7.2%) had more than 3 children.

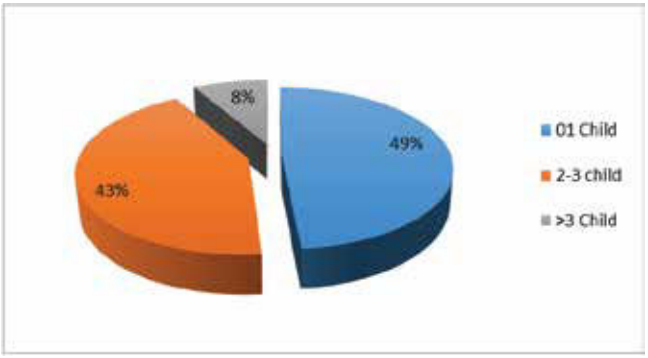


Figure II: Distribution of the Respondents according to Their Parity

Figure III showed that among 695(100%) respondents, 125(17.4%) didn't receive ANC, 267(38.4%) received partial ANC below 3 and rest 307(44.2%) received full ANC.

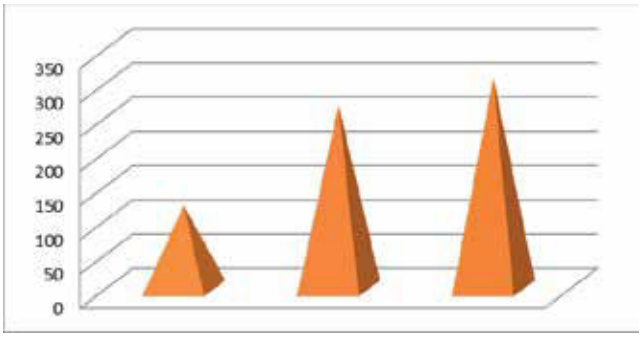


Figure III: Distribution of the respondents according to the number of received ANC

Table 1 showed that among 695(100%) respondents, 305(43.9%) cases had received their ANC from community clinic, 35(5%) from UHFWC, 145(20.9%) cases from UHC, 41(5.9%) from NGO, 48(6.9%) cases from other sources and rest of 121(17.4%) cases did not receive any ANC.

Table 1: Distribution of the respondents according to the place received ANC

Variables	Frequency	Percent
Community clinic	305	43.9
UHFWC	35	5.0
UHC	145	20.9
NGO	41	5.9
Others	48	6.9
ANC didn't receive	121	17.4
Total	**695**	**100.0**

Table 2 showed that Among 695(100%) respondents, the place of last delivery of 301(43.3%) cases were at home and 394(56.7%) cases were Institutional.

Table 2: Distribution of the Respondents According To the Place of Last Delivery

Place of Last Delivery	Frequency	Percent
Home	301	43.3
Institutional	394	56.7
Total	**695**	**100.0**

Table 3 shows that Among 695(100%) respondents, 60(8.6%) were attended home delivery by skilled birth attendance, 232(33.4%) were attended by traditional dai and 9(1.3%) were attended by others. Upon 394(56.7%) cases home delivery attendants were not applicable because they took Institutional delivery.

Table 2: Distribution of the Respondents According To the Place of Last Delivery

Home Delivery Attendant	Frequency	Percent
SBA	60	8.6
Traditional dai	232	33.4
Others	9	1.3
Home delivery attendant not applicable (because they took Institutional delivery)	394	56.7
Total	**695**	**100.0**

Discussion

Among the 695(100%) respondents,14(2%) were below 18 years of age,272(39.1%) were in the age group of 18-24 years,208(29.9%) were in the age group of 25-29 years and rest of the 201(28.9%) were in the group above 30 years of age. 289(41.6%) respondents had only 1 child,356(51.2%) were having 2-3 children and the rest 50(7.2%) had more than 3 children. Among 695(100%) respondents, 125(17.4%) didn't receive ANC, 267(38.4%) received partial ANC below 3 and rest 307(44.2%) received full ANC. Among 695(100%) respondents, 305(43.9%) had received their ANC from community clinic, 35(5%) from UHFWC, 145(20.9%) from UHC, 41(5.9%) from NGO, 48(6.9%) from other sources and rest of 121(17.4%) did not receive any ANC. 392(56.4%) respondents received PNC, rest of the 303(43.6%) did not receive PNC among 695(100%) respondents.

Among 695(100%) respondents, 231(33.2%) respondents received PNC at least 1 time, 161(23.2%) received PNC more than 2times and rest of 303(43.6%) did not receive any PNC. Among 695(100%) respondents, the place of last delivery of 301(43.3%) were at home and 394(56.7%) were Institutional. Among 695(100%) respondents, 60(8.6%) were attended home delivery by skilled birth attendance, 232(33.4%) were attended by traditional dai and 9(1.3%) were attended by others. Upon 394(56.7%) home delivery attendants were not applicable (because they took Institutional delivery).

Among 695(100%) respondents, the satisfaction of 70(10.1%) were ordinary, 381(54.8%) were good, 117(16.8%) were better,6(.9%) were bad, satisfaction was not applicable(as they did not receive ANC) for 121(17.4%) respondents. Among 695(100%) respondents, the satisfaction level of 33(4.7%) were ordinary, 252(36.3%) were good, 98(14.1%) were better,11(1.6%) were bad. Among 695(100%) respondents the satisfaction regarding PNC of 30(4.3%) were ordinary, 271(39%) were good,83(11.9%) were better,7(1%) were bad and only 1(0.1%) was worse Moreover, rest of 303(43.6%) had not given any satisfaction level as they did not receive PNC. This table reveals that among 695(100%),41(5.9%) did not receive institutional delivery for cost,25(3.6%) for no open facility,15(2.2%) for no transport and far distance,11(1.6%) for not trusting the facility and poor quality service, only 1(0.1%) for absence of female provider at facility,39(5.6%) as their husbands did not allow them,152(21.9%) because they did not feel it necessary,1(0.1%) for not customization and 16(2.3%) for other reasons. It was not necessary for rest of the 394(56.7%) as they took institutional delivery.

It was found that among 695 (100%) respondents, 65 (9.35%) had no education of which 34 (52.30%) did not take ANC (0), 22 (33.84%) took partial ANC (<3) and 9 (13.84%) took full ANC (3). 202(29.06%) respondents had primary education among which 33 (16.33%) did not take ANC, 110 (54.45%) took partial ANC and 59 (29.20%) took full ANC. 310 (44.60%) respondents were under secondary education of which 45 (14.52%) did not take ANC, 114 (36.77%) took partial ANC and 151 (48.71%) took full ANC. 118 (16.97%) were under higher secondary education of which 9(7.62%) did not take ANC , 21 (17.79%) took partial ANC and 88(74.57%) took full ANC. It was found that among the total 695(100%) respondents, 470(67.62%) were poor of which 105(22.34%) did not take ANC, 208(44.25%) took partial ANC,157(33.40%) took full ANC. Again 205(29.49%) among the total respondents were middle class of which 15(7.31%) did not take ANC, 55(26.92%) took partial ANC and 135(0.65%) took full ANC. And the rest 20(2.88%) were rich among which 1(5%) did not took ANC, 4(20%) took partial ANC and 15(75%) took full ANC.

Among 695(100%) respondents, it was found that 470(67.63%) were poor, of which 243(51.70%) received postnatal care and 227(48.30%) did not take any postnatal care. 205(29.50%) respondents were middle class level, of which 133(64.88%) received postnatal care and 72(35.12%) did not take any postnatal care. 20(2.88%) respondents were rich, of which 16(80%) received postnatal care and 4(20%) did not take any postnatal care.

Finally, we found that 392(56.40%) received postnatal care and 303(43.59%) did not take any postnatal care among 695(100%) respondents. Among 695(100%) respondents, it was found that 65(9.35%) had no education of which 12(18.46%) received postnatal care and 53(81.54%) did not receive any postnatal care. 202(29.06%) respondents were having primary education of which 100(49.50%) received postnatal care and 102(50.49%) did not received any postnatal care. 310(44.60%) respondents were having secondary level of education, of which 193(62.26%) received postnatal care and 117(37.74%) did not receive any postnatal care. 118(16.98%) respondents were above secondary level, of which 87(73.73%)received postnatal care and 31(26.27%) did not receive any postnatal care. Finally, we found that 392(56.40%) took postnatal care and 303(43.59%) did not take postnatal care among 695(100%) respondents.

It was found that among the 695(100%) respondents 14(2.01%) were <18 years of which 3(21.42%) did not take ANC and 4(28.57%) took full ANC. 272(39.13%) respondents were between 18-24 years old among which 32(11.76%) did not take ANC,115(42.27%)took partial ANC and 125(45.95%) took full ANC. 208(29.92%) of the total respondents were between 25-29 years old of which 27 (12.38%) did not take ANC,75(36.08%) took partial ANC and 106(50.96%) took full ANC. And 201(28.92%) of the total respondents 59(29.35%) did not take ANC, 70(34.82%) took partial ANC,72(35.82%) took full ANC. Among 695(100%) respondents, it was found that 14(2.01%) were below 18 years old, of which 9(64.29%) took postnatal care and 5(35.71%) did not take postnatal care. 272(39.14%) respondents were between 18-24 years old, of which 164(60.29%) received postnatal care and 108(39.71%) did not take any postnatal care. 208(29.93%) respondents were between 25-29 years old, of which 135(64.90%) received and 73(35.10%) did not received any postnatal care. 201(28.92%) respondents were above 30 years old, of which 84(41.79%) received postnatal care and 117(58.21%) did not receive postnatal care. Finally, 392(56.40%) took postnatal care and 303(43.59%) did not receive any postnatal care of total 695(100%) respondents.

It was found that among 301(43.32%) respondents took home delivery. Of which 51(16.94%) had no education, 119(39.53%) had primary education, 119(39.20%) had secondary education and the rest 13(4.32%) had above higher secondary level of education. And among the 394(56.69%) respondents took institutional delivery. Of which 14(3.55%) had no education, 83(21.06%) had primary education, 192(48.73%) had secondary education and the rest 105(26.65%) had above secondary level of education. Among 301(43.31%) respondents who took home delivery, 242(80.39%) were poor, 58(19.27%) were middle-class level and the rest one (0.33%) was rich class of the society. And among the 394(56.69%) respondents who took institutional delivery, 228(57.8%) were poor, 147(37.31%) were middle class and the rest 19(4.82%) were rich class of the society.

Conclusion

In conclusion, it has been noticed that a large number of mothers have not taken any ANC, INC and PNC which is affecting their health, health of their children as well as the prosperity of the society awfully. It has now become a great problem for our national healthcare delivery system also. Finally, the study reveals that maternal health care services should be more developed in rural communities. The Govt. should take proper steps regarding this. It is expected that after this study, necessary steps will be taken by the concerned authority to improve this situation.

Acknowledgements
Non
Conflict of interest
No conflict of interest.
Financial Disclosure
The author(s) received no specific funding for this work.
Authors' Contributions
Iqbal SMM conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript; Zahan R, Ferdaus F, Hossain MB, Roy HL contributed to the analysis of the data, interpretation of the results and critically reviewing the manuscript; Aziz MMA, Shireen Akter S involved in the manuscript review and editing. All authors read and approved the final manuscript.
Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

How to cite this article
Iqbal SMM, Zahan R, Ferdaus F, Hossain MB, Roy HL, Aziz MMA, Shireen Akter S. Factors Influencing the Utilization of Maternal Health Care Services in a Rural Community of Bangladesh. J Army Med Coll Jashore, 2022;3(2):76-80
Publication History
Received on: 7 April 2022
Accepted on: 24 May 2022
Published on: 1 July 2022

References

1. Chakraborty N, Islam MA, Chowdhury RI, Bari W, Akhter HH. Determinants of the use of maternal health services in rural Bangladesh. Health Promotion International. 2003;18(4):327-37.
2. Rahman M, Islam MM, Islam MR, Sadhya G, Latif MA. Health service seeking behavior and factors associated with underutilization of public health care facilities in a rural area of Bangladesh. Int J Pharmacy Teaching Pract. 2011;2(3):108-16.
3. Kuo T, Torres-Gil FM. Factors affecting utilization of health services and

home-and community-based care programs by older Taiwanese in the United States. Res Aging. 2001;23(1):14-36
4. Gulliford M, Figueroa-Munoz J, Morgan M, Hughes D, Gibson B, Beech R, et al. What does' access to health care' mean? J Health Services Res Policy. 2002;7(3):186-8

https://amcj-bd.org/
Journal of Army Medical College Jashore
July 2022, Vol. 3, No. 2, Page: 71-75
ISSN : 2789-1135 (Print)

Original Article ***Open Access***

Anthropometric Study and Correlation of Intercanthal Distance with Left eye Fissure Length in the Adult Healthy Bangladeshi Buddhist Rakhain Males

Mohammed Iqbal[1], Nazmun Nahar[2], Kazi Md. Shahidur Rahman[3], Utpal Kumar Biswas[4], Nishat Sultana[5], Shahana Hossain[6], MST. Rommana Akter[7], Md Abdullah Yusuf[8]

[1]Professor, Department of Anatomy, Monno Medical College, Manikganj, Bangladesh; [2]Associate Professor, Department of Pathology, Medical College for Women & Hospital, Dhaka, Bangladesh; [3]Associate Professor, Department of Pathology, Monno Medical College, Manikganj, Bangladesh. [4]Assistant Professor, Department of Forensic Medicine & Toxicology, Monowara Sikder Medical College, Shariatpur, Bangladesh. [5]Assistant Professor, Department of Anatomy, Monowara Sikder Medical College, Shariatpur, Bangladesh. [6]Professor, Department of Anatomy, Tairunnessa Memorial Medical College, Gazipur, Bangladesh. [7]Assistant Professor, Department of Dermatology & Venereology, Monowara Sikder Medical College & Hospital, Shariatpur, Bangladesh. [8]Associate Professor, Department of microbiology, National Institute of Neurosciences & Hospital, Dhaka

Abstract

Background: Anthropometry is the scientific study of the measurements and proportions of the human body. Anthropometric studies are an integral part of craniofacial surgery and syndromology. Each orbital cavity is essentially intended as a socket for the eyeball. Assessment of orbital dimensions is important for knowing the anatomy of orbital structures and surgical management of orbital pathologies. **Objective:** The purpose of the present study was to determine the anthropometric study and correlation of different orbital proportion in the adult healthy Bangladeshi Buddhist Rakhain males. **Methodology:** This cross-sectional observational study was carried out in the Department of Anatomy, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh from January 2011 to December 2011 for a period of one (01) year. Adult healthy Bangladeshi Buddhist Rakhain males with the age group of 18 to 30 years were included as study population. Standard of normative facial anthropometric values related to orbital proportion were measured (inner intercanthal distance and left eye fissure length). **Results:** This study showed the inner intercanthal was 33.19 ± 2.88 mm and left eye fissure length was 30.04±1.81 mm. **Conclusion:** In conclusion intercanthal distance is higher than left eye fissure lengths. *[Journal of Army Medical College Jashore, July 2022;3(2):71-75]*

Keywords: Anthropometric study; correlation; intercanthal distance; left eye fissure length; adult healthy Bangladeshi; Buddhist Rakhain; males

Introduction

Anthropometry which equally aids the understanding of anatomical structures, constitutes the technique of expressing quantitatively the form of the human body and skeleton[1]. It is a basic tool of biological anthropology and has been of immense help in the development of forensic sciences in general and forensic medicine in particular. Anthropometric studies are an integral part of craniofacial surgery and syndromology[2]. For these reasons, standards based on ethnic or racial data are desirable because these standards reflect the potentially different patterns of craniofacial growth resulting from racial, ethnic, and sexual differences[3].

Accordingly, reference anthropometric data of the orbital region are necessary for multiple forensic, medical diagnostic as well as surgical aesthetic procedures. For instance, antemortem and postmortem comparison of personal database, facial reconstruction, diagnosis of fetal alcohol syndrome, evaluation of

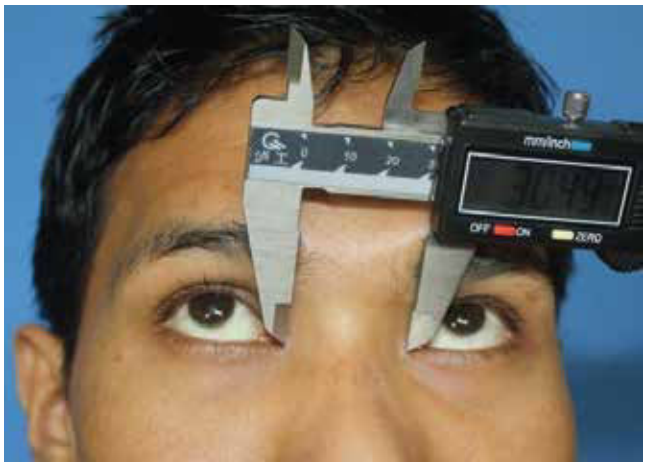
Correspondence: Dr. Mohammed Iqbal, Professor, Department of Anatomy, Monno Medical College, Monno City, Gilando, Manikganj, Bangladesh;
Email: iqbal085nahar082@gmail.com;
Cell No.: +8801713162227; ORCID ID: 0000-0002-2346-361X

traumas, gene alterations and teratogenic induced conditions with periocular dysmorphology[4-7].

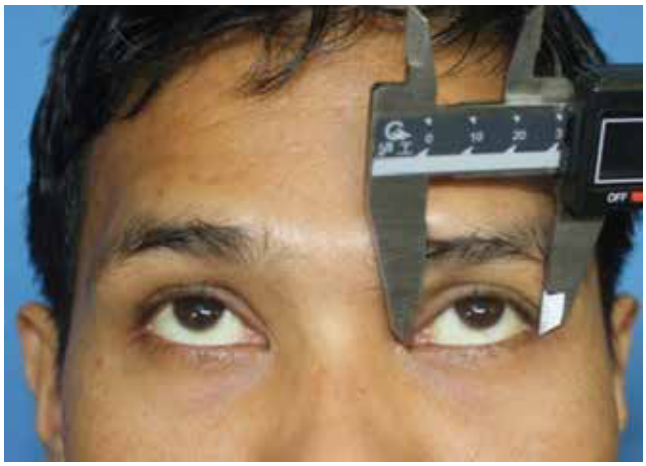
The anthropometric measures of the face have an important place in facial reconstructive surgery and also in the definition of ideal face. The bilateral orbital region that is located in the upper face acts as a key determinant in the perception of facial attractiveness, youthfulness, and healthy[8-12]. The purpose of this study was to determine anthropometric study and correlation of different orbital proportion in the adult healthy Bangladeshi Buddhist Rakhain males.

Methodology

This cross-sectional study was carried out in the Department of Anatomy at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh from January 2011 to December 2011 for a period of one (01) year. Participants of the study were adult healthy Bangladeshi Buddhist Rakhain ethnic males who were in the age group of 18 to 30 years. Data analysis was carried out in the Department of Anatomy at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka. The following exclusion criteria were used to screen out the ineligible participants through history taking and physical examinations like mixed ethnic origin, congenital craniofacial anomaly, major craniofacial trauma, orthodontic treatment or craniofacial reconstructive surgery, malocclusion, common genetic, endocrine or neurological disorders & beard or mustache, cranio-facial diseases and abnormalities, growth related disorders and history of facial trauma/reconstruction surgery were excluded from the study. During landmark marking, the participant was asked to sit relaxed on a chair and the head was kept in the normal head position. This position was suitable for correct identification of facial features9. All the measurements were taken twice to avoid measurement error. With the help of a sliding calliper, the measurements were taken in millimeters. The data was statistically analyzed by Statistical Package for Social Science (SPSS version 17.0) to determine the range, the mean and standard deviation and any significant correlation between inner intercanthal distance and left eye fissure length.



A



B

Figure I: A) Procedure of measuring the intercanthal distance ('endocanthion' to 'endocanthion') in a participant using a sliding caliper. B) Procedure of measuring the left eye fissure length ('exocanthion' to 'endocanthion') in a participant using a sliding caliper.

Results

A total number of 100 males were recruited for this study. This study showed the inner intercanthal was 33.19 ± 2.88 mm and left eye fissure length was 30.04±1.81 mm.

Table 1: Values of the Variables Related to the Different Orbital Proportion in the Adult Healthy Bangladeshi Buddhist Rakhain males*

Variable related to orbital proportion	Value (mm)		P value
	Range	Mean±SD	
Intercanthal distance (en – en)	27.00 to 40.71	33.19±2.88	0.000
Left eye fissure length (ex – en)	26.02 to 33.95	30.04±1.81	

* N (no. of participants)= 100 males; en: endocanthion; ex: eocanthion; † From paired t test; $p \leq 0.05$ was considered as significant; S: Significant.

Discussion

The normal morphological and functional values of orbits are variable according to races, sex, and ages. The average values of the external structure of the eye are practically important to determine in the diagnosis of various diseases and identification of anthropological standards in the aesthetic facial surgery[13]. Facial cosmetic and reconstructive surgery are challenging as maintaining the anatomical facial proportions is very important to have a pleasant postoperative appearance. The anthropometric measures of the face have an important place in facial reconstructive surgery and also in the definition of ideal face. The bilateral orbital region that is located in the upper face acts as a key determinant in the perception of facial attractiveness[8–10]. Orbits have been used in race and gender prediction of individuals for more than a century[14]. Understanding human anatomy, proportions, mechanical functions and racial variations concerning the ocular anatomy are of vital importance when treating or clinically evaluating patients[14].

This study shows the inner intercanthal was 33.19 ± 2.88 mm. These findings are well agreement with the other study[8]. Another study Abdel-Rahman study found the inter-inner canthal distance (IICD) was 33.8±2.2 mm. The inner canthal distance has similarities with other studies done in Turkish people[15-18]. Thus, inner canthal distance is considered in the narrow categories in the Turkish people. American, Bulgarian, Macedonian, Pomak, Azerbaijani, German, and Greek women are also into the same categories[19-21]. The present findings are nearly similar to Malays where the IICD was 33.9±1.9mm in males[23].

This study shows that the left eye fissure length is 30.04±1.81 mm which is similar other studies[8,24]. Furthermore, the comparison of these results is similar with the studies done by Farkas et al[21] and Wei[20]. Similarly, Jayaratne et al[25] found left eye fissure length. According to this study the Turkish has eye fissure length larger than Chinese[26], Indian, Italian, Russian, Azerbaijani, Egyptian, Angolan[25]. On the other hand, our findings regarding eye fissure length were smaller than Iranian[25]. According to our findings the Turkish has larger eye fissure length when compared with Chinese, Korean, and African-American[22].

It is evident from the table 2 that the Rakhain males showed the mean values orbital proportion of all variables similar to the Turkish, Azerbaijan and Bulgarian males. The mean Rakhain intercanthal distance and mean left eye fissure length was also similar (S) to those of the majority of the populations mentioned. The other variables showed varied findings, though different trends were somewhat visible.

Porter, along with Farkas, evaluated the differences between continental Asian, Asian American, and North American Caucasian faces in 2002. The most significant differences between these two groups were that the Asian group had significantly greater Intercanthal distance and shorter eye fissures length Farkas et al[21] have presented and discussed the findings of 14 anthropometric measurements in peoples of Europe (all Caucasoid), Middle East, Asia and of African origin (some of which have been

Table 2: Comparisons of the Rakhain male mean values of variables related to orbital proportion with the means of other male population groups

Male population group, (age in yrs, sample size)			Reference	Orbital Proportion	
				Mean Inter-Canthal Distance*	Mean Left Eye Fissure Length
				en – en	ex – en
1	Thai	(18-30 yrs, 30)	Farkas et al 2005, p 637	L	H
2	Japanese	(do)	(do), p 638	L	S
3	Indian	(do)	(do), p 634	L	S
4	Turkish	(18-25 yrs, 228)	Bozrik et al 2003, p 216	S	S
5	Azerbaijan	(18-30 yrs, 30)	Farkas et al 2005, p 618	S	S
6	Bulgarian	(do)	(do), p 619	S	S
7	Czech	(do)	(do), p 620	S	H

S	**(Similar):**	Rakhain males' mean value similar to that of the mentioned population (varying by 10% or less).
L	**(Lower):**	Rakhain males' mean value lower than that of the mentioned population.
H	**(Higher):**	Rakhain males' mean value higher than that of the mentioned population.

discussed above) and tested their differences statistically with North American White people.

Conclusion

This study shows intercanthal distance was higher than left eye fissure lengths. The normative anthropometric data presented in this study would be useful for clinical interpretation of orbital proportion in the adult healthy Bangladeshi Buddhist Rakhain males. However, this study serves as a guide post to the expansion of normographic data as regards the bony orbit in our immediate environment. It will also present a more in depth guide to the surgical correction of orbital pathologies and fractures.

Acknowledgements
None .
Conflict Of Interest
There was no conflict of interest to any of the authors.
Financial Disclosure
This study has been performed without any funding from outside else.
Authors' Contributions
Iqbal M, Nahar N, Rahman KMS conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript. Biswas UK, Sultana N, Hossain S contributed to the analysis of the data, interpretation of the results and critically reviewing the manuscript. Akter MR, Yusuf MA involved in the manuscript review and editing. All authors read and approved the final manuscript. All authors involved from protocol preparation up to manuscript writing & revision.
Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

How to cite this article
Iqbal M, Nahar N, Rahman KMS, Biswas UK, Sultana N, Hossain S, Akter MR, Yusuf MA. Anthropometric Study and Correlation of Intercanthal Distance with Left eye Fissure Length in the Adult Healthy Bangladeshi Buddhist Rakhain Males. J Army Med Coll Jashore, 2022;3(2):71-75
Article Info
Received on: 7 April 2022
Accepted on: 24 May 2022
Published on: 1 July 2022

References

1. Ukoha U, Egwu OA, Okafor IJ, Ogugua PC, Onwudinjo O, Udemezue O. Orbital dimensions of adult male nigerians: a direct measurement study using dry skulls. Int J Biol Med Res. 2011;2(3):688-690
2. Novit M. Facial, upper facial, and orbital index in Batak, Klaten, and Flores students of Jember University Dent J. (Maj.Ked.Gigi). 2006;39 (3):116-119.
3. Everekliogluc C, Doganay S, Er H, Gunduz A, Tercan M, Balat A, Cumurcu T. Craniofacial anthropometry in a Turkish population. The Clef PalateCraniofacial Journal. 2002;39(2):208-218.
4. Abdel-Rahman RH, Amr SGA, Khalil AG. Sexual Dimorphism of Anthropometric Measurements of Periorbital Soft Tissues in a Sample of Egyptian Adults. Mansoura J Forens Med Clin Toxicol 2019;27(1):13-25.
5. Ozdemir T, Can FE, Isiklar S. Periorbital soft tissue anthropometric analysis of young adults. J. Craniofac. Surg. 2017;28(4): e311.
6. Sforza C, Grandi G, Catti F. Age- and sex-related changes in the soft tissues of the orbital region. Forensic Sci. Int. 2009;185:115.e1–115.e8.
7. Vasanthakumar P, Kumar P, Rao M. Anthropometric analysis of palpebral fissure dimensions & its position in South Indian ethnic adults. Oman Med J 2013;28(1):26-30.
8. Direk FK, Deniz M, Uslu AI, Doğru S. Anthropometric Analysis of Orbital Region and Age-Related Changes in Adult Women. Journal of Craniofacial Surgery, 2016; 27(6):1579–1582.
9. Marquardt SR, Stephen R. Marquardt on the Golden Decagon and human facial beauty. Interview by Dr. Gottlieb. J Clin Orthodont 2002;36:339–347
10. Volpe CR, Ramirez OM. The beautiful eye. Facial Plast Surg Clin North Am 2005;13:493–504
11. Vasanthakumar P, Kumar P, Rao M. Anthropometric analysis of palpebral fissure dimension and its position South Indian ethnic adults. Oman Med J 2013;28:26–32
12. Tipples J, Atkinson AP, Young AW. The eyebrow frown: a salient social signal. Emotion 2002;2:288–296.
13. Song CH, Ahn KY, Han DC. The age-related anthropometric analysis of eyelids and orbits in Koreans. J Korean Soc Plast Reconstr Surg 1999;26:1131–1137.
14. Kaplanoglu V, Kaplanoglu H, Toprak U, Parlak IS, Tatar IG, Deveer M. Anthropometric measurements of the orbita and gender prediction with three-dimensional computed tomography images. Folia Morphol 2014; 73; 2: 149–152.
15. Bozkir MG, Karakas¸ P, Og˘uz O¨ . Measurements of soft tissue orbits in Turkish young adults. Surg Radiol Anat 2003;25:54–57.
16. Erden N. Anthropometric measurements and indexes of head and face in Turkish adult men and women [in Turkish]. Uzmanlik Tezi Edirne 2005:114-119.
17. O¨ ztu¨rk F, Yavas G, Inan UU. Normal periocular anthropometric measurements in the Turkish population. Ophthalmic Epidemiol 2006;13:145–149
18. Inan A. Anthropological Characters and History of Turkish People [in Turkish]. Ankara, Turkey: Turkish Historical Society Printing House; 2017:4–155.
19. Young WJ. Head and Face Anthropometry of Adults U. S. Civilians. Washington: Office of Aviation Medicine; 1993:1–12
20. Popov M. Anthropology of the Bulgarian people. fizicc¸eski appearance Napoleons [in Turkish]. Sofya: BAN 2009;7:87-92.
21. Farkas LG, Katic MJ, Forrest CR. International anthropometric study of facial morphology in various ethnic groups/races. J Craniofac Surg 2005;6:615–646.
22. Wei WT. Eyelid anthropometry of different races in Singapore. Thesis, Sim University School of Science and Technology 2009.
23. Ngeow WC. and Aljunid ST. Craniofacial anthropometric norms of Malays. Singapore Med. J. 2009;50(5):525.
24. Gudek MA, Uzun A.. Anthropometric measurements of the orbital contour and canthal distance in young Turkish. Journal of the Anatomical Society of India 2015;64, S1–S6.
25. Jayaratne YSN, Deutsch CK, Zwahlen RA. Normative findings for periocular anthropometric measurements among Chinese young adults in Hong Kong. BioMed. Research International.

2013;15:69-73.
26. Quant JR, Woo GC. Normal values of eye position in the Chinese population of Hong Kong. Optom Vis Sci. 1992;69:152–158.

https://amcj-bd.org/
Journal of Army Medical College Jashore
July 2022, Vol. 3, No. 2, Page: 81-84
ISSN : 2789-1135 (Print)

Original Article ***Open Access***

Plasma Fibrinogen Level among Women presented with Eclampsia attended at a Largest Teaching Hospital in Dhaka City

Sharmin Sultana[1], Qazi Shamima Akhter[2], Rukhsana Afroz[3], Fouzia Farid[4], Fayeza Karim[5]

[1]Associate Professor & Head, Department of Physiology, Ad-din Sakina Women's Medical College, Jashore, Bangladesh; [2]Former Head & Professor of Physiology, Dhaka Medical College, Dhaka, Bangladesh; [3]Associate Professor (CC), Department of Physiology, Bikrampur Bhuiyan Medical College, Munshiganj, Dhaka, Bangladesh; [4]Associate Professor (CC), Department of Physiology, Dhaka Community Medical College, Dhaka, Bangladesh; [5]Associate Professor & Head, Department of Physiology, East West Medical College, Turag, Dhaka, Bangladesh

Abstract

Background: Eclampsia is one of the most important causes of maternal and perinatal mortality and morbidity. In eclampsia, there is an increased tendency of blood coagulation which acts as a risk factor for thromboembolism & DIC. Altered coagulation indices (plasma fibrinogen) have been reported in patients with eclampsia and have been suggested as a sensitive marker for the detection of bleeding complications. **Objective:** The purpose of the present study was to compare the coagulation indices in women with eclampsia. **Methodology:** This cross-sectional study was conducted in the Department of Physiology at Dhaka Medical College, Dhaka, Bangladesh from January to December 2014 for a period of one year. Women aged 18 to 40 years were selected from the department of Obstetrics &Gynaecology of DMCH, Dhaka for this study. The women with eclampsia were selected as the study group and age-matched healthy non-pregnant women were considered as the control group. Fibrinogen was analyzed on an automated coagulation analyzer. **Results:** A total number of 100 women were recruited for this study. Among them, 50 women with eclampsia were selected as the study group and age-matched 50 healthy non-pregnant women were considered as the control group. In this study, plasma fibrinogen was significantly higher in eclamptic than those of healthy women. Moreover, 100.0% eclamptic patients had raised plasma Fibrinogen. **Conclusion:** In conclusion, plasma fibrinogen is directly related with eclampsia. *[Journal of Army Medical College Jashore, July 2022;3(2):81-84]*

Keywords: Preeclampsia; eclampsia; fibrinogen; hypertension; proteinuria; stroke; cerebral hemorrhage; DIC

Introduction

Preeclampsia is a pregnancy-specific, idiopathic multisystem disorder characterized by the development of hypertension and proteinuria after the 20 weeks of gestation[1-2]. Preeclampsia when associated with convulsion known as eclampsia3. Eclampsia can be diagnosed depending on the presence of convulsion along with hypertension and proteinuria which may develop even after 20 weeks of gestation.

Hypertension in eclampsia can be mild (BP more than 140/90 mm Hg with proteinuria upto1+) or severe (BP more than 160/110 mm Hg with proteinuria> 1+). Sometimes hypertension may be relative (systolic BP more than 30 mm Hg or diastolic BP more than 15-mmHg from pre-pregnant state). Relative hypertension has seen approximately 20.0% eclamptic patients. Clinically eclampsia is usually characterized by a chronic, gradual process that begins with the development of preeclampsia and results in generalized convulsions or coma. However, in approximately 15.0% to 20.0% of cases, the onset of eclampsia may be abrupt without previous evidence of preeclampsia[2].

The onset of convulsions can be antepartum (50.0% cases), during labor (25.0% cases) and postpartum period (25.0% cases); however, antepartum eclampsia usually develops during the third trimester, occasionally between 21 to 27 weeks and rarely before 20 weeks[3]. Usually postpartum eclampsia appears within the first 24 hours,

Correspondence: Dr. Sharmin Sultana, Associate Professor, Department of Physiology, Ad-din Sakina Women's Medical College, Jashore, Bangladesh; Email: sharminsultana2015@yahoo.com; Cell no.: +8801925364656; ORCID ID.: https://orcid.org/0000-0002-7645-2148

sometimes can develop beyond 40 hours and have been reported as late as 2 weeks postpartum[2]. The incidence of eclampsia in developed countries is estimated about 1 in 2000 pregnancies. But in developing countries, it varies widely ranging from 1 in 100-1700 pregnancies[4]. In Bangladesh, the incidence of eclampsia is about 3.05% cases[5].

In eclampsia, the most feared complication is death which may occur due to stroke and cerebral haemorrhage[2]. Complications affecting the developing fetus include intrauterine growth retardation, prematurity, oligohydramnios, bronchopulmonary dysplasia and increased risk of perinatal death[2]. During normal pregnancy profound changes occur in the coagulation and fibrinolytic system of the mother causing a hypercoagulable state. In eclampsia there is a distinct possibility of accentuation of this hypercoagulable state of pregnancy[6]. Coagulation abnormalities such as thrombocytopenia and decrease in some plasma clotting factors may develop in eclampsia[7].

Fibrinogen is the primary blood clotting factor. Fibrin clot is formed from fibrinogen. Fibrinogen plays a vital role in the process of inflammation, atherogenesis and thrombogenesis. Fibrinogen is a cofactor in platelet activation and may directly contribute to platelet plaque formation. This higher plasma fibrinogen level may increase the blood viscosity, platelet aggregation and causes thrombus formation[8-9].

There are some evidence of intravascular coagulation in eclampsia. Postmortem studies in women who died of eclampsia have shown deposition of fibrin in the blood vessels of several organs and their renal biopsy by immunofluorescence have demonstrated deposition of fibrinogen-related material within renal glomeruli[10]. Several studies showed increased serum fibrinogen in patients with eclampsia[11-12]. However, some studies found low serum fibrinogen level in eclampsia[7,13-14].

From the above studies, it has been observed that the result is conflicting. Several studies have done abroad to observe fibrinogen level in these groups but their exact relationship with eclampsia still debatable. As, there is less published data available regarding this topic in our country, the relationship among the parameter in the Bangladeshi eclamptic is not precisely known. Furthermore, we need a data from which we can compare the parameter in our population.

Methodology

Study Settings and Population: This present cross-sectional analytic study was conducted in the Department of Physiology, Dhaka Medical College, Dhaka, Bangladesh during the period from January 2014 to December 2014. Protocol of this study was approved by Ethical Review Committee of Dhaka Medical College, Dhaka, Bangladesh. For this study, diagnosed eclamptic women aged 18 to 40 years were selected as group B. Age-matched healthy non-pregnant women were considered as control group (Group A) for comparison. The subjects were selected from department of Obstetrics and Gynaecology, Dhaka Medical College Hospital and from personal contact in different areas of Dhaka city by simple random sampling.

Study Procedure: After selection the nature, purpose, benefit and risks of the study were explained in details. Informed written consent was taken from the participants. Before taking blood detailed family and medical history were taken and recorded in a prefixed data schedule. Plasma fibrinogen was estimated on automated coagulation analyzer, Sysmex CA – 500 series. Plasma fibrinogen was estimated by using theDade ® Fibrinogen determination reagent.Plasma fibrinogen was estimated by usingthe latex particles coated with monoclonal antibodies to FDP. In addition BMI was calculated and blood pressure was measured. Presence of proteinuria was determined by conventional heat coagulation test13.Then interpretation of theheat coagulation test was done according to presence of turbidity in the urine as nil/trace (0), 1+, 2+, 3+ and 4+ 13,14.

Statistical Analysis: For statistical analysis one-way ANOVA test, Bonferroni test and Pearson's correlation co-efficient (r) test were performed by using SPSS version 22.0.

Results

The mean systolic (180.2±19.6 mmHg) and diastolic (125.0±15.5mmHg) blood pressure were significantly higher in eclampsia compared to healthy non pregnant women (SBP 112.2±7.1mmHg, DBP 73.0±6.1mmHg). Difference was significant. Again the mean urinary protein level was significantly higher1.82±1.98 gm/dL in eclampsia compared to healthy non pregnant women (Table 1).

Table 1: General Characteristics of the Subjects in Different Groups (n=100)

Parameters	Healthy nonpregnant (n=50)	Eclampsia (n=50)
Age (years)	28.24±4.63	25.88±5.99
BMI (kg/m2)	26.17±2.58	27.97±1.85
SBP (mmHg)	112.2±7.1	180.2±19.6
DBP (mmHg)	73.0±6.1	125.0±15.5
Urinary protein level (gm/dL)	-	1.82±1.98

Results are expressed as Mean ±SD; Figures in parentheses indicate range; One-way ANOVA test was performed to compare among groups; n = Number of subjects; *p<0.001, compared to control; BMI= Body mass index; SBP= Systolic blood pressure; DBP= Diastolicblood pressure

The mean plasma fibrinogen was higher (734±121mg/dl) in eclampsia than healthy non pregnant women (312.4±102.5mg/dl)and the result was significant (Table 2).

Table 2: Plasma Fibrinogen Level in Different Groups (n=100)

Groups	N	Plasma Fibrinogen(mg/dl)
A	50	312.4±102.5 (161-575)
B_3	50	734±121.9 (435-999)

Results are expressed as Mean ±SD. Figures in parentheses indicate range.One-way ANOVA test was performed to compare among groups. Bonferronitest was performed to compare between groups. n = Number of subjects; Group A: Healthy adult non pregnant women (Control group); Group B3: Women with eclampsia (Study group).

Moreover in this study, elevated plasma fibrinogen (>400mg/dL) was found in 100.0% cases ofeclamptic women (Table 3).

Table 3: Distribution of the subjects by Fibrinogen in study groups

Fibrinogen	B_3 n(%)
Less Than 400 mg/dL	**0(0.0%)**
More Than 400 mg/dL	**50(100%)**

Results are expressed as frequency and percentage. n = Number of subjects; Group A: Healthy adult non pregnant women (Control group); Group B3: Women with eclampsia (Study group)

Discussion

Eclampsia is the advanced stage of preeclampsia and this preeclampsia is the most common medical disorder of pregnancy[15]. It is a multisystem disorder. Although the exact aetiology is unknown, but there are some haematological, genetic, immunological and environmental factors which play role in preeclampsia aetiopathogenesis. Preeclampsia is a generalized intravascular inflammatory response, which occurs in normal pregnancy too, but is more exaggerated in preeclampsia & eclampsia. A systemic inflammatory response involves both the immune system and clotting and fibrinolytic system[16-20]. In normal placental development, pseudovasculogenesis (the cytotrophoblasts differentiate from epithelial to an endothelial phenotype) occur. By this process, placenta can provide essential nutrients and oxygen to sustain the growing fetus. However, in preeclampsia and eclampsia, this psedovasculogenesis does not occur and these spiral arterioles remain as shallow and small caliber resistance vessels. However, in preeclampsia the placenta become hypoxic within the intervillous space that triggers tissue oxidative stress and increases placental apoptosis and necrosis. These changes finally leading to endothelial dysfunction and an exaggerated inflammatory response[20].

In pregnancy complicating disease like abruption placentae, pregnancy induced hypertension, intra uterine death and missed abortion common terminal complication is occurrence of DIC which is responsible for maternal mortality[16]. After the onset of clinical manifestations, the diagnosis of DIC is simplified but the treatment becomes difficult. Thus, it is important to diagnose DIC at its subclinical stage so that early therapeutic measures can be instituted. The estimation of plasma fibrinogen is helpful not only in the early diagnosis of hemostatic failure but also to guide replacement therapy during the necessary state. There are other diseases also which creates complication of pregnancy such as septic abortion, vesicular mole, intrauterine fetal death and amniotic fluid embolism. These diseases are closely related with plasma fibrinogen level. The main aim of this study is to detect levels of fibrinogen in abnormal pregnancy which is the main component in clot formation.

In the present study, mean plasma fibrinogen level was higher in eclamptic women than healthy non pregnant female.This finding was in agreement with Sogani and Sarkar[11] as well as Alwan et al[12]. Plasma fibrinogen level was also higher in eclamptic women18. than healthy non-pregnant female. But some investigators did not find significant differences of plasma fibrinogen level between eclamptic women and healthy non-pregnant female[7,13]. Some researchers[17] found decreased plasma fibrinogen level in pregnancy-induced hypertension like preeclampsia, eclampsia and gestational hypertension[17]. The incidence of hypofibrinogenemia in case of pregnancy-induced hypertension was found to be as high 25.0%. Most other studies have found fibrinogen levels to be normal in cases of PIH.

In this study, Pearson's correlation (r) test was done to observe the relationship of Systolic blood pressure, diastolic blood pressure and urinary protein level with plasma fibrinogen level in study group. There is a non-significant positive correlation between plasma fibrinogen level with systolic blood pressure. Again, diastolic blood pressure showed a positive correlation with plasma fibrinogen level which was statistically non-significant. A significant positive correlation of plasma fibrinogen with urinary protein level was also observed.

Literature review suggested that raised plasma fibrinogen in preeclampsia and eclampsia was due to the exaggerated systemic inflammatory response and fibrinolytic activity[11]. In the present study,raised plasma fibrinogen in eclampsia than control women is attributed to these facts.

Conclusion

From the result of this study, it may be concluded that increased plasma fibrinogen level may act as a future risk

of developing thromboembolic disorder and disseminated intravascular coagulation in eclampsia.Therefore, estimation of this parameter in eclampsia may provide information for further medical care and will minimize the further complications thereby reducing both maternal and fetal mortality and morbidity.

Acknowledgements
None
Conflict of interest
All the authors declared no competing interests.
Financial Disclosure
The author(s) received no specific funding for this work..
Authors' Contributions
Sultana S, Akhter QS, Afroz R conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript; Sultana S contributed to the analysis of the data, interpretation of the results and critically reviewing the manuscript; Farid F, Karim F involved in the manuscript review and editing. All authors read and approved the final manuscript.
Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.
Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

How to cite this article
Sultana S, Akhter QS, Afroz R, Farid F, Karim F. Plasma Fibrinogen Level among Women presented with Eclampsia attended at a Largest Teaching Hospital in Dhaka City. J Army Med Coll Jashore, 2022;3(2):81-84
Publication History
Received on: 7 April 2022
Accepted on: 24 May 2022
Published on: 1 July 2022

References
1. Onisai M, Vladareane AM, Bumea H et al. study of the hematological picture of platelet function in preeclampsia- report of a series of cases. Med J Clin Med. 2009; 4(4):326-37.
2. Coppage KH, Sibai BM. Preeclampsia and eclampsia. Glob. Libr. Women's med.2008;Retrieved June19, from http://www.glowm.com/section-view/heading/Preeclampsia
3. Osungbade KO, Ige KO. Public health perspectives of preeclampsia in developing countries: Implication for health system strengthening.J Pregnancy. 2011;2011:1-6.
4. Duley L. Preeclampsia and the hypertensive disorders of pregnancy. Br Med Bull.2003.67:161-76.
5. Akhtar R, Ferdous A, BhuiyanS. Maternal and fetal outcome of eclamptic patients in a tertiary hospital. Bangladesh J Obstet Gynaecol 2011;26(2): 77-80.
6. Chauhan P, Rawat U, Bisht V, et al. Comparison of coagulation profile in pre-eclamptic and eclamptic patients with normotensive pregnant patients. J Evol Med Dental Sci 2014; 3(12):3208-15.
7. Dave R, Agravat A, Dhruva G, et al. Comparative study of coagulation factors in preeclampsia and normal pregnancy. IJSR. 2014; 3(4): 377-8.
8. Bolaman Z, Kok F, Kadikoylu G, et al. The Changes of Coagulation Parameters and Microvascular Complications in Diabetes Mellitus. Endocrinologist. 2007;17:196-9.
9. Kafle DR, Shrestha P. Study of fibrinogen in patients with diabetes mellitus. Nepal Med Coll J. 2010;12(1): 34-7.
10. Mustaq TA. Comparative study of coagulation profile in term normal pregnancy, preeclampsia and eclampsia. [Dissertation]. [Bangalore]: Rajiv Gandhi University of health sciences; 2013. 20 p.
11. Sogani S, Sarkar PD. Evaluation of plasma fibrinogen and plasma fibrin degradation product (FDP) in preeclampsia. J Clin Biomed Sci. 2013; 3(4): 201-3.
12. Alwan AF, Zubair AM, Salman SW. Study of plasma fibrinogen in pregnant women with severe preeclampsia. IOSR-JDMS 2013; 8(5):55-9.
13. Jahromi BN, Rafiee SH. Coagulation factors in severe preeclampsia. IRCMJ. 2009;11(3):321-24
14. Dutta DC. Text Book of Obstetrics. 6th ed. Calcutta: New Central Book Agency (P) Ltd; 2008. 666p.
15. Heilmann L, Rath W, Pollow K. Haemostatic abnormalities in patients with severe preeclampsia. Clinical and applied thrombosis/haemostasis 2007;13(3):285-91
16. Hossain N, Paidas MJ. Disseminated intravascular coagulation. Hemostasis and Thrombosis in Obstetrics & Gynecology. 2010:182-94
17. Kanchana A, Girijavani DSS. Fibrinogen levels helps in early detection of abnormal pregnancies. Int J Reprod Contracept Obstet Gynnecol. 2017;6(1): 232 – 239
18. Chatterjee T, et al. studies on plasma fibrinogen level in pre-eclampsia and eclampsia. Experientia 1978
19. Parasnis H, Raje B, Hinduja IN. Relevance of plasma fibrinogen estimation in obstetric complications. J Postgrad Med. 1992;47(4):287-9.
20. Sharon E, Maynard, Karumanchi SA. Angiogenic factors and preeclampsia. Semin nephrol. 2011;31(1):33-46.

https://amcj-bd.org/
Journal of Army Medical College Jashore
July 2022, Vol. 3, No. 2, Page: 85-89
ISSN : 2789-1135 (Print)

Original Article ***Open Access***

Complication, Co-existing Diseases Profiles and Surgical Management of Abdominal Tuberculosis Patients

Iftekhar Md. Kudrat-E-Khuda[1], Mst. Tanjila Momotaj[2], Md. Sayeedur Rahman[3], Md. Ashraful Alom[4], Sk. Shamim Ahmed[5], Ahmed Masiha Jamil[6]

[1]Assistant Professor, Department of Surgery, Rajshahi Medical College, Rajshahi, Bangladesh; [2]Registrar, Department of Paediatrics, Islami Bank Medical College Hospital, Rajshahi, Bangladesh; [3]Assistant Professor, Department of Surgery, Jashore Medical College, Jashore, Bangladesh; [4]Assistant Professor, Department of Surgery, Rajshahi Medical College, Rajshahi, Bangladesh; [5]Junior Consultant, Department of Anesthesia, Rajshahi Medical College Hospital, Rajshahi, Bangladesh; [6]Assistant Professor, Department of Medicine, Rajshahi Medical College, Rajshahi, Bangladesh

Abstract

Background: Abdominal tuberculosis patients are presented with different complications and co-existing diseases. **Objectives:** The purpose of the present study was to see the complication, co-existing diseases profiles and surgical management of abdominal tuberculosis patients. **Methodology:** This descriptive cross-sectional study was conducted in the Department of Surgery of Rajshahi Medical College Hospital, Rajshahi, Bangladesh from January 2014 to December 2015 for two years. This study included patients who were admitted in surgery units of Rajshahi Medical College Hospital, Rajshahi, Bangladesh who were diagnosed as abdominal tuberculosis with or without associated pulmonary or nodal TB. The different complication, co-existing diseases and surgical management were recorded. **Results:** After confirmation of diagnosis 100 cases were included in the study. The most common age group was 20 to 30 Years of age group which was 52.0% cases. Among the 100 cases of abdominal tuberculosis it was observed that most common complication were anaemia (98%) and malnutrition (92%). Only 62 cases had structural complications including multiple strictures in the small intestine (27%), inflammatory fibrous bands and adhesions to peritoneum and omentum (18%). Intestinal perforation was found in 11 cases. Pelvic abscess was found in 5 cases. Only one patient presented with fistula in ano. In this study 10% patient had co-existing pulmonary TB, 5% tubercular cervical lymphadenitis and 5% Spine TB (Pott's disease). Among the pulmonary TB one patient had MDR PTB. **Conclusion:** In conclusion the most common complications are multiple strictures in the small intestine, inflammatory fibrous bands and adhesions to peritoneum and omentum, Intestinal perforation. *[Journal of Army Medical College Jashore, July 2022;3(2):85-89]*

Keywords: Complication; Co-existing Diseases; Surgical Management; Abdominal Tuberculosis

Introduction

Tuberculosis is an airborne infectious disease, caused by bacilli called the Mycobacterium tuberculosis[1]. The bacilli usually enter the body by inhalation through the lungs and spread to other parts of the body via the blood stream, the lymphatic, or through direct extension to other organs. Tuberculosis of the lungs or pulmonary tuberculosis is the most common form of TB and occurs in about 80% of cases[2]. When the infection occurs in other parts of the body it is called extra-pulmonary tuberculosis.

The systemic manifestations of intestinal tuberculosis include chromic ill health, anaemia, anorexia, fever and night sweats, dyspepsia and weight loss[3]. There may be history of altered bowel habit, diarrhoea and steatorrhoea. Abdominal features are of recurrent episodes of sub-acute intestinal obstruction with colicky abdominal pain and vomiting or with a mass in the right iliac fossa[4-6]. The purpose of the present study was to see the complication, co-existing diseases

Correspondence: Dr. Iftekhar Md. Kudrat-E-Khuda, Assistant Professor, Department of Surgery, Rajshahi Medical College, Rajshahi, Bangladesh; Email: kudrate_khuda@yahoo.com;
Cell no.: +8801711010157;
ORCID ID: 0000-0003-4101-4145

profiles and surgical management of abdominal tuberculosis patients.

Methodology

Study Design and Population: This descriptive cross sectional study was conducted in the Department of surgery of Rajshahi Medical College Hospital, Rajshahi, Bangladesh from January 2014 to December 2015 for two years. This study included 100 patients who were admitted in surgery units of Rajshahi Medical College Hospital, Rajshahi, Bangladesh who were diagnosed as abdominal tuberculosis with or without associated pulmonary or nodal TB. Both male and female patient of any age except pediatric age group irrespective of nutritional and socio –economic status were included in study population. Sampling was done by non-randomized, purposive, convenience technique. All admitted patients who were diagnosed abdominal tuberculosis with or without associated pulmonary or nodal tuberculosis were included in this study. Patients of paediatric age group (<18 years), Pregnant woman or Suspected abdominal TB under trial of anti-tubercular chemotherapy were excluded from this study. The details of demographic variables like age, Sex, Residence and so one were recorded in a data collection sheet.

Study Procedure: Patients who were diagnosed as abdominal tuberculosis with or without associated pulmonary or nodal TB. Both male and female patient of any age except pediatric age group irrespective of nutritional and socio –economic status were included in study population. Detailed history of each patient under study was recorded in respect to age, sex, mode of presentation, symptoms relating to abdominal tuberculosis and its complications, present or past history regarding tuberculosis, relevant personal, family or close contact tuberculosis and socioeconomic history. The diagnosis of abdominal tuberculosis in the present series was made by clinical data and investigations. Complete blood count, ESR, serum electrolytes, renal function tests, serum glucose, chest and abdominal X-rays were obtained for all patients. Two groups of patients were observed and analysed. In group I, patients presenting with acute symptoms like pain, vomiting, constipation signifying intestinal obstruction/perforation requiring urgent surgical intervention. Here the diagnosis of abdominal tuberculosis was made on the basis of suggestive per-operative findings and confirmed by histopathological examination of the operative specimens. In group II, patients presenting with chronic symptoms like pain, fever, lump and/or distension abdomen, ascitis, altered bowel habits and so one. The investigations in these patients included additional investigations like ultrasonography (USG), sputum for AFB, fine needle aspiration cytology (FNAC), contrast gastro-intestinal studies, peritoneocentesis wherever indicated. Whenever, the diagnosis was doubtful, in spite of detailed investigations, the patient was advised surgical intervention. Finally, histopathology of biopsy specimen obtained by laparotomy or laparoscopy confirms the diagnosis of abdominal tuberculosis. In all cases detailed operative findings and procedure, immediate post-operative complications were noted. Patient's postoperative outcome were assessed with remission of symptom and sign and general improvement of patient's condition. Patients were discharged with first line anti tubercular medication for 9 months and was advised for follow up after 2 months. Information was collected from the study population who had met the selection criteria by the standard data collection sheet containing all variables of interest.

Statistical Analysis: Collected data was compiled, checked and edited. Data processing and analysis was done with the help of computer using statistical software SPSS (Statistical Package for Social Science) version 15.0 for windows. The test statistic used to analyse the data was descriptive statistics and Chi-square test. The level of significance was set at 0.05 and $P<0.05$ was considered significant.

Results

After confirmation of diagnosis 100 cases were included in the study. The most common age group was 20 to 30 Years of age group which was 52.0% cases followed by 31 to 40 Years and 41 to 50 Years of age group which was 26.0% cases and 14.0% cases respectively. However, the 51 to 60 Years and 61 to 70 Years of age group patients were in 5.0% cases and 3.0% cases respectively (Table 1).

Table 1: Age Distribution among the Study Population (n=100)

Age Group	Frequency	Percent
20 to 30 Years	52	52.0
31 to 40 Years	26	26.0
41 to 50 Years	14	14.0
51 to 60 Years	5	5.0
61 to 70 Years	3	3.0
Total	**100**	**100.0**

Among the 100 cases of abdominal tuberculosis it was observed that most common complication were anaemia (98.0%) and malnutrition (92.0%). Only 62 cases had structural complication including multiple strictures in the small intestine (27.0%), inflammatory fibrous bands and adhesions to peritoneum and omentum (18.0%). Intestinal perforation was found in 11 cases. Pelvic abscess was found in 5 cases. Only one patient presented with fistula in ano (Table 2).

Table 2: Complications of abdominal TB among the study population (n=100)

Complications	Frequency	Percent
Strictures	27	27.0
Fibrous Bands & Peritoneal and omental adhesions	18	18.0
Perforation	11	11.0
Abscess formation (pelvic)	5	5.0
Fistula	1	1.0
Anaemia	98	98.0
Malnutrition	92	92.0

In this study 10.0% patient had co-existing pulmonary TB, 5.0% tubercular cervical lymphadenitis and 5.0% Spine TB (Pott's disease). Among the pulmonary TB one patient had MDR PTB (Figure I).

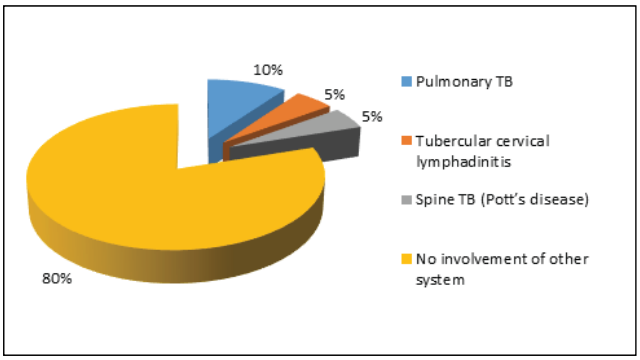


Figure I: Associated Co- existing tuberculosis in the other system

Table 3: Site of Involvement of Tuberculosis among the Study Population (n=100)

Site of lesion	Frequency	Percent
Jejunum	4	4
Ileum	33	33
Ilio-caecal	45	45
Large intestine	7	7
Abdominal lymph node	30	30
Peritoneam	18	18
Omentum	5	5
Other organ (Liver, spleen)	4	4

Among the 100 cases ileo- caecal region is the commonest site of involvement in abdominal tuberculosis (45.0%) followed by ilium (33.0%), abdominal lymph node (30.0%) peritoneam (18.0%), large intestine (7.0%), omentum (5.0%), and 4.0% in liver & spleen. Discrepancy in number is due to multiple sites of involvement in the same patient. Two patients had disseminated abdominal TB (Table 3).

Among the 100 cases of abdominal tuberculosis surgical treatment was done in 62 patients followed by anti-tuberculous chemotherapy. Rest 38 patients were managed conservatively with anti-tuberculous chemotherapy (Figure II).

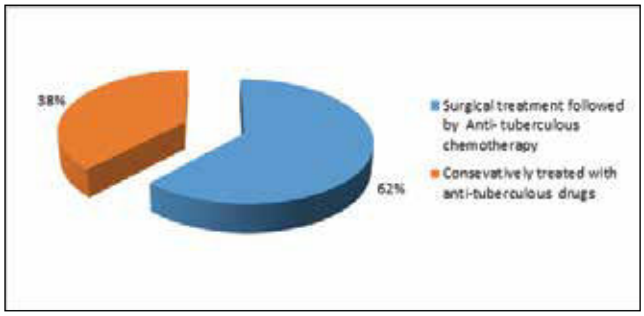


Figure II: Treatment Procedure among the Study Population (n=100)

Discussion

Abdominal tuberculosis is predominantly a disease of the young adult. The most common site of involvement is the ileocaecal region[7]. The classic histological finding is a caseating granuloma. In this study a total 100 cases were included. Both male and female patients were included according to the selection criteria. Admitted patients in department of surgery of Rajshahi Medical college hospital who were diagnosed as abdominal TB selected as a sample.

This study was carried out on 100 cases of abdominal tuberculosis. Among them most of the cases 52.0% were aged between 20 to 30 years, 26 cases were aged between 31 to 40 years, only 3 cases were beyond 60 years. Both male and female patient were included in this study. Age varies widely among the patients of abdominal TB ranging from 20 to 70 years. Among the 100 cases 52% was within 20-30 years of age. Only 3% was found beyond the age of 60. In a study[8] it had been reported that most of the patients were in the age of 2130 years which is similar to our study. Age varies widely among the patients of abdominal TB ranging from 20 to 70 years. Among the 100 cases 52.0% was within 20 to 30 years of age. Only 3.0% cases was found beyond the age of 60 years. Rahman et al[9] show

most of the patients were in the age of 21-30 years which is similar to this present study.

In one Indian study[10] age at presentation was variable with maximum cases in 21 to 40 years age group (58% cases) with mean age of 32.7 years. This indicate high prevalence of tuberculosis among earlier, economically productive age group in our country. The possible cause of affected group is working in the community getting the infection from environment by organism that spread by open cases of pulmonary tuberculosis. On the other hand age incidence of elderly persons are also low possibly because of late presentation of constitutional symptoms. Sometimes neglected elderly patients of abdominal tuberculosis do not reach hospital for treatment[12].

In this study 20 patients were found to have associated Co-morbidities. Among them 6 were diabetic, 4 hypertensive, 4 have Br. Asthma, 3 have COPD, 2 have CLD & only 1 found IHD. All of the patients of abdominal tuberculosis were enquired about ingestion of raw unboiled /unpasteurized milk. Only 07 patients gave history of ingestion of such milk. Drinking unboiled /unpasteurized milk may be partly responsible for abdominal tuberculosis in the present series. In another study[13] it had been shown that acute presentation were in 23 cases which include 7 cases of perforation (5 cases were radiologically proved pneumoperitoneum), 11 cases of acute intestinal obstruction, 4 cases of subacute obstruction and 1 case of tuberculous peritonitis. Total 37 patients admitted routinely through the outpatient department. Among them 5 (13.51%) presented with chronic abdominal pain, 15 (40.54%) with ascites and 16 (43.24%) with abdominal lump and only 1(2.70%) presented with fistula in ano.

Among the 100 cases of abdominal tuberculosis it was observed that most patient diagnosed late and come with complications of disease and underwent surgery. Most common complication were anaemia (98%) and malnutrition (92%). Only 62 cases had structural complication and underwent surgery. Structural complication including multiple strictures in the small intestine (27%), inflammatory fibrous bands and adhesions to peritoneum and omentum (18%). Intestinal perforation was found in 11 cases. Pelvic abscess was found in 5 cases. Only one patient presented with fistula in ano. Another report by Thapa et al[14] series of abdominal tuberculosis, their 86.67% patients were anaemic.

In this study 10% patient had co-existing pulmonary TB and one patient had MDR PTB. Rahman et al[9] found 6.0% cases, and 14.3% patients had co-existing pulmonary. TB in their serious that is much lower and higher than present series. We also found 5.0% patients had co-existing tubercular cervical lymphadenitis and TB spine (Pott's disease).

In this study ileo- caecal region is the commonest site of involvement in abdominal tuberculosis (45.0%) followed by ilium (33.0%), abdominal lymph node (30.0%) peritoneam (18.0%) , large intestine (7.0%), omentum (5.0%), and 4.0% in liver & spleen. Discrepancy in number is due to multiple site of involvement in the same patient. Two patient had disseminated abdominal TB.

In a study[15] it had been observed that a mass was found in 42.1% cases of the hyperplastic ileocaecal tuberculosis cases, in 43.0% cases of the mesenteric lymphadenitis cases, in 31.2% cases of the tuberculous peritonitis cases, in 60.0% cases of the cases with stricture of the colon and in 18.0% cases of the cases with stricture of the small bowel. There was no significant difference in the occurrence of a mass in obstructive and non-obstructive groups. It is evident that an ileocaecal lesion was not the only type of case in which a mass could be present, and it even occurred in cases with tuberculous peritonitis.

Among the 100 cases of abdominal tuberculosis surgical treatment was done in 62 patients followed by anti-tuberculous chemotherapy. Rest 38 patients were managed conservatively with anti-tuberculous chemotherapy.

Conclusion

In conclusion the most common age group suffering from abdominal tuberculosis is young adult age group. The most common complications are anaemia and malnutrition. Only few cases have structural complications including multiple strictures in the small intestine, inflammatory fibrous bands and adhesions to peritoneum and omentum. Intestinal perforation is found in few cases. Pelvic abscess is also reported. In this study patient have co-existing pulmonary tuberculosis, tubercular cervical lymphadenitis and spine TB (Pott's disease). Further large scale study should be carried out.

Acknowledgements
None .
Conflict Of Interest
The authors have no conflicts of interest to disclose
Financial Disclosure
The author(s) received no specific funding for this work.
Authors' Contributions
Kudrat-E-Khuda IM, Momotaj MT, Rahman MS, Alom MA conceived and designed the study, analyzed the data, interpreted the results, and wrote up

the draft manuscript. Ahmed SS, Jamil AM contributed to the analysis of the data, interpretation of the results and critically reviewing the manuscript. Kudrat-E-Khuda IM, Momotaj MT involved in the manuscript review and editing. All authors read and approved the final manuscript.

Data Availability

Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate

Ethical approval for the study was obtained from the Institutional Review Board. The written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

How to cite this article

Kudrat-E-Khuda IM, Momotaj MT, Rahman MS, Alom MA, Ahmed SS, Jamil AM. Complication, Co-existing Diseases Profiles and Surgical Management of Abdominal Tuberculosis Patients. J Army Med Coll Jashore, 2022;3(2):85-89

Article Info

Received on: 7 April 2022
Accepted on: 24 May 2022
Published on: 1 July 2022

References

1. World Health Organization. Global tuberculosis control: epidemiology, strategy, financing: WHO report 2009. World health organization; 2009.

2. Rahman O, Kabir A, Biswas PK, Islam AS, Siddik AB, Rahman H. Clinical presentation and treatment outcome of abdominal tuberculosis. Journal of Medicine. 2014;15(2):131-4.

3. Begum SN, Hoque MA, Rahmen KK, Pramanik AK, Alam SS. Ileo-caecal Tuberculosis Associated with Hepatic Involvement-A Case Report. TAJ: Journal of Teachers Association. 2007;20(1):60-3.

4. Mazumder PC. 2001. Clinicopathological profile of intestinal tuberculosis causing obstruction-study of 50 cases. Dissertation. BCPS. 2638

5. Rangabashyam N, Anand BS, OmPrakash R. Abdominal tuberculosis. Oxford Text Book of surgery. 1994;2:2484-91.

6. Saaiq M, Shah SA, Zubair M. Abdominal tuberculosis: epidemiologic profile and management experience of 233 cases. JPMA-Journal of the Pakistan Medical Association. 2012;62(7):704.

7. Ahsan G, Ahmed J, Shinghasianon P, Kaewkungwal S, Okanurak K, Suwannapong N, et al. Gender difference in treatment seeking behaviours of tuberculosis cases in rural communities of Bangladesh. Southeast Asian J Trop Med Public Health. 2004;35(1): 126-35.

8. Nelliyanil M, Sharada MP, Joseph N, Basagoudar SS, Jayaram S, Patil DC. A study of the socio-demographic profile and treatment outcome of paediatric tuberculosis patients in Bangalore Mahanagar Palike area. Indian J Tuberc. 2012;59(4):207-13

9. Rahman O, Kabir A, Biswas PK, Islam AS, Siddik AB, Rahman H. Clinical presentation and treatment outcome of abdominal tuberculosis. Journal of Medicine. 2014;15(2):131-4

10. Sircar S, Taneja VA, Kansra U. Epidemiology and clinical presentation of abdominal tuberculosis--a retrospective study. Journal of the Indian Medical Association. 1996;94(9):342-4.

11. Debnath BC, Ghosh A, Chowdhury AK, Alam F, Joardar AI, Alom T. Socio-demographic Characteristics of Surgically Resected Histopathological Confirmed Intestinal Tuberculosis Patients attended at a Tertiary Care Hospital in Dhaka City. Bangladesh Journal of Infectious Diseases. 2021;8(1):7-11.

12. Chalya PL, Mchembe MD, Mshana SE, Rambau PF, Jaka H, Mabula JB. Clinicopathological profile and surgical treatment of abdominal tuberculosis: a single centre experience in northwestern Tanzania. BMC infectious diseases. 2013;13(1):1-9.

13. World Health Organization. Global tuberculosis report 2013. World Health Organization; 2013.

14. Thapa DR, Sidhu M, Goswamy HL, Nasib C. Digray NC, Kachroo RK, R.K. Nargotra RK. Abdominal tuberculosis in Surgical Practice: Analysis of 30 cases and Review of Literature. JK Science 2000;2(l): 37-42

15. Udgirkar S, Jain S, Pawar S, Chandnani S, Contractor Q, Rathi P. Clinical profile, drug resistance pattern and treatment outcomes of abdominal tuberculosis patients in western india. Arquivos de gastroenterologia. 2019;56:178-83.