

DCIMCJ
2023

DHAKA CENTRAL INTERNATIONAL MEDICAL COLLEGE JOURNAL

VOLUME 10 NO-1 | JANUARY-2023

ISSN 2410-9282

OFFICIAL PUBLICATION OF
DHAKA CENTRAL INTERNATIONAL MEDICAL COLLEGE

DHAKA CENTRAL INTERNATIONAL MEDICAL COLLEGE JOURNAL (APPROVED BY BMDC)

January 2023, Vol. 10 No.1

Contents

From the Desk of Editor-in-Chief 3
Instructions for Authors 4

Editorial

Antibiotic Resistance: Bangladesh Perspective 13
Begum N, Chowdhury MAA

Original Articles

Association of Serum Glypican 3 Level among Patients with HCC and Cirrhosis of Liver Attending in Hepatology OPD in BSMMU, Bangladesh 16
Yeusuf AMAA, Siddique TB, Roy PP, Naha PK

Anthropometric Study of Orbitonasal Proportion and Their Comparisons in Bangladeshi Buddhist Rakhain Ethnic Females and Males 25
Hossain S, Iqbal M, Akhter Z, Yeasmin F, Sultana R

Study on Clinical and Biochemical Characteristics of PCOS in Adolescent Girls 31
Akhter S, Salam S, Shimu F, Begum R

Effects of Prolong Exposure to Mosquito Coil Smoke on Pulmonary Function by FEV-1 in Healthy Adult Individuals. 37
Jahan N, Sarker CR, Tanvir SM, Akhter J, Sultana S

Dyslipidemia in Patients of Rheumatoid Arthritis 42
Sultana A, Rahman MH, Sultana N, Akhter A, Howlader MH, Khatun A, Chowdhury MAA

Discontinuation of Oral Contraceptive Pills among Slum Women of Dhaka City, Bangladesh 48
Karim F, Kamrun S, Azim E, Dutta B, Begum R

Association of Preoperative Uric Acid Level with Acute Kidney Injury Following Off Pump Coronary Artery Bypass Surgery 54
Zahan LA, Sarkar R, Islam Z, Saklayen SMG, Polash WA, Rupa RN

Case Report

A Case Report on Hematuria Due to Urinary Tract Tuberculosis 60
Nomany BMS

Medical Quiz

Medical Quiz: Images. 62
Mamun KAA

Dhaka Central International Medical College Journal

January 2023, Vol. 10 No.1

An Official Organ of Dhaka Central International Medical College

CHIEF PATRON

Dr. M A Hye Chowdhury
Chairman, Governing Body
Dhaka Central International
Medical College

EDITORIAL BOARD

Editor in Chief

Prof. Bidhu Bhushan Das
Principal, Dhaka Central
International Medical College

Executive Editor

Prof. S. M. Idris Ali

Editors

Prof. Zakia Akhter
Dr. Mohammad Ali
Dr. Md. AnwarulAlam Chowdhury
Dr. Nurjahan Begum
Dr. Rahana Begum
Dr. Kazi Abdullah Al Mamun

Members

Prof. Begum Hosne Ara
Prof. Dr. Md. Kamrul Hasan Sardar
Prof. Helena Begum
Prof. Dr. Md. Mahbubar Rahman
Prof. Mafruha Nazneen
Prof. Dr. Most. Naznin Nahar
Prof. Matira Khanam
Dr. Saika Shaheed
Dr. Md. Mahfuzul Islam

ADVISORS

Prof. Azizul Islam
Prof. Dr. S.M. Amjad Hossain
Prof. Shohrab Hossain Sourav
Prof. Md. Anwarul Islam
Prof. Md. Shahid Ullah
Prof. Chowdhury GolamMahbub-E-Mostafa
Prof. Merina Khanom

REVIEWERS

Prof. AKM Nazrul Islam
Prof. Mohammad Kamal
Prof. M Fakrul Islam
Prof. Ratu Rumana Binte Rahman
Prof. Selina Ahmed
Prof. Shahanaz Begum
Prof. Rashidul Hassan

PUBLISHED BY

Dhaka Central International
Medical College
2/1 Ring Road, Shyamoli,
Dhaka-1207, Bangladesh

ANNUAL SUBSCRIPTION

Tk. 200/- for local subscribers
US$ 20 for overseas subscribers

The Dhaka Central International Medical College Journal is a peer reviewed journal. It is published biannually – January and July. It accepts original articles, review articles and case reports.

While every effort is always made by the Editorial Board to avoid any inaccurate or misleading information from appearing in the Dhaka Central International Medical College Journal, information within the individual article is the responsibility of its author(s). The Dhaka Central International Medical College Journal and/or its editorial board accept no liability whatsoever for the consequences of any such inaccurate and misleading information, opinion or statement.

ADDRESS OF CORRESPONDENCE

Professor S. M. Idris Ali
Executive Editor, Dhaka Central International Medical College Journal,
Professor, Department of Orthopedic, Dhaka Central International Medical College
Tel: +88029124396, Cell No. +8801770008844, Fax: +88029118598
Web: www.dcimch.com, email: jdcimc@yahoo.com
2/1, Ring Road, Shyamoli, Dhaka-1207, Bangladesh.

From the Desk of Editor-in-Chief

We are delighted to inform that the Volume 10, Number 1 of the Dhaka Central International Medical College Journal (DCIMCJ) is going to be published very soon. In this issue we have added a new section, Medical Quiz: Images. We are grateful to Almighty Allah. We are sending the complimentary copies of the journal to the libraries of most of the medical college and other medical institutions in Bangladesh. Already our journal has been approved by Bangladesh Medical & Dental Council (BMDC). We invite the doctors of medical colleges and institutes to submit their research articles to the journal committee for publication. We accept both hard & soft copies of the articles. We go through the papers and if necessary, communicate the authors. We also thank all the authors for giving us opportunity to publish their research papers in this journal. We have tried our best to avoid erroneous information. We like to add here that DCIMC Journal and its editorial board accept no liability for any inaccurate and misleading information, opinion and statements. It is the responsibility of the individual author (s). We have mentioned the instruction for the authors in this issue. We request the contributing authors to follow the instructions for their manuscripts. We appreciate our chairman, editors, members and advisors for their encouragement and also appreciate the contributors and reviewers for their participation. Last of all we welcome valuable suggestion, opinion, advice and constructive criticisms for improvement of the quality of the journal.



Prof. Bidhu Bhushan Das
Editor-in- Chief

INFORMATION FOR AUTHORS

Manuscript preparation and submission:

Guidelines for the Authors:

The Dhaka Central International Medical College Journal provides publication (six monthly) of articles in all areas of the subject. The Journal welcomes the submission of manuscript that meets the general criteria of significance and scientific excellence.

Papers must be submitted with the understanding that they have not been published elsewhere (except in the form of an abstract or as part of a published lecture, review, or thesis) and are not currently under consideration by another journal published by **INTERNATIONAL RESEARCH JOURNALS** or any other publisher.

The submitting (corresponding) author is responsible for ensuring that article's publication has been signed and approved by all the other co-authors. It is also the author's responsibility to ensure that the articles emanating from a particular institution are submitted with the approval of the necessary institutional requirement. Only an acknowledgment from the editorial office officially establishes the date of receipt. Further correspondence and proofs will be sent to the corresponding author(s) before publication unless otherwise indicated. It is a condition for submission of a paper that the authors permit editing of the paper for readability. All enquiries concerning the publication of accepted papers should be addressed to –

Editor-in-Chief,
DCIMCJ
2/1, Ring Road, Shyamoli,
Dhaka, Bangladesh.

Electronic submission of manuscripts is strongly encouraged, provided that the text, tables, and figures are included in a single Microsoft Word file (preferably in Arial font).

Submit Manuscripts as e-mail attachment to the editorial office at: jdcimc@yahoo.com

A manuscript number will be mailed to the corresponding author within two working days. The cover letter should include the corresponding author`s full address and telephone / fax numbers and should be in an e-mail message sent to the editor, with the file, whose name should begin with the first author`s surname attachments or triplicate Hard copy with a soft copy.

Article types:

Five types of manuscripts may be submitted:

Editorials:

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

Original articles:

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

Short communications:

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

Reviews:

Submissions of reviews and perspectives covering topics of current interest are welcome and encouraged. Reviews should be up to date. Reviews are also peer-reviewed.

Case reports:
This should cover uncommon and /or interesting cases with appropriate confirmation process.

Review process:
All manuscripts are initially screened by editor and sent to selective reviewer. Decisions will be made as rapidly as possible, and the journal strives to return reviewers comments to authors within 3 week. The editorial board will re-review manuscripts that are accepted pending revision. The DCIMCJ editorial board will try to publish the manuscript as early as possible fulfilling all the rigorous journal needs.

I. A. Preparing manuscript for submission to DCIMCJ Editors and reviewers spend many hours reading manuscripts that are easy to read and edit. Much of the information in this journal`s Instructions to Authors is designed to accomplish that goal in ways that meet each journal`s particular editorial needs. The following information provides guidance in preparing manuscripts for this journal.

Condition for submission of manuscripts:

- All manuscripts are subject to peer-review.
- Manuscripts are received with the explicit understanding that they are not under simultaneous consideration that are not under simultaneous by any other publication.
- Submission of a manuscript for publication implies the transfer of the copyright from the author to the publisher of the Dhaka Central International Medical College journal and may not be reproduced by any means in whole or in part without the written consent of the publisher.
- It is author`s responsibility to obtain permission to reproduce illustrations, tables etc. from other publications.

Ethical aspects:

- Ethical aspect of the study will be very carefully considered at the time of assessment of the manuscript.
- Any manuscript that includes table illustration or photograph that has been publishedearlier should accompany a letter of permission for re-publication from the author(s) of the publication and editor/publisher of the Journal where it was published earlier.
- Permission of the patients and/or their families to reproduce photographs of the patients where identity is not disguised should be sent with the manuscript. Otherwise the identity will be blackened out.

Preparation of manuscriptCriteria:
Information provided in the manuscript is important and likely to be of interest to an international readership.

Preparation:

1. Manuscript should be written in English and typed on one side of A4 (29 x 21cm) size white paper.
2. Margin should be 5 cm for the header and 2.5 cm for the remainder.
3. Style should be that of modified Vancouver.
4. Each of the following section should begin separate page:
    - Title page
    - Summary/abstract
    - Text
    - Acknowledgement
    - References
    - Tables and legends

Page should be numbered consecutively at the upper right hand corner of each page beginning from the title page

I. A. 1.a. General Principles:

- The text of observational and experimental articles is usually (but not necessarily) divided into the following section: Introduction, Methods, Results, and Discussion. This so-called "IMRAD" structure is a direct reflection of the process of scientific discovery.

- Long articles may need subheadings within some sections (especially Results and Discussion) to clarify their content. Other types of articles, such as case reports, reviews, and editorials, probably need to be formatted differently.
- Electronic formats have created opportunities for adding details or whole sections, layering information, cross linking of extracting portions of the articles.
- Authors need to work closely with editors in developing or using such new publication formats and should submit supplementary electronic material for peer review.
- Double-spacing all portions of the manuscript- including the title page, abstract, text, acknowledgments, references, individual tables, and legends- and generous margins make it possible for editors and reviewers to edit the textline by line and add coments and queries directly on the paper copy.
- If manuscripts are submitted electronically, the files should be double-spaced to facilitate reviewing and editing.
- Authors should number on right upper corner of all of the pages of the manuscript consecutively, beginning with the title page, to facilitate the editorial process.

I. A.1.b. Reporting guidelines for specific study designs:

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

I. A. 2. Title page:

1. Article title. Concise title is easier to read than long, convoluted ones. Titles that are too short may, however, lack important information, such as study design (which is particularly important in identifying type of trials). Authors should include all information in the title that will make electronic retrieval of the article both sensitive and specific.
2. Authors' names and institutions.
3. The name of the department(s) and institution(s) to which the work should be attributed.
4. Disclaimers, if any.
5. Contact information for corresponding authors. The name, mailing address, telephone and fax numbers, and e-mail address of the authors responsible for correspondence about the manuscript.
6. The name and address of the authors to whom requests for reprints should be address or a Statement that reprints are not available from the authors.
7. Source(s) of support in the form of grants, equipment, drugs, or all of these.
8. A short running head or foot line, of no more than 40 characters (including litters and spaces). Running heads are published and also used within the editorial office for filing and locating manuscript.
9. The number of figures and tables. It is difficult for editorials staff and reviewers to determine whether the figures and tables that should have accompanied a manuscript were actually included unless the numbers of figures and tables are noted on the title page.

I. A. 3. Conflict-of interest notification page:

To prevent potential conflicts from being overlooked or misplaced, this information needs to be part of the manuscript. The ICMJE has developed a uniform disclosure form for use by ICMJE member journal (http://www. icmje/crg/coi_disclosure.pdf) and DCIMCJ has accepted that.

I. A. 4. Abstract:

- Structured abstracts are essential for original research and systematic reviews. Structured abstract means introduction, methods, results and conclusion in abstract
- Should be limited to 250 words
- The abstract should provide the introduction of the study and blinded state and should state the study's purpose, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations. Articles on clinical trials should contain abstracts that include the items that the CONSORT group has identified as essential (http: //www. consort-statement. org).
- Because abstracts are the only substantive portion of the article indexed in many electronic databases, and the only portion many readers read, authors need to be careful that they accurately reflect the content of the article

I. A. 5. Introduction:

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

I. A. 6. Methods:

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

I. A. 6. a. Selection and description of participants:

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

I. A. 6. b.Technical information:

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

I. A. 6. c. Statistics:

- Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals).

- Avoid relying solely on statistical hypothesis testing, such as P values, which fail to convey important information about effect size. References for the design of the study and statistical methods should be to standard works when possible (with pages stated).

- Define statistical terms, abbreviations, and most symbols.

- Specify the computer software used.

I. A. 7. Result:

- Present results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Please keep the sequence of specific objective selected earlier.

- Do not repeat all the data in the tables or illustrations in the text; emphasize or summarize only the most important observations. Extra or supplementary materials and technical detail can be placed in an appendix where they will be accessible but will not interrupt the flow of the text, or they can be published solely in the electronic version of the journal.

- When data are summarized in the Results section, give numeric results not only as derivatives (for example, percentages) but also as the absolute numbers from which the derivatives were calculated, and specify the statistical methods used to analyze them.

- Restrict tables and figures to those needed to explain the argument of the paper and to assess supporting data. Use graphs as an alternative to tables with many entries; do not duplicate data in graphs and tables.

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

I.A.8. Discussion:

- Emphasize the new and important aspects of the study and the conclusions that follow then in the context of the totality of the best available evidence.

- Do not repeat in detail data or other information given in the introduction or the result section.

- For experimental studies, it is useful to begin the discussion by briefly summarizing the main findings, then explore possible mechanisms or explanations for these findings, compare and contrast the results with other relevant studies, state the limitations of the study, and explore the implications of the findings for future research and for clinical practice.

- Link the conclusions with the goals of the study but avoid unqualified statements and conclusions not adequately supported by the data. In particular, avoid making statements on economic benefits and costs unless the manuscript includes the appropriate economic data and analyses. Avoid claiming priority or alluding to work that has not been complete. State new hypotheses when warranted, but label them clearly as such.

I. A 9. References:

I. A. 9. a. General considerations related to

References:

- Although references to review articles can be an efficient way to guide readers to a body of literature, review articles do not always reflect original work accurately. Readers should therefore be provided with direct references to original research sources whenever possible.

- On the other hand, extensive lists of references to original work of a topic can use excessive space on the printed page. Small number of references to key original papers list, is preferable particularly since references can now be added to the electronic version of published papers, and since electronic literature searching allows readers to retrieve published literature efficiently.

- Avoid using abstracts as references. References to papers accepted but not yet published should be designated as “in press” or “forthcoming”; authors should obtain written permission to cite such papers as well as verification that they have been accepted for publication.

- Information from manuscripts submitted but not accepted should be cited in the text as “unpublished observations” with written permission from the source.

- Avoid citing a “personal communication” unless it provides essential information not available from a public source, in which case the name of the person and date of communication should be cited in parentheses in the text. For scientific articles, obtain written permission and confirmation of accuracy from the source of a personal communication. Some but not all journals check the accuracy of all references citations; thus, citation errors sometimes appear in the published version of articles. To minimize such errors, references should be verified using either an electronic bibliographic source such as Pub Med or print copies from original sources.

- Authors are responsible for checking that none of the references cite retracted articles except in the context of referring to the retraction. For articles published in journals indexed in MEDLINE, the ICMJE considers Pub Med the authoritative source for information about retractions.

I. A. 9. b. Reference style and format:

- References should be numbered consecutively in the order in which they are first mentioned in the text.

- Identify references in text, tables, and legends by Arabic numerals in superscript.

- References cited only in tables or figure legends should be numbered in accordance with the sequence established by the first identification in the text of the particular table or figure.

I. A. 10. Tables:

- Tables capture information concisely and display it efficiently.

- Use tables/figures that are relevant to study

- Try to limit the number of tables/figure

- Type or print each table with double-spacing on a separate sheet of paper. Number tables consecutively in the order of their first citation in the text and supply a brief title for each.

- Do not use internal horizontal or vertical lines. Give each column a short or an abbreviated heading. Authors should place explanatory matter in footnotes, not in the heading. Explain all nonstandard abbreviation in footnotes, and use the following symbols, in sequence:
  *, †, ‡, §, _, ¶, **, ††, ††, §§, _ _, ¶¶, etc.

- Identify statistical measures of variations, such as standard deviation and standard error of the mean.

- Be sure that each table is cited in the text. If you use data from another published or unpublished source, obtain permission and acknowledge that source fully.

I. A. 11. Illustrations (Figures):

- Figures should be either professionally drawn and photographed, or submitted as photographic-quality digital prints,in addition to requiring a version of the figures suitable for printing, (for example, JPEG/GIF)

- Authors should review the images of such files on a computer screen before submitting them to be sure they meet their own quality standards. For x-ray films, scans, and other diagnostic images, as well as pictures of pathology specimens or photomicrographs, send sharp, glossy, black-and-white or color photographic prints, usually 127 X 173 mm (5 X 7 inches)

- Letters, numbers, and symbols on figures should therefore be clear and consistent throughout, and large enough to remain legible when the figure is reduced for publication.

- Photographs of potentially identifiable people must be accompanied by written permission to use the photograph. Figures should be numbered consecutively according to the order in which they have been cited in the text.

- If a figure has been published previously, acknowledge the original source and submit written permission from the copyright holder to reproduce the figure. Permission is required irrespective of authorship or publisher except for documents in the public domain.

- For illustrations in color, DCIMCJ accept colored illustration only when it seems essential. This Journal publishes illustrations in color only if the author pays the additional cost. Authors should consult the journal about requirements for figures submitted in electronic formats.

I. A. 12. Legends for illustration (Figures):

- Type or print out legends for illustrations using double spacing, starting on a separate page, with Arabic numerals corresponding to the illustrations.

- When symbols, arrows, numbers, or letters are used to identify parts of the illustrations, identify and explain each one clearly in the legend. Explain the internal scale and identify the method of staining in photomicrographs.

I. A. 13. Units of measurement:

- Measurement of length, height, weight, and volume should be reported in metric units (meter, kilogram, or liter) or their decimal multiples.

- Authors should report laboratory information in both local and International System of Units (SI).

- Drug concentrations may be reported in either SI or mass units, but the alternative should be provided in parentheses where appropriate.

I. A. 14. Abbreviations and symbols:

- Use only standard abbreviations; use of nonstandard abbreviations can be confusing to readers.

- Avoid abbreviations in the title of the manuscript.

- The spelled-out abbreviation followed by the abbreviation in parenthesis should be used on first mention unless the abbreviation is a standard unit of measurement.

I. B. Sending the manuscript to the journal:

- If a paper version of the manuscript is submitted, it should contain print copies of tables and figures; they are all needed for peer review and editing, and the editorial office stall cannot be expected to make the required copies.

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

Editing and peer review:

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

Submission preparation checklist:

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

Check lists:

Final checklists before you submit your revised article for the possible publication in the Journal of Dhaka Central International Medical Collage:

1. Forwarding/Cover letter and declaration form
2. Authorship and conflicts of interest form
3. Manuscript

- Sample of the above document is available in the following links: http://www.dcimc.com
- If you have submitted mentioned document (1, 2, 3) above, when you first submitted your article then you don't need to re-submit but if there is change in the authorship or related then you have to re-submit it.

General outline for article presentation and format:

- Double spacing
- Font size should be 12 in arial
- Margins 5 cm from above and 2.5 cm from rest sides.
- Title page contains all the desired information (vide supra)
- Running title provided (not more than 40 characters)
- Headings in title case (not ALL CAPITALS, not underline)
- References cited in superscript in the text without brackets after with/without comma (,) or full stop (.)
- References according to the journal's instructions─abide by the rules of Vancouver system.

Language and grammar:

- Uniformity in the language
- Abbreviations spelt out in full for the first time
- Numbers from 1 to 10 spelt out
- Numerals at the beginning of the sentence spelt out

Tables and figures:

- No repetition of data in tables/graphs and in text
- Actual numbers from which graphs drawn are provided
- Figures necessary and of good quality (color)
- Table and figure numbers in Arabic letters (not Roman)
- Labels pasted on back of the photographs (no names written)
- Figure' privacy maintained (if not, written permission enclosed)
- Credit note for borrowed figures/tables provided
- Each table/figure in separate page

If you have any specific queries please visit our website at www.dcimc .com

Manuscript format for research article:

- **Title**
  - Complete title of your article
  - Complete author information
  - Mention conflict or interest if any
- **Abstract**
  - Do not use subheadings in the abstract
  - Give full title of the manuscript in the Abstract page
  - Not more than 200 words for case reports and 250 words for original articles
  - Structured abstract (Including introduction, methods, results and discussion, conclusion) for case reports.
  - Key words provided – arrange them in alphabetical order (three – five)
- **Introduction:**
  - Word limit 150-200 words
  - Pertinent information only

- **Material and methods:**
  - Study Design
  - Duration and place of study
  - Ethical consent
  - Patient consent
  - Statistical analysis and software used.
- **Result:**
  - Clearly present the data
  - Avoid data redundancy
  - Use table information at the end of the sentence before full stop between the small bracket
- **Discussion:**
  - Avoid unnecessary explanation of someone else work unless it is very relevant to the study
  - Provide and discuss with literatures to support the study
  - Mention about limitation of your study
- **Conclusion:**
  - Give your conclusion
  - Any recommendation
- **Acknowledgement:**
  - Acknowledge any person or institute who have helped for the study
- **Reference:**
  - Abide by the Vancouver style
  - Use reference at the end of the sentence after the full stop with superscript
- **Legends:**
  - Table
  - Figures

The editor reserves the right to style and if necessary, shorten the material accepted for publication and to determine the priority and time of publication

---

DCIMCJ

Editorial

DCIMCJ 2023 January;10(1):13-15

Antibiotic Resistance: Bangladesh Perspective

Begum N[1], Chowdhury MAA[2]

Introduction:

Antibiotics (ABs) belong life-saving drugs that help people fighting various noxious pathogens. However, the effectiveness of ABs is jeopardized by the fast escalation of antibiotic resistance (ABR) and the scarcity of new ABs with novel mechanism(s) of action. In 2015, the worldwide mortality toll from ABR was around 700,000 people. Furthermore, it is anticipated that the ABR-related mortality rate would have risen to 10 million per year by 2050, with approximately 90% of the predicted deaths are estimated to happen in Asia and Africa. Without appropriate action, by 2050 the global economy may lose more than USD 6 trillion annually because of AMR, which is nearly 4% of Gross Domestic Product (GDP).

ABR, is a discernable fact, where infectious bacteria get comparatively stronger than earlier due to incomplete and irrational use of antibiotics. Millions of people die due to AB resistance every year in today's world and gradually the situation is going out of control as the infectious bacteria are no longer vulnerable to ABs which worked effectively in previously. The irrational use of ABs is a driving factor of ABR. According to the World Health Organization (WHO), medications are used rationally when patients receive the proper medicines, for the relevant indications, in dosages that fit their own specific requirements, for an acceptable amount of time, at the lowest cost to them and society, and with appropriate information. When one or more of these factors are not achieved, irrational or needless use of drugs occurs.

1. Dr. Nurjahan Begum, Associate Professor, Department of Microbiology, Dhaka Central International Medical College.

2. Dr. Md. Anwarul Alam Chowdhury, Associate Professor, Department of Biochemistry, Dhaka Central International Medical College.

People in developing countries like Bangladesh lack even the most basic understanding of resistance, ABs, and diseases. They seek symptomatic relief, to which doctors respond by giving ABs in the hopes of a rapid recovery. It eventually leads to higher healthcare costs, longer hospital stays, and abrupt or protracted health consequences, including considerable increases in morbidity and eventual death. A recent global study conducted in 76 countries reported that there is a 65% increase in AB consumption and a 35% increase in AB consumption rate driven mostly by low and middle- income countries (LMICs).

The availability of over-the-counter antibiotics for humans and animals, and a lack of training and compliance with standards among healthcare providers (HCPs) are important contributors to the emergence of antibiotic resistance in Bangladesh. Pharmacies/drug shops are major primary healthcare providers for Bangladeshi households, accounting for nearly two-thirds of their out-of-pocket spending. Within retail drug shops, the majority of antibiotics are purchased without a prescription. Antibiotics provided to patients without a prescription are likely to be a less appropriate drug, taken for an incorrect duration (course), or of the wrong dose. Unqualified drug sellers also fall victim to aggressive marketing strategies resulting in overprescribing, multidrug prescribing, using unnecessarily expensive drugs and dispensing drugs without a prescription.

The National Centre for Antimicrobial Consumption Surveillance of Bangladesh- Directorate General of Drug Administration (DGDA) is conducting surveillance to curb antimicrobial resistance since 2015.

Out of the findings reported that the national consumption of antimicrobial drugs in Bangladesh was increasing and highlighted some irrational use, such as the use of "watch" category antibiotics consumption is higher than the "Access" category.

In addition, during the COVID-19 pandemic in Bangladesh, an unprecedented surge in consuming ABs has been experienced because people got infected with mild to moderate symptoms- cough, fever, and lung infiltrate resemble bacterial pneumonia, and the doctors had nothing to do but prescribe ABs since a gray line exist between bacterial pneumonia and COVID-19. The worldwide pandemic of COVID-19 affects AB usage and enhances the selection pressure of effective antimicrobials to mitigate the extra imminent load of antimicrobial resistance throughout this pandemic.

In 2017, the WHO described the most critical multidrug-resistant bacteria for which novel therapeutics are urgently needed. Without surprise, they belonged to the already known group, ESKAPE (Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa, and Enterobacter spp.), which causes most of the healthcare-associated infections nowadays.

Antibacterial resistance is now a global catastrophe that demands collective and wide-collaborative efforts despite having a Global Action Plan on Antimicrobial Resistance formulated by the WHO in 2015. Several studies pointed at the attitude, knowledge, and perception of medical professionals regarding the use of AB for its irrational use and prescription that ultimately lead to ABR, while different studies highlighted the carelessness of the patients and their sweet-will to continue the course of medicine. It is found in several studies that gender is a key determinant of AB prescribing, and a few recent studies found that women consume 36%–40% more ABs than men, particularly in developed countries.

In addition, age, education level, knowledge of AB usage, medication style, and reasons for taking ABs have significant associations with ABR.

As there is a shortage of new antibiotics, it is of utmost importance that the existing ones are used cautiously. There is evidence that controlled and lowered use of antibiotics can abate resistance. This can be achieved by implementing stricter regulations on antibiotic use, as well as by educating healthcare professionals and the public, as irrational antibiotic use is common in Bangladesh through prescription and self-medication. Antibiotic stewardship programs should also be implemented to optimize the use of antibiotics in healthcare settings. At the same time, regular surveillance needs to be conducted throughout the country to keep track of the resistance patterns of the pathogens.

References:

1. Sengupta S, Chattopadhyay MK, Grossart HP. The multifaceted roles of antibiotics and antibiotic resistance in nature. Front Microbiol. 2013; 4:47.

2. Uddin TM, Chakraborty AJ, Khusro A, et al. Antibiotic resistance in microbes: history, mechanisms, therapeutic strategies and future prospects. J Infect Public Health. 2021; 14(12):1750-1766.

3. Saha SK. Factors influencing clinician's antibiotic prescribing behaviors (APB) in Bangladesh: an in-depth review using COMB model. Open Access J Transl Med Res. 2017; 1(4):00019.

4. Dutta S, Haque M. COVID-19: questions of antimicrobial resistance. Bangladesh Journal of Medical Science. 2021; 20(2):221-227.

5. Blair JMA, Webber MA, Baylay AJ, Ogbolu DO, Piddock LJV. Molecular mechanisms of antibiotic resistance. Nat Rev Microbiol. 2015; 13(1):42-51.

6. WHO. The world medicines situation report 2011. World Health Organization; Geneva, Switzerland: 2011.

7. Mannan A, Shohel M, Rajia S, Mahmud NU, Kabir S, Hasan I. A cross sectional study on antibiotic resistance pattern of Salmonella typhi clinical isolates from Bangladesh. Asian Pac J Trop Biomed. 2014; 4(4):306-311.

8. Klein EY, Van Boeckel TP, Martinez EM, Pant S, Gandra S, Levin SA, et al. Global increase and geographic convergence in antibiotic consumption between 2000 and 2015. Proc Natl Acad Sci USA. 2018; 115(15): E3463 -E3470.

9. WHO. Worldwide country situation analysis: response to antimicrobial resistance. April 2015.WHO.

10. Baseline study of private drug shops in Bangladesh: Findings and recommendations. Arlington, VA: Systems for Improved Access to Pharmaceuticals and Services (SIAPS), 2015.

11. Morgan DJ, Okeke IN, Laxminarayan R, Perencevich EN, Weisenberg S. Non-prescription antimicrobial use worldwide: a systematic review. Lancet Infect Dis 2011; 11:692–701.

12. Parveen M, Molla MMA, Yeasmin M, Nafisa T, Barna AA, Ghosh AK. Evidences on irrational anti-microbial prescribing and consumption among COVID-19 positive patients and possible mitigation strategies: a descriptive cross sectional study. Bangladesh J Infect Dis. 2020; 7(October):S3-S7.

13. Dunachie SJ, Day NP, Dolecek C. The challenges of estimating the human global burden of disease of antimicrobial resistant bacteria. Curr Opin Microbiol. 2020; 57:95-101.

14. Guisado-Gil A, Infante-Domínguez C, Penalva G, Praena J, Roca C, Navarro-Amuedo MD, et al. Impact of the COVID-19 pandemic on antimicrobial consumption and hospital-acquired candidemia and multidrug-resistant bloodstream infections. Antibiotics. 2020; 9(11):8.

15. Getahun H, Smith I, Trivedi K, Paulin S, Balkhy HH. Tackling antimicrobial resistance in the COVID-19 pandemic. Bull World Health Organ. 2020; 98(7):442-442A.

16. World Health Organization. Global Priority List of Antibiotic-Resistant Batceria to Guide Research, Discovery, and Development of New Antibiotics. (Accessed July 03, 2017).

17. Nisabwe L, Brice H, Umuhire MC, Gwira O, Harelimana JD, Nzeyimana Z, et al. Knowledge and attitudes towards antibiotic use and resistance among undergraduate healthcare students at University of Rwanda. J Pharm Policy Pract. 2020; 13(1):7.

18. Schröder W, Sommer H, Gladstone BP, Foschi F, Hellman J, Evengard B, et al. Gender differences in antibiotic prescribing in the community: a systematic review and meta-analysis. J Antimicrob Chemother. 2016; 71(7):1800-1806.

DCIMCJ

Original Article

DCIMCJ 2023 January;10(1):16-24

Association of Serum Glypican 3 Level among Patients with HCC and Cirrhosis of Liver Attending in Hepatology OPD in BSMMU, Bangladesh

Yeusuf AMAA[1], Siddique TB[2] Roy PP[3], Naha PK[4]

Abstract:

Background: Hepatocelluler carcinoma (HCC) is one of the most common solid organ tumors in the world. Hepatitis B virus, hepatitis C virus and alcoholic disease are mostly responsible for HCC. Glypican-3 (GPC3), a membrane-bound proteoglycan, is expressed by a large proportion of HCCs, but is undetectable in normal hepatocytes and non-malignant liver disease. Objective: The purpose of the present study was to find out the diagnostic value of serum glypican-3 for detection of hepatocellular carcinoma and cirrhosis of liver. Methods: This cross-sectional study took place in the Department of Hepatology, BSMMU. The study population consisted of confirmed hepatocellular carcinoma patients attending Hepatology OPD or admitted in inpatient department during the study period who fulfilled the inclusion criteria. A total of 30 patients with HCC and 30 patients of cirrhosis of liver were included in the study by convenience sampling technique after taking written informed consent and doing all relevant examinations and investigations for confirmation of diagnosis. Serum GPC-3 and serum AFP tests were performed for these 60 patients. Serum GPC-3 and AFP were done from the Microbiology department of BSMMU. Results: Maximum patients were 46-60 years among these two groups. Regarding sex, males were predominant than females. The most common complaints in HCC group were right hypochondriac/epigastric pain (96.7%), whereas in cirrhosis group the most complaints were abdominal distension (80%). It was evident that, 76.7% of patientswere HBsAg positive, 10% had anti HCV in HCC group. On the other hand, in cirrhosis group 76.7% had HBsAg positive. Mean serum glypican 3 level was 378.00 ng/ml in HCC group of patients and 22.36ng/ml in cirrhosis group of patients. Conclusion: Significant association of AFP and serum glypican 3 in HCC patients (P<0.05) even glypican 3 was found significantly raised among 5 HCC patients who has alfa fetoprotein below cut of value range, but there was no significant association of AFP and serum glypican 3 in cirrhosis patients.

Keywords: Serum glypican 3, hepatocellular carcinoma, cirrhosis of liver, hepatitis C virus

Introduction:

Hepatocellular carcinoma (HCC) represents the fifth most common cancer worldwide and the third most common cause of cancer death with about 500,000 new cases each year[1]. The HCC accounts for approximately 75% of all liver tumors[2]. The main predisposing factors of HCC are cirrhosis, hepatitis C virus (HCV), hepatitis B virus (HBV) and ingestion of fungal carcinogens as aflatoxin B1[3,4] Prognosis depends on number and size of tumors[5]. AFP is the most widely used tumor marker for the detection and monitoring of HCC[6]. However, serum AFP is not always increased to a diagnostic level in all patients, specifically in small HCC who have tumor nodules less than 5 cm in diameter[7]. In other case for example, non-malignant chronic liver diseases, including chronic hepatitis and cirrhosis, pregnancy and other types of cancer such as germ cell, stomach, biliary tract and pancreatic tumors, serum AFP is found high[8].

Hence, the search for a new promising serum marker of HCC with high sensitivity and specificity is required[9]. The glypican-3 (GLP-3) plays an important role in cellular growth, differentiation and migration.

1. Dr. A. M. Abdullah Al Yeusuf, Assistant Professor, Department of Hepatology, Dhaka Central International Medical College.

2. Dr. Tasnim Binta Siddique, Assistant Professor, Department of Surgery, Dhaka Central International Medical College.

3. Dr. Partho Pratik Roy, Registrar, Department of Hepatology, Shaheed Suhrawardy Medical College.

4. Dr. Ponkaj Kumar Naha, Medical Officer, Department of Hepatology, Shaheed Suhrawardy Medical College.

Correspondence: A. M. Abdullah Al Yeusuf
E-mail: dryeusuf01 @gmail.com

The GLP-3 has been reported to be increased in HCC in comparison with pre-neoplastic lesions and cirrhotic tissues at the mRNA and protein levels[10].

HCC is often asymptomatic and frequently diagnosed at late stages[11]. Early diagnosis of HCC could be done by regular screening programs among high-risk populations by combination of serum tumor markers as alpha-fetoprotein and imaging modalities as ultrasound, computed tomography (CT) or magnetic resonance imaging (MRI)[12.]

As patients with cirrhosis may develop HCC only after many years, emphasis has been placed on the early detection of HCC when it is small, asymptomatic and potentially curable. So, this study aimed to estimate serum GLP-3 levels in patients with cirrhosis and HCC, versus healthy controls. Also, to define the role of serum GLP-3 levels in the early diagnosis and differentiation of small (diameter of 3 cm or less) HCC from liver cirrhosis, and to correlate these levels.

AFP : Alfa-fetoprotein

BSMMU: Bangabandhu Sheikh Mujib Medical University

CT scan: Computed Tomography Scan

FNAC : Fine Needle Aspiration Cytology

GPC-3 : Glypican-3

HBsAg : Hepatitis B surface antigen

HCC : Hepatocellular Carcinoma

HCV : Hepatitis C Virus

OPD : Out-Patient Department

Materials & methods:

This cross-sectional study took place in the Department of Hepatology, BSMMU during the period of January 2015 to December 2016. The study population consisted of confirmed hepatocellular carcinoma patients attending Hepatology OPD or admitted in inpatient department during the study period who fulfill the inclusion criteria. A total of 30 patients with HCC and 30 patients with cirrhosis were included in the study by convenience sampling technique after taking written informed consent and doing all relevant examinations and investigations for confirmation of diagnosis. Structured questionnaire was used to collect the necessary information.

Serum GPC-3 and serum AFP tests were performed of these 60 patients. Serum GPC-3 and AFP were done from the Microbiology department of BSMMU.

GPC-3was done by ELISA. This assay employs an antibody specific for human GPC-3 coated on a 96-well plate. Standards and samples were pipetted into the wells and GPC-3 was present in a sample bound to the wells by immobilized antibody. The wells were washed and biotinylated anti-human GPC-3 antibody is added. After washing away unbound biotinylated antibody, Horseradish Peroxidase-conjugated streptavidin was pipetted to the wells. The wells werere-washed and a Tetramethylbenzidine substrate solution was added to the wells. Then, color developed in proportion to the amount GPC-3 was bound. The stop solution changed the color from blue to yellow, and the intensity of the color was measured at 40 nm.

All continuous data were presented as mean ± standard deviation (SD). Qualitative data were analyzed by Chi-square test & quantitative data were analyzed by student's t-test. The sensitivity and specificity were evaluated by multivariate logistic regression analysis after adjusting for the potential confounding variables. Risk analysis was performed by calculating the odds ratio (OR) and the 95% confidence interval (CI). All tests were two tailed, with a significant p value defined as < 0.05. All statistical analyses were performed by using SPSS version 20.

Inclusion criteria:

- HCC (irrespective of etiology) which was diagnosed by positive cytology of fine needle aspirate from hepatic space occupying lesion.

Exclusion criteria:

- Patients who were on treatment or previously treated for HCC.
- Patient with co-morbid conditions; not physically fit for liver FNAC.

- Patients with dysplastic nodules or inconclusive result in FNAC.
- Presence of clinical or biomarkers suggestive of other malignancies.

Child-Pugh Score:

The Child-Pugh scoring system (also known as the Child-Pugh-Turcotte score) was designed to predict mortality in cirrhosis patients. Originally conceptualized by Child and Turcotte in 1964, patients were divided into three categories: A - good hepatic function, B - moderately impaired hepatic function, and C - advanced hepatic dysfunction. Their original scoring system used five clinical and laboratory criteria to categorize patients: serum bilirubin, serum albumin, ascites, neurological disorder, and clinical nutrition status[13].

Result:

Socio-demographic Characteristics

Table I show maximum patients were 46-60 years between two groups. Regarding sex male were predominance than female. Maximum patients were illiterate between two groups and majority were farmer between two groups.

Table I: Demographic characteristics of the study subjects (n=60).

Characteristics	HCC (n=30)		Cirrhosis (n=30)		P value
	No	%	No	%	
Age in years					
16-30	3	10.0	4	13.3	
31-45	8	26.7	8	26.7	
46-60	11	36.7	12	40.0	0.925
>60	8	26.7	6	20.0	
Mean±SD	50.26±14.7		48.63±14.39		
Sex					
Male	26	86.7	25	83.3	
Female	4	13.3	5	16.7	0.718
Education					
Illiterate	14	46.7	24	80.0	
Primary	8	26.7	2	6.7	
SSC	4	13.3	4	1.3	0.037
HSC	3	10.0	0	00	
Bachelor and above	1	3.3	0	00	
Occupation					
House wife	4	13.3	4	13.3	
Service	2	6.7	2	6.7	0.898
Farmer	16	53.3	19	63.3	
Business	7	23.3	4	13.3	
Others	1	3.3	1	3.3	
Monthly income					
Upto 5000 taka	3	10.0	1	3.3	
5001-10000	13	43.3	25	83.3	0.010
10001-20000	10	33.3	4	13.3	
Above 20000	4	13.3	0	00	

It was observed that most common complaints were right hypochondriac/epigastric pain (96.7%) followed by weakness (90%), weight loss (86.7%), abdominal swelling (73.3%) and abdominal pain (50%) in HCC group. On the other hand, in cirrhosis group the most complaints were abdominal distension (80%), followed by yellow coloration of eyes (40%), weakness (30%) and abdominal swelling (23.3%). It was shown in table II.

Clinical Characteristics:

Table II: Distribution of the subject according to complaints.

It was observed that most common complaints were right hypochondriac/epigastric pain (96.7%) followed by weakness (90%), weight loss (86.7%), abdominal swelling (73.3%) and abdominal pain (50%) in HCC group. On the other hand, in cirrhosis group the most complaints were abdominal distension (80%), followed by yellow coloration of eyes (40%), weakness (30%) and abdominal swelling (23.3%). It was shown in table II.

Table II: Distribution of the subject according to complaints.

Complaints	Hepatocellular carcinoma (n=30)		Cirrhosis (n=30)		P value
	No	%	No	%	
Right hypochondriac/ epigastric pain	29	96.7	2	6.7	0.001
Weight loss	26	86.7	1	3.3	0.001
Weakness	27	90.0	9	30.0	0.001
Abdominal swelling	22	73.3	7	23.3	0.001
Yellow coloration of eyes	5	16.7	12	40.0	0.045
Fever	3	10.0	1	3.3	0.301
Abdominal distention	15	50.0	24	80.0	0.015
Blood vomiting	1	3.3	0	00	0.313
Passage of black stool	1	3.3	1	3.3	1.00
Altered level of consciousness	1	3.3	0	00	0.313

Table III: Clinical characteristics of the study subjects.

Table III shows 76.7% had HBsAg positive, 10% had anti HCV in HCC group. On the other hand, in cirrhosis group 76.7% had HBsAg positive, 13.3% had anti HCV. Regarding Child Pugh classification, 4(13.3%), 16(53.3%), and 10 (33.3%), patients with cirrhosis were in class A, B, and C, respectively. In contrast, 12 (40%), 16(53.3%), and 2 (6.7%) patients with HCC were in Child Pugh class A, B, and C, respectively. There was no significant difference between the two groups (P>0.05).

Clinical characteristics	Hepatocellular carcinoma (n=30)		Cirrhosis (n=30)		P value
	No	%	No	%	
HBsAg positive					
Positive	23	76.7	23	76.7	1.000
Negative	7	23.3	7	23.3	
Anti HCV					
Positive	3	10.0	4	13.3	0.688
Negative	27	90.0	26	86.7	
Child Pugh score					
Stage A	12	40.0	4	13.3	0.009
Stage B	16	53.3	16	53.3	
Stage C	2	6.7	10	33.3	

Table IV: Mean distribution of AFP and Serum glypican 3.

Table IV shows the mean AFP level was 19191.17ng/ml in HCC group of patients and 60.17ng/ml in cirrhosis group. Mean serum glypican 3 level was 378.00ng/mlin HCC group of patients and 22.36ng/ml in cirrhosis group of patients.

	Hepatocellular carcinoma (n=30)	Cirrhosis (n=30)	P value
	(Mean±SD)	(Mean±SD)	
Alfa fetoprotein (ng/ml)	19191.17±55084	60.17±145.43	0.001*
Serum glypican 3 (ng/ml)	378.00±168.42	22.36±24.17	0.001*

*Statistically significant

DCIMCJ

Table V: Association of serum glypican 3 according to clinical characteristics in HCC patients

Table V shows higher level of serum glypican 3 were found in both HBsAg and anti HCV positive HCC patients. It also observed that higher level of serum glypican 3 found in HCC patients of Child Pugh C class.

Clinical characteristics	Serum glypican 3 Mean±SD	P value
HBsAg		
Positive	383.50±153.85	0.001*
Negative	359.92±223.20	
Anti HCV		
Positive	471.00±50.76	0.044
Negative	367.66±174.16	
Child Pugh score		
Stage A	363.00±194.951	
Stage B	386.44±163.16	0.002*
Stage C	400.50±20.50	

*Statistically significant

Table VI: Association of AFP according to clinical characteristics in HCC patients

Table VI shows higher level of serum alfa fetoprotein 3 were found in both HBsAg and anti HCV positive HCC patients. It also observed that higher level of serum alfa fetoprotein found in HCC patients of Child Pugh C class.

Clinical characteristics	Alfa fetoprotein Mean±SD	P value
HBsAG		
Positive	22074 ± 62669	0.001*
Negative	9717±11334	
Anti HCV		
Positive	110523±164706	
Negative	9043±15106	0.001*
Child Pugh score		
Stage A	7928±11675	
Stage B	11224±17839	0.001*
Stage C	150500±211424	

*Statistically significant

Table VII: Association of serum glypican 3 according to clinical characteristics in cirrhosis patients

Table VII shows lower level of serum glypican 3 were found in both HBsAg and anti HCV positive cirrhosis patients. It also observed that higher level of serum glypican 3 found in cirrhosis patients of child Pugh C class.

Clinical characteristics	Serum glypican 3 Mean±SD	P value
HBsAg		
Positive	27.90±28.70	
Negative	20.68±23.08	0.498
Anti HCV		
Positive	22.52±24.42	
Negative	21.35±26.00	0.930
Child Pugh score		
Stage A	16.82±32.31	
Stage B	21.60±32.31	0.330
Stage C	31.55±26.19	

Table VIII: Association of AFP according to clinical characteristics in cirrhosis patients.

TableVIII shows higher level of serum alfa fetoprotein 3 were detected in both HBsAg and anti HCV positive cirrhosis patients. It also observed that higher level of serum alfa fetoprotein found in cirrhosis patients of child Pugh C class.

Clinical characteristics	Alfa fetoprotein Mean±SD	P value
HBsAG		
Positive	70.20±163.76	
Negative	27.24±47.32	0.001*
Anti HCV		
Positive	63.64±154.77	
Negative	37.66±63.57	0.001*
Child Pugh score		
Stage A	18.82±29.39	
Stage B	37.35±46.86	0.003*
Stage C	113.23±243.70	

*Statistically significant

Table IX: Association of AFP and serum glypican 3 in HCC patients.

Table IX shows significant association of AFP and serum glypican 3 in HCC patients (P<0.05) even glypican 3 was found significantly raised among 5 HCC patients who has alfa fetoprotein below cut of value range.

AFP	Number of patients	Serum glypican 3	P value
<200	5	324.77±120.24	0.001*
200-5000	18	402.82±145.27	
>5000	7	425.60±55.01	

*Statistically significant

Table X: Association of AFP and serum glypican 3 in cirrhosis patients.

Table X shows no significant association of AFP and serum glypican 3 in cirrhosis patients (P>0.05)

AFP	Number of patients	Serum glypican 3	P value
<20	12	20.83±21.90	0.865
20-50	16	23.6±28.52	
>50	2	28.80±34.93	

Discussion:

This cross-sectional observational study was carried out with the aim to assess the diagnostic value of serum glypican-3 in detecting hepatocellular carcinoma as well as cirrhosis of liver in the department of Hepatology, BSMMU, Dhaka between March, 2015 to August, 2016. A total of 60 were included in this study. Patient presented with ultrasonographic or radiological evidence of hepatic SOL were prepared for FNA. FNA were done in the department of Hepatology, BSMMU. Aspirated material was be sent to the department of pathology for cytological examination. After histological confirmation of hepatocellular carcinoma these patients were finally selected for the study.

Hepatocellular carcinoma most frequently develops in patients with cirrhosis related to chronic viral hepatitis[14]. The use of biomarkers in predicting disease holds considerable promise and has played an important role in early diagnosis. In HCC, GLP-3 fosters HCC growth by altering Wnt signaling[15]. modulating growth factors such as insulin-like growth factor-2 (IGF-2), bone morphogenetic protein-9 (BMP-9), and fibro-blast growth factor-2(FGF-2) and possibly by playing a role in M2 macrophage recruitment[16].

Thirty patients were diagnosed as HCC. They were 26 males and 4 females, with their mean age ± SD of 50.26 ± 14.7 years. Another thirty patients had HCV liver cirrhosis. They were 25 males and 5 females, their mean age ± SD of 48.63 ± 14.39 years. Age and gender were not significantly different among two studied groups (p>0.05). Regarding Child Pugh classification, 4(13.3%), 16(53.3%), and 10 (33.3%), patients with cirrhosis were in class A, B, and C, respectively. In contrast, 12 (40%), 164(53.3%), and 2 (6.7%) patients with HCC were in class A, B, and C, respectively. There was no significant difference between the two groups (P>0.05). These findings consistent with another study in 2014 occurred in Egypt[17].

In the present study, we found that serum levels of GLP-3 were significantly higher in patients with HCC compared with cirrhosis group. Several studies have demonstrated the efficacy of GLP-3as a diagnostic tool in HCC. It was reported that the sensitivity and specificity ranged from 47–93.3%, and 41.8–100%, respectively [18-19].

Consistent with our and these previous studies, tumors arising in cirrhotic liver are more likely to express GLP-3[20]. Also, in line with our work, recently the American Association for the Study of Liver Disease has stated in management of HCC that 'Expert pathology diagnosis is reinforced by stain-ing for GLP-3, heat shock protein 70 and glutamine synthesize, because positivity for two of these three stains confirms HCC[21].

Likewise, the Clinical Practice Guidelines of the European Association for the Study of the Liver recommend the use of these three markers to confirm HCC diagnosis (EASL-EORTC 2012).

Conclusion:

Serum GLP-3 is highly sensitive and specific for detecting HCC, and differentiating HCC from liver cirrhosis. Further studies in larger groups of patients are needed to confirm this finding.

References:

1. Bruix J, Llovet JM. Hepatitis B virus and hepatocellular carcinoma. Journal of Hepatology. 2003 Jan 1;39:59-63.

2. Asrani SK, Devarbhavi H, Eaton J, Kamath PS. Burden of liver diseases in the world. Journal of hepatology. 2019 Jan 1;70(1):151-71.

3. Moudgil V, Redhu D, Dhanda S, Singh J. A review of molecular mechanisms in the development of hepatocellular carcinoma by aflatoxin and hepatitis B and C viruses. Journal of Environmental Pathology, Toxicology and Oncology. 2013;32(2)

4. Chu YJ, Yang HI, Wu HC, Lee MH, Liu J, Wang LY, Lu SN, Jen CL, You SL, Santella RM, Chen CJ. Aflatoxin B1 exposure increases the risk of hepatocellular carcinoma associated with hepatitis C virus infection or alcohol consumption. European Journal of Cancer. 2018 May 1;94:37-46.

5. Okuda K, Ohtsuki T, Obata H, Tomimatsu M, Okazaki N, Hasegawa H, Nakajima Y, Ohnishi K. Natural history of hepatocellular carcinoma and prognosis in relation to treatment study of 850 patients. Cancer. 1985 Aug 15;56(4):918-28.

6. El-Houseini ME, Mohammed MS, Elshemey WM, Hussein TD, Desouky OS, Elsayed AA. Enhanced detection of hepatocellular carcinoma. Cancer control. 2005 Oct;12(4):248-53.

7. Tangkijvanich P, Chanmee T, Komtong S, Mahachai V, Wisedopas N, Pothacharoen P, Kongtawelert P. Diagnostic role of serum glypican-3 in differentiating hepatocellular carcinoma from non-malignant chronic liver disease and other liver cancers. Journal of gastroenterology and hepatology. 2010 Jan;25(1):129-37.

8. Lahoud RM, O'Shea A, El-Mouhayyar C, Atre ID, Eurboonyanun K, Harisinghani M. Tumour markers and their utility in imaging of abdominal and pelvic malignancies. Clinical Radiology. 2021 Feb 1;76(2):99-107.

9. Wright LM, Kreikemeier JT, Fimmel CJ. A concise review of serum markers for hepatocellular cancer. Cancer Detection and Prevention. 2007 Jan 1;31(1):35-44.

10. Capurro M, Wanless IR, Sherman M, Deboer G, Shi W, Miyoshi E, Filmus J. Glypican-3: a novel serum and histochemical marker for hepatocellular carcinoma. Gastroenterology. 2003 Jul 1;125(1):89-97.

11. Filmus J, Capurro M. Glypican-3 and alphafetoprotein as diagnostic tests for hepatocellular carcinoma. Molecular Diagnosis. 2004 Dec;8:207-12.

12. An C, Kim DY, Choi JY, Han KH, Roh YH, Kim MJ. Noncontrast magnetic resonance imaging versus ultrasonography for hepatocellular carcinoma surveillance (MIRACLE-HCC): study protocol for a prospective randomized trial. BMC cancer. 2018 Dec;18(1):1-8.

13. Child CG, Turcotte JG. Surgery and portal hypertension. Major Probl Clin Surg. 1964;1:1-85.

14. Perz JF, Armstrong GL, Farrington LA, Hutin YJ, Bell BP. The contributions of hepatitis B virus and hepatitis C virus infections to cirrhosis and primary liver cancer worldwide. Journal of hepatology. 2006 Oct 1;45(4):529-38.

15. Poon D, Anderson BO, Chen LT, Tanaka K, Lau WY, Van Cutsem E, Singh H, Chow WC, Ooi LL, Chow P, Khin MW. Management of hepatocellular carcinoma in Asia: consensus statement from the Asian Oncology Summit 2009. The lancet oncology. 2009 Nov 1;10(11):1111-8.

16. Filmus J, Song H, Shi W, Duenas Gonzalez A, Kaya M, Cano-Gauci D. Glypican-3 is a novel inhibitor of insulin-like growth factor signaling. Medicina (B Aires). 1999 Jan 1;59(5 Pt 2):546.

17. Badr EA, Korah TE, Ghani AA, El-Sayed S, Badr S. Role of serum glypican-3 in the diagnosis and differentiation of small hepatocellular carcinoma from hepatitis-C virus cirrhosis. Alexandria Journal of Medicine. 2014 Sep 1;50(3):221-6.

18. Liu H, Li P, Zhai Y, Qu CF, Zhang LJ, Tan YF, Li N, Ding HG. Diagnostic value of glypican-3 in serum and liver for primary hepatocellular carcinoma. World journal of gastroenterology: WJG. 2010 Sep 9;16(35):4410.

19. Baz E. The Diagnostic Value of Peripheral Blood Glypican-3 in Patients with Hepatocellular Carcinoma. World J Med Sci.;2012(7):105.

20. Qiao SS, Cui ZQ, Gong L, Han H, Chen PC, Guo LM, Yu X, Wei YH, Ha SA, Kim JW, Jin ZT. Simultaneous measurements of serum AFP, GPC-3 and HCCR for diagnosing hepatocellular carcinoma. Hepato-gastroenterology. 2011 Jul 15;58(110-111):1718-24.

21. Nguyen TB, Roncalli M, Tommaso LD, Kakar S.Combined use of heat-shock protein 70 and glutamine synthetase is useful in the distinction of typical hepatocellular adenoma from atypical hepatocellular neoplasms and well-differentiated hepatocellular carcinoma. Mod Pathol. 2016;29(3):283-292.

DCIMCJ

Original Article

DCIMCJ 2023 January;10(1):25-30

Anthropometric Study of Orbitonasal Proportion and Their Comparisons in Bangladeshi Buddhist Rakhain Ethnic Females and Males

Hossain S[1], Iqbal M[2], Akhter Z[3], Yeasmin F[4], Sultana R[5]

Abstract:

Background: The anthropometric pattern of the orbit onasal proportion varies with no universal normative values. Objective: The purpose of the present study was to evaluate the anthropometric study of orbitonasal proportion and their comparisons in Bangladeshi Buddhist Rakhain Ethnic females and males. Methodology: This cross-sectional 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 females in the age group of 18 to 30 years were included as the study population. Standard normative facial anthropometric values related to intercanthal distance and nose width were measured. Results: This study shows the inner intercanthal distance (IICD) mean value of females and males as 31.28±2.78 mm and 33.19±2.88 mm, respectively with a statistically significant relationship (P<0.05). The nose width was 36.11 (±2.20) in females and 41.16 (±3.03) in males which was statistically significant (P<0.05). Conclusion: This study shows that intercanthal distance and nose width differ across the adult healthy Bangladeshi Buddhist Rakhain females and males. Gender and ethnicity are two of the main parameters that affect the variation. These findings would be applicable in clinical setup as reference values during surgical planning.

Keywords: Anthropometric Study; Orbitonasal Proportion; Bangladeshi Buddhist; Rakhain Ethnicity

Introduction:

Anthropometry is the study of comparative measurements of the human body[1]. Anthropometry has been considered as the single most portable universally applicable inexpensive and noninvasive method available to assess the proportions, size and composition of human body[2]. It is an important clinical tool due to its simplicity, besides providing reference normality data about a great variety of craniofacial measurements of different populations[3]. The important branch of anthropology is cephalometry through which a human being can easily distinguish between male and female face without much difficulty and also play a great role in finding out the difference between different ethnic groups. Among the different parameters of cephalometry, nasal parameters are considered as one of the most important clues to racial and ethnic origin[4]. The nose is the uppermost part of the respiratory tract and the organ for smell. It's shape including the nasal bridge, slope of the tip, septum and nares differs from race to race, tribe to tribe and from one environmental region to the other4. It is believed that the shape of the nose is a signature indicating the ethnicity, race, age and sex[5].

Orbitonasal anthropometry has a key part in measuring dysmorphic syndromes, hypertelorism, facial trauma, especially naso-orbitoethmoid damage

1. Dr. Shahana Hossain, Professor (C.C) & Head, Department of Anatomy, Tairunnessa Memorial Medical College, Gazipur,
2. Dr. Mohammed Iqbal, Professor, Department of Anatomy, Monno Medical College, Manikgonj.
3. Dr. Zakia Akhter, Professor & Head, Department of Anatomy, Dhaka Central International Medical College.
4. Dr. Farida Yeasmin, Associate Professor, Department of Anatomy, Tairunnessa Memorial Medical College, Gazipur.
5. Dr. Razia Sultana, Associate Professor, Department of Anatomy, Tairunnessa Memorial Medical College, Gazipur.

Correspondence: Dr. Shahana Hossain
E-mail: shahanahossain047@gmail.com

and also in diagnosing neural crest anomalies. It also aids in arrangement reconstructive surgical procedures of the face and getting fruitful outcome. Canthus is the term used to describe the either reached the adult level most maybe in the mid to late twenties. Canthal measurements are predisposed by ethnicity[6]. It is a method used in both physical and medical anthropology comprising precise and systematic measurements of the human skull. Craniofacial anthropometry also includes measurement of the inner (medial) and outer (lateral) canthal distances and canthal index. Orbitonasal anthropometry is significant for the study of human growth and variations in different age, sex and races[7].

Canthus is the angle at either end of the fissure between the eyelids. Lateral canthus is formed by the lateral part of superior and inferior eyelids and medial canthus is formed by the medial part of the superior and inferior eyelids. Canthal distances are measured as inner canthal distance and outer canthal distance. Inner canthal distance is the distance between the two medial canthi and outer canthal distance is the distance between the two lateral canthi[8]. Considering all facts mentioned, the purpose of the present study was to establish the baseline measurements of the orbitonasal proportion and their comparisons in Bangladeshi Buddhist Rakhain ethnic females and males.

Methodology:

Study Settings and Population:

This cross-sectional observational study was carried out in the Department of Anatomy at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka from January 2011 to December 2011 for a period of one (01) year. Participants of the study were adult healthy Bangladeshi Buddhist Rakhain ethnic females who were in the age group of 18 to 30 years. 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, craniofacial diseases and abnormalities, growth related disorders and history of facial trauma/reconstruction surgery were excluded from the study.

Study procedure:

During landmark marking, each of the participants was asked to sit relaxed on a chair and the head was kept in the normal head position. This position was recommended and suitable for the correct identification of facial features[9]. All the measurements were taken twice to avoid measurement errors. With the help of a sliding calipers, the measurements were taken in millimeters. The landmarks used for taking different physical measurements have been described by Kolar and Salter[10]. The landmarks in the study were defined as follows: ‘alare’ to ‘alare’, ‘endocanthion’ to ‘endocanthion’[10]. (1) Nasion- is the midpoint of the naso-frontal suture. In the lateral view, it represents the apex of the fronto-nasal angle; (2) Subnasale- is the junction between the lower border of the nasal septum and the cutaneous portion of the upper lip in the midline; (3) Gnathion- is the lowest point in the midline on the lower border of the chin. Upper facial height (UFH) is defined as distance between Nasion and Subnasale[10]. Lower facial height (LFH) is a distance between Sub-nasale and Gnathion[11].

Statistical analysis:

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 upper and lower facial heights.

B
A
B
B
B
B

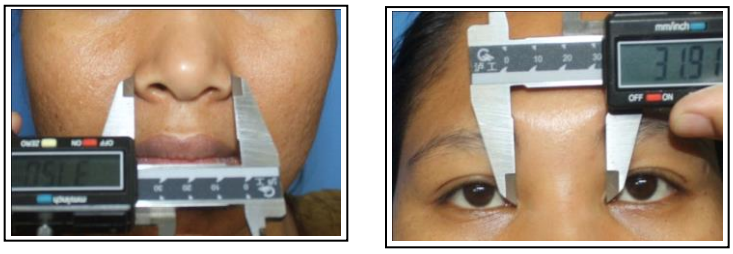


Figure-1: A: Procedure of measuring the nose width ('alare' to 'alare') in a participant using a sliding calipers. **B:** Procedure of measuring the intercanthal distance ('endocanthion' to 'endocanthion') in a participant using a sliding caliper.

Results:

A total number of 100 participants were recruited for this study. The mean with SD of Intercanthal distance was 31.28 (±2.48) and 33.19 (±2.88) in female and male respectively. The mean with SD of nose width was 36.11 (±2.20) and 41.16 (±3.03) in female and male respectively (Table 1).

Table 1: Comparisons of the Values of the Variables Related to the Orbitonasal Proportion in the Adult Healthy Bangladeshi Buddhist Rakhain Females and Males (n=100 females and 100 males)

Variable related to the Orbitonasal proportion	Gender	Value (mm)		P value
		Range	Mean (±SD)	
Intercanthal distance (en – en)	Female	25.17 – 39.15	31.28 (±2.48)	0.000
	Male	27.00 – 40.71	33.19 (±2.88)	
Nose width (al – al)	Female	31.08 – 42.30	36.11 (±2.20)	0.000
	Male	34.07 – 51.50	41.16 (±3.03)	
	Total	120.00 - 160.00	140.28(±8.00)	

* n (no. of participants)= 100 females, 100 males; al: alare; en: endocanthion;
‡ From unpaired t test; p≤ 0.05 was considered as significant; S: Significant; NS: Non-significant

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

Female Population Group	Age (years)	Sample size	References	Variable related to Orbitonasal proportion*	
				Mean intercanthal distance (en–en)	Mean nose width(al-al)
1. Korean American	18-30	30	Choe et al[24]	L	S
2. Thai	18-30	30	Farkas et al[22]	L	L
3. Japanese	18-30	30	Farkas et al[22]	L	S
4. Indian	18-30	30	Farkas et al[22]	S	S
5. Indian American	18-30	30	Husein et al[25]	S	S
6. Turkish	18-25	228	Bozrik et al[26]	S	S
7. Azerbaijan	18-30	30	Farkas et al[22]	S	S
8. Bulgarian	18-30	30	Farkas et al[22]	S	S
9. Czech	18-30	30	Farkas et al[22]	S	S
10. Croatian	18-30	30	Farkas et al[22]	S	H
11. German	18-30	30	Farkas et al[22]	S	L
12. Greek	18-30	30	Farkas et al[22]	S	H
13. Slovak	18-30	30	Farkas et al[22]	S	H
14. African American	18-30	30	Porter and Olson[27]	S	S
15. Angolan	18-30	30	Farkas et al[22]	L	L
16 Zulu	18-30	30	Farkas et al[22]	L	S

***S** (Similar): Rakhain females' mean value is similar to that of the mentioned population (varying by 10% or less).

L (Lower): Rakhain females' mean value is lower than that of the mentioned population.

H (Higher**):** Rakhain females' mean value is higher than that of the mentioned population.

Discussion:

A significant difference was found between genders in the orbitonasal in the adult healthy Bangladeshi Buddhist Rakhain females and males. The results of females and males are 31.28 ±2.48 mm and 33.19 ±2.88 mm, respectively and the results show a significant difference (P-value = 0.001). These findings are in well agreement with the other studies[12-18].

Adhikari et al[8] reported there is a significant difference (p value 0.0.5) in the value of inner canthal distance between female and male of Indian and Nepalese populations with males having higher inner intercanthal distance. A Sudanese study was done by Salah et al[19] among females and it revealed that the inner Intercanthal distance (IICD) minimum value is 24.15 mm and the maximum value is 37.46 mm. The other Sudanese study, done by EI-Sheikh et al[20] revealed that the mean width of the inner Intercanthal distance (IICD) is 32.80 mm. Furthermore, the gender shows significant influence on the anthropometric pattern of the inner Intercanthal distance (IICD) with higher values in males. A Turkish study done by Everekliogluet al[21] for the investigation of the inner Intercanthal distance (IICD) in females and males revealed significantly lower values when compared to the Sudanese.

It is evident from Table 2 in the results section that the Rakhain females showed the mean values of all variables similar to Indian, Indian American, Turkish, Azerbaijan, Bulgarian, Czech, and African American females. The other variables showed varied findings, though different trends were somewhat visible. The Rakhain nose width had higher (H) means than the means of the predominantly Caucasoid populations like Croatian, Greek and Slovak. On the other hand, the intercanthal distance had a lower (L) mean in the Rakhain females than in the predominantly mongoloid, Thai, Japanese and Korean American populations.

Porter, along with Farkas, evaluated the differences between continental Asian, Asian American, and North American Caucasian faces. The most significant differences between these two groups were that the Asian group had significantly smaller mouth width, greater Intercanthal distance, shorter eye fissures length, and much wider noses. Farkas et al[22] 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 discussed above and tested their differences statistically with North American White people.

In the current study, nose width was 36.11±2.20 in female and 41.16±3.03 in male which was statistically significant (P<0.05). Farkas[22] study showed that the mean values of nose width in Indian it was 37.9mm, in Singaporean Chinese it was 39.2 mm, in Thai it was 40.8 mm, which showed differences with the values of Bengali, it was d 33.81 mm and Chakma it was 34.70 mm. When compared with Caucasian Azerbaijan, the mean values of nose width was 35.7 mm and Negroid Angolan, it was 46.3mm, ethnic differences also established[23].

Conclusion:

This study shows that intercanthal distance and nose width are lower in female than male in the adult healthy Bangladeshi Buddhist Rakhain. Therefore, it needs further studies to establish the scientific reasons for variation in measurements among this ethnic study population of Bangladesh.

References:

1. Hall JG, Allanson JE, Grip KW, Slovotinek AM. Handbook of Physical Measurements. 2nd edition. New York. Oxford University Press;2007.

2. Onis MD & Habicht J. 1996. Anthropometric reference data for international use: recommendations from a world health organization expert committee. The American Journal of Clinical Nutrition. 2007; 64:650-658.

3. Samper MA, Novo NF, Juliano Y, Colugnati FAB, Sigulem DM. Anthropometry and body composition in ethnic Japanese and Caucasian adolescent girls: considerations on ethnicity and menarche. International journal of Obesity, 2003;27:1114-1120.

4. Chakraborty R, Bhattacharjee PK, Mostafa A, Hoque R, Biswas RSR. Study of Nasal Parameters between Bengali and Chakma School Going Children of Bangladesh. Chattagram Maa-O-Shishu Hospital Med CollJ. 2017;16(1):33-36.

5. Etöz A. Aesthetic, Plastic and Reconstructive Surgery, Anthropometric Analysis of the Nose. Handbook of Anhthropometry, Bursa, Turkey: . 2012; pp.919-926.

6. Radha K, Srinivasan KR. Anthropometric Assessment of Canthal Distances and Canthal Index of South Indian Region: A Cross-Sectional Study. Medico-leg Update. January-March 2021;21(1):794-797.

7. Oladipo GS, Akande PA, Osogba IG, Yorkum KL. Anthropometric Studies of Inner Canthal Distance, Outer Canthal Distance and Canthal Index of Adult Ibibios. Asian J MedSci. 2011;3(1): 14-16.

8. Adhikari N, Ambekar MN, KC S. An Anthropometric Comparison of Inner Canthal Distance, Outer Canthal Distance and Canthal Index in the Indian and Nepalese Undergraduate Students of Nepalgunj Medical College. J Nepalgunj Med Coll. 2016;14(2);12-14.

9. Sforza C, Laino A, D'Alessio R, Grandi G, Dellavia C, Tartaglia GM, et al. Three-dimensional facial morphometry of attractive Italian women. Prog Orthod. 2007;8(2):282-293.

10. Kolar JC, Salter EM. Craniofacial anthropometry: practical measurement of the head and face for clinical, surgical and research use. Springfield, Illinois, USA: Charles C Thomas Publisher Ltd,. 2005

11. Baral P, Lobo SW, Menezes RG, Kanchan T, Krishan K, Bhattacharya S, et al. An Anthropometric study of facial height among four endogamous communities in the Sunsari district of Nepal. Singapore Med J. 2010; 51(3): 212-215.

12. Abdallah SBI, Ali EA, Osman MA. Ethnic Comparison of Inner and Outer Intercanthal Distance among Adult Sudanese. Open J Stomatol. 2020;10(7): 320-325.

13. Cem E, Cengiz Y, Hamdi E, Selim D, Yasar D. Normative values of craniofacial measurements in idiopathic benign microcephalic children. Cleft-palate Craniofac J. 2001;38(3):260-263.

14. Oladipo GS, Akande PA, Osogba IG, Yorkum KL. Anthropometric studies of inner canthal distance, outer canthal distance and canthal index of adult Ibibios. Asian J Med Sci. 2011;34(1):14-16.

15. Erica N, Uldis T, Dzintra K. Craniofacial anthropometry in a group of healthy Latvian residents. Acta Med Litu. 2005;12(1):47–53.

16. Oladipo GS, Fawehinmi HB, Okod PD. Canthal indices of Urhobo and Itsekiri ethnic groups. Aus J Basic Appl Sci. 2009;3(4):3093-3096.

17. Osunwoke EA, Didia BC, Olotu EJ, Yerikema AH. A study on the normal values of inner canthal, outer canthal, interpupillary distance and head circumference of 3-21 years Ijaws. Am J Sci Ind Res. 2012;3(6):441-445.

18. Shah S, Koirala S. Study of canthal index in Nepalese undergraduate medical students of Bpkihs, Nepal: gender and ethnic differences. J Kath Med Coll. 2014;3(2):78-81.

19. Salah, M. Higzi, M.A., Ali, R.W. and Naini, F.B. The Sudanese Female Face: Normative Craniofacial Measurements and Comparison with African-American and North American White Females. J Cranio-Maxillofac Surg. 2014; 42:1704-1709.

20. El-Sheikh NMA, Mendilawi LRB, Khalifa N. Intercanthal Distance of a Sudanese Population Sample as a Reference for Selection of Maxillary Anterior Teeth Size. Sudan J Med Sci. 2010;5:117-121.

21. Everekliogluc C, Doganay S, Er H, Gunduz A, Tercan M, Balat A. Craniofacial Anthropometry in a Turkish Population. Cleft Palate-Craniofac J. 2002;39:208-218.

22. Farkas LG, Katic MJ, Forrest CR. International anthropometric study of facial morphology in various ethnic groups/races. J Craniofac Surg. 2005;16:615-646.

23. Ngeow WC, Aljunid ST. Craniofacial anthropometric norms of Malays. Singapore Med J. 2009;50(5):525-528.

DCIMCJ

Original Article

DCIMCJ 2022 January;10(1):31-36

Study on Clinical and Biochemical Characteristics of PCOS in Adolescent Girls

Akhter S[1], Salam S[2], Shimu F[3], Begum R[4]

Abstract:

More than 10% of adolescent girls are affected with polycystic ovary syndrome (PCOS). The features of polycystic ovary syndrome (PCOS) vary greatly among adolescent girls. Some of the features of PCOS may overlap with features of normal pubertal development in girls. This case-control study was carried out from January, 2021 to December, 2021 to evaluate the clinical and biochemical characteristics of PCOS in adolescent girls. A total of 200 adolescent girls were included in this observational case–control study. Of these, 100 were diagnosed as PCOS and 100 adolescent girls with no evidence of PCOS were recruited as controls. Clinical and biochemical parameters were compared in the two groups. The study found that acne, hirsutism, menstrual irregularities, obesity and family history of PCOS were strongly associated with adolescenct PCOS (P<0.05). Serum testosterone level, LH: FSH ratio and prolactin level were significantly raised in adolescent PCOS cases. Due to the complexity of PCOS, prompt diagnosis and treatment are often difficult. There is no magic bullet for PCOS, but with life style modification which includes healthy diet & regular exercise, the situation is completely controllable with better outcome.

Keywords: PCOS, adolescent, menstrual irregularities, hirsutism

Introduction:

Polycystic ovary syndrome (PCOS) is one of the common endocrine disorder in female. According to the diagnostic criteria used, it has a reported prevalence in the general population ranging from 6% to 10%[1]. Ovulatory dysfunction, hyperandrogenism, and ultrasound evidence of polycystic ovarian morphology (PCOM) describe polycystic ovary syndrome (PCOS)[2,3]. Although this disorder affects a large percentage of teenagers, there is debate about the best way of diagnosis and treatment. The most persistent feature of PCOS in both adults and adolescents is hyperandrogenism[3,4]. Pathognomonic signs of polycystic ovary syndrome (PCOS) sometimes first appear in adolescent girls. The metabolic and reproductive health consequences of PCOS may be mitigated, if detected and treated early.

The World Health Organization defines adolescence as the period between 10 and 19 years of age, which includes critical changes in growth, pubertyand development. These physiological changes, including menstrual irregularities, hyperandrogenism and polycystic ovarian morphology (PCOM) overlap with adult diagnostic criteria of PCOS, making diagnosis during adolescence challenging and controversial[5].

The first diagnostic criteria for PCOS in adult women were established by a consensus meeting at the National Institutes of Health (NIH) in 1990[6] and was followed by multiple consensuses, statements and/or guidelines for adult women with limited acknowledgment of the difficulties for diagnosing PCOS in adolescents[7-8]. A recent systematic review identified 13 clinical practice guidelines for diagnosis

1. Dr. Shirin Akhter, Professor (C.C), Department of Obstetrics and Gynaecology, Dhaka Central International Medical College.

2. Dr. Soheli Salam, Assistant Professor, Department of Obstetrics and Gynaecology, Ad-din Women's Medical College Hospital.

3. Dr. Farhana Shimu, Associate Professor, Department of Radiology and Imaging, Dhaka Central International Medical College.

4. Dr. Rahana Begum, Associate Professor, Department of Community Medicine, Dhaka Central International Medical College

Correspondence:Prof. Shirin Akhter
E-mail: shirin.anu1967@gmail.com

and management of PCOS with seven of those covering adolescentPCOS[9]. Over the last decade, there have been three international adolescent consensuses/guidelines supporting the use of NIH PCOS diagnostic criteria. Adolescent PCOS should be diagnosed using two main criteria irregular - menstrual cycles (relative to number of years post-menarche) and hyperandrogenism (clinical and/or biochemical); after excluding other conditions that mimic PCOS [10]. The 2003 Rotterdam criteria for PCOS diagnosis is not recommended in the adolescent PCOS guidelines as it is based on the presence of two of three features: menstrual irregularities, clinical and/or biochemical hyperandrogenism, and PCOM on ultrasound; and PCOM should not be used in adolescents[11].

Clinical hyperandrogenism manifests itself in PCOS patients as hirsutism, acne or hair loss. Menstrual irregularities include: primary or secondary amenorrhea, oligomenorrhea, irregular periodsandmenorrhagia. Ultrasound evidence of polycystic ovarian morphology (PCOM) and/or blood test evidence of metabolic derangement (e.g., insulin resistance, glucose intolerance, obesity, and dyslipidemia) are indicative of a clinical diagnosis of polycystic ovary syndrome in adult, but not in adolescence. Its clinical appearance might be quite variable[6].

The etiology of polycystic ovary syndrome (PCOS) is poorly understood because of the complicated interaction between genetic, metabolic, endocrine, environmental and lifestyle variables[7,8,9.10]. Hyperandrogenism, insulin resistance, and abnormal neuroendocrine gonadotropin production are all possible explanations[11]. Moreover, if ovulation does not occur, the lining of the uterus (called the endometrium) does not uniformly shed and regrow as in a normal menstrual cycle. The endometrium becomes thicker and may shed irregularly, which can result in heavy and/or prolonged bleeding. Irregular or absent menstrual periods can increase a adolescent's risk of endometrial overgrowth (called endometrial hyperplasia) or even endometrial cancer.

Adolescent girls with PCOS usually have fewer than six to eight menstrual periods per year. Some adolescent girls have normal cycles during puberty, which may become irregular if they become overweight.

Teenage girls who have polycystic ovary syndrome may have irregular periods, hair growth in unwanted places, and/or acne. This patient population is ideal for a systematic diagnostic approach. The use of any exogenous medications should also be evaluated. Medication used to treat acne may alleviate or hide PCOS symptoms, as may androgenic steroids and certain anti-seizure drugs[12].

Adolescents with polycystic ovary syndrome (PCOS) are more likely to experience menstrual irregularities, such as oligomenorrhea and excessive uterine bleeding, secondary amenorrhea (missing periods for more than 90 days with a history of prior menstrual periods), primary amenorrhea (missing menarche by age 15 or waiting more than 2 years after breast budding)[13]. PCOS was reported to be the leading cause of abnormal uterine bleeding (AUB) and menorrhagia in hospitalized teenagers, accounting for 33% of hospitalizations, in a recent research[14].

Methodology:

This was a case control study carried out from January, 2021 to December, 2021 over a period of 1 year. During the study period a total number of 100 adolescent PCOS girls (age between 10 and 19 years) were assessed. They were evaluated for the complaints of menstrual irregularity & hirsutism for at least past one year. These adolescent girls had attained menarche at least 2 years before their existing complaint of menstrual disorder and were ready to provide informed consent. Individuals not fulfilling the inclusion criteria or participating in other clinical trials or had mental and physical challenges or were not willing to participate in the study were excluded from study.100 adolescent girls with no evidence of PCOS were recruited as controls.

The BMI was calculated by dividing the weight (in kg) by the height (in miter) square toassess

DCIMCJ

obesity. The amount of terminal hair growth assessed using a modified Ferriman Gallway method in which the upper lip, chin, chest, upper and lower abdomen, thighs, upper and lower back and upper arms were scored from 0 to 8. The collected data were processed by using SPSS software, version 29. Unpaired t-test and Z test of proportion were used to the analyze the variables. Confidence interval was set at 95% level. Statistical significance was set at $p<0.05$.

Results:

A total of 200 girls fulfilling the inclusion criteria participated in the study.

Table-I:Age distribution of cases and controls.

Age (in years)	Cases (n=100)		Controls (n=100)		P value
	f	%	f	%	
10-14	40	40	37	37	
15-19	60	60	63	63	
Mean±SD	**18.23 ± 2.5**		**18.11±2.4**		**0.72^{ns}**

Ns=not significant

P value was reached from unpaired t test

They were divided into 2 groups according to age. Most of the cases (60%) belonged to 15-19 years age group. Most of the controls (63%) also belonged to 15-19 years age group (Table 1). The mean age difference was not statistically significant ($p>0.05$) between cases and controls in unpaired t-test.

Table-II: Educational status of cases and controls.

Educational status	Cases (n=100)		Controls (n=100)		P value
	f	%	f	%	
HSC	41	41	38	38	0.434^{ns}
SSC	49	49	52	52	0.674^{ns}
Below Secondary level	8	8	7	7	0.787^{ns}
Illiterate	2	2	3	3	0.653^{ns}

ns=not significant

P value was reached from Z test of proportion

The above chart shows the educational status of cases and controls. There `was no statistically significant difference between cases and controls regarding educational status($P>0.05$).

Table-III: Residential Status of cases and controls.

Residential Status	Cases (n=100)		Controls (n=100)		P value
	f	%	f	%	
Urban	85	85	81	81	0.453^{ns}
Rural	15	15	19	19	0.453^{ns}

ns=not significant

P value was reached from Z test of proportion

The above chart shows the residential status of case and controls. There `was no statistically significant difference between cases and controls regarding residential status($P>0.05$).

Table-IV: Menstrual cycle status of cases and controls.

Menstrual cycle status	Cases (n=100)		Controls (n=100)		P value
	f	%	f	%	
Oligomenorrhoea	49	49	28	28	0.002^{s}
Amenorrhoea	22	22	3	3	0.00001^{s}
Menorrhagia	11	9	19	19	0.114^{ns}
Normal	18	20	50	50	0.00001^{s}

s=significant

ns=not significant

P value was reached from Z test of proportion

The above chart shows that oligomenorrhoea and amenorrhoea were significantly higher in adolescecent PCOS cases ($P<0.05$). Normal menstrual cycle status was significantly higher in control group($P<0.05$).

Table-V: Clinical and biochemical status of the cases and controls.

Variables	*PCOS* (n = 100)	*Control* (n = 100)	*P*-value
Hirsutism	23(23%)	2(2%)	<0.00001[s]
Acne	11(8%)	3(3%)	0.026[s]
Family history of PCOS	25(25%)	3(3%)	<0.00001[s]
BMI (kg/m^2)	27.98 ± 5.62	25.56 ± 5.08	0.0038[s]
Total testosterone (ng/mL)	0.44 ± 0.21	0.27 ± 0.13	<0.001[s]
LH/FSH	1.46 ±0.81	0.87 ±0.30	<0.0001[s]
Prolactin(ng/ml)	14.08±6.87	10.18±6.72	<0.0001[s]
TSH(mIU/ml)	2.76 ± 1.14	2.53 ± 1.54	0.311[ns]

s=significant

ns=not significant

The above chart shows that hirsutism, acne, family history of PCOS, BMI were significantly higher in adolescecent PCOS cases (P<0.05) (P value was reached from Z test of proportion).

Total testosterone, LH/FSH ratio and prolactin level were also significantly higher in cases(P<0.05). But TSH level was not significantly different between cases and controls (P value was reached from unpaired t test).

Discussion:

PCOS in adolescent girls is a diagnostic challenge. In adolescents, natural maturity characteristics usually overlap with signs and symptoms of PCOS. This issue leads to particular diagnostic problems and the debate on the aetiopathogenesis & diagnostic criteria for PCOS in adolescents continues[8]. The diagnostic challenge in adolescents may be due to many reasons, such as the higher rate of physiologic anovulatory cycles, irregular menses during the first 2 years following menarche and the presence of acne in this age group[9]. Due to these transitory symptoms and signs mimicking PCOS during adolescence, care must be taken to avoid premature labelling of a case as PCOS to avoid overtreatment and psychological stress.

In this study, mean age of the adolescent PCOS girls was 18.23 ± 2.5 years and the most common age group was 15-19 years (60%) [9]. In a study from India, mean age of the adolescent PCOS girls was 18.15 ± 2.1[10] .

There `was no statistically significant difference between cases and controls regarding educational statusand residential status (P>0.05).

The presence of oligomenorrhea among adolescent girls 2 years post-menarche is a good screening indicator to diagnose a probable case of PCOS. Diagnosis is confirmed if there is clinical and/or biochemical evidence of hyperandrogenism in the presence of persistent menstrual irregularities[9]. In this study, oligomenorrhoea and amenorrhoea were significantly higher in adolescecent PCOS cases. 49% of the patients had oligomenorrhea, 22% amenorrhea. In Indian adolescents diagnosed with PCOS, Balaji S et al. found that 43% of girls have oligomenorrhea and 18% had secondary amenorrhea[16]. In the same country, Nidhi R et al. reported the prevalence of oligo/amenorrhea to be 70% amongst adolescents with PCOS[17].

Androgenic features were also common presenting complaints. Acne was observed in 11% of the patients. In a study done by Rosenfield et al[8], acne was seen in 14% of the patients. Spandana JC et al. reported the incidence of moderate to severe acne to be 13% [10] which were similar to our findings. In this study, 23% of the patients had hirsutism. Balaji et al. had similar observation in India among similar patients (21%)[16].The modified FG score is a visual grading system; as it is subjective in nature, it may have significant inter- and intra-observer variability.

In this study, 25% of the cases had a first-degree family member with PCOS. Nidhi et al found that 33% of patients with PCOS in India had a first-degree relative with PCOS[17]. Singh et al observed that 24% of mothers and 32% of sisters of patients with PCOS also had PCOS[18] .

In our study, the majority of the patients were overweight (50%), mean BMI was 27.98 ± 5.62. In a study by Barber et al the prevalence of overweightwas 61% inadolescents with PCOS [15].Total testosterone, LH:FSH ratio and prolactin level were significantly higher in our cases. Spandana et al[10] and Nicandri[11] also found compatible findings in their studies. Disturbance in the pulsatile nature of gonadotrophin releasing hormone (GnRH) results in the relative increase in LH to FSH ratio[17].An abnormal feedback mechanism by ovarian estrogen is blamed to play role in this discriminated increase in LH release[18].As a result of this derangement, the ratio between FSH and LH levels which is normally around 2 to 1, become reversed and sometimes even more (2 or 3 to 1) in approximately 60% of the patients with PCOS[12] .

In our study, we did not find significant association of PCOS with hypo or hyperthyroidism. But Spandana et al[10] and Janssen et al[19] found that PCOS was adversely affected by associated thyroid dysfunction.

This study had some limitations. The sample size was small. Long term complications and sequele of PCOS could not be studied.

Conclusion:

Adolescent PCOS has varying clinical manifestation including gynecologic, endocrine and dermatological manifestations and can lead to reproductive, metabolic and oncological complications in the long term. Majority of the patients present withacne, hirsutism, menstrual abnormalities, overweight, elevated LH: FSH ratio ,higher testosterone and prolactin level. PCOS should be diagnosed and treated early in adolescence to prevent long term complications.

Reference:

1. Rajkumari P, Sahoo J, Sujata P, Sahoo G, Hansa J. Awareness about PCOS and the Likelihood of its Symptoms in Adolescent Girls in a Semi-Urban Set-Up: A Cross Sectional Study. Journal of Medical Science & Clinical Research. 2016;4(11):12264-9.

2. Azziz R, Woods KS, Reyna R, Key TJ, Knuchenhauer ES, Yildiz BO. The prevelance and features of the polycystic ovary syndrome in an unselected population. J Clin Endorinol Metab. 2004; 89(6):2745-49.

3. Teede HJ, Misso ML, DeeksAAet al. Assessment and management of PCOS: summary of an evidence based guideline. Med J Aust. 2011; 195:65-112.

4. Xita N, Tsatsoulis A. Fetal programming of polycystic ovary syndrome by androgen excess: Evidence from experimental, clinical and genetic association studies. J clin Endocrinol Metab. 2006; 91(5):1660-66.

5. Legro RS and Strauss JF. Molecular progress in infertility: Polycystic ovary syndrome. Fertilsteril. 2002;78:569-76.

6. Jalilian A, Kiani F, Sayehmiri F, Sayehmiri K, Khodaee Z, Akbari M. Prevalence of polycystic ovary syndrome and its associated complications in Iranian women: A meta-analysis. Iran J Reprod Med. 2015;13(10):591-604.

7. Naz MSG, Tehrani FR, Majd HA, et al.. The prevalence of polycystic ovary syndrome in adolescents: A systematic review and meta-analysis. Int J Reprod Biomed. 2019;17(8):533-542.

8. Rosenfield RL. Clinical review: identifying children at risk for Polycystic ovary syndrome. J Clin Endocrinol Metab. 2007; 92(3):787-96.

9. Buggs C, Rosenfield RL. Polycystic ovary syndrome in adolescence. Endocrinol Metab Clin North Am. 2005;34(3):677-705.

10. Spandana JC, Shetty PK. A study on the clinical, biochemical and hormonal profile of polycystic ovary syndrome patients attending tertiary care hospital. Int J Reprod Contracept Obs Gynecol. 2017;6:1986.

11. Nicandri KF, Hoeger K. Diagnosis and treatment of polycystic ovarian syndrome in adolescents .CurrOpin Endocrinol Diabetes Obes. 2012;19(6):497-504.

12. Srinivasan R, Chaudhry S, Wong E. Polycystic ovary syndrome. J ObstetGnnaecol Can. 2010; 32(5): 423-28.

13. Nair MK, Pappachan P, Balakrishnan S, Leena ML, George B, Russell PS. Menstrual irregularity and poly cystic ovarian syndrome among adolescent girls--a 2 year follow-up study. Indian J Pediatr. 2012;79 (1):69-73.

14. Strauss JF. Some new thoughts on the pathophysiology and genetics of polycystic ovary syndrome. Ann NYAcad Sci, 2003; 997: 42-48.

15. Barber TM, Mc Carthy MI, Wass JA, Franks S. Obesity and PCOS. Clin Endocrinol 2006; 65(2):

16. Balaji S, Amadi C, Prasad S et al. Urban rural comparisons of polycystic ovary syndrome burden among adolescent girls in a hospital setting in India. Biomed Res Int. 2015;2015: 158951.

17. Nidhi R, Padmalatha V, Nagarathna R, Amritanshu R. Prevalence of polycystic ovarian syndrome in Indian adolescents. J PediatrAdolesc Gynecol. 2011;24(4):223-7.

18. Singh A, Vijaya K, Laxmi KS. Prevalence of polycystic ovarian syndrome among adolescent girls: a prospective study. Int J Reprod Contracept Obstet Gynecol 2018;7:4375-8.

19. Janssen OE, Mehlmauer N, Hahn S, Offner AH, Gärtner R. High prevalence of autoimmune thyroiditis in patients with polycystic ovary syndrome. Eur J Endocrinol. 2004;150:363–9.

Original Article

DCIMCJ

DCIMCJ 2022 January;10(1):37-41

Effects of Prolong Exposure to Mosquito Coil Smoke on Pulmonary Function by FEV-1 in Healthy Adult Individuals.

Jahan N[1], Sarker CR[2], Tanvir SM[3], Akhter J[4], Sultana S[5]

Abstract:

Background: In various countries, mosquito are known as the main vector of transmitting life threatening diseases like malaria, filariasis and dengue fever, a major public health concern and a great hindrance to the socioeconomic development for the developing nations. In the endeavor to protect ownself, mosquito coils are widely used as these are effective less expensive and easy to use. Burning mosquito coil produce smokes which contain polyaromatic hydrocarbons, aldehydes and ketones all of these are significantly affects pulmonary functions. Objective: To observe the longtime exposure to mosquito coil smokes on FEV1 in healthy adult individuals. Methods: This cross-sectional study was conducted in the department of Physiology, Rangpur medical college, Rangpur from January 2019 to December 2019.Total 120 apparently healthy adult individuals aged 20-40 years, exposed to mosquito coil smokes for at least 6 months were selected as study group from different areas in Rangpur City.60 age & BMI matched apparently healthy individuals not exposed to mosquito coil smokes were taken as control. FEV1 of all the subjects were recorded by using a digital spirometer. For statistical analysis unpaired 't' test was performed. Results: The mean percentage of predicted value of FEV1 were significantly lower in mosquito coil smokes exposed individuals than those of control. Conclusion: From the result of this study, it can be concluded that prolonged exposure to mosquito coil smokes may have harmful effects on pulmonary function.

Keywords: Mosquito coil smokes, FEV1 (Forced expiratory volume 1).

Introduction:

Mosquito has always been spreading life threatening diseases like malaria, filaria, dengue specially in tropical and subtropical countries[1]. Mosquito alone transmit diseases to more than 700 million persons annually[2]. In the endeavor to protect himself, man has inventedvarious means for protection against mosquitoes.

1. Dr. Nayma Jahan, Assistant Professor, Department of Physiology, Dhaka Central International Medical College.
2. Dr. Chandra Rani Sarker, Professor, Department of Physiology, Rangpur Medical College.
3. Dr. Sarker Md. Tanvir, Medical Officer, Upazila Health Complex, Mithapukur, Rangpur.
4. Dr. Jumruda Akhter, Assistant Professor, Department of Biochemistry, Dhaka Central International Medical College.
5. Dr. Sharmin Sultana, Assistant Professor, Department of Physiology, Rangpur Medical College.

Correspondence: Dr. Nayma Jahan
E-mail: naymajahanshanu@gmail.com

Mosquito coils are widely used in domestic households to combat mosquito menace[1,3]. It is also used all over the world especially in tropical and sub-tropical countries like Asia, Africa and South America where mosquito are found in abundance[4].

The smoke from burning of mosquito coil contains polycyclic aromatic hydrocarbon, aldehydes, ketones all of these are injurious to health[5].The best known mosquito repellent is N, N-diethyl-3-methyl-benzamide (DEET)[6]. The emission of formaldehyde from burning one coil can be as high as that released from burning 51 cigarettes[7-9].

They are known to be an efficient mosquito repellent as they are inexpensive, available and easy to use[10]. It repels mosquito thereby reducing the chances of being bitten but does not provide mosquito proof of a person thereby reducing the transmission of mosquito-borne disease[8]. In 2000, World Health Organization (WHO) reported that the annual

worldwide consumption of mosquito coil is estimated to be 32 billion pieces[11].

Among the diseases, pulmonary diseases are more extensive and hazardous. Because of extensive surface area, high blood flow and thin alveolar epithelium and free communication with external environment, lung is a vulnerable site for deposition of suspended particles in environmental air, resulting in lung fibrosis upon prolong exposure. Moreover, burning mosquito coil can release a large amount of particulate matter and formaldehyde causes metaplasia of bronchial epithelial cells[12]. Morphological alterations of alveolar macrophages both these changes lead to low grade inflammatory responses bringing about restrictive and obstructive changes. In addition, there is also thickening bronchial epithelial wall, alveolar thickening and consolidation of alveolar areas which is exaggerating the restrictive and also bringing obstructive changes[13].

Methods:

This cross-sectional study was conducted in the department of physiology, Rangpur medical college, Rangpur from January 2019 to December 2019. Total 120 apparently healthy individuals exposed to mosquito coil smokes for at least 6 months, age ranged 20-40 years were taken as study group.They were selected from different areas of Rangpur City. Total 60 apparently healthy individuals exposed to mosquito coil smokes for at least 6 months, age ranged 20-40 years were taken as study group. Another 60 apparently healthy, age and BMI matched individuals not exposed individuals were also included as control for comparison. All the subjects were free from smoking, chronic obstructive pulmonary disease, asthma, musculoskeletal abnormalities, heart disease, Tb and malignancy. After selection of the subjects the objective, perspective, benefits and risk of this study were briefed in detail to the study subjects. They were encouraged to participate voluntarily. An informed written consent was taken from all the participants. Ethical committee ad Thesis protocol review committee of Rangpur Medical College approved the study protocol. Detailed family and medical history was recorded in a performed questionnaire. Height and weight of the subjects were measured for calculation of BMI. For assessment of lung function by FEV1 of all subjects were measured by using a digital spirometer. For statistical analysis unpaired 't' test was performed by computer-based software SPSS- 23.0 version for windows.

Results:

General characteristics of study subjects (n=120).The mean percentage of predicted values of FEV_1 were compared between group A_1 and B_1 and group A_2 and B_2. The mean percentage of predicted values of FEV_1 were significantly ($P < 0.001$) lower in the mosquito coil exposed male and female individuals than the non-exposed group. The mean measured value and percentage of predicted value of FEV1 was compared between group B_1 and B_2. There were no statistically significant differences ($p > 0.05$) in the mean predicted values and percentage of predicted value of FEV1 between group B_1 and B_2

Table- l: Showing mean ± SD of age, height, weight and body mass index of the study subjects of different groups:

Group	Age- Year Mean ± SD Range (L-H)	Height-m Mean ± SD Range (L-H)	Weight-kg Mean ± SD Range (L-H)	BMI-kg/m^2 Mean ± SD Range (L-H)
A_1 (n= 30)	33.80 ± 4.294 (27 - 40)	1.68 ± 0.0421 (1.61 – 1.78)	70.500± 5.2637 (59 - 78)	22.390±1.3337 (20.93- 22.47)
B_1 (n=30)	33.56 ± 2.595 (30 – 40)	1.56 ± 0.0325 (1.47 -1.58)	61.133±4.057 (55 -68)	21.293± 1.5498 (22.10 - 23.02)
A_2 (n=30)	33.80 ± 4.559 (28– 38)	1.66 ± 0.0350 (1.64 -1.76)	70.333± 4.744 (60 – 78)	22.000± 1.1447 (20.637 -21.96)
B_2 (n=30)	35.40 ± 8.062 (30-40)	1.48 ± 0.0582 (1.45-1.58)	57.933 ± 3.268 (55- 68)	21.100± 1.2134 (22.02- 22.79)

Group A_1- Male individuals non exposed to mosquito coil smokes.

Group B_1- Male individuals exposed to mosquito coil smokes.

Group A_2- Female individuals non exposed to mosquito coil smokes.

Group B_2- Female individuals exposed to mosquito coil smokes.

Table- II: Showing Mean ± SD of predicted value, measured value and percentage of predicted value of Forced Expiratory volume in 1st second (FEV_1) of the study subjects of different groups.

Groups	Predicted value (Liter) Mean ± SD Range (L-H)	Measured value (Liter) Mean ± SD Range (L-H)	Percentage of Predicted value (%) Mean ± SD Range (L-H)
A_1 (n=30)	3.6837 ± .33685 (2.90- 4.45)	2.0190 ± .60857 (1.95 – 3.14)	54.4000 ± 17.48024 (25.00 – 94.00)
B_1 (n=30)	3.8713 ± .49473 (3.09 – 4.85)	1.7387 ± .77288 (1.38 – 3.31)	55.8000 ± 23.74491 (12.00 – 100.00)
A_2 (n=30)	3.4200 ± .49128 (2.34 – 4.36)	1.6103 ± .71014 (1.39 – 3.31)	47.7000 ± 18.78949 (9.00 -89.00)
B_2 (n=30)	3.5573 ± .31892 (2.84 – 3.99)	.9817 ± .35966 (.23 – 1.63)	33.3333 ± 9.35998 (16.00 – 51.00)

The mean predicted value of FEV_1 was compared between group A_1 and B_1 and group A_2 and B_2 and group B_1 and B_2. There were no statistically significant differences ($p > 0.05$) in the mean predicted values of FEV_1 between group A_1 and B_1, group A_2 and B_2 and group B_1 and B_2.

The mean measured value of FEV_1 was compared between group A_1 and B_1 and group A_2 and B_2. The mean measured values of FEV_1 were significantly ($P < 0.001$) lower in the mosquito coil exposed male and female individuals than the non-exposed group.

The mean percentage of predicted values of FEV_1 were compared between group A_1 and B_1 and group A_2 and B_2. The mean percentage of predicted values of FEV_1 were significantly ($P < 0.001$) lower in the mosquito coil exposed male and female individuals than the non-exposed group. The mean measured value and percentage of predicted value of FEV1 was compared between group B_1 and B_2. There were no statistically significant differences ($p > 0.05$) in the mean predicted values and percentage of predicted value of FEV1 between group B_1 and B_2

Table- Ill: Showing statistical analysis of the mean predicted value, measured value and percentage of predicted value of forced expiratory volume in 1st (FEV_1) of the study subjects of different groups.

Analysis between the groups done by One way ANOVA (post-Hoc) test.

Predicted value of FEV_1(L)		
Groups	Mean ± SD	P value
A_1 Vs B_1	3.6837 ± .33685 / 3.8713 ± .49473	.325^{NS}
A_2 Vs B_2	3.4200 ± .49128/ 3.5573 ± .31892	.577^{NS}
B_1 Vs B_2	3.8713 ± .49473/ 3.5573 ± .31892	0.426
Measured value of FEV_1(L)		
Groups	Mean ± SD	P value
A_1 Vs B_1	2.0190 ± .60857/ 1.7387 ± .77288	.000***
A_2 Vs B_2	1.6103 ± .71014/ .9817 ± .35966	.001***
B_1 Vs B_2	1.7387 ± .77288/ 0.9817 ± .35966	.403
Percentage of predicted value of FEV_1 (%)		
Groups	Mean ± SD	P value
A_1 Vs B_1	54.4000±17.48024/ 55.8000±23.74491	.000***
A1 Vs B1	47.7000± 18.78949/ 33.3333± 9.35998	.003**
B_1 Vs B_2	55.8000±23.74491/ 33.3333± 9.35998	.695

SD = Standard Deviation.
*** = $P < 0.001$
**=$P < 0.005$
NS = $P > 0.05$

Discussion:

In this study mean measured value and percentage of predicted values of FEV_1 were compared between group A_1 and B_1 and group A_2 and B_2 and group B1 and B2. The mean measured value and percentage of predicted values of FEV_1 were significantly ($P < 0.001$) lower in the mosquito coil exposed male and female individuals than the non-exposed group. The mean measured value and percentage of predicted value of FEV1 was compared between group B_1 and B_2. There were no statistically significant differences ($p > 0.05$) in the mean predicted values and percentage of predicted value of FEV1 between group B_1 and B_2 .These findings are similar withVenkatesh S1, Puneeth M2studies. But some studies found no significant changes.

From the lower value of this parameters in apparently healthy exposed individuals compared to control, the harmful effect of exposure to mosquito coil smokes on pulmonary function in the exposed individual is obvious. Prolong exposure to mosquito coil smokes causes accumulation of particles in peri-bronchial lymphoid and connective tissues along with varying degrees of wall thickening and remodeling in terminal and respiratory bronchioles. Bronchiolar walls with marked thickening is associated with increase in collagen and interstitial inflammatory cells including macrophage[14]. Moreover, workplace exposure to mosquito coil smokes causes respiratory inflammation and thereby leads to ventilatory dysfunction. In addition, smokes induce histamine release or immunological reaction mediated by endotoxin as mechanism of impaired FEV1 and FVC/FEV1%. Histamine directly stimulates vagus nerve causing smooth muscle contraction resulting broncho-constriction. Histamine also causes increase airway mucus secretion that reduces the air entry into the lung which might be associated with decreased FEV1[15].

Conclusion:

Therefore, from this study, it may be concluded that lung function parameter like FEV1 and FVC/FEV1% decrease in mosquito coil smokes exposed individuals.

References:

1. Phal DA. A comparative study of elemental analysis in mosquito repellent coil and cigarette smoke. International Journal of Pharmacology Biological and Medical Science 2011;1(4): 462-7.

2. Jawed S, Rana R, Muazzam S, Haq SM. Effects of turmeric on mosquito coil induced emphysema in rat lungs. Journal of Islamic international medical college 2018;13(3): 141-5.

3. Mark S Fradin, John F Day. Comparative efficacy of insect repellents against Mosquito bites.The New England Journal of Medicine 2002;347(1):13-18.

4. Shirai Y, Funada H, Takizawa H, Seki T, Morohashi M, Kamimura K. Landing preference of Aedes on human skin among ABO blood group, secretors or nonsecretors and ABH antigens. Journal of medical entomology 2004;41(4):796-9.

5. Mafong EA, Kaplan LA. Insect repellents-what really works? Journal of scientific and innovative research 1997;102(2): 63-74.

6. Ogoma SB, Moore SJ, Maia MF. A systematic review of mosquito coils and passive emanators. Journal of parasites and vectors 2012;5(1):287.

7. World Health Organization. WHO Pesticides Evaluation Scheme, Division of control of Tropical Diseases, Guideline Specifications for Household Insecticides Products. [internet]. [cited1998].Availablefrom:www.researchgate.net/publication/245405098_HPTLC_analysis_of_octachlorodipropyl_ether_in_insecticides.

8. Shu-Chen C, Ruey-Hong W, Li-jie S, Ming-Chih C, Huei L. Exposure to mosquito coil smoke may be a risk factor for lung cancer in Taiwan. Journal of Epidemiology 2008;18(1):19-25.

9. Liu W, Zhang J, Hashim JH,Jalaludin J, Hashim Z, Goldstei BD. Mosquito coil emissions and health implication. Journal of Environmental Health Perspect 2003;111:1454-60.

10. Wikipedia. Mosquito coil. [Internet]. [cited 2018 september].Available from https://en.m.wikipedia. org/wiki/Mosquito.coil .

11. Venkatesh S, Puneeth M. Effects of mosquito repellents on pulmonary functions. Journal of evolution of medical and dental Sciences 2014;3(39): 9892-6.

12. Fagbule D, Ekanem EE. Some environmental risk factors for childhood asthma: a case-control study. Journal of Annals oftropical paediatrics1994;14(2):15-19.

13. Taiwo VO, Nwagbara ND, Suleiman R, Angbashim JE, Zarma MJ. Clinical signs and organ pathology in rats exposed to graded doses of pyrethroids-containing mosquito coil smoke and aerosolized insecticidal sprays. African journal of Biomedical Research 2008;11(1):97-124.

14. Johncy SS, Ajay KT, Dhanyakumar G, Raj NP and Samuel V. Dust exposure and lung function impairment in construction worker. Journal of physiology and biomedical sciences 2011; 24(1):9-13.

15. Prabhakara RK, Srinivasarao CH and Sumangali P. A study of pulmonary function tests in cotton mill workers of Guntur district. A Peer Reviewed International Journal. 2013; 1(3): 206-209.

DCIMCJ

Original Article

DCIMCJ 2023 January;10(1):42-47

Dyslipidemia in Patients of Rheumatoid Arthritis

Sultana A[1], Rahman MH[2], Sultana N[3], Akhter A[4], Howlader MH[5], Khatun A[6], Chowdhury MAA[7]

Abstract:

Background: Rheumatoid Arthritis is a chronic inflammatory disease associated with increased disability, morbidity and mortality. Dyslipidaemia is one of the main risk factors for atherosclerotic cardiovascular disease. Patients with rheumatoid arthritis have 2-3 times more cardiovascular risk, which is partly due to the pattern of lipids which increase the atherogenic index. In general, the plasma level of high density lipoprotein cholesterol (HDL) correlates with the risk of incidence of ischemic heart disease. Objectives: To determine the association of metabolic syndrome with Rheumatoid arthritis. Methods: The study was a hospital based case control study involving 50 adult patients with RA and 50 apparently healthy controls. Serum total cholesterol, triglycerides and HDL-C were measured with enzymatic procedures but LDL cholesterol was calculated. Results: Mean (SD) age was 41.94 (8.57) years in case and 39.62 (9.26) years in control. RA patients had hypertriglyceridemia (18/50 among cases Vs3/50 among controls; P= 0.001), and low HDL-C (48/50 among cases Vs 33/50 among control; P=0.001). Conclusion: Abnormal lipid profile is frequently observed in rheumatoid arthritis. Lipid levels should be monitored and managed in patients with RA to minimize the long-term risk of cardiovascular disease.

Keywords: Rheumatoid arthritis, dyslipidemia, metabolic syndrome

Introduction:

Rheumatoid arthritis (RA) is a chronic inflammatory disorder of unknown etiology, characterized by systemic symptoms that particularly involve the joints and may lead to deformities during the course of the disease[1]. It is the most common persistent inflammatory arthritis, occurring throughout the world and in all ethnic groups. The prevalence is lowest in Black Africans and chinese, and highest in Pima Indians. In Caucasians, approximately 0.8-1.0% are affected, with a female to male ration of 3:1. The clinical course is prolonged, with intermittent exacerbations and remissions[2].Studies on RA Show a considerable variation of the disease frequency among different populations. The established RA can be distinguished from other forms of arthritis my multiple criteria; and those agreed by the American Rheumatism Association. The median prevalence estimate the RA for the total population in South European Countries is 3.3 cases per 1000, and for developing countries 3.5 cases per 1000[3]. RA affects 0.5-1.0% of adults in developed countries and is 2-3 times more frequent i women than men[4]. The overall prevalence of RA in Bangladesh is 0.7% in rural population and 0.4% in urban population[5].

RA is considered an autoimmune disease and the overall systemic and articular inflammatory load drives the destructive progression of the disease[6]. In addition, the extent of inflammation has been linked to an increased risk of cardiovascular mortality in patients with RA as compared to general population[7].

1. Dr. Aziza Sultana, Assistant Professor, PCR Lab, Govt. Employees Hospital, Fulbaria, Dhaka.
2. Dr. Mohammad Hafizur Rahman, Associate Professor, Department. of Biochemistry, Dhaka Medical College.
3. Dr. Nasima Sultana, Professor & Head, Department. of Biochemistry, Dhaka Medical College.
4. Dr. Arifa Akthter, Assistant Professor, Department. of Biochemistry, International Medical College.
5. Dr. Md. Hanif Howlader, Associate Professor, Department. of Biochemistry Sher-E Bangla Medical College, Barishal.
6. Dr. Amena Khatun, Assistant Professor, Department. of Biochemistry, Marks Medical College.
7. Dr. Md. Anwarul Alam Chowdhury, Associate Professor, Department of Biochemistry, Dhaka Central International Medical College

Correspondence:Dr. Aziza Sultana
E-mail: drazizasultana@gmail.com

This is because the patients with RA are more prone for accelerated atherosclerosis which in turn is a risk factor for cardiovascular disease and thus there decreased survival in them[8].

Several groups have documented a high prevalence of dyslipidemia in patients with systemic rheumatic diseases like RA and systemic lupus erythematosus (SLE) chronic inflammation seen in patients with RA is one of the important factors which links it to both dyslipidemia and atherosclerosis[9].

Proinflammatory cytokines, tumour necrosis factor alpha (TNF-α), interleukin-6 (lL-6) seen in patients with RA contribute to insulin resistance which is the basic metabolic disorder seen in Metabolic Syndrome, Insulin resistance leads to other metabolic disturbances, like hyperglycemia, dyslipidemia which independently contribute to atherosclerosis and cardiovascular risk[10]. The interplay among cytokines, disease activity, atherosclerotic risk factors and Metabolic Syndrome in patients with chronic inflammatory arthritis is complex. Elevation of the levels of TNF- α and IL-6 as a result of active RA and skin inflammation reduces the activity of insulinand inhibits insulin receptor autophosphorilation and signal transduction, thereby promoting insulin resistance that leads to hyperglycaemia, compensatory hyperinsulinemia and dyslipidemia[11]. Proinflammatory cytokines are also independently involved in the pathopnesis of atherosclerosis through the production of acute phase reactant C-reactive protein[12].Thus multiple mechanisms inflammation, insulin resistance and dyslipidemiaincrease the burden of cardiovascular risk in these patients.

Study showed that patients with RA are 50% more likely to suffer a cardiovascular event than subjects from the general population[13]. Investigations into the relationship between RA and dyslipidemia have yielded conflicting results. However, based on current knowledge one can conclude that patients with RA are at a higher risk for development of CVD than that of the general population. So, by diagnosis and treatment of dyslipidemia associated with RA, the overall inflammatory process and the associated risk of CVD will be decreased. So, present study was designed in a small group of Bangladeshi population to observe dyslipidemia in Patients of Rheumatoid Arthritis.

Materials & methods:

An observational case control study involving 50 RA patients and 50 apparently healthy control was carried out in the department of Biochemistry, Dhaka Medical College, Dhaka, during the period of July 2014 to June 2015. Ethical consideration and permission of the study was taken from the concerned Departments and Ethical Review Committee of Dhaka Medical College, Dhaka (Appendix-I). Rheumatoid arthritic patient who were attending in the department of Medicine, DMCH, Dhaka were selected as per inclusion and exclusion criteria.

After meticulous checking and rechecking all data were recorded in a predesigned data collection sheet. Continuous variables were expressed as mean ± SD and were compared between groups of patients by student's 't' test. Categorical variables were compared using a chi-square test or Fischer's exact test as appropriate, and were presented as absolute frequencies with percentages. All Pvalues were two-tailed with significance defined as $p<0.05$ at the level of 95% confidence interval CI. All analysis was done using the SPSS 16.0 (Statistical Package for Social Science) package for windows.

Results:

Following results and observation were found in this study.

Table I: Distribution of patients according to age in study subjects

Age	Group		p value
	Case n (%)	Control n (%)	
Mean ± SD	41.91 ± 8.57	39.62 ± 9.26	**0.197**
Range (Min –Max)	22 – 60	21 - 60	

Unpaired t-test was done to measure the level ofsignificance.

Table I shows the distribution of patients according to age in study subject. Mean (SD) age was 41.94 (8.57) years in caseand 39.62 (9.26) years in control. The case and control groups were age matched.

Table II: Distribution of patients according to sex in study subjects.

Sex	Group		p value
	Case n (%)	Control n (%)	
Male	17 (34.0)	23 (46.0)	0.221
Female	33 (66.0)	27 (54.0)	
Total	**50 (100.0)**	**50 (100.0)**	

Chi-square test was done to measure the level of significance.

Table II shows distribution of patients according to gender in study subjects. In both groups female was predominant that male. The case and control groups were sex matched.

Table III: Llipid profile in study subjects.

FBS and lipid profile	Group		p value
	Case (Mean ± SD)	Control (Mean ± SD)	
Total cholesterol (mg/dl)	181.06 ± 30.38	177.40 ± 27.77	0.531
HDL (mg/dl)	34.88 ± 7.02	42.72 ± 7.02	0.001
LDL (mg/dl)	118.34 ± 30.53	110.40 ± 26.78	0.170
Triglyceride (mg/dl)	137.02 ± 40.74	112.72 ± 37.76	0.003

Unpaired t-test was done to measure the level of significance (P=<0.05)

Table III shows comparison of components of metabolic syndrome (FBS and lipid profile) between case and control. Mean FBS and Triglyceride were significantly higher in case group than control group but HDL-C was significantly lower in case group than control group. Mean of total cholesterol and LDL-C were almost same in both groups.

Table IV: NCEP-ATPIII based comparison of biochemical components of dyslipidemia in study subjects.

Component of metabolic syndrome		Group		p value	OR (95% CI)
		Case n (%)	Control n (%)		
HDL	Male ≤ 40 mg/dl/ female ≤ 50 mg/dl	48 (96)	33 (66)	0.001	12.36 (2.67 – 57.13)
	Male > 40 mg/dl/ female > 50 mg/dl	2 (4)	17 (34)		
TG	≥ 150 mg/dl	18 (36)	3 (6)	0.001	8.81 (2.39 – 32.04)
	< 150 mg/dl	32 (64)	47 (94)		

Chi square test was done to measure the level of significance (P= <0.05 is considered as significant)

Table IV shows comparison of different components of metabolic syndrome (HDL & TG) in study subjects according to NCEP-ATPIII. There were statistical significant difference in HDL and TG between case and control.

Discussion:

RA is a systemic Inflammatory disorder characterized by chronic symmetric and erosive synovitis that preferentially affects peripheral joints, with a prevalence of (0.5-1)% in the population[14]. Emerging epidomilogical evidence suggests that CVDs account for approximately 50% of all RA associated deaths[15]. Abnormalities in the lipid profile, specifically hypertriglyceridemia and low levels of HDL-C have been shown to be a strong predisposing issue to many diseases including obesity, diabetes and cardiovascular diseases[16].

This is an observational case control study conducted in Dhaka Medical College Hospital. A total of 50 cases of RA and 50 controls were recruited for the study. The age of the study participants ranged from (20-60) years. The mean age was found 41.91±8.57 years in cases and 39.62±9.26 years in control group.

The mean age difference was not found statistically significant (P=0.197). In the case group 17(34.0%) cases were males and 33 (66.0%) cases were females. In the control group there were 23 (46.0%) were males and 27(54.0%) were females the difference of male female ration was not found statistically significant (P=0.221) between two groups. These observations were consistent with the result of the studies done by Sahebari et al[17]. They observed that age and sex are not important risk factors for metabolic syndrome.

In this current study, it was observed that 36% patients had presented with hypertriglceridemia in case group and 6% in control group which was statistically significant (P=0.001). Rostom et al found insignificant difference of triglyceride level betweencase and control and Sahebari et al found triglyceride is significantly higher in control group in their study[17,18].

Regarding HDL-C, which is one of the biochemical components of dyslipidemia, it was found that 96% of cases had reduced HDL-C in case group whereas it was 66% in control group which was statistically significant (P=0.001), which was consistent with the findings of other studies like Karvounaris et al, Rostom et al[18,19].

Several epidemiological studies reveals, higher prevalence of reduced HDL-C in general population of Bangladesh which was reflected in our case group (96%). However other components of lipid profile like total cholesterol was 181.06±30.38 mg/dl in case group and 177.40±27.77 mg/dl in control group and LDL-C was found 118.34±30.53 mg/dl in case group and 110.40±26.78 mg/dl in control group. The difference was not statistically significant (P=>0.05). Rostom et al 2013 found significant difference and Karakoc et al found non significant difference regarding these two. Our findings are consistant with the later[18,20].

Regarding HDL-C, which is one of the biochemical components of Metabolic Syndrome it was found that 96% of cases had reduced HDL-C in case group whereas is was 66% in control group which was statistically significant (P= 0.001), which was consistent with the findings of other studies like Karvounaris et al and Dao et al, Rostom et al[18,19,21].
These findings tend to support that, there is an association between RA and Metabolic syndrome in hospital based RA Patients in Bangladesh, which gives an insight into the pattern of comorbidities of RA in our country.

Conclusion:

In conclusion this study revealed that dyslipidemia is associated with RA therefore, in addition to the evaluation of RA, lipid profile should be sort out in all RA patients to reduce impending cardiovascular disease.Patients with rheumatoid arthritis have a pro-atherogenic lipid profile. It is important to know this and treat it to reduce cardiovascular risk.

Limitation:

Due to constrained of fund insulin resistance could not be measured. This was a single hospital based study, not community based, so the result to the study may not be adequate to represent the total population.

Recommendations:

Nationwide further large scale study from primary to tertiary level hospitals in Bangladesh is needed for better understanding the underlying association between RA and dyslipidemia in our population.

References:

1. Kojima M, Kojima T, Ishiguro N, Oguchi T, Oba M, Tsuchiya H, Sugiura F. Phychosocial factors, disease status, and quality of life in patients with rheumatoid arthritis. J Psychosom Res. 2009; 67(5):425-431.

2. Ralston SH, Mclnnes I.B. Rheumatology and Bone disease in: Walker BR, Colledge NR, Ralston SH, Penman ID. (Editors). Davidson's principle & practice of medicine 22nd edition; Edinburgh: Churchill Livingstone (Elservier); 2014:1096-1102.

3. Alamanos Y, Voulgari PV, Drosos AA. Incidence and prevalence of rheumatoid arthritis, based on the 1987 American College of Rheumatology criteria: a systematic review. Semin Arthritis Rheum. 2006;36:182-8.

4. Scott DL, Wolfe F, Huizinga TW. Rheumatoid arthritis. Lancet. 2010; 376:1094-1108.

5. Haq SA, Darmawan J, Islam MN, Uddin MZ, Das BB, Rahman F, et al. Prevalence of rheumatic disease and associated outcomes in rural and urban communities in Bangladesh: a COPCORD study. Journal Rheumatol. 2005; 32(2):348-53.

6. Smolen JS, Aletaha D, Koeller M, Weisman M, Emery P. New therapies for the treatment of rheumatoid arthritis. Lancet. 2007; 370:1861-74.

7. Meune C, Touze E, Trinquart L, Allanore Y. Trends in cardiovascular mortality in patients with rheumatoid arthritis over 50 years: a systematic review and meta-annalysis of cohort studies. Rheumatology (Oxford). 2009; 48:1309-13.

8. Manzi S, Wasko MC. Inflammation-medicated diseases and atherosclerosis. Ann Rheum Dis. 2000; 59:321-5.

9. Cojocaru M, Cojocaru IM, Silosi I, Vrabie CD. Metabolic syndrome in rheumatoid arthritis. Maedica (Buchar). 2012; 7:148-52.

10. Mittelman SD, van Citters GW, Kirkman EL, Bergman RN. Extreme insulin resistance of the central adipose depot in vivo. Diabetes. 2002; 5:755-61.

11. Mok CC, Ko GTC, Ho LY. Prevalence of atherosclerotic risk factors and the metabolic syndrome in patients with chronic inflammatroy arthritis. Arthritis Care & Research. 2001;63: 195-202.

12. Gonzalez-Gay MA, Gonzalez-Juanatey C, Lopez-Diaz MJ, Pineiro A, Garcia-Porrua C, Miranda-Filloy JA. HLA-DRB1 and persistent chronic inflammation contribute to cardiovascular events and cardiovascular mortality in patients with rheumatoid arthritis. Arthritis Rheum. 2007;57:125-32.

13. Avina-Zubieta JA, Choi HK, Sadatsafavi M, Etminan M, Esdaile JM, Lacaille D. Risk of cardiovascular mortality in patients with rheumatoid arthritis: a meta-analysis of observational studies. Arthritis Rheum. 2008; 59:1690-7.

14. Gabriel SE. The epidemiology of rheumatoid arthritis. Rheum Dis Clin North Am. 2001;27:269-81.

15. Goshayesh L, Saber H, Sahebari M, Rezaieyazdi Z, Rafatpanah H, Esmaily H, et al. Association between metabolic syndrome, BMI and serum vitamin D concentration in rheumatoid arthritis. Clinical rheumatology. 2012;31: 1197-1203.

16. Turner R, Millns H, Neil H, Stratton I, Manley S, Matthews D, et al. Risk factors for coronary artery disease in non-insulin dependent diabetes mellitus: United Kingdom prospective diabetes study (UKPDS: 23) BMJ. 1998;316(7134):823–828.

17. Sahebari M. Goshayeshi L, Mirfeizi Z, Rezaieyazdi Z, Hatef MR, Ghayour-Mobarhan M, et al. Investigation of the association between metabolic syndrome and disease activity in rheumatiod arthritis. The Scientific World Journal. 2011;11:1195-1205.

18. Rostom S, Mengat M, Lahlou R, Hari A, Bahiri R, Hassouni NH. Metabolic syndrome in rheumatoid arthritis: case control study. BMC Musculoskelet disord. 2013;14:147.

19. Karvounaris SA, Sidiropoulos PI, Papadakis JA, Spanakis EK, Bertsias GK, Kritikos HD. Metabolic syndrome is common among rniddle-to-older aged Mediterranean patients with rheumatoid arthritis and correlates with disease activity: a retrospective, cross-sectional, controlled, study. Ann Rheum Dis. 2007; 66(1): 28-33.

20. Karakoc M, Batmaz I, Sariyildiz MA, Tahtasiz M, Cevik R, Tekbas E, et al.The relationship of metabolic syndrome with disease activity and the functional status in patients with rheumatoid arthritis. J Clin Med Res. 2012;4(4):279-85.

21. Dao HH, Do QT, Sakamoto J. Increased frequency of metabolic syndrome among Vietnamese women with early rheumatoid arthritis: a cross-sectional study. Arthritis Res Ther. 2010;12:R218.

Original Article

DCIMCJ

DCIMCJ 2023 January;10(1):48-53

Discontinuation of Oral Contraceptive Pills among Slum Women of Dhaka City, Bangladesh

Karim F[1], Kamrun S[2], Azim E[3], Dutta B[4], Begum R[5]

Abstract:

Introduction: Oral contraceptive pills (OCP) are the most common method of contraception in Bangladesh but discontinuation of this method is a major problem, contributing to the overpopulation of the country. The progress made in reducing fertility seems to have halted in recent years, one of the main causes of which is the discontinuation of contraceptive methods. This study aims to look at the factors which influence this behavior among slum women. Methods: A descriptive type of cross-sectional study was conducted from July to December, 2010 among 105 women living in Begunbari slum area of Dhaka city. A pre-tested semi-structured questionnaire was used to collect information from the respondents by face to face interview. A non-probability purposive sampling technique was applied. Data was analyzed by using SPSS version 20.Results: Out of the 105 respondents, 41.9% of the respondents stated that the cause of discontinuing OCP was due to side effects, and a further 32.4%, 12.4% and 10.5% were due to desire of more children, lack of supply and husbands' disliking respectively. The side effects cited by respondents include obesity (33.3%), nausea (21%), dizziness (20.0%), palpitations (14.3%), anorexia (6.7%) and vomiting (4.8%). The majority of respondents collected OCP from NGO (43.8%), and the rest from government (25.7%), Family Welfare Visitor/FWV (21.0%) and pharmacies (9.5%). The information regarding contraception use came from neighbors (47.6%), husbands (35.2%) and FWV (17.2%).Conclusions: From the present study, it is seen that the side effects act as the biggest hindrance in the continuation of OCPs. It is also seen that there is a lack of outreach from government agencies among slum women. The improvement in these two factors can greatly reduce the discontinuation of use of OCP among slum women, and thus bring Bangladesh closer to achieving its target population goals.

Keywords: Oral contraceptive pills, discontinuation, slum women, side effects

Introduction:

Population explosion is one of the most important issues all around the world, more so in a developing country like Bangladesh. Bangladesh is one of the most densely populated countries in the world with a population density of 1265 people per square kilometer and a population growth rate of 1.01.[1,2,3] In an attempt to curtail further population growth, the Government of Bangladesh introduced the national Family Planning program in the 1970s, with a main focus on provision and counselling for contraceptive methods. The global fertility rate has been falling from 3.2 births per woman in 1990 to 2.5 in 2019[4]. Similarly, in Bangladesh, the trend in the TFR from the BDHS since 1975 reflects an overall decline in fertility that began in the 1970s. The reduction in the TFR from 6.3 births per woman in 1975 to 2.3 in 2011 is encouraging, but it has since remained stable. The objective of the 4th HPNSP is to reach a TFR of 2.0 children per woman by 2022[5].

Globally, the contraceptive use has increased from 55% in 1990 to 64% in 2015[6]. Between 1975 and 2014, contraceptive prevalence in Bangladesh increased from 8% to 62%, and remained at that level thereafter. The 4th HPNSP aims to reach a CPR of 75% by 2022.

1. Dr. Farhana Karim, Assistant Professor (C.C), Department of Community Medicine, Green Life Medical College.
2. Dr. Sayma Kamrun, Assistant Professor, Department of Community Medicine, Green Life Medical College.
3. Prof. Dr. Ehsamul Azim, Professor and Head, Department of Community Medicine, Green Life Medical College.
4. Dr. Barnali Dutta, Assistant Professor Department of Community Medicine, Enam Medical College and Hospital.
5. Dr. Rahana Begum, Associate Professor, Department of Community Medicine, Dhaka Central International Medical College.

Correspondence: Dr. Farhana Karim
E-mail: dr.k.farhana@gmail.com

Unmet need for family planning in Bangladesh has decreased from 14% in 2011 to 12% in 2014, and remains at that level in 2017[5].

Hence it is clear that in recent years, the progress made by the Government of Bangladesh in reducing fertility has reached a standstill. The cause of this lack of progression is not only the unmet need for family planning, but also their discontinuation. Almost one-third of the users of a contraceptive method stop using the method within 12 months of starting[5].

Oral contraceptive pills are the most commonly used contraceptive method in Bangladesh[5]. However, discontinuation remains fairly high among users. The purpose of this study is to identify the factors which influence the discontinuation of oral contraceptive pills, specifically in women of lower socio-economic status living in slums. The results of this study can help to formulate policies for the raising of contraceptive prevalence rate, the prevention of unwanted pregnancies and reduction of population growth rate among slum women.

Methods:

A cross-sectional descriptive type of observational study was conducted in Begunbari slum of Mohakhali, Dhaka, Bangladesh during the period of 6 months from 1st July to December 31st, 2010. Non probability convenient sampling was applied to select the sample. The study was conducted among 105 women of reproductive age group with at least 6 months OCP use prior to the survey. Semi structured questionnaire was used to collect necessary data by face to face interview. Before the data collection, questionnaire was developed, pretested and revised. After collection the data were checked, revised, edited and analyzed using the Statistical Package for Social Sciences (SPSS) version 20. Preliminary results in the form of frequencies and percentages were first obtained.

Ethical approach:

The purpose of the study was explained to the respondents in a rational manner. It was worth to bring about the valid information from the respondents. Those who volunteered to participate were included in the sample.

Results:

Table-I: Distribution of respondents by Socio Demographic characteristics (n=105).

Socio Demographic Characteristics	Frequency (n)	Percentage (%)
A. Age group		
15-25 years	37	35.2
26-30 years	32	30.5
31-35 years	19	18.1
>35 years	17	16.2
Mean ± SD	28.57 ± 5.663 years	
B. Religion		
Islam	90	85.7
Hinduism	15	14.3
C. Educational qualification		
Illiterate	51	48.6
Class One	25	23.8
Class Two	22	21.0
Class Three	4	3.8
Class Five	3	2.9
D. Occupation		
House wife	56	53.3
Maid servant	49	46.7
E. MonthlyFamily Income		
< Tk 4000	32	30.5
Tk 4001 – 6000	29	27.6
Tk 6001 – 8000	30	28.6
Tk 8001 – 10000	14	13.3
F. Number of children		
1	22	21.0
2	53	50.5
3	11	10.5
4	15	14.2
5	4	3.8

Table-I shows the socio demographic characteristics of the respondents. The mean age was 28.57 ± 5.67 years and most of the respondents were under 30 years of age. Most (85.7%) of them were followers of Islam. Almost half (48.6%) of the respondents were illiterate. About half of the respondents were house wives and the other half were maid servants.

Almost equal number of the respondents hada monthly family income of < Tk 4000, Tk 4001-6000 and Tk 60001-8000 and only 13.3% had an income of Tk 8001-10000. Around half (50.5%) of the respondents had 2 children.

Table-II: Distribution of respondents by time of use of OCP (n=105).

Time of use of OCP	Frequency (n)	Percentage (%)
1 year	10	9.5
2 years	32	30.5
3 years	44	41.9
4 years	8	7.6
5 years	11	10.5

From Table-II, it can be observed that the highest number of the respondents (41.9%) used the OCP for 3 years. Around 30% used it for 2 years and very few numbers used it for 1 year, 4 years or 5 years.

Table-III: Distribution of respondents by time of first usage of OCP (n=105).

Time of first usage	Frequency (n)	Percentage (%)
Before birth of 1st child	92	87.6
After birth of 1st/2nd/3rd child	13	12.4

Table-III shows that, majority of the respondents (87.6%) started using OCP before the birth of 1st child, and 12.4% started after bearing one or more children.

Table-IV: Distribution of respondents according to various type of treatment they received during their menstrual problems (n=105).

Type of treatment	Frequency (n)	Percentage (%)
Physician's Advice	8	7.5
Kabiraji Treatment	21	20.0
Doa-Tabij	9	8.5
No treatment	67	64.0

Table-IV shows that the majority of respondents (64%) do not seek any treatment for their menstrual problems. A considerable proportion (20% and 8.5% respectively) seeks treatment from local untrained persons. Physician's Advice is sought by the lowest percentage of people.

In Figure-I, the different reasons cited by the respondents (105) as to why they discontinued the use of OCP are shown. The most common reason was the occurrence of side effects (41.9%). The desire for more children was the second most common reason (32.4%), and husbands' disliking (10.5%) and lack of supply (12.4%) were both minor reasons.

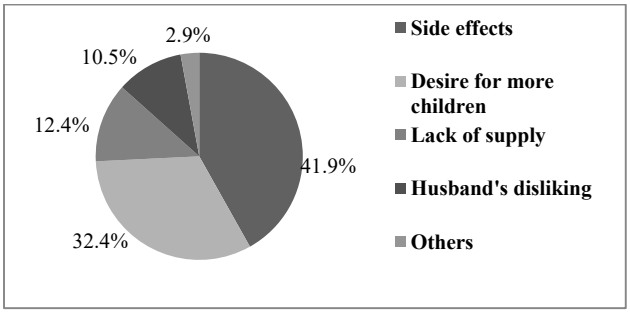


Figure-I: Distribution of respondents according to reasons for discontinuation of OCP (n = 105)

In Figure-II, it is shown that the respondents face various types of side effects. The most common side effect stated was obesity (33.3%), followed by nausea (21%) and dizziness (20%). Palpitation (14.3%), anorexia (6.7%) and vomiting (4.8%) were other less common side effects.

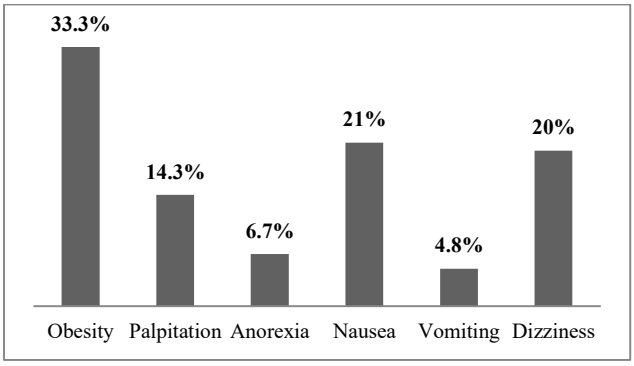


Figure-II: Distribution of study population by side effects during taking oral contraceptive pills (n= 105)

It is revealed in Figure-III that, the majority of respondents (43.8%) collected OCP from NGOs. Other important sources where Family Welfare Visitor and Government (21.0% and 25.7% respectively). Very few respondents got their OCP from pharmacy (9.5%).

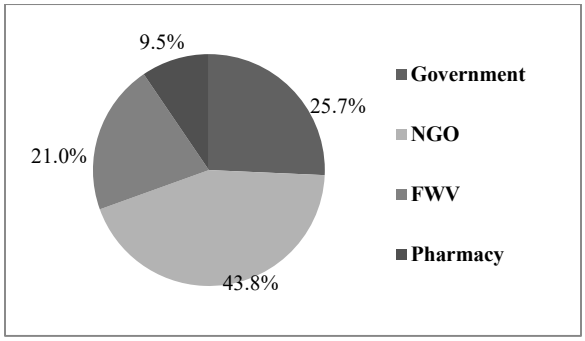


Figure-III: Distribution of respondents by source of collection of OCP (n = 105)

In Figure-IV, it is shown that out of 105 respondents, almost half (47.6%) of the respondents received information about OCP from their neighbors. The next most common source of information was their husbands (35.2%) and the lowest amount of information came from Family Welfare Visitor (17.2%).

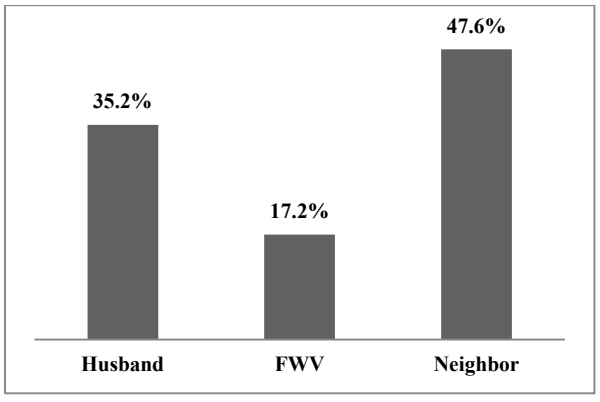


Figure-IV: Distribution of respondents by their source of receiving information about OCPs (n = 105)

Discussion:

The purpose of this study is to identify the factors influencing the discontinuation of OCPs among slum women. After preliminary data analysis it was found that the discontinuation rate was highest among women between 15-25 years of age and the mean age was 28.5 years. The discontinuation of OCPs above 35 years of age was found to be less.

About 41.9% of the women used the OCPs for 3 years, and 30.5% used them for 2 years. Only 9.5%, 7.6% and 10.5% used them for 1 year, 4 years and 5 years respectively. By far, the majority (87.6%) started using OCPs before the birth of their first child.

When asked about the reason of discontinuation, most of the respondents (41.9%) replied that the primary reason was the side effects of OCPs. The next most common reason was desire for more children (32.4%). Husbands' disliking and lack of supply were responsible for 10.5% and 12.4% respectively. This coincides with several studies done across USA, Brazil, Iran, Pakistan and many rural areas of Bangladesh where the side effects were cited as the most common reason for discontinuation of OCP[6-13]. A study in Karachi, Pakistan also found that women having support from the husband for contraceptive use were less likely to discontinue the method, which is consistent with our findings as well[13]. A study done in USA found that logistical problems (problems related to either obtaining the pill or using it correctly) were the primary cause of discontinuation, and similar results are also reflected in the data from our study[14].

The most common side effects stated by the respondents were obesity (33.3%), nausea (21%) and dizziness (20.0%) followed by less common side effects such as palpitations (14.3%), anorexia (6.7%) and vomiting (4.8%). This is in contrast to various studies done on different populations. For example, a

study done in rural area of Bangladesh shows that dizziness, nausea and blurring of vision were the most common side effects[11]. Another study done in Iran revealed the main side effects to be anger and nausea[10]. The difference may be a result of different demographic characteristics, or due to different chemical compositions of different OCPs. Regardless, the importance of the prevalence of side effects as a factor promoting the discontinuation of OCPs is apparent across all these studies. From the present study it is seen that the government agencies act as a source of OCPs for a very small proportion of the respondents (25.7% directly from the government and 21% from FWV). The most common collection sources are various NGOs (43.8%) This data is lower than those found by a study done in rural area of Tangail upazilla where the government accounted for about half of the respondents' collection source, which itself was deemed a low value[11]. Therefore it can be seen that the government outreach is lower among slum women than among rural women in Bangladesh. The information regarding contraception use came from neighbors (47.6%), husbands (35.2%) and FWV (17.2%). This is similar to the previous study, but does not exactly coincide with it, as in that study female friends and relatives accounted for 41%, government family planning personnel accounted for 16% and husbands only accounted for 13%[8]. Lastly, it is seen that the vast majority (64%) do not even seek any treatment for their menstrual problems from qualified physicians. Thus an important source of counselling and information regarding OCP is not accessed by most of the respondents.

Conclusion:

High contraception prevalence rate is the most important measure against uncontrolled reproduction. From the present study, it is seen that the side effects act as the biggest hindrance in the continuation of OCPs. Therefore, the development of better formulations and its availability for lower socio-economic groups should be a target for the future. It is also seen that there is a lack of outreach from government agencies among slum women. The improvement of this outreach can not only act as a measure to solve the problem of lack of supply, but also act as a vital counselling tool. Furthermore, since highest discontinuation was seen in women between 15-25 years of age, and desire for children was the second most common cause for discontinuation, women could be advised to start OCPs after the birth of one or two children, to reduce the incidence of side effects in the long run.

Another important finding was the lack of consultation from qualified physicians. Mass media campaigns which promote seeking physicians' advice when needed will help increase both the contraception prevalence rate and the management of side effects in users. Lastly, the data provided by this study on the prevalence of side effects can be used by pharmacologists as a reference in the improvement of OCP formulations.

References:

1. Bangladesh Population Density and Growth rate Available from https://www. worldometers. info/world-population/bangladesh-population/

2. World Population 2019, Department of Economic and Social Affairs, United Nations.

3. BBS. Statistical Handbook 2019 Bangladesh Bureau of Statistics (BBS). Dhaka: Government of Bangladesh.

4. United Nations. The world population prospects 2019: highlights. New York: United Nations; 2019.

5. National Institute of Population Research and Training, ICF International. Bangladesh Demographic and Health Survey 2017-2018; Key Indicator.2019.

6. UNDESA; Trends in Contraceptive Use Worldwide.2015. Available at:http://www. un.org/en/development/desa/ population/ publications/pdf/family/trendsContraceptiveUse2015Report.pdfUNDESA;

7. Huber LRB, Hogue CJ, Stein AD, Drews D, Zieman M, King J, et al. Contraceptive use and discontinuation: Findings from the contraceptive history, initiation, and choice study. American Journal of Obstetrics and Gynecology. 2006;194(5): 1290–5.

8. Rosenberg MJ, Waugh MS. Oral contraceptive discontinuation: a prospective evaluation of frequency and reasons. Am J Obstet Gynecol. 1998; 179(3 Pt 1):577-82.

9. do Nascimento Chofakian CB, Moreau C, Borges ALV, Santos OAD. Contraceptive discontinuation: frequency and associated factors among undergraduate women in Brazil. Reprod Health. 2019;16(1):131.

10. Kamalifard M, Malakouti J, Pezeshki M, Velayati A. Continuation and Discontinuation Reasons of LD Contraceptives among Iranian Women. International Journal of Women's Health and Reproduction Sciences. 2014;2(5):287–290.

11. Zafar Ullah AN, Humble ME. Determinants of oral contraceptive pill use and its discontinuation among rural women in Bangladesh. Reprod Med Biol. 2006 May 19;5(2):111-121.

12. Khan MA. Side effects and oral contraceptive discontinuation in rural Bangladesh. Contraception. 2001;64(3):161-7.

13. Thobani R, Jessani S, Azam I, Reza S, Sami N, Rozi S, et al. Factors associated with the discontinuation of modern methods of contraception in the low income areas of Sukh Initiative Karachi: A community-based case control study. 2019;14(7): e0218952.

14. Westhoff CL, Heartwell S, Edwards S, Zieman M, Stuart G, Cwiak C, Davis A, Robilotto T, Cushman L, Kalmuss D. Oral contraceptive discontinuation: do side effects matter? Am J Obstet Gynecol. 2007;196(4):412.e1-6.

Original Article

DCIMCJ

DCIMCJ 2023 January;10(1):54-59

Association of Preoperative Uric Acid Level with Acute Kidney Injury Following Off Pump Coronary Artery Bypass Surgery

Zahan LA[1], Sarkar R[2], Islam Z[3], Saklayen SMG[4], Polash WA[5], Rupa RN[6]

Abstract:

Background and Objectives: Acute kidney injury (AKI) is an important postoperative complication in patients who underwent off pump coronary artery bypass (OPCAB) surgery. Several preoperative factorsassociated with postoperative AKI; serum uric acid (SUA) is claimed to be one of them. The purpose of this study was to investigate the potential influence of preoperative SUA on AKI following OPCAB surgery. Methods: This prospective observational study included patients who underwent OPCAB surgery from October, 2016 to March, 2018 at the Department of Cardiac Surgery, National Institute of Cardio Vascular Disease (NICVD), Dhaka. Acute kidney injury was defined as an absolute increase in Serum Creatinine 0.3 mg/dL or 1.5 times from baseline within 48 hours after surgery. Results: There were 100 patients included for analysis divided into two groups on the basis of preoperative SUA level. The incidences of acute kidney injury found higher with higher level of SUA. SUA level ≥5.5 mg/dL was associated with a 4-fold rise (odds ratio [OR] 4.1; 95% confidence interval [CI], 2.3-7.9) of AKI. Postoperative mechanical ventilation time, ICU stay and hospital stay also found longer in patients with higher level of SUA. Conclusion: Preoperative elevated SUA was associated with increased incidence and risk for acute kidney injury, longer postoperative mechanical ventilation time, ICU stay and hospital stay in patients undergoing OPCAB surgery.

Keywords: Serum uric acid, acute kidney injury, off pump coronary artery bypass surgery

Introduction:

Acute kidney injury (AKI) is one of the common complication of cardiac surgery developing in 25-35% cases[1]. The development of AKI is associated with a high morbidity and mortality, a morecomplicated hospital course and a higher risk for infectiouscomplications[2]. Risk factors for AKI are common among patients undergoing cardiac surgery. Many of these factors are nonmodifiable and other factors are specific to anesthetic, surgical and ICU management and physicians should be cognizant of these factors in order to eliminate or mitigate their effects[3]. In off pump coronary artery bypass (OPCAB) surgery pathophysiologic sequelae of CPB could be avoided thus consider as Reno- protective[4]

1. Dr. Laila Akter Zahan, Assistant Professor, Department of Vascular Surgery, Ibrahim Cardiac Hospital and Research Institute.

2. Dr. Rampada Sarkar, Professor and Head, Department of Cardiac Surgery, National Institute of CardioVascular Disease, Dhaka.

3. Dr. Zahidul Islam, Associate Professor, Department of Cardiac Surgery, National Institute of CardioVascular Disease, Dhaka

4. Dr. SMG Saklayen, Associate Professor and HOD, Department of Vascular Surgery, Ibrahim Cardiac Hospital and Research Institute, Dhaka

5. Dr.Wahidul Azad Polash, Assistant Registrar, Department t of Vascular Surgery, Ibrahim Cardiac Hospital and Research Institute, Dhaka

6. Dr. Rusama Nuzhat Rupa, Assistant Registrar, Department t of Vascular Surgery, Ibrahim Cardiac Hospital and Research Institute, Dhaka.

Correspondence: **Dr.Laila Akter Zahan**
E-mail: lailaakterzahan@gmail.com

and risk of acute kidney injury reduced to 17.5%[5]. Early, accurate and cost-effective ways to predict AKI is a challenge in clinical medicine. Serum creatinine and equations and scoring systems derived from serum creatinine have been extensively utilized in clinical practice despite their limited ability to predict AKI in the first 12 hours following renal injury. Serum uric acid (SUA) has recently been rediscovered as a predictor of AKI that is easy and inexpensive to measure and has good predictive value for AKI when measured pre-operatively[6].

Uric acid is an end-product of purine degradation. Higher levels are found in patients with cardiovascular disease and in those with major cardiovascular risk factors such as hypertension, diabetes mellitus, obesity, hyperinsulinemia/insulin resistance and renal dysfunction[7]. SUA itself influences many of the proposed mechanisms of acute kidney injury.It induces renal vasoconstriction and reduction in GFR[8], impairs autoregulation, has pro-inflammatory pathways involving chemokine expression with leukocyte infiltration and anti-angiogenic properties[9] and has key roles in both innate and adaptive immune responses[10]. The objective of this study was to find the association of preoperative SUA level with AKI after OPCAB surgery.

Methods:

This prospective observational study was done with a total study population of 100 (hundred) adult male patients who underwent OPCAB surgery from October, 2016 to March, 2018 at the Dept. of Cardiac Surgery, NICVD. The study protocol was approved by Ethical Committee of NICVD and informed written consent was taken from each patient before enrollment. The primary outcome of the study was the development of AKI following OPCAB surgery. Thisstudy evaluated the role of SUA in early postoperative prediction of AKI. AKI was defined as per the AKIN guideline: increase in serum creatinine by 0.3 mg/dL or 1.5 times of baseline within 48 hours of surgery[11].

Patients with preoperative renal dysfunction (serum creatinine >1.4 mmoml/L), prior revascularization (PCI or CABG), takinguric acid lowering drugs, hepatic disease, emergency CABG, OPCAB converted to on-pump CABG, peroperative hypotensive episode (systolic pressure <60 mmHg for more than 10min), duration of surgery >8 hours were excluded from the study.History was taken and detailed clinical examination was performed and recorded in predesigned structured dara-sheet. Demographic data such as age, sex, BMI were recorded. Baseline SUA was measured using Hemalyzer 3000 at National Center for Rheumatic Fever and Heart Diseases. Baseline serum creatinine level was measured atthe day before surgery by Beckman coulter AU480 at NICVD. Patients were divided into two groups on the basis of preoperative SUA level after fulfilling the enrollment criteria, 50 patients in Group 1 with preoperative SUA level <5.5 mg/dl and 50 patients in Group 2 with preoperative SUA level ≥5.5 mg/dl.A standard anesthetic protocol was used throughout the study. All the patients were undergone median sternotomy and standard OPCAB performed. During the procedure systolic BP was kept >80mmHg. Postoperatively same analgesics (ketorolac and diclofenac sodium) were used. Serum creatinine was measured using same analyzer at 2hr, 12hr, 24hr and 48hr following OPCAB surgery to diagnose postoperative AKI. Patients were monitored for any adverse events till discharge.

All statistical analyses were performed by using SPSS 22.0 statistical package. All data are expressed as mean with standard deviation for quantitative variables. Qualitative variables presented as number (percentage). Comparisons between the groups were done. 95% confidence limit was taken. Probability value <0.05 was considered as level of significance. To see the association between quantitative variables Student's t test had been performed and for qualitative variables Chi-Square test had been performed.

Results:

Age distribution among group 1 patients, highest number of percentage 50% were in 51-60 years age whereas among group 2 patients highest percentage was 66 % in 51-60 years age group. The mean difference of age (years) between AKI & No AKI group was statistically insignificant (p>0.05) in unpaired student t-Test. The mean BMI was 28.6±2.30 in patients developed AKI and 29.7±3.32in patients didn't develop AKI. There was no statistical significant difference between the groups in term of BMI (p>0.05) in unpaired t-test. The mean Pre-operative baseline serum creatinine level 1.03±0.15 and 1.05±0.14 in AKI and No AKI group respectively. Though these observations were statistically insignificant (p>0.05) in unpaired t-test. Preoperative Left Ventricular Ejection Fraction (LVEF) had statistically no significant difference between AKI and No AKI group. Preoperative serum uric acid (SUA) level in AKI group was 5.93±0.87 and in No AKI group was 4.29±0.63. The difference of preoperative SUA between AKI & No AKI group was statistically significant (p<0.001). Diabetes mellitus (DM), Hypertension (HTN), Dyslipidemia (DL) found higher in AKI group. But there was no statistical significant difference between two groups in Chi-square test.

Table-1: Baseline Demographic & Clinical Characteristics According to Postoperative AKI

Characteristics	No AKI	AKI	p Value
Demographic			
Age	53.9±5.62	54.3±5.36	0.415
Clinical			
BMI	28.6±2.30	29.4±3.32	0.070
Laboratory			
Creatinine	1.03±0.15	1.05±0.14	0.538
Serum Uric Acid	4.29±0.63	5.93±0.87	<0.001
LVEF	54.4±6.11	52.7±5.92	0.091
Medical History			
HTN	64%	78%	0.124
DM	36%	42%	0.359
Dyslipidemia	63%	66%	0.620

Duration of surgery in AKI group and No AKI group found 304.4±26.02 and 309.0±24.35 miutes respectively, though these observations were statistically insignificant (p>0.05) in unpaired t-test. Perioperative MI and arrhythmia occurs in No AKI group - 8% and 20%, in AKI group – 12% and 24% respectively. Though difference were higher but statistically insignificant (p>0.05) in Chi-square test. Postoperatively 14% patients developed AKI in group 1 and 48% patients developed AKI in group 2. The result was statistically significant in Chi-square test. Risk measurement done by Odd Ratio.

Table-2: Relationship of preoperative uric acid with postoperative AKI.

	No AKI	AKI	Odds Ratio	p-value
Group-I	43(86.0%)	7(14.0%)	4.1(2.37.9)	<0.001[S]
Group-II	26(52.0%)	24(48.0%)		

Postoperative serum creatinine level measured at 2nd, 12th, 24th and 48th hours in group 1 and group 2. There was no statistically significant difference between group 1 and group 2 at 2nd, 24th and 48th hours but at 12th hours serum creatinine level was significantly higher in group 2 when unpaired t-test performed.

Postoperative mechanical ventilation time was measured in hours. The mean ±SD of mechanical ventilation time for No AKI group patients was 9.73±2.65 hours and for AKI group patients it was 10.59±3.25 hours. Postoperative ICU stay was measured in days. The mean ±SD of ICU stay for No AKI group patients was 5.94±2.31days and for AKI group patients it was 6.44±4.52 days. Postoperative hospital stay was measured in days. The mean ±SD for No AKI group patients was 10.78±2.19 days and for AKI group patients it was 11.28±3.91 days. Postoperative mechanical ventilation time, ICU stay, Hospital stay found higher in AKI group but differences in comparison to No AKI group were statistically non significant.

Table-3: Comparison of mechanical ventilation time, ICU stay and hospital stay after surgery according to Postoperative AKI.

	No AKI	AKI	
Mechanical ventilation time (hrs)	9.73±2.65	10.59±3.25	0.146^{NS}
ICU stay (days)	5.94±2.31	6.44±4.52	0.488^{NS}
Hospital stay after surgery (days)	10.78±2.19	11.28±3.91	0.432^{NS}

Discussion:

The purpose of this study was to evaluate the association of preoperative serum uric acid level with AKI in patients who underwent OPCAB surgery. This prospective observational study showed no statistically significant difference regarding the demographic characteristics such as age and BMI between two groups. According to the age distribution highest number of patients was in 51-60 years group in both groups. Study conducted by Lapsia and his colleagues found highest number of patients belong to 61-70 years age group[6].

In this study only male patients were taken as majority of the patients in NICVD who underwent OPCAB were male. As well as female gender is an important risk factor for AKI following cardiac surgery due to late presentation, diffuse disease, small caliber of coronary vessels, poor target vessels and more comorbidities.

Patients in both groups were statistically identical regarding preoperative comorbidities like HTN, DM, DL. Majority of the patients of both groups had been suffered from HTN. Gaipov and his colleagues found no significant difference between two groups in terms of HTN and DM, DL that is similar to this study[1].

The mean pre-operative serum creatinine level 1.03±0.15 and 1.05±0.14 in No AKI group and AKI group respectively in our study. Though these observations were statistically insignificant ($p>0.05$) in unpaired t-test. Study conducted by Lapsia and his colleagues also found homogeneous distribution of patients regarding preoperative serum creatinine. Result of this study was similar with their study[6].

Difference between mean duration of surgery in AKI group and No AKI group were statistically insignificant ($p>0.05$) in unpaired t-test. In this study higher percentage of patients had been suffered from postoperative MI and arrhythmia of AKI group in comparison to No AKI group but these observations were statistically insignificant ($p>0.05$) in Chi-square test. Joung and his colleagues also found same results regarding postoperative MI and arrhythmia that was similar to our findings[12].

In this study postoperative serum creatinine level measured at 2nd, 12th, 24th and 48th hours in group 1 and group 2. There is no statistically significant difference between mean serum creatinine level of group 1 and group 2 at 2nd, 24th and 48th hours but at 12th hours mean serum creatinine level is significantly higher in group 2 (1.42±0.44, p value-0.035) in comparison to group1 (1.27±0.23). Ejaz and his colleagues also found postoperatively at 12th hours serum creatinine level is significantly higher in group 2[13].

In thesestudy postoperatively 14% patients developed AKI in group 1 and 48% patients developed AKI in group 2. The result is statistically significant in Chi-square test. Study conducted by Ejaz and his colleagues found 13.1% patients developed AKI in group 1 and 48.7% patients developed AKI in group 2 postoperatively. Result of our study was similar to their result[13]. And risk of development of AKI in group 2 about 4 fold higher than group 1(OR 4.1; 95% CI 2.3-7.9) which is similar to the result found by Lapsia and his colleagues (OR 4.4; 95% CI 2.4-8.2)[6].

According to the time course levels in group 1, 28.6% patients developed AKI within the first 2 hours, whereas 57.2.5% patients were diagnosed with AKI at 12 hours and 14.2% patient at 24 hours after OPCAB surgery and in group 2, 29.2% patients developed AKI within the first 2 hours, whereas 54.5%, 12.1% and 4.3% patients were diagnosed with AKI at 12, 24 and 48 hours after OPCAB surgery respectively. In this study sample more than 80% cases AKI developed within 12 hours of OPCAB which is similar to the observation of Gaipov and his colleagues[1].

Among postoperative variables mean mechanical ventilation time, mean ICU stay and mean hospital stay after OPCAB were prolonged in AKI group in comparison to No AKI group but statistically insignificant. Study conducted by Lapsia and his colleagues found mean mechanical ventilation time, ICU stay and hospital stay statistically insignificant[6].

The major finding of the study was that preoperative SUA was associated with an increased risk for acute kidney injury. The risk was higher in those with higher threshold SUA values. The increases in risk remained significant even after adjustment for sex, baseline renal and cardiac function, types of surgery and other comorbid conditions.

The limitations of our study are single center study with small sample size and multiple surgical team performed the procedure, use of purposive non-random sampling method, lack of data after discharge from hospital and unmentioned postoperative quality of life.

Conclusion:

In conclusion we report that elevated preoperative SUA level was associated with higher incidence of AKI, longer mechanical ventilation time, ICU stay and hospital stay following OPCAB surgery. From this study it can be concluded that preoperative SUA can be used as a predictor of AKI following OPCAB surgery. Further studies are needed to assess whether preoperative lowering of SUA level would have a beneficial effect on renal outcome or not in patients undergoing OPCAB surgery.

References:

1. Gaipov A, Solak Y, Turkmen K, Toker A, Baysal AN, Cicekler H, et al. Serum uric acid may predict development of progressive acute kidney injury after open heart surgery. Ren Fail. 2015;37(1):96-102.

2. Antunes PE, Prieto D, Oliveira JF, Antunes M. 2004.Renal dysfunction after myocardial revascularization. EurJ Cardio-thorac Surg. 2004;25(16):597-604.

3. O'Neal J, Shaw AD, Billings IV FT. Acute kidney injury following cardiac surgery: current understanding and future directions. Crit Care. 2016;20(8):187-195.

4. Ahmed I, Rahim AA, Mahmood KN, Ahmed M. Early evaluation of renal function in high risk patients after off pump coronary artery bypass grafting. Cardiovasc J. 2016;9(1):23-30.

5. Garg AX, Kurz A, Sessler DI, Cuerden M, Robinson A, Mrkobrada M, et al. Perioperative aspirin and clonidine and risk of acute kidney injury. J Am Med Assoc. 2014;312(21):2254-2264.

6. Lapsia V, Johnson RJ, Dass B, Shimada M, Kambhampati G, Ejaz NI, et al. Elevated uric acid increases the risk for AKI in cardiovascular surgery. Am J Med. 2012;125(3):302-317.

7. Baker JF, Krishnan E, Chen L, Schumacher HR. Serum uric acid and cardiovascular disease: recent developments, and where do they leave us? Am J Med.2005;118(6):816-826.

8. Sánchez-Lozada LG, Tapia E, Santamaría J, Avila-Casado C, Soto V, Nepomuceno T, et al. Mild hyperuricemia induces vasoconstriction and maintains glomerular hypertension in normal and remnant kidney rats. Kidney Int. 2005;67(2): 237-247.

9. Kang D, Park S, Lee I, Johnson RJ. Uric acid-induced C-reactive protein expression: implication on cell proliferation and nitric oxide production of human vascular cells. J Am Soc Nephrol. 2005;16(4):3553-3562.

10. Kono H, Chen C, Ontiveros F, Rock KL. Uric acid promotes an acute inflammatory response to sterile cell death in mice. J Clin Invest. 2010;120(6):1939-1949.

11. Mehta RL, Kellum JA, Shah SV, Molitoris BA, Ronco C, Warnock DG, et al. Acute Kidney Injury Network: report of an initiative to improve outcomes in acute kidney injury. Crit Care. 2007;11(2):231-237.

12. Joung K, Jo J, Kim W, Choi D, Chin J, Lee E, et al. Association of preoperative uric acid and acute kidney injury following cardiovascular surgery. J Cardio-thorac and Vasc Anesth. 2014;28(6):1440-1447.

13. Ejaz AA, Kambhampati G, Ejaz NI, Dass B, Lapsia V, Arif AA, et al. Postoperative serum uric acid and acute kidney injury. J Nephrol. 2012;25(4):497-505.

DCIMCJ

Case Report

DCIMCJ 2023 January;10(1):60-61

A Case Report on Hematuria Due To Urinary Tract Tuberculosis

Nomany BMS[1]

Summary:

Urinary tract tuberculosis is one of the complications of disseminated or miliary tuberculosis. Sometimes diagnosis is missed and patient develops obstructive uropathy and subsequently end stage kidney disease. Appropriate diagnosis and management can save the patient from dialysis. Here a patient presented with hematuria has been described, ultimately was diagnosed urinary tuberculosis.

Keywords: Hematuria, hydro-uretero-nephrosis, tuberculosis.

Case repost:

Md. Safir Uddin, 36-year-old gentlemen was referred by urologist to outpatient department of Kidney Foundation Hospital and Research Institute, with recurrent colicky abdominal pain and gross hematuria for the last 2 years. He did not have fever, anorexia but significant weight loss. CBC showed normal study with ESR 50. CRP was 2. Urine R/E showed RBC-plenty, pus cells 0-3/HPF, albumin (+). Serum creatinine was 149 micromol/L. USG of KUB showed left sided marked hydronephrosis with mild hydroureter and right sided mild hydro-uretero-nephrosis which was confirmed by CT urogram. CXR (P/A view) showed right sided mild pleural effusion. MT and quantiferon TB gold test were negative. To exclude urinary tract tuberculosis, 3 morning samples of urine for AFB and GeneXpert for detection of mycobacterium tuberculosis (MTB) were done and all were positive. Ultimately he was diagnosed as a case of urinary tract tuberculosis. He was treated with anti-tuberculous drugs (RIPE for 2 months and RI for 4 months), titrated with body weight and renal function test. Prednisolone 60 mg was added for 6 weeks due to having strictures in both ureters. The first follow up after 15 days showed improvement of general well-being along with renal function tests.



Introduction:

Tuberculosis (TB) is a major global health problem. Genitourinary TB constitutes 9% of extrapulmonary TB. Urinary tract tuberculosis is almost always secondary to a primary lesion in the lung. Renal involvement occurs as a complication of miliary TB[1].

Clinical manifestations:

A high index of suspicion is necessary for early diagnosis. Risk factors include close contact with sputum smear–positive patients, neglected person, malnutrition, immunocompromised host, diabetes mellitus, CKD, vitamin D deficiency, and other debilitating illnesses[2]. Some important clinical manifestations of urinary tract tuberculosis are[3].

1. **Dr. Bakhtiare Md. Shoeb Nomany,** Associate Professor, Department of Nephrology, Kidney Foundation Hospital and Research Institute, Dhaka.

Correspondence: Dr. Bakhtiare Md. ShoebNomany
E-mail: shoebnomany@googlemail.com

Asymptomatic Presentations:

- About 25% of patients have no clinical or laboratory evidence.
- Diagnosis of urinary TB is made during investigation for other diseases.
- Another 25% have asymptomatic urinary abnormalities, like persistent pyuria or hematuria.
- In patients with persistent pyuria, 3-days urine cultures do not yield any growth.

Lower Urinary Tract Symptoms (LUTS):

- Lower urinary tract symptoms, such as frequency, urgency, dysuria, nocturia or hematuria, occur in >40% of patients with TB.
- Recurrent painless hematuria should alert the clinician to the possibility of urinary TB, but IgA nephropathy should be excluded.
- Macroscopic hematuria in urinary TB may result from bleeding from ulcerating lesions.

Abdominal Pain:

- Colicky abdominal pain may be due to blood clot, sloughed papilla, or other causes of acute obstruction from TB.
- Upper tract obstruction may cause pain in the loin.
- Suprapubic pain and dysuria are due to acute tuberculous cystitis.

Constitutional symptoms:

- Fever, lethargy, anorexia, weight loss, sweating at night (FLAWS) occur in <20% of patients.
- These patients should be carefully investigated to identify TB in the lungs, lymph node, bones or spine.

Diagnosis of urinary tract tuberculosis:

- A high index of suspicion is necessary to diagnose urinary TB. A rapid and reliable automated test endorsed by the WHO to identify targeted nucleic acid sequences in the M. tuberculosis genome (GeneXpert MTB/RIF test) is available. This test has a pooled sensitivity of 98% and specificity of 99%. This test detects the DNA sequences specific for M. tuberculosis and rifampicin resistance by PCR. Results can be generated in 2 hours[4].

Treatment of urinary tract tuberculosis:

- A short-course regimen is started with daily rifampicin 600 mg, isoniazid 300 mg, and Pyrazinamide 25 mg/Kg body weight in the morning. Pyrazinamide is discontinued after 2 months and isoniazid and rifampicin are continued for another 4 months.

References:

1. World Health Organisation. Tuberculosis report, 2016. Geneva, Switzerland: WHO; 2016.
2. Gibney KB, MacGregor L, Leder K, Torresi J, Marshal C, Ebeling PR, et al. Vitamin D defificiency is associated with tuberculosis and latent tuberculosis infection in immigrants from sub-saharan Africa. Clin Infect Dis. 2008;46(3):443–446.
3. Visweswaran R K, Jayakumar K P. Tuberculosis of the Urinary Tract. (6th edition).Comprehensive Clinical Nephrology. UK: Elsevier, 2019: pp 639- 649.
4. Boehme CC, Nabeta P, Hillemann D, Nicol MP, Shenai S, Krapp F, et al. Rapid molecular detection of tuberculosis and resistance to rifampicin. N Engl J Med. 2010;363:1005–1015.

Medical Quiz

DCIMCJ 2023 January;10(1):62-63

Medical Quiz: Images

Mamun KAA[1]

A 62-year-old male patient presented to the emergency department with generalized tonic-clonic seizure. He also complained of a similar episode two weeks ago. His past medical history was associated with a prolonged morning headache, which was generalized, dull, non-radiating associated with nausea for the last two months. He had no history of trauma or fall.He was suggested MRI Brainwith MRS.

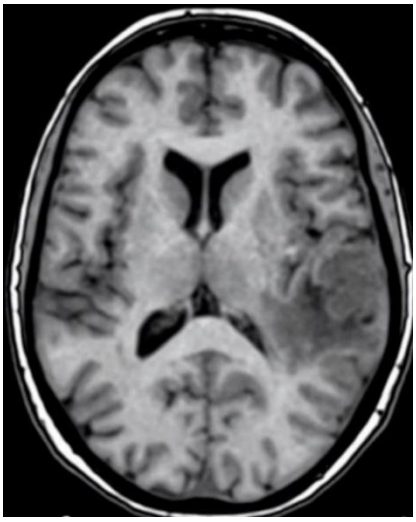


Figure 1: MRI brain T1 image

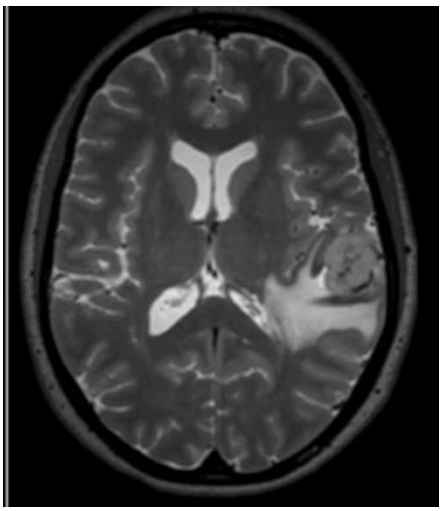


Figure 2: MRI brain T2 image

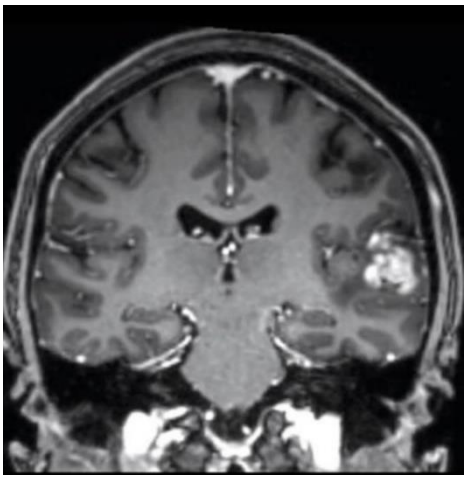


Figure 3: MRI brain T1 contrast ımage

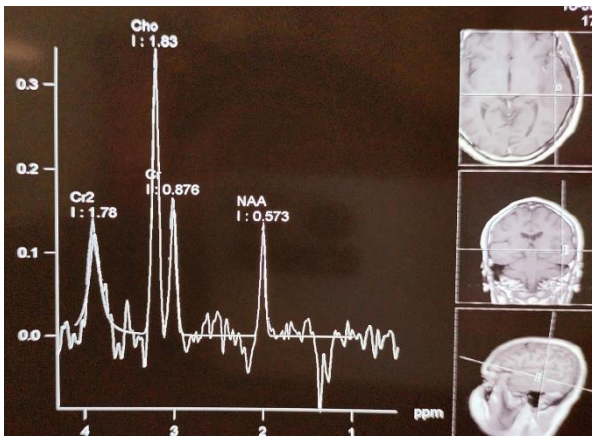


Figure 4: MRS of brain

1. Dr Kazi Abdullah Al Mamun, Associate Professor (Neuromedicine)
Dhaka Central International Medical College.

- **Q1**. Mention abnormal findings inMRI brain.
- **Q2**. Mention abnormal findings inMRS brain.
- **Q3**. What is the diagnosis?
- **Q4**. What is the treatment option?

Answer to Medical Quiz: Images

- ✓ MRI brain shows T1 Hypointense, T2 hyperintense lesion in left temporal lobe. Mild contrast enhancemet is seen in the centre of lesion.
- ✓ Magnetic Resonance spectroscopy(MRS) showsCho(Choline-containing Compounds) elevation and NAA(N-Acetyl Aspartate) reduction is seen , with elevated Cho(Choline-containing Compounds) / Cr (Creatine) ratio
- ✓ Low grade glioma
- ✓ Surgery

Discussion:

Glioma is the most common form of central nervous system neoplasm that originates from glial cells[1]. There are 3 cases of gliomas diagnosed per 100,000 people every year[2]. Gliomas are diffusely infiltrative tumors that affect the surrounding brain tissue[1]. Headache is the most common initial presenting symptom of patients with glioma. Seizures are the second most common symptom of presentation[3]. Other symptoms include nausea, vomiting and change in vision[4].Treatment of Gliomas include Surgery and Chemoradiation[5].

References:

1. Jiang H, Cui Y, Wang J, Lin S. Impact of epidemiological characteristics of supratentorial gliomas in adults brought about by the 2016 world health organization classification of tumors of the central nervous system. Oncotarget. 2017 Mar 21;8(12) :20354 -20361.
2. Zhang S, William C. Educational Case: Histologic and Molecular Features of Diffuse Gliomas. AcadPathol. 2020 Jan-Dec;7:237 4289520914021.
3. Kinslow CJ, Garton ALA, Rae AI, Marcus LP, Adams CM, McKhann GM, et al. Extent of resection and survival for oligodendroglioma: a U.S. population-based study. J Neurooncol. 2019 Sep;144(3):591-601.
4. Kristensen BW, Priesterbach-Ackley LP, Petersen JK, Wesseling P. Molecular pathology of tumors of the central nervous system. Ann Oncol. 2019 Aug 01;30(8):1265-1278.
5. Muthusamy RK, Mehta SS. Chordoid Glioma of the Third Ventricle. Neurol India. 2019 Jul-Aug;67(4):1178-1179.