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INFORMATION FOR AUTHORS

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Guide to Authors

MH Samorita Medical College Journal provides rapid publication (twice in a year) of articles in all areas of different subjects. The Journal welcomes the submission of manuscripts that meet the general criteria of significance and scientific excellence.

The manuscripts should be submitted addressing Editor-in-Chief.

The Journal of MH Samorita Medical College only accepts manuscripts submitted as triplicate hard copy with a soft copy.

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 (**International or National)** or any other publisher.

The submitting (Corresponding) author is responsible for ensuring that the submitting article has been signed by all the co-authors. It is also the authors' 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 board officially establishes the date of receipt. Further correspondence and proofs are 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 papers should be addressed to Editor-in-Chief (MH Samorita Med Coll J)

The cover letter

Cover letter is expected to be submitted along with manuscript. Use the cover letter to explain why the paper should be published in the Journal of MH Samorita Medical College. The cover letter should include the corresponding author's full address, telephone/ fax numbers and e-mail address.

Ethical aspects

- Ethical aspect of the study is considered very carefully at the time of assessment of the manuscript.
- Any manuscript that includes table, illustration or photograph that have been published earlier 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 would be blackened out.

Conditions for submission of manuscript

- All manuscripts are subject to peer-review.
- Manuscripts are received with the explicit understanding that they are not under simultaneous consideration by any other publication.
- Submission of a manuscript for publication implies the transfer of the copyright from the author to the publisher upon acceptance. Accepted manuscripts become the permanent property of the MH Samorita Medical College Journal (MHSMCJ) and may not be reproduced by any means in whole or in part without the written consent of the publisher.
- It is the author's responsibility to obtain permission to reproduce illustrations, tables etc. from other publications.

Article Types

Four types of manuscripts may be submitted.

Editorials: It should preferably cover a single topic of common 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 and its volume should **not exceed 5000 words** or equivalent space including title, summary/abstract, main body, references, table(s) and figure(s).

Review Articles: Submissions of reviews covering topics of current interest are welcome and encouraged. Reviews should be concise and no longer than 4 to 6 printed pages (about 12 to 18 manuscript pages) and should **not exceed 5000 words**. It should be focused and must be up to date.

Case Reports: This should cover uncommon and/or interesting cases and should **not exceed 1000** words or equivalent space.

Review Process

All manuscripts are initially screened by editor and sent to selective reviewers. Reviewers are requested to return comments to editor within 3 weeks. On the basis of reviewers' comments the editorial board decides whether the articles are accepted or send for re-review the manuscripts. The MH Samorita Med Coll J editorial board tries to publish the manuscript as early as possible fulfilling all the rigorous standard journal needs.

I. Preparing a Manuscript for Submission to MH Samorita Med Coll J

Editors and reviewers spend many hours reading and working on manuscripts, and therefore appreciate receiving manuscripts that are easy to read and edit. The following information provides guidance in preparing manuscripts for the journal.

I A. Preparation of manuscript

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

Preparation

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

- Title page
- Abstract
- Main body/Text: Introduction, Materials and Methods, Results, Discussion and conclusion (For an original article/ Systematic review)
- Acknowledgement
- References
- Tables and legends

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

I A. 1. General Principles

- The text of observational and experimental articles is usually (but not necessarily) divided into the following sections: Introduction, Materials and Methods, Results, and Discussion(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.
- Authors need to work closely with editors in developing or using the publication formats and should submit supplementary electronic material for peer review.
- Double-spacing all portions of the manuscript— including the title page, abstract, text, acknowledg- ments, references, individual tables, and legends— and generous margins make it possible for editors and reviewers to edit the text line by line and add comments and queries directly on the paper copy.
- If manuscripts are submitted electronically, the files should be double-spaced to facilitate printing for reviewing and editing.
- Authors should number on right upper all of the pages of the manuscript consecutively, beginning with the title page, to facilitate the editorial process.

I A. 2. Title Page

The title page should have the following information:

- The title should be brief, relevant and self explanatory. It should reflect the content of the article and should include all information that will make electronic retrieval of the article easy. Subtitles should not be used unless they are essential.
- Title should not be phrased as questions.
- The names of the authors should appear below the title that should include full names of all authors **(no initial).**

Example: Md MA Hamid **(correct form);** Hamid MA **(incorrect).**

The affiliations and full addresses of all authors should be mentioned in the title page.

- Contact information for corresponding authors: The name, mailing address, telephone and fax numbers, and e-mail address of the author responsible for correspondence about the manuscript.
- The name and address of the author to whom requests for reprints should be addressed or a Statement that reprints are not available from the authors.
- Source(s) of support in the form of grants, equipment, drugs, or all of these.

I A. 3. Abstract

Original Article: Structured abstracts are essential for original research. Structured abstract includes introduction, objective(s), materials and methods, results and conclusion. Should be limited to 250 words. The abstract should provide the introduction of the study and blinded state and should mention the study's purpose, basic procedures including selection of study subjects or laboratory animals, main findings (giving specific effect sizes and their statistical significance, if possible) and the principal conclusion. Because abstracts are the only substantive portion of the article indexed in many electronic databases, and the only portion that many readers read, it should accurately reflect the content of the article; so, authors need to be careful about that.

Review Article: is expected to contain background, objective(s), main information and conclusion in brief form. Without any subheading the content should be described in a single paragraph.

Case Study: needs to have background, case summary and conclusion. The content should be described in a single paragraph.

Do not put references in the abstract.

I A. 4. Main body

I A. 4 a) Original article

The body of the text should be divided into the following sections: i) Introduction, ii) Materials and methods, iii) Results, iii) Discussion and iv) Conclusion.

i) Introduction

Should not exceed **500 words**. This section includes background of the problem (that is, the nature of the problem and its significance). It should be very specific, identify the specific knowledge in the aspect, reasoning and what the study aim to answer. Only pertinent primary references should be provided and no data or conclusions should be included from the work to be reported. **Justificatio**n of the study and its **objective(s)** should be mentioned at the end of this section. All information given in this section must have references that to be listed in the reference section.

ii) Materials and methods

The Methods section should be written in such way that another researcher can replicate the study. The type of study (study design), study period, sampling technique, sample size, study population, data collection technique and tool as well as data handling, processing and data analysis should be briefly mentioned in this section.

ii a) Selection and Description of Participants

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

ii b) Technical Information

- Describe methods, apparatus (give the manufacturer's name and address in parentheses), and procedures in sufficient detail to allow others to reproduce the results.
- Cite references to established methods, including statistical methods. Provide references and brief descriptions for methods that have been published but are not well-known.

- Describe new or substantially modified methods, give the reasons for using them, and evaluate their limitations.
- Identify precisely all drugs and chemicals used, including generic name(s), dose(s), and route(s) of administration.
- For a systematic review article include a section describing the methods used for locating, selecting, extracting, and synthesizing data. These methods should also be summarized in the abstract.

ii c) Statistics

- Describe statistical methods with enough detail to enable a know- ledgeable 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).
- Cite references for the design of the study and statistical methods (standard for the work) when possible.
- Define statistical terms, abbreviations, and most symbols.
- Specify the computer software used.

iii) Results

Results should be described in past tense.

- Present results in logical sequence in the text, tables, figures and illustrations, giving the main or most important findings first. Maintain the sequence of results with the specific objectives selected earlier.
- Do not repeat all the data in the tables or illustrations in the text; emphasize or summarize only the most important observations.
- When data are summarized in the result 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 (relevant to objectives) and to assess supporting data. Use graphs as an alternative to tables with many entries; do not duplicate data in figures (graphs/ charts) and tables. **Example:** Age range of the studied respondents should be appeared **either in table or in figure**.
- Avoid nontechnical uses of technical terms in statistics, such as "random" (which implies a randomizing device), "normal," "significant," "correlations," and "sample."

iv) Discussion

The discussion must be described in **past tense.** This section should reflect the author's comments on the results.

- Emphasize the new and important aspects of the study and the conclusions that follow them in the context of the totality of the best available evidence.
- Do not repeat in detail data or other information given in the Introduction or the Results section.
- For experimental studies, it is useful to begin the discussion by briefly summarizing the main findings, then explore possible mechanisms or explanations for those findings.
- Compare and contrast the results with other relevant studies and potential argument for discrepancy and consistency should be given here.
- 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, 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.

v) Conclusion

It should be described in **present tense**. Conclusion should be the main message and the authors' impression from the results of the study. The article should be concluded briefly (**not more than 100 words**). Recommendation(s) can also be included in this section which should not exceed 30 words.

I A. 4 b) Review article

For a systematic review or meta-analysis the body of text should be divided into the following sections (Like an original article): i) Introduction, ii). Materials and methods, iii) Findings/Results, iii a) Main information about the topic, iv) Discussion and v) Conclusion. For a general review article section No. ii (Materials and methods) and iii (Findings/Results) iv) (Discussion) are not relevant. So, for a general review article section No. i). Introduction, iii a). Main Information about the Topic and v). Conclusion are required.

i) **Introduction**: should not exceed **500 words**. This section will include background of the topic. At the end of the review, why the author want to publish the topic on the article ie., the objective should be mentioned.

ii) **Material and methods**: How the review was done, what sorts of articles were searched, how they were searched, the total number of articles reviewed should be mentioned here. This section is not required for a general review article.

iii) **Results/findings**: The findings on the topic after reviewing the articles should be compiled, analysed and described here like an original research article. This section is not required for a general review article.

iii a) **Main Information about the Topic**: The main information about the topic should be described and discussed elaborately with the help of published literatures in this section but the subtitles should be relevant to the topic(Title) for a general review article. This section may not be required for a systematic review or meta-analysis.

iv) **Conclusion:** The article should be concluded briefly (**not more than 100 words**).

I A. 4 c) Case Report

The body of the text should be divided into the following sections: i) Introduction, ii) Case Report (Description of the case), iii) Discussion and iv) Conclusion.

i) **Introduction**: A brief description should be given on the topic of the case with the help of published literatures.

ii) **Case Report**

- The findings (history, clinical examination and investigations) should be described here.
- Management (if any) can also be given.

iii) **Discussion**

- The discussion should be started by briefly summarizing the main findings of the case reported, then possible explanations for those findings should be explored.
- The findings of the case should be compared with other relevant studies and potential argument for discrepancy and consistency should be given here.

iv) **Conclusion**

- The article should be concluded briefly (**not more than 100 words**).
- The main findings of the reported case should be emphasized which the readers can consider as a clue to suspect a diagnosis for a rare case in future.

I A. 5. Acknowledgement

Acknowledge advisor(s) and/or any one who helped the researcher(s)

- Technically
- Intellectually
- Financially

I A. 6. References

I A. 6 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.
- Abstracts should not be used 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.
- Citing a "personal communication" should be avoided 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 reference 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 PubMed 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 PubMed the authoritative source for information about retractions.

I A. 6 b) Reference Style and Format

➢ **Reference Style**

Author should follow **Vancouver style**.

- R**eference list** should appear at the end of the article and should be numbered consecutively in the order as they are cited in the text, which is done by **superscript** (single press of 'ctrl shift +') in numerical form **(citation number).**
- When **multiple references** are cited at a given place in the text, use a **hyphen** to join the first and last numbers that are **inclusive**. Use **commas** (without spaces) to separate **non-inclusive** numbers in a multiple citation.

  Example: 2,3,4,5,7,10,12 are abbreviated to **(2-5,7,10,12**).
- **Do not** use a hyphen if there is no citation numbers in between 2 numbers that support your statement.

  Example: 1-2 (**in correct form).** 1,2**(correct form)**
- As a general rule, citation numbers in the text should be placed **outside full stops and commas**, inside colons and semicolons (applicable for any part of the document).

  Example: Masud Alam,1 Selim Khan[2]

  Example: Over the past decades public health relevance of mental health condition 'in children and adolescents has been of growing concern'.[1-3,5,6]
- 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.

➢ **Reference Format**

1. Citing a Book

The essential details required are (in order):

1.1 Name/s of author/s, editor/s, compiler/s or the institution responsible.

- Where there are **6 or less authors** you must list **all authors**.
- Where there are **7 or more author**s, only the **first 6 are listed** and **add "et al"** (after a **comma**).
- Put a comma and 1 space between each name. The last author must have a full-stop after their initial(s).

  Format: surname (**1 space**) initial/s (**no spaces or punctuation between initials**) (**full-stop OR if further names comma, 1 space**)

  Example: Smith AK, Jones BC, Bloggs TC, Ashe PT, Fauci AS, Wilson JD, et al.
- **When author/s is/are editor/s :**Follow the same methods used with authors but use the word **"editor"** or **"editors"** in full after the name/s. The word editor or editors must be in small letter. (**Do NOT** confuse with "ed."used for edition.)

  Example: Millares M, editor. Applied drug information: strategies for information management. Vancouver (WA): Applied Therapeutics Inc; 1998.

Sponsored by institution, corporation or other organization (including PAMPHLET)

E**xample**: Australian Pharmaceutical Advisory Council. Integrated best practice model for medication management in residential aged care facilities. Canberra: Australian Government Publishing Service; 1997.

1.2. Title of publication and subtitle if any

- Italics or underlining should be avoided.
- Only the first word of the titles (and words that normally begin with a capital letter) should be started with capital letter (except proper noun).

Format: title (**full-stop, 1 space**)

Example: Harrison's principles of internal medicine.

Example: Physical pharmacy: physical chemical principles in the pharmaceutical sciences.

Example: Pharmacy in Australia: the national experience.

1.3. Edition (other than the first)

Number of edition **other than first one** should be mentioned as **2nd, 3rd,10th ed.**

Example: Blenkinsopp A, Paxton P. Symptoms in the pharmacy: a guide to the management of common illness. 3rd ed. Oxford: Blackwell Science; 1998.

1.4. Place of publication (if there is more than one place listed, use the first one)

- The place name should be written in full.
- If the place **name is not well known**, add a comma, 1 space and the state or the country for clarification. For places in the USA, add after the place names the 2 letter postal code for the state. This must be in upper case. eg. Hartford (CN): (where CN=Connecticut).

Format: place of publication (**colon, 1 space**)

Example: Hartford (CN):

Example: Texas (NSW):

Example: Kyoto (Japan):

1.5. Publisher

The publisher's name should be spelled out in full.

Format: publisher (**semi-colon, 1 space**)

Example: Australian Government Publishing Service;

Example: Raven Press;

Example: Williams & Wilkins;

1.6. Year of publication

Format: year (full-stop, add 1 space if page numbers follow).

Example: 1999.

Example: 2000. p. 12-5.

1.7. Page numbers (if applicable).

- Abbreviate the word "page" to "p.".

Note: do not repeat digits unnecessarily

Format: p (**full-stop, 1 space**) page numbers (**full-stop**).

Example: p. 122-9 (**correct**); p. 122-129 (**incorrect**).

Example: p. 1129-57 (**correct**); p. 1129-157 (**incorrect**).

Example of citing a book: Lodish H, Baltimore D, Berk A, Zipursky SL, Matsudaira P, Darnell J. Molecular cell biology. 3rd ed. New York: Scientific American; 1995.

(*Name/s. Title. Edition(other than first). Place of publication: Publisher; year of publication. p. Page no*)

2. Citing a Chapter in an Edited Book (to which a number of authors have contributed)

- Name/s of author of the chapter
- Title of chapter followed by, In:
- Editor
- Title of book
- Series title and number (if part of a series)
- Edition (if not the first edition)
- Place of publication (if there is more than one place listed, use the first named)
- Publisher
- Year of publication
- Page numbers

(*Title of Chapter. In: Editor(s). Title of book and number. Edition (other than first). Place of publication: Publisher; year of publication. p. Page no*)

Example of citing a chapter in an edited book:

Porter RJ, Meldrum BS. Antiepileptic drugs. In: Katzung BG, editor. Basic and clinical pharmacology. 6th ed. Norwalk (CN): Appleton and Lange; 1995. p. 361-80.

3. Citing a Journal Article from a Print source

The essential details required are (in order):

- **Name/s of author/s of the article.**
  See step 1 of "Citing a book" for full details.
- **Title of article.**
  See step 2 of "Citing a book" for full details.

Example: Validation of an immunoassay for measurement of plasma total homocysteine.

- **Name of journal (abbreviated).**

- Abbreviate the name of the journal according to the style used in Medline.
- A list of abbreviations can be found at: http://w**ww.ncbi.nlm.nih.gov/entrez/query.fcgi?db=journals**

  Note: No punctuation marks are used in the abbreviated journal name.

Format: journal title abbreviation (1 space)

Example: Bang J Psychiatry

- **Year of publication (month or day should be omitted).**

Format: year (**semi-colon, one space**)

Example: 1996; 12(5): 127-33.

- **Volume number (and issue/part)**

  Format: volume number (**colon, one space**)

Example: 1996; 12(5): 127-33. Or
1996; 18: 1237-8.

- **Page numbers**

Note: Do not repeat digits unnecessarily

Format: page numbers (full-stop)

Example: 5310-5.

Example of citing a journal: Russell FD, Coppell AL, Davenport AP. In vitro enzymatic processing of radiolabelled big ET-1 in human kidney as a food ingredient. Biochem Pharmacol 1998; 55(5): 697-701.

Name(s). Title. Name of the Journal Year of publication; Volume Number (Session/Issue Number): Page Number.

- **No author given in article**

  Example: Coffee drinking and cancer of the pancreas [editorial]. BMJ 1981; 283: 628.

- **Journals with parts and/or supplements**

Examples

- **Volume with supplement**

  Environ Health Perspect 1994; 102Suppl 1: 275-82.

- **Issue with supplement**

  SeminOncol 1996: 23(1 Suppl 2): 89-97.

- **Volume with part**

  Ann ClinBiochem 1995; 32(Pt 3): 303-6.

4. Citing a Journal Article from Internet and Other Electronic Sources

This includes software and internet sources such as web sites, electronic journals and databases.

The **basic form** of the citations **follow the principles listed for print sources** (see above).

In the case of sources that may be subject to alteration it is important to acknowledge the **Date The Information Was Cited.** This is particularly true for web sites that may disappear or permit changes to be made and for CD-ROMS that are updated during the year.

4.1. Citing a Journal Article from the Internet

Note: Follow the same procedure for citing print journals as for electronic journals regarding date, volume pages and journal title

Format: Author/s (full-stop after last author, 1 space) **Title of article** (full-stop, 1 space)

Abbreviated title of electronic journal (1 space) **[serial online]** (1 space) **Publication year** (1space) **month(s)** - if available (1 space) **[cited year month (abbreviated) day]** - in square brackets (semi colon, 1 space) **Volume number** (no space) **Issue number** if applicable in round brackets (colon) **Page numbers or number of screens** in square brackets (full-stop, 1 space) **Available from** (colon, 1 space) URL:**URL address underlined**

Examples:

- Morse SS. Factors in the emergence of infectious disease. Emerg Infect Dis [serial online] 1995 Jan-Mar [cited 1999 Dec 25]; 1(1):[24 screens]. Available from:URL: http://www/cdc/gov/ncidoc /EID/eid.htm
- Garfinkel PE, Lin E, Goering P. Should amenorrhoea be necessary for the diagnosis of anorexia nervosa? Br J Psych [serial online] 1996 [cited 1999 Aug 17]; 168(4):500-6. Available from: URL:http://biomed. niss.ac.uk

4.2. Citing a Journal Article from WWW site

(If the author is not documented, the title becomes the first element of the reference.)

Format: Author (full-stop after last author, 1 space) **Title** (full-stop, 1 space) **[Online]** (full stop, 1 space) **Publication Year** (1 space) **[cited year month (abbreviated) day]** (semi colon) **Number of screens in square brackets or pages** (full-stop, 1 space) **Available from** (colon, 1 space)

URL: (no space) **URL address underlined**

Note: The number of screens is not necessary. Put a semi colon and 1 space after the cited date if no pages or screen numbers are listed.

When the date is approximated, indicate that by following the date with a question mark and inserting the statement in square brackets. Eg. [2001?]

Examples: National Organization for Rare Diseases [Online]. 1999 Aug 16 [cited 1999 Aug 21]; Available from: URL:http://www.rare diseases.org/

Royal College of General Practitioners.The primary health care team.[Online]. 1998 [cited 1999 Aug 22];[10 screens]. Available from:URL: http:// ww. rcgp.org.uk/informat/publicat/rcf0021.htmZand J. The natural pharmacy: herbal medicine for depression [Online]. [1999?] [cited 2001 Aug 23];[15 screens]. Available from:

URL:http://www.healthy.net/asp/templates/Article.asp?PageType=Article&Id=920

Important Points For Reference List

- For **online material**, please cite the **URL**, together with the **date you accessed** the website
- **Online journal** articles can be cited using the Digital Object Identifier **(DOI)** number

Samples of Reference List

A list of references contains details of those works cited in the text.

The references are listed in the same numerical order as they appear in the body of the text

1. Getzen TE. Health economics: fundamentals and flow of funds. New York (NY): John Wiley & Sons; 1997.
2. Millares M, editor. Applied drug information: strategies for information management. Vancouver, WA: Applied Therapeutics, Inc.; 1998.
3. Australian Government Publishing Service. Style manual for authors, editors and printers. 5th ed. Canberra: Australian Government Publishing Service; 1994.
4. Australian Pharmaceutical Advisory Council. Integrated best practice model for medication management in residential aged care facilities. Canberra: Australian Government Publishing Service; 1997.
5. Bennett GL, Horuk R. Iodination of chemokines for use in receptor binding analysis. In: Horuk R, editor. Chemokine receptors. New York (NY): Academic Press; 1997. p. 134-48. (Methods in enzymology; vol 288).
6. Coffee drinking and cancer of the pancreas [editorial]. BMJ 1981;283:628.
7. Morse SS. Factors in the emergence of infectious disease. Emerg Infect Dis [serial online] 1995 Jan-Mar [cited 1996 Jue 5]; 1(1):[24 screens]. Available from: URL:http:// www. cdc.gov/ ncidoc/EID/eid.htm

I A. 7. Conflict of interest

All authors are requested to disclose any actual or potential conflict of interest including any financial, personal or other relationships with other people or organizations.

It is important to be consistent when you are referencing.

I A. 8. Tables and Illustrations (Figures)

I A. 8 a) Tables

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

  *, †, ‡, §, _, ¶, **, ††, ‡‡, §§, _ _, ¶¶, 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. 8 b) 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).

- Review the images of such files on a computer screen before submitting them to be sure that they meet their own quality standards. For x-ray films, scans, and other diagnostic images, as well as pictures of pathology specimens or photomicrographs, send sharp, glossy, black-and-white or color photographic prints, usually 127 _ 173 mm (5 _ 7 inches).
- 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 colour, MH Samorita Med Coll J accept coloured illustration when it seems essential. This Journal publish illustrations in colour only if the author pays the additional cost. Authors should consult the editorial board of the journal about requirements for figures submitted in electronic formats.

I A. 8 c) Legends for Illustrations (Figures)

- Type or print the 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. 9. Units of Measurement

- Measurements 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. 10. 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 should be used in parenthesis on first mention followed by the use of abbreviation in parenthesis unless the abbreviation is a standard and well established one like 'WHO'.

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- If a paper version of the manuscript is submitted, send the required number of copies of the manuscript and figures; they are all needed for peer review and editing, as the editorial office staff cannot be expected to make the required copies.
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- All submitted manuscripts are subject to scrutiny by the Editor in-chief or any member of the Editorial Board.
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- 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.
- Finally, Editorial Board decides upon the publishability of the reviewed and revised/ modified submission.
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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 MH Samorita Med Coll J.

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

If you have submitted mentioning document (1, 2, 3) above, when you first submit your article 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
- Running title provided (not more than 40 characters)
- Headings in title case (not ALL CAPITALS, not underlined)
- 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 Style.
- **Language and grammar**
- Uniformity in the language
- Abbreviations spelt out in full for the first time
- Numerals 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, provided
- Figures necessary should be of good quality (colour)
- Table and figure numbers in Arabic letters (not Roman)
- Labels pasted on back of the photographs (no names written)
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- Patients' privacy maintained (if not, written permission enclosed)
- Credit note for borrowed figures/tables provided.
- Each table/figure in separate pages.

I E. Manuscript Format for a Research Article

- **Title**
- Complete title of the article
- Complete author information
- Mention conflict of 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 conclusion are provided for an original article and introduction, case report and conclusion for case reports.
- Key words provided – arrange them in alphabetical order should be 3-5 in number.
- **Introduction**
- Word limit 150 -200 words
- Pertinent information only
- **Material and Methods**
- Study Design
- Duration and place of study
- Ethical approval
- Patient consent
- Statistical analysis and software used.
- **Results**
- Clearly present the data
- Avoid data redundancy
- **Discussion**
- Avoid unnecessary explanation of someone else' work unless it is very relevant to the study
- Provide and discuss with the literatures to support the study with references.
- Mention about limitation of the study
- **Conclusion**
- Give your conclusion
- Any recommendation
- **Acknowledgement**
- Acknowledge any person or institution 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**
- Tables
- Figures

Editorial

Biopharmaceuticals

Dhar DK

Biologics mean broadly to substances or drugs produced by living cells using biotechnology. Examples are recombinant DNA technology, controlled gene expression, antibody technologies. They have opened up new treatment options for many non communicable diseases which are life endangering like cancer, diabetes mellitus, anemia, rheumatoid arthritis, multiple sclerosis. Producing substances like recombinant hormones, growth factors, blood products, monoclonal antibody, recombinant vaccines and others like gene and cell therapy biological products.[1]

The First drug earned US Food and Drug Administration (FDA) approval was insulin in 1982; that was the First Successful journey of global biologic industry.[2]

With time there is a necessity of evolution of newer cost saving analogues arising from generic versions of original innovator product.

The generic versions of biologics are referred to as 'biosimilars' in Europe, 'follow on pharmaceuticals' in the US and Japan, 'subsequent entry biologies' in Canada, 'biocomparables' in Mexico.

Significant differences exist between biologics or biosimilar drugs and typical small molecule drugs basically due to differences in origin.

Biological drugs are produced by living cell cultures, of high molecular weight complex, heterogeneous, usually administered parenteraly, usually antigenic lengthly and difficult purification process, unstable and sensitive to external environment compared to small molecule synthesis. Biologics are 100 to 1000 times larger in size, having several hundred amino acids, biochemicals formed by peptide bonds to form a polypeptide. Biologics consist of primary (amino acid sequence) and secondary (Alpha helix and beta pleated sheet) structures which are folded into complicated 3D tertiary structures. After synthesis these structures are more modified by post translational modifications such as glycosylation or sialylation.

In contrast conventional drugs are smaller, molecular weight <1000, self contained usually chemically synthesized completely stable characterized chemical compounds.[3]

The FDA defines a biosimilar as a biologic product that is highly similar to the reference product-a biologic not withstanding minor differences in clinically inactive components.

Manufacturing process begins with isolation of DNA for the biologic product attached to a vector(Virus, bacteria) and transferred to a host cell which will make the biologic product.

It further requires different growth media and cell lines for cell expansion, cell production in bioreactor. Recovery through filtration or centrifugation purification through chromatography and characterisation and stability.

So, biopharmaceutical production methods are more complex and subject to variation affecting biological and clinical properties of the drug.Further pre-clinical and clinical development of biologics involve manufacturing costs reaching 100 fold of those small molecules.

Another important aspect of biologic drugs is their immunogenicity. Nearly all therapeutic proteins induce antibodies irrespective of whether they are human or non human homologous.[4] They may have decreased efficacy or may induce severe side effects by neutralising antibodies. So, health care economics, effective innovation incentives and anticipated public health improvements are major issues when now a days, biologics comprise a third group of medicines approved.

Pharmacovigilance is particularly important for monitoring innovator products and biosimilars, Clinical trials and post authorisation. Pharmacovigilance are considered essential to quantify safety and efficacy.

The European Medicines Agency (EMEA) has moved ahead of the rest of the world in this direction and issued a number of general guidelines that detail the requirements of market approval. Besides product specific guideline have been approved because of their

structural differences e.g, recombinant erythropoietin, somatotropin, human granulocyte colony stimulating factor, human insulin, recombinant IFN-a ,low molecular weight heparin.[5]

Biosimilars can be highly inter changeable to their biologic reference with comparable safety, efficacy and cost effectiveness. Further pre clinical and clinical data are required to evaluate them in future.

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Effectiveness and Menstrual Abnormalities of the Implanon Users in Family Planning Model Clinic of a Tertiary Level Hospital in Bangladesh

Kohinoor GA[1], Jahan MS[2], Pervin B[3], Nahar N[4], Rashid F[5], Bari N[6]

Abstract:

Introduction: *Contraceptives implants are one of the most effective family planning methods which was introduced more than 25 years ago. Etonogestrel (ENG) contraceptive implants are becoming increasingly popular birth control choice. Implanon is a single-rod implant made of an ethylene vinyl acetate copolymer (EVA) with a core containing 68 mg of ENG (3-keto desogestrel, active form desogestrel). This long acting and reversible contraceptive is safe, effective and suitable for most women of reproductive age. The major side effects associated with the use of contraceptive implants are changes in menstrual bleeding pattern (frequency, duration & amount) which is a major cause of discontinuation. Adequate counseling prior to insertion of Implanon increases its acceptance.*

Objective: *To see the effectiveness and menstrual abnormalities of the Implanon users in Family Planning Model Clinic, Dhaka Medical College and Hospital.*

Materials and Methods: *This Cross-sectional study was carried out in the Department of Obstetrics & Gynaecology of Family Planning Model Clinic, DMCH during the period of February 2012 to August 2012. A total of 62 clients of Implanon users were included in this study. Data were collected by face to face interview by semi-structured questionnaire and checklist. All the relevant data were recorded at the time of insertion and all the clients were reviewed after six months.*

Result: *In this study, the mean age of the respondent was 27.26 ± 5.498 years. Most of the respondents were in the age group of 26 to 30 years. Majority of the respondents were home makers (80.6%), more or less literate up to primary level (56.5%). Majority (90.3%) were from lower middle class families. Most of the respondents (35.48%) were married for 6-10 years. Majority of the respondents (46.8%) had two children. The mean parity was 2.13±0.80 live births. Majority of the respondents (64.51%) had their last child age below 5 months. Most of the patients previously used injectable contraceptive method (29%).Most of the clients had normal menstrual period (74.2%), regular menstrual cycle(67.7%) and normal menstrual flow (72.6%) before insertion .Only 22.6 % were amenorrhoeic (injectable contraceptive method) and 11.3% had irregular menstrual cycle at pre insertion period. After insertion most of the clients (67.7%) developed amenorrhea which was not statistically significant ($\chi^2 = 0.082$), only 12.9% had regular menstrual bleeding which was also not statistically significant ($\chi^2 = 0.248$). Majority of the respondents (77.4%) were satisfied with Implanon. Majority of the respondents (98.4%) continued Implanon after 6 months and only one discontinued for severe lower abdominal pain which was not Implanon related. Maximum respondents (93.5%) needed no treatment and only 6.5% needed treatment. Treatment was OCP for three months.*

Conclusion: *Implanon is an effective, safe and acceptable method of contraception amongst its acceptors. Though menstrual abnormalities were one of the important side effects but most of the subjects found tolerable with adequate counseling. This study showed that implant contraception had a high degree of effectiveness with relatively high user satisfaction and continuation rate.*

Key words: *Implanon, Menstrual abnormalities.*

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Introduction

Contraception is the act of preventing pregnancy. Birth control methods are designed to prevent contraception or interrupt or nullify implantation and growth. Conception can be prevented by hormonally disrupting the menstrual cycle (OCP, implant), by physically blocking the passageway (barrier method or sterilization) or less successfully by abstinence during fertile periods or withdrawal method, implantation is impaired via the use of foreign body (IUD) or surgical removal (Salpingectomy or Vasectomy)[1]. Contraceptives implants are one of the most effective family planning methods which was introduced more than 25 years ago[2]. Etonogestrel (ENG) contraceptive implants are becoming increasingly popular birth control choice[2]. Approximately 6 million women are using this method worldwide[2]. This safe, highly effective long acting and reversible contraceptive is suitable for most women of reproductive age. Recent guidelines are also supporting its use in women with a history of venous thromboembolism or congenital & acquired cardiac disease[3,4] .Recent data has shown that the ENG implant is one of the most effective reversible contraceptive method with a failure rate of 0.01 per 100 implant fitted[5] .Despite of their safety & efficacy, these methods remain underutilized. Implanon is a single-rod implant made of an ethylene vinyl acetate copolymer (EVA) with a core containing 68 mg of ENG (3-keto desogestrel, active form desogestrel)[6-7]. The implant has a length of 40mm and a diameter of 2mm and is inserted for subdermal application. The implanon is placed subdermally in the medial aspect of the non-dominant arm, 6-8 cm above the elbow at 1-5 days of menstrual cycle[8]. Contraceptive action is mainly by inhibition of ovulation and last for 3 years. A release rate of 25-30 micrograms/day of ENG is required to suppress ovulation[9]. The ENG in implanon is released out an initial rate of approximately 60-70 microgrammes/day which slowly decreases to about 30 micrograms/day by years 2 and 3[10]. Implanon also causes thickening of cervical mucous so that it becomes impenetrable to sperm and causes the endometrial lining to become thin and atrophic[11]. After removal, the women's normal fertility capacity restored very rapidly. The major side effects associated with the use of contraceptive implants are changes in bleeding pattern (frequency, duration & amount).Other potential side effects include weight gain, headache, abdominal pain, acne, dizziness, nausea, breast tenderness and mood changes[12-13]. Frequent cause of discontinuation is bleeding irregularities, besides this weight changes, acne and seeking child. Adequate counseling prior to insertion of Implanon about possible side effects especially regarding potential abnormal bleeding increases rates of continuation[14]. Many studies have been done about its safety and efficacy in different countries. But in Bangladesh, there are few studies about Implanon. This study is intended to see the effectiveness and menstrual abnormalities of the Implanon users in DMCH.

Materials and Methods

This Cross-sectional Observational study was carried out in the Family Planning Model Clinic, DMCH during the period of February 2012 to August 2012. Purposive sampling was done. The ultimate sample size was 62. Sources of material were patient record book, semi-structured questionnaire and data collection sheet .Implanon clients who gave consent were included in the study and excluded who refused to be included in the study. Before insertion of Implanon thorough history was taken. Counseling about risk and benefits of Implanon was carried out before insertion. Age was recorded in the nearest full year as stated by the patient. Follow up was done with detail after six months. At the same time reassurance and any intervention like oral contraceptive pill was given to control irregular bleeding.

Our patients were classified into different social classes depending on the income of the family as follows:[15]

Lower income group (Monthly Income = <4800 Taka)

Lower middle income group (Monthly Income = 4800-20,000 Taka)

Middle income group (Monthly Income > 20,000-Taka)

The collected data were compiled and findings were presented through tables then appropriate statistical analysis of data was done by using statistical packages for social science (SPSS 17).

Result

Results were presented on tables and figures. Most of the respondents were in the age group of 26-

30years.The mean age of respondents was 27.6 years with standard deviation of ±5.498 (Fig 1). Majority of the respondents were home makers (80.6%) and the rest were service holder (8.1%), garments workers (6.5%), day laborers (3.2%) and business women (1.6%) (Table -1).

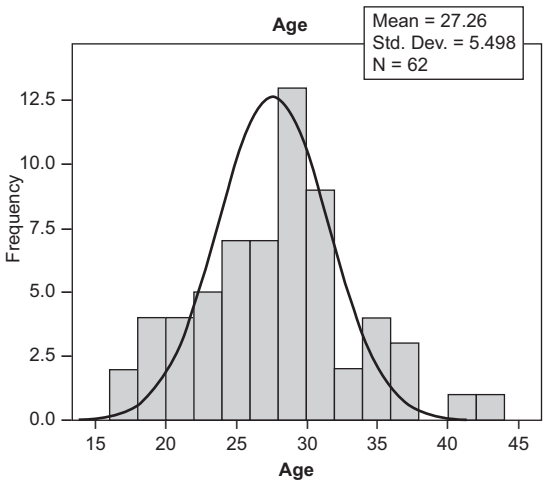

Fig. 1: *Distribution of the respondents by age*

Table 1. Distribution of occupation of respondents (n=62)

Occupation of wife	Frequency	Percent
Home makers	50	80.6
Day Laborer	2	3.2
Garments Worker	4	6.5
Service holder	5	8.1
Business woman	1	1.6
Total	62	100.0

Table 2. Distribution of Education of respondents (n=62)

Level of Education of wife	Frequency	Percent
Illiterate	8	12.9
Primary	35	56.5
Secondary	16	25.8
Graduate	2	3.2
Post Graduate	1	1.6
Total	62	100.0

Majority of the respondents were more or less literate and 56.5% were educated up to primary level and only 1.6% were post graduates (Table -2). Majority were from lower middle class families. Mean income of the respondents was 13467.74 taka with SD of ± 9189.655(Fig -2). Majority of the respondents (46.8%) had two children. Only 4.8% had 4 children. (Table -3). Majority of the respondents (64.51%) had their last child age below 5 months. (Table -4)

Most of the patients previously used injectable contraceptive methods (29%).From the rest of them, 12.9% used the barrier method and 12.9% used an implant.(Table -5). Most of the clients had a regular menstrual cycle (67.7%), normal menstrual period(74.2%) and normal menstrual flow(72.6%) before insertion. Only 22.6 % were amenorrhoeic and 11.3% had irregular menstrual cycle at pre insertion period. After insertion most of the clients (67.7%) developed amenorrhea which was not statistically significant (χ^2 = 0.082), only 12.9% had regular menstrual bleeding which was also not statistically significant (χ^2 =0.248).(Table -6)

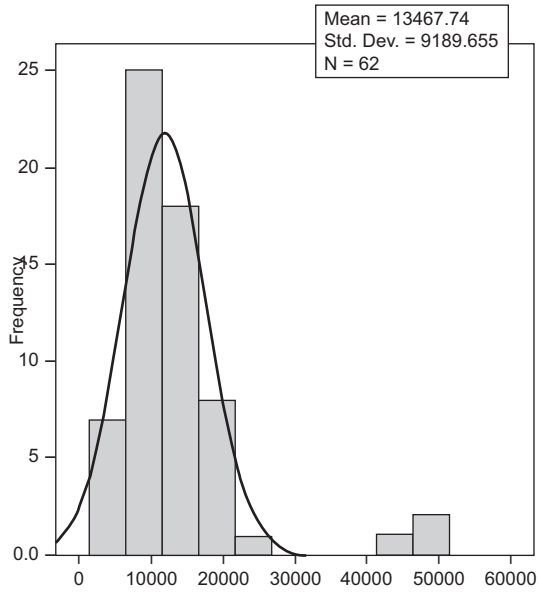

Fig. 2: *Distribution of the respondents by monthly income*

Table 3. Distribution of Parity of the respondents (n=62)

Para	Frequency(%)	Mean± SD
1	14(22.6)	
2	29(46.8)	
3	16(25.8)	2.13± 0.820
4	3(4.8)	
Total	62(100)	

Table 4. Age of the last child of the respondents (n=62) .

Age (In months)	Frequency	Percentage
0 -5	40	64.51
5 – 10	13	20.96
10 – 15	7	11.29
15 – 20	2	3.3
Total	62	100

Table 5. Contraceptive history of the respondents (n=62)

Contraceptive History	Frequency	Percent
None	12	19.4
Barrier	8	12.9
OCP	16	25.8
Injectable	18	29.0
Implant	8	12.9
Total	62	100.0

Table 6. Menstrual history of the respondents (n=62).

Menstrual History		Pre Insertion Frequency	Post Insertion Frequency	χ^2
Menstrual Period	Normal	46(74.2%)	13(21%)	
	Increased	1(1.6%)	2(3.2%)	
	Decreased	1(1.6%)	5(8.1%)	0.082
	Absent	14(22.6%)	42(67.7%)	
	Total	62(100%)	62(100%)	
Menstrual Cycle	Regular	42(67.7%)	8(12.9%)	
	Irregular	7(11.3%)	12(19.4%)	0.248
	Absent	13(21%)	42(67.7%)	
	Total	62(100%)	62(100%)	
Menstrual Flow	Normal	45(72.6%)	12(19.4%)	
	Increased	2(3.2%)	2(3.2%)	
	Decreased	2(3.2%)	6(9.7%)	0.562
	Absent	13(21%)	42(67.7%)	
	Total	62(100%)	62(100%)	

Table 7: Compliance of the respondents (n=62)

Compliance of the respondents	Frequency	Percent
Satisfied	48	77.4
Non Satisfied	14	22.6
Total	62	100.0

Table 8. Continuation of Implanon (n=62)

Continuation of Implanon	Frequency	Percent
Continued	61	98.4
Discontinued	1	1.6
Total	62	100.0

Table 9. Requirement of treatment (n=62).

Requirement of treatment	Frequency	Percent
Required	4	6.5
Not required	58	93.5
Total	62	100.0

Majority of the respondents (77.4%) were satisfied with Implanon and only 22.6% were not satisfied with Implanon due to irregular menstrual bleeding(Table-7). Majority of the respondents (98.4%) continued Implanon. Only one discontinued for severe lower abdominal pain. Laparotomy was done and there were no relevant findings. Client

refused Implanon after proper counseling. .(Table-8).Maximum respondents (93.5%) needed no treatment and only 6.5% needed treatment. Treatment was OCP for three months. .(Table-9)

Discussion

This cross sectional study was carried out with an aim to see the effectiveness of menstrual abnormalities of the Implanon users in Family Planning Model Clinic, Dhaka Medical College & Hospital.

In this study the mean age of the respondent was 27.26 ± 5.498 years. Most of the respondents were in the age group of 26 to 30 years. The findings are consistent with the study of Kang and Tan in which the mean age of the subjects was 29.4 (±5.1) years[13].

The majority of the respondents were home makers (80.6%) and the rest were service holders (8.1%), garments workers (6.5%), day laborers (3.2%) and business women (1.6%).

Most of the clients (90.3%) were from lower middle class and 4.8% were from lower and 4.8% were from middle class families.

Most of the respondents (35.48%) were married for 6-10 years.

The majority of the respondents (46.8%) had two children. The mean parity was 2.13 (± 0.820) live births.This finding is consistent with study of Kang and Tan in which showed that the mean parity was 2.1 (±1) live births[13]. Aisien and Enosolease showed that the mean parity was 3.1 ± 1.7 live births[11]. The majority of the respondents (64.51%) had their last child age below 5 months.

Most of the respondents previously used injectable contraceptive methods (29%).From the rest of them 12.9% used barrier methods and 12.9% used implants. These findings are consistent with the study of Kang and Tan who found that more than half (55.2 percent) of the subjects had used other methods of contraception before. The main reason for them to switch to implant contraception was convenience (63.6 percent).[13]

Most of the clients had a regular menstrual cycle (67.7%), normal menstrual period (74.2%) and normal menstrual flow (72.6%) before insertion. Only 22.6 % were amenorrhoeic and 11.3% had irregular menstrual cycle at pre insertion period. After insertion most of the clients (67.7%) developed amenorrhea which was not statistically significant (χ^2 = 0.082), only 12.9% had regular menstrual bleeding which was also not statistically significant (χ^2 =0.248). Croxatto et al in their open, multicentre study found that bleeding irregularities was the main reason for discontinuation during the first 2 years of use (17.2%) and adverse experiences in the third year (3.4%)[3]. Aisien and Enosolease showed that the side effects were menstrual abnormalities. 56.3% reported reduced, 3.1% increased and 40.6% combinations of bleeding patterns. No participant had a normal cycle[11]. Sergent et al showed that menstrual disturbance in 83% of the women were mainly bleeding irregularity (40%) and amenorrhea (26%). Bleeding irregularity was one of the main motives for discontinuing the implant in 41% of cases[12]. Kang et al found that of the 516 users on follow-up, the common side-effects were menstrual irregularity (51 percent), secondary amenorrhoea (9.6 percent) and weight gain (15.7 percent)[13]. Candan et al showed that Amenorrhoea, prolonged bleeding, frequent bleeding and infrequent bleeding were reported in 20 (32%), 13 (21%), 4 (6.5%) and 2 (3.2%) patients, respectively[16]. Power et al showed that the most common side effect with Implanon and Norplant was changes in bleeding pattern. The pattern with Implanon was initially more variable, bleeding with both implants became less frequent with duration of use. After two years use the amenorrhoea rate was significantly higher with Implanon. The trials reported no significant difference in hormonal side-effects or adverse events[14]. Hubacher et al found that For DMPA use, the weighted prevalence of amenorrhea at successive 90-day periods was 12%, 25%, 37% and 46%. The comparable estimates for the LNG implant were 11%, 13%, 9% and 13%. Levonorgestrel implant users experienced a higher average number of bleeding or spotting days compared to DMPA users, but this average was similar to what is expected naturally. At 12 months, normal menstrual patterns were experienced by 23% of LNG implant users compared to 11% of DMPA user[17]. Affandi showed that Implanon users had more amenorrhea, and slightly more infrequent bleeding, frequent bleeding, and prolonged bleeding than Norplant users. The difference was only statistically significant for amenorrhea (17.9%–24.8% with Implanon compared with 2.0%–7.0% for Norplant over RP 2–8)[7] . Peralta et al in their study showed that bleeding irregularities occurred in 20-30% of the women but there were only four terminations because of bleeding problems[18].

Majority of the respondents (77.4%) were satisfied with Implanon which is consistent with study of Aisien et al. Their study findings showed that all the clients received adequate information about the method and most of them were satisfied with it at

follow up.[11] Sergent et al showed that possibility of a long-term and easy to use contraception was the most common reason for choosing Implanon (74% of the women). Eighty-one percent of the women were globally satisfied with Implanon but one out of two women had side-effects.[12]

Majority of the respondents (98.4%) continued Implanon after 6 months which is consistent with study of Aisien et al. In their study the efficacy and continuation rate were 100% and 93.8% respectively[11]. Kang et al found that the continuation rate was 92.4 percent after one year, 80.8 percent after two years, 68.9 percent after three years and 58.5 percent after four years. The main reasons for early implant removal were side-effects and desire for future pregnancy. Re-insertion was carried out in 53.7 percent of users who had completed five years of Norplant contraception[13]. Sergent et al showed that Only 62% of the women were ready to use it again. Except weight gain present for 37% of patients, the other side-effects, even though they were frequent, were less often the reason for removal[12]. Affandi in his study found that there were no statistically significant differences in the acceptability of the two products as indicated by the discontinuation rates, which were 30.2% and 0.9% in Europe and Southeast Asia, respectively, for Implanon, and 22.5% and 1.4%, respectively, in the two regions .[7]

Maximum respondents (93.5%) needed no treatment and only 6.5% needed treatment. Treatment was OCP for three months. Kang et al found that 29.3 percent of users did not experience any side-effect. There was only one serious adverse event of a patient (0.2 percent) who developed severe hypertension requiring treatment.[13]

Conclusion

Implanon was an effective, safe and acceptable method of contraception among its acceptors. Though menstrual abnormalities was one of the important side effects, but most of the respondents were found tolerant with adequate counseling. This study showed that implanon had a high degree of effectiveness with relatively high user satisfaction and continuation rate.

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Antibiotic Sensitivity Pattern of Escherichia coli Isolated from Urine Samples of Urinary Tract Infection Patients at a Tertiary Care Hospital

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Abstract

Introduction: *Urinary tract infection (UTI) is one of the most common bacterial infections encountered by clinicians in developing countries.* Escherichia coli *is the most common causative organism of UTI. Development of resistance by* E.coli *towards different antimicrobial agents is alarming. Hence, our study was planned to analyze the antimicrobial resistance pattern of* E.coli *isolates at a tertiary care hospital.*

Materials and Methods: *Culture sensitivity reports of all urine samples sent to microbiology laboratory of LABAID hospital during the period of January 2018 to December 2018 were screened. Detailed reports were collected for all the samples in which* E.coli *was identified as a causative organism. Culture sensitivity testing was done by modified Kirby-Bauer disk diffusion method.*

Results: *E.coli was isolated in total 100 urine samples during the period of one year. Majority of patients belonged to middle age group (21-30) years 22%. 79% samples were of female patients. Fifteen antimicrobial agents were tested to see their sensitivity towards* E.coli. *Antimicrobial resistance ranging from 3% to 82% were noted among various antimicrobials. E.coli showed very high susceptibility towards Imipenem (100%) followed by Amikacin (97%) and Gentamicin (88%).*

Conclusion: *Proper selection and wise use of available antibiotics will help in reducing the rate of increase in resistance. Periodic monitoring of antimicrobial susceptibility pattern of causative agent in a particular setting will be helpful in guiding judicious use of antimicrobial agents limiting the spread of resistant strains.*

Key Words:*Antimicrobial susceptibility,* Escherichia coli*, Urinary tract infection,Drug resistance.*

(MH Samorita Med Coll J 2020; 3(1): 9-13)

Introduction

Urinary tract infection (UTI) is an infection caused by microorganisms anywhere in the region that comprises of kidney, renal pelvis, ureters, urinary bladder, urethra, and adjacent structures including perinephric fascia, prostate, and epididymis.[1]UTI is one of the most prevalent disease affecting people from all age groups including neonate and geriatric age groups. Every year about 150 million people are being diagnosed with urinary tract infection worldwide. Each and every woman has a lifetime risk of developing UTI is 60% by contrast, men have a lifetime risk of only 13%.[2] Females are more susceptible to UTI as compared to males due to the

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short length of urethra, absence of prostatic secretion, pregnancy and easy contamination of the tract with fecal flora.[3]In men as the age advances the incidence of UTI increases which may be due to enlargement of prostate gland or neurogenic bladder.[4]

Clinically UTI is divided into two categories, uncomplicated and complicated. Uncomplicated UTI mostly affects healthy individuals with no structural or neurological urinary tract abnormalities which includes cystitis and pyelonephritis. Complicated UTI is due to the factors that compromise the urinary tract, which include urinary obstruction, neurological disease causing urinary retention, renal failure, renal transplantation, pregnancy and the presence of foreign bodies such as calculi, indwelling catheters or other drainage devices.[5]

Escherichia coli is most common organism causing UTI which accounts for up to 90% of cases. *Klebsiella* species, *P. aeruginosa* and *Enterobacter* species are less frequent offenders. Gram-positive organisms are also common which includes *Group B Streptococcus, S. aureus, S. saprophyticus* and *S. haemolyticus. E.coli* is also the causative agent in 70-95% of community acquired UTI and 50% of all cases of nosocomial infection. A number of broad spectrum antibiotics are used frequently against *E.coli* that causes emergence of antibiotic resistance, many adverse effects and increase the cost of health care.[6] Currently UTI is mostly managed empirically without urine culture or susceptibility testing this may lead to the frequent misuse of antibiotics. The antimicrobial susceptibility data of UTI-causing microorganisms is variable it changes from time to time and from place to place. Most commonly UTIs are treated empirically in that case the criteria for the selection of antimicrobial agents should be determined on the basis of the most likely pathogen and its expected resistance pattern in that geographic area. Hence, the periodic monitoring of etiologic agents of UTI and their resistance pattern in the community is very essential.[7]

The aim of the study was to determine the prevalence of UTI and to analyze the antimicrobial resistance pattern of *E.coli* towards commonly prescribed antimicrobial agents which may help and guide the Medical Practitioners to carry out empirical treatment.

Materials and Methods

This was a cross sectional descriptive study and the samples were collected from Microbiology laboratory of LABAID hospital Dhaka. One hundred laboratory reports were collected during January 2018 to December 2018.

Sample collection: Simple random sampling technique was applied for selection of culture positive *E.coli* patients laboratory report. Clean–catch midstream urine specimens from patients diagnosed clinically to be having UTI on the basis of symptoms.

Isolation and identification of *E.Coli*: Urine Specimen were inoculated on Blood agar and McConkey Agar plates, which were incubated aerobically at 37º C overnight. Plates showing growth suggestive of significant bacteriuria, with colony count exceeding 10^5cfu/ml were subjected to standard biochemical tests for identification. Identification of the microorganisms was done through Gram staining and biochemical tests.

Antimicrobial susceptibility test: Antimicrobial sensitivity testing was performed using Kirby Bauer disc diffusion method as described by the Clinical Laboratory Standard Institute (CLSI) protocol. Interpretation as Sensitive or Resistant was done on the basis of the diameters of zone of inhibition of bacterial growth.Commercially available standard antibiotic discs were used. The zones of inhibition were measured and recorded according to the CLSI guidelines 2019.

Results

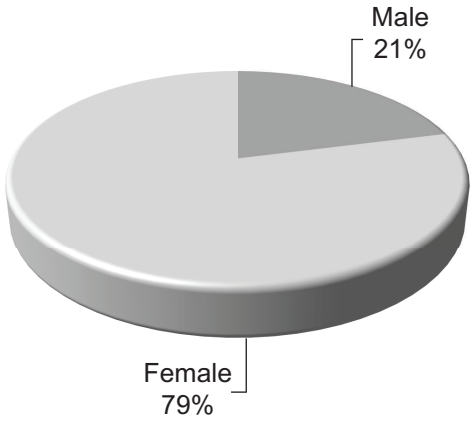

Fig. 1: *Gender distribution of E.coli isolates*

The gender distribution of patients is shown in figure 1, here female were 79% and male were 21%.In this

study female preponderance was observed in*E.coli* cases with female:male ratio = 4:1 for all *E. coli* isolates.

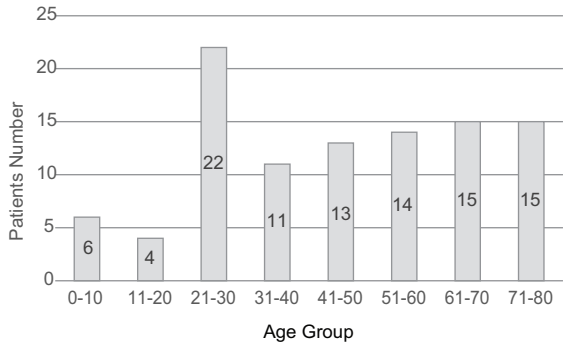

Fig. 2*: Age distribution of E. coli isolates*

Figure no. 2 showed the age distribution of *E. coli* isolates. The majority cases of UTI were in 21-30 years age group where the percentage were 22% and least from 11-20 years age groups where percentage were 4%.

Table 1: Antibiotic susceptibility pattern of *Escherichia coli* by Kirby-Bauer disc diffusion method.

Antiboitic	*Escherichia coli* (N=100)	
	Sensitive (%)	Resistant (%)
Amikacin	97%	3%
Amoxicillin	20%	80%
Amoxiclav	61%	39%
Cefepime	63%	37%
Cefixime	57%	43%
Ceftriaxone	58%	42%
Ciprofloxacin	59%	41%
Co-trimoxazole	55%	45%
Gentamicin	88%	12%
Imipenem	100%	-
Levofloxacin	76%	24%
Meropenem	18%	82%
Naliixic Acid	54%	46%
Nitrofurantoin	60%	40%
Cefalexin	62%	38%

The antibiotic susceptibility pattern of *E.coli* as depicted in Table-1, showed very high susceptibility towards Imipenem (100%) followed by Amikacin (97%) and Gentamicin (88%). *E.coli* isolates were least susceptible towards Meropenem (18%) and Amoxicillin (20%). However, susceptibility to conventional antibiotics like Amoxiclav and Co-trimoxazole were (61%) and (55%) respectively. *E.coli* isolates were mostly resistant to Meropenem (82%) followed by Amoxicillin (80%) and Co-trimoxazole (45%).

Discussion

Urinary tract infections (UTI), being the most common infections diagnosed in community and hospital are to be treated scrupulously considering the type of infecting organism and its antibiotic resistance pattern.[8] The prevalence of antimicrobial resistance in urinary pathogens is increasing worldwide. The consequences of resistance are severe as infection caused by resistant microbes fail to respond to standard treatment, resulting in prolonged illness and greater risk of death.[9] *Escherichia coli* is the most common causative organism of urinary tract infections.[10] According to a WHO report, *E.coli* has acquired resistance to many different groups of antimicrobials,[11] and the prevalence of antimicrobial resistance varies greatly between and within countries and between different pathogens.[12] Treatment of UTI cases is often started empirically and therapy is based on information determined from the antimicrobial resistance pattern of the urinary pathogens. Accurate bacteriologic records of culture results may provide guidance on empirical therapy before sensitivity patterns are available.[13] Hence, keeping this in mind, our study was planned to analyze the antimicrobial resistance pattern of *E.coli* isolates towards commonly prescribed antimicrobial agents in LABAID hospital Dhaka.

Our study showed a high prevalence of UTI in females (79%) than in males (21%) which correlate with findings from other studies which revealed that the frequency of UTI is greater in females as compared to males.[14] The reason behind this high prevalence of UTI in females is due to close proximity of the urethral meatus to the anus, shorter urethra, sexual intercourse, incontinence, and bad toilet. However, higher incidence was observed in middle age females and old age males may be due to prostate disease in males are responsible for the increase in the incidence of UTI above 41 years.[15] In the present study the overall occurrence of UTI recorded was highest among the middle age group (21-30 years) 22% and second highest among the elderly (61-80 years) 15% compared to young age patients.

The most effectively sensitive antimicrobial agents in this study were Imipenem, Amikacin, Gentamicin, Levofloxacin, Cefipime and Amoxiclave showing percentage of susceptibility 100%, 97%, 88%, 76%, 63% and 61% respectively. Higher resistance were observed among Meropenem, Amoxicillin, Cotrimoxazole, Cefixime, Ceftriaxone and Ciprofloxacin showing percentage resistance of 82%, 80%, 45%, 43%, 42% and 41% respectively. In this study, it was observed that the susceptibility of the tested antibiotics for the *E. coli* isolates showed resistance to the commonly used antibiotics. In present study overall sensitivity is observed to be very low. Antimicrobial resistance is a very huge problem throughout the world. Periodic assessment of in vitro susceptibility pattern of urinary pathogens serves as a guide for antibiotic therapy as these organisms exhibit resistance to many first-line drugs used for UTI infection. In order to prevent resistance to antibiotics, appropriate therapy as per bacterial sensitivity pattern needs to be initiated.

Antimicrobial agents were viewed as miracle cures when first introduced into clinical practice. However, it became evident rather soon after the discovery of penicillin that resistance developed quickly, terminating the miracle. This serious development is ever present with each new antimicrobial agent and threatens the end of the antimicrobial era. Today every major class of antimicrobial is associated with the emergence of significant resistance.[16] Proper selection of antimicrobial agent is the most crucial step in successful management of urine infection. This data provides useful information not only for clinicians in determining the appropriate antimicrobial regimen but also for microbiologists to procure appropriate antimicrobial susceptibility discs. That will lead to judicious use of antimicrobials and providing of effective antimicrobial therapy which will help in limiting the emergence of drug resistance and spreading of multidrug resistance.

Conclusion

This study concludes that *E.coli* is the most resistant isolated organism of UTIs. It also indicates a high resistance to the most commonly used antibiotics due to indiscriminate use of antibiotics. Here we see that the organism *E.coli* in UTI is resistant to commonly prescribed drugs like Quinolones in many of the cases. Over use of Quinolone has led to increased prevalence of *E.coli* resistance to Quinolones *E.coli* has developed resistance to third generation Cephalosporins, Quinolones, and Co-trimoxazole so they cannot be considered for empirical treatment in UTI caused by *E.coli*. Thus in order to prevent development of resistance, antibiotic susceptibility patterns must be continuously and periodically evaluated to select the appropriate regimen to treat UTI and to avoid complications. Hence, periodic monitoring of antimicrobial susceptibility pattern of causative agent in a particular setting will be helpful in guiding judicious use of antimicrobial agents and limiting the spread of resistant strains.

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Anti-diabetic Effects of Arachis Hypogaea L. (peanut) Oil on Streptozotocin Induced Diabetic Rats

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Abstract

Introduction*: Diabetes mellitus (DM) is one of the leading causes of death and disability worldwide. Since synthetic anti-diabetic drugs have some serious side effects, the study has been designed to evaluate the anti-diabetic activity of a natural product Arachis hypogaea L. (peanut) as an alternative source of medicine for treatment of diabetes mellitus.*

Objective: *To evaluate the anti-diabetic effects of Arachis hypogaea L. (peanut) oil with two increasing doses in streptozotocin induced diabetic rats.*

Materials & Methods: *This experimental study was carried out in the Department of Physiology, Sir Salimullah Medical College, in 2016. 40 Wistar albino male rats, weighing 225-240 g were grouped as ND (Non-diabetic group), STZ (Streptozotocin induced diabetic group), STZ-PI (Diabetic group treated with peanut oil 500mg/kg) and STZ-PII (Diabetic group treated with peanut oil 1000mg/kg) with 10 rats in each group. Diabetic model was developed by giving single intraperitoneal injection of streptozotocin (50mg/kg) to STZ, STZ-PI and STZ-PII groups on day-1. In addition, STZ-PI and STZ-PII group received peanut oil 500mg/kg and 1000mg/kg orally once daily for 21 days respectively. Rats were sacrificed on day-25. To observe glycemic status, Fasting Blood Glucose (FBG), HbA1c and insulin levels were estimated and HOMA-IR was calculated.*

Results: *FBG, HbA1c and HOMA-IR levels were significantly ($p<0.001$) lower and insulin level was significantly ($p<0.001$) higher in both STZ-PI and STZ-PII groups than those of STZ group but more profound effects were observed in STZ-PII group when compared to those of STZ-PI group.*

Conclusion: *The present study revealed that peanut has significant anti-diabetic activity and higher dose was more effective than lower dose in improving the glycemic status.*

Key words: *Diabetes mellitus, Streptozotocin, Arachis Hypogaea L., Wister Albino Rats.*

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Introduction

Diabetes mellitus is a syndrome of impaired carbohydrate, fat and protein metabolism caused by either lack of insulin secretion or decreased sensitivity of tissue to insulin.[1] Diabetic hyperglycemia is accompanied by damage and dysfunction of different organs especially the eyes, kidneys, nerves, heart and blood vessels. Therefore, people with diabetes are at an increased risk of cardiac, peripheral arterial and cerebrovascular diseases.[2] Throughout the world, the numbers of people with diabetes are increasing day by day due to population growth, aging, urbanization, stress and increasing prevalence of obesity and physical inactivity.[3]

Streptozotocin is a nitrosourea glucosamine derivative and is widely used to induce experimental

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diabetes in animals.[4] It is a broad spectrum antibiotic and alkylating genotoxic agent which possesses antibacterial, tumoricidal, carcinogenic and diabetogenic properties.[5]

Effective management of diabetes requires sustained glycemic control to lower the risk of diabetic complications.[6] For the treatment of diabetes mellitus different classes of anti-diabetic drugs are available, but these drugs may produce some side effects.[7] For this reason, there has been increasing demand for the use of plant products with anti-diabetic activity due to low cost, easy availability and lesser side effects.[8]

Arachis hypogaea L. known as peanut belongs to the family Fabaceae, have gained popularity recently for their health benefits. Peanut is a nutrient dense food, rich in plant protein and a good source of mono and polyunsaturated fatty acids.[9] These unsaturated fatty acids improve insulin sensitivity and reduce risk of type 2 DM.[10] They also contain some bioactive phytochemicals like flavonoids and phenolic compounds like resveratrol which also possess significant antihyperglycemic activity. [11-14]

Recently, anti-diabetic effect of different nuts like walnut, hazelnut, semecarpus anacardium nut were found in diabetic rats with significant improvement of FBG, HbA1c, serum insulin levels and HOMA-IR value.[15-17] Therefore, the present study has been designed to observe the anti-diabetic effects of peanut on streptozotocin induced diabetic rats. It is also expected that the result of this study would make peanut acceptable among the people as a rich source of nutrients with high medicinal value for the treatment of diabetes mellitus.

Materials and Methods

This experimental study was conducted in the Department of Physiology, Sir Salimullah Medical College (SSMC), Mitford, Dhaka, in 2016. All the experiments and animal care were performed according to the international guidelines set in the 'Manual for Care and Use of Laboratory Animals' by the Animal Experimentation Ethics Committee (AEEC) of the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b).[18]

Procurement and maintenance of animals [19]

Forty (40) Wistar albino male rats, 90-120 days old, weighing 225-240 g were used in this study. The animals were kept in the animal house of Institute of Nutrition and Food Science, University of Dhaka, where they were housed in specially built still cages with one rat per cage at 23±2ºC room temperature under 12 hours dark-light cycle. All the animals were acclimatized for 14 days prior to intervention. After 14 days of acclimatization, the total study period was 24 consecutive days.

Dose schedule[19]

Fifty (50) mg/kg body weight powder of streptozotocin (Sigma, USA) was dissolved in 0.1M freshly prepared citrate buffer (pH 4.5) and the solution was prepared. In addition, peanut oil 500 mg/kg and 1000mg/kg was prepared by modified Holden method.

Experimental design

At day -1 the rats were divided into four groups containing 10 rats in each group, i.e. Non-diabetic group (ND), Streptozotocin induced diabetic group (STZ), Diabetic group treated with peanut oil 500mg/kg (STZ-PI) and Diabetic group treated with peanut oil 1000mg/kg (STZ-PII). STZ, STZ-PI and STZ-PII group received a single intraperitoneal injection of streptozotocin (50 mg/kg) only on day-1 to induce diabetes mellitus. In addition, STZ-PI and STZ-PII group received peanut oil orally 500 mg/kg and 1000mg/kg respectively, once daily in the morning for 21 days (day-4 to day-24). After 12 hours of overnight fasting blood samples were collected from tail vein of all rats on day-1, day-4 and day-14 for estimation of FBG level. At the end of the study period i,e on day-25 morning, after measuring the FBG level from the blood taken from the tail's vein, all the animals were anaesthetized with the help of chloroform (30%). In deep anesthesia, 5ml of blood was drawn from the heart. Then, the rats were sacrificed by decapitation. HbA1c and serum insulin levels were estimated and HOMA-IR was calculated according to the Matthews et al. (1985)[20] formula to estimate insulin resistance. The formula is-

HOMA-IR= fasting insulin (ìU/ml)× fasting glucose (mmol/L) /22.5

Statistical analysis

The statistical analysis was done by one way ANOVA, post hoc- Bonferroni test as applicable.

Results

Initial body weight of ND, STZ, STZ-PI and STZ-PII groups was almost similar and the differences were

not statistically significant among all the groups. Whereas, final body weight was significantly lower in STZ group ($p<0.001$) in comparison to that of ND group. However, this level was significantly ($p<0.001$) higher in STZ-PI and STZ-PII groups when compared to that of STZ group and also in STZ-PII group ($p<0.01$) than that of STZ-PI group (Table 1).

Figure 1 showed fasting blood glucose (FBG) level in different groups of rats. Here, FBG level on day-4 was significantly ($p<0.001$) higher in STZ, STZ-PI and STZ-PII groups and also on day-14 and day-25 in STZ group in comparison to that of ND group. Whereas, on day-14 and day-25, this level was significantly ($p<0.001$) lower in STZ-PI and STZ-PII groups when compared to that of STZ group and also in STZ-PII group ($p<0.01$) than that of STZ group, where it decreased towards the level of ND group and showed no statistically significant difference between STZ-PII and ND group on Day-25.

The serum insulin level was found to be significantly ($p<0.001$) lower in STZ group when compared to that of ND group. Whereas, this level was significantly ($p<0.001$) higher in STZ-PI and STZ-PII groups in comparison to that of STZ group and also in STZ-PII group ($p<0.01$) than that of STZ-PI group (Figure 2).

Again, significantly higher ($p<0.001$) levels of blood HbA1c and HOMA-IR were found in STZ group in comparison to that of ND group. Again, these levels were significantly ($p<0.001$) lower in STZ-PI and STZ-PII groups when compared to that of STZ group and also in STZ-PII group ($p<0.01$, $p<0.05$) than that of STZ-PI group (Table 2).

Table 1: Initial and final body weight of different groups of rats (n=40)

Parameters	ND (n=10)	STZ (n=10)	STZ-PI (n=10)	STZ-PII (n=10)
Initial body weight (g) Day-1	233.76±3.68	232.51±3.72	234.42±3.81	234.54±4.31
Final body weight (g) Day-25	242.33±4.34	222.60±4.28***	229.75±4.34$^{\#}$	236.16±4.36$^{\#+}$

Results were expressed as mean ± SD. ND=Non-diabetic group, STZ=Streptozotocin induced diabetic group, STZ-PI=Diabetic group treated with peanut oil (500mg/kg), STZ-PII=Diabetic group treated with peanut oil (1000mg/kg). ***=p<0.001, compared to ND group, $^{\#}$=p<0.001, compared to STZ group and $^{+}$=p<0.01, compared to STZ-PI group.

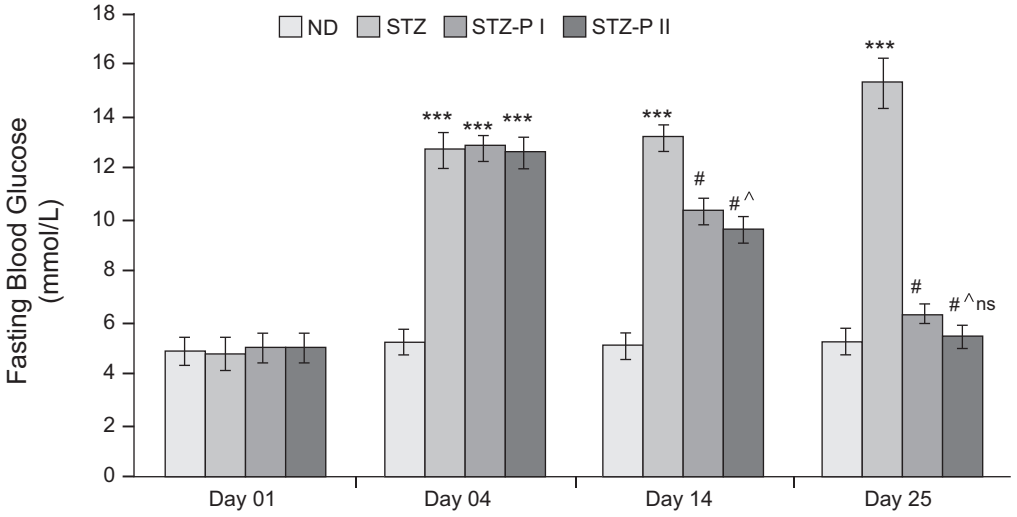

Fig. 1: *Fasting blood glucose level in different groups of rats. Each bar symbolizes for mean±SD for 10 rats. ND=Non-diabetic group, STZ=Streptozotocin induced diabetic group, STZ-PI=Diabetic group treated with peanut oil 500mg/kg, STZ-PII=Diabetic group treated with peanut oil 1000 mg/kg. ***=p<0.001, ^{ns}=p>0.05, compared to ND group, $^{\#}$=p<0.001, compared to STZ group and $^{\wedge}$=p<0.01 compared to STZ-PI group.*

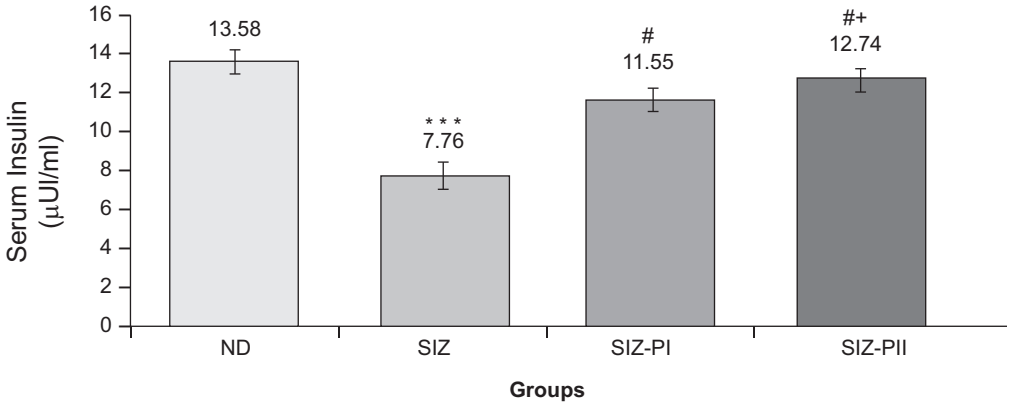

Fig. 2: *Serum insulin level in different groups of rats. ND=Non-diabetic group, STZ=Streptozotocin induced diabetic group, STZ-PI=Diabetic group treated with peanut oil 500mg/kg, STZ-PII=Diabetic group treated with peanut oil 1000 mg/kg. Each bar symbolizes for mean±SD for 10 rats. ***=p<0.001, compared to ND group, $^{\#}$=p<0.001, compared to STZ group and $^{+}$=p<0.01, compared to STZ-PI group.*

Table 2: Blood HbA1c level and HOMA IR value in different groups of rats (n=10)

Parameters	ND	STZ	STZ-PI	STZ-PII
	(n=10)	(n=10)	(n=10)	(n=10)
HbA1c (%)	4.21±0.61	8.84±1.99***	5.46±0.83$^{\#'}$	4.95±1.4$^{\#\wedge}$
HOMA IR	3.18±0.30	5.29±0.54***	3.96±0.22$^{\#}$	3.07±0.23$^{\#+ns}$

Results were expressed as mean ± SD. ND=Non-diabetic group, STZ=Streptozotocin induced diabetic group, STZ-PI=Diabetic group treated with peanut oil (500mg/kg), STZ-PII=Diabetic group treated with peanut oil (1000mg/kg). ***=p<0.001, ^{ns}=p>0.05, compared to ND group, $^{\#}$=p<0.001, compared to STZ group ^= p<0.01and $^{+}$p<0.05 compared to STZ-PI group.

Discussion

In the present study, treatment with all two doses (500mg/kg and 1000mg/kg) of peanut oil significantly decreased FBG level in both peanut oil treated group compared to that of STZ group. However, the rate of decrease was more in rats treated with 1000mg/kg (STZ-PII group) than those rats treated with 500mg/kg (STZ-PI group) of peanut oil. Similar trends of decrement of FBG level with increment of doses of hazelnut were also observed by El khamisy and Razq (2013)[16] in streptozotocin induced diabetic rats though the doses were different from this study. On the contrary, Sharma et al. (2010)[8] found no significant blood glucose lowering effect by using low dose (10mg/kg) of some other herbal medicine (ficus glomerata leaf extract) for a short duration of only 10 days.

Again, HbA1c and HOMA-IR levels were found to be significantly lower and final body weight and serum insulin levels were significantly higher in both STZ-PI and STZ-PII group than that of STZ group. However, the rate of decrease occurred in a dose dependent fashion, where more profound effects were observed in rats treated with higher doses (1000mg/kg) of peanut oil than rats treated with lower doses (500mg/kg). Similar findings were also reported by Rahimi et al. (2011)[15] by using walnut oil in diabetic rats.

Diabetogenic dose of streptozotocin selectively damage insulin producing pancreatic β cells with subsequent inhibition of insulin synthesis and secretion from β cells.[21] As a result, hypoinsulinemia and hyperglycemia developed.[17]

Moreover, prolonged hyperglycemia alters insulin signaling pathway and decreases the sensitivity of target tissues to the metabolic effects of insulin and ultimately resulting in insulin resistance.[1] Again, protein synthesis is reduced and proteolysis is increased in insulin deficiency, leading to increased muscle wasting and decreased body weight.

Moreover, chronic hyperglycemia causes non enzymatic glycation of hemoglobin A and thus causes increased blood HbA1c level.[22]

The exact mechanism by which peanut oil causes anti diabetic effects couldn't be revealed directly from the present study. Several investigators of different countries proposed various suggestions on these aspects. It has been postulated that some active components of peanut like oleic acid, quercetin (a flavonoid present in peanut) and resveratrol stimulate insulin secretion from pancreatic β cells, inhibit the intestinal absorption of glucose, increases insulin sensitivity and ultimately reduces the blood glucose level and lowers the risk of diabetes mellitus.[10-14] They also protect β cells from oxidative damage and help in regeneration of β cells.[13]

In the present study, after treatment with both doses (500mg/kg and 1000mg/kg) of Arachis Hypogaea oil for 21 days, anti-diabetic effects were found in both STZ-PI and STZ-PII groups of rats as evidenced by their measured FBG and HbA1c levels. But treatment with higher doses (1000mg/kg) has shown more effectiveness in improving the glycemic status. All these results indicate peanut has profound anti-diabetic effects and it is dose dependent. All these anti-diabetic effects may be due to their combined action on increasing insulin sensitivity and also by increasing the secretion of insulin by peanut, as evidenced by their measured serum insulin level and HOMA-IR value. However, the exact mechanism involved cannot be elucidated from this study due to time and financial constraints.

Conclusion

In the present study, oral administration of Arachis Hypogaea L. (peanut) oil at two different doses (500mg/kg and 1000mg/kg) were effective in improving the glycemic status. It is also evident that higher dose (1000mg/kg) was more effective than the lower dose (500mg/kg) of peanut oil. Therefore, it may be concluded that, peanut has anti-diabetic effects and increasing doses of peanut oil was progressively more effective in improving glycemic status as observed in this study. Some active components of peanut may be responsible for these effects. It is also expected that the result of this study would make peanut acceptable among people as a rich source of nutrients with medicinal value for treatment of diabetes mellitus.

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A Study of Sexual Dimorphism on Maximum Length of Fully Ossified Dry Human Left Tibia

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Abstract:

Introduction:*Determination of sex from the skeleton or its parts is very vital medico- legally and anthropologically.*

Objectives: *The present study was planned to collect data regarding maximum length of fully ossified dry human left tibia and to find out possible variations in male and female.This morphometric parameter is also clinically important in imaging diagnosis of fractures and also great use to forensic medicine and physical anthropology.*

Materials & Methods: *This analytical study was conducted in the Department of Anatomy at Sir Salimullah Medical College, Dhaka, Bangladesh from July 2014 to June 2015 for a period of one year. The study was performed on adult dry human left tibia of unknown sex and collected from the department of Anatomy and also from the students of Sir Salimullah Medical College (SSMC), Dhaka. The study samples were distributed in male and female sex groups by discriminate function analysis. Maximum lengths were measured with the help of an osteometric board.*

Results: *A maximum number of two hundred (200) bones were analyzed. The mean (±SD)values of maximum length were greater in male (39.12 ± 2.93) cm than female (33.61± 1.44) which was statistically significant (p< 0.001).*

Conclusion: *The maximum length is greater in male compared to female. The study may be helpful for Orthopedic surgeons and forensic investigations for the identification of the remains of unknown bodies.*

Keywords *: Sexual Dimorphism, maximum lengths.*

(MH Samorita Med Coll J 2020; 3(1): 20-22)

Introduction:

In human body, tibia is the stronger and second largest bone next to femur. It is commonly recognized as the large weight bearing bone of the leg[1]. The Maximum Tibial Length (MTL) is used by many researchers in the estimation of human stature[2]. The prediction of human stature with the help of MTL is of great use to forensic medicine and physical anthropology. The stature of an individual forms part of his or her biological profile. It is particularly helpful in identification of missing persons and or dead bodies in mass disasters, cases of mass burial discoveries, as well as medico legal cases [3]. The main premise in this sexual variation was supported since there was differential bone remodeling between the sexes and the rate of cortical bone development in the shaft of a tubular bone was shown to be greater in males than in females. It is

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the bone that is mostly fractured in the body [4]. It also has the highest incidence of open fractures [5]. Its anatomy is responsible for it being the most fractured bone and more so, the high incidence of open fracture. The entire anteromedial part of shaft of the tibia is subcutaneous. The bone is, therefore, easily injured when exposed to trauma, as the soft tissue cover is minimal[6]. The anthropometric study of bone is important to determine race and also in medico legal cases for determination of sex. Tibia is an ideal long bone of the limb which is used for sex determination, as it resists erosive forces which act upon it and it remains unaffected even after burial of body [7]. Maximum length of tibia is the best single variable for estimation of sex. So far it is known the morphometric measurement of tibia have not yet been studied in Bangladesh. Further work on tibia is needed. Morphometric measurements of maximum length of tibia will be helpful for comparing with male and female tibia that will make a guideline for anatomists, anthropologists, forensic scientists, sports medicine physicians, orthopaedic, plastic surgeons and radiologists.

Materials and Methods:

This analytical study was conducted in the Department of Anatomy at Sir Salimullah Medical College, Dhaka, Bangladesh from July 2014 to June 2015. Then the sex was determined by linear discriminant function analysis technique[8]. This linear discriminant function analysis technique was applied to the collected data as follows: $Z = b_{0+}b_1 x_{1;}$ Here Z = Discriminant function, b_0 = Constant*, b_1= Co- efficient* and x_1= Maximum length of left tibia (independent variable).

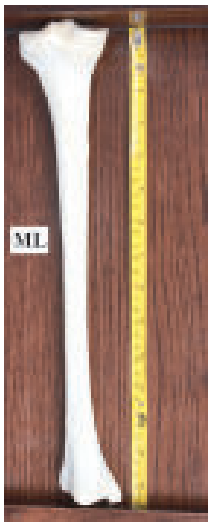

Fig. 1: *Photograph showing maximum length of tibia by osteometric board; ML= maximum length*

In this study the value of Z for each specimen was calculated. A sectioning point was created by using the mean discriminant scores which were also known as the group centroids. To assign the case to either male or female sex the product Z was compared to the sectioning point by the discriminant function analysis. A value higher than the sectioning point was considered to be male and a value below it was considered to be female. By discriminant analysis technique the sex was determined and the grouping was done. Afterwards for the measurement of maximum length of tibia, the straight distance from most projecting point of intercondylar eminence to the tip of medial malleolus were determined by osteometric board (Figure 1). After collection of data, the findings of the study was analyzed by SPSS version 20.0 and revealed important information regarding morphometric variation. Comparison of the values of different variables between male and female was done by unpaired Students 't' test.

Ethical clearance:

This study was carried out after approval of the research protocol by the Institutional Ethics Committee (IEC) of Sir Salimullah Medical College, Dhaka.

Results:

The mean (±SD)maximum length was 39.12 (± 2.93) cm in male and 33.61(± 1.44) cm in female .There was significant difference between maximum length (p=0.000) in male and female .

The range of maximum length of tibia was 35.40 cm to 47.16cm in male and 31.30 cm to 37.76 cm in female. The mean (±SD)value of maximum length was 39.12 (± 2.93) cm in male and 33.61 (± 1.44 cm) in female. There was significant difference between maximum length (p=0.000) (Figure 2).

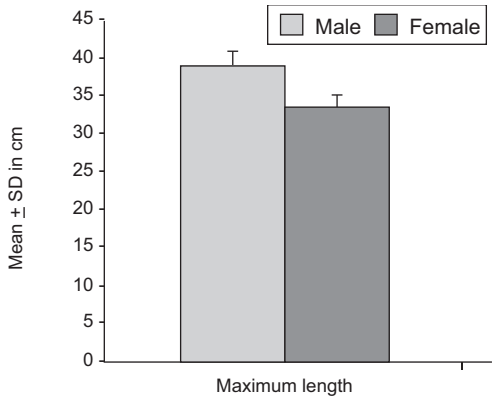

Fig. 2: *Bar diagram showing height of medial malleolus of left tibia in male(n=102) and female (n=98).*

Table I : Maximum length of left tibia in male and female

Sex	Maximum length Mean ± SD in cm
Male (n=102)	39.12 ± 2.93 (35.40-47.16)
Female (n=98)	33.61 ± 1.44 (31.30- 37.76)
P value	0.000**

Discussion:

In the present study, the mean (±SD) of themaximum length was found greater in male than females, which was statistically significant (p< 0.01). The measured values of the present study coincide with the findings reported by Mandela et al[8] who conducted a study on skeletal remains in Kenyan population. Balakrishnan YAet al[9] also worked on Indian people. Gluec et al[10] worked on Kenyan people and had reported the mean (±SD) of maximum length was 1.42±.18 cm. But they did not differentiate sex.

In the present study the mean (±SD) of maximum length of tibia was found greater in male than female which was statistically significant (p< 0.01). The measured values of the present study was found significantly dissimilar (p< 0.01) to the findings reported by Apostol et al (2014).These dissimilarities might be due to different ethnic and racial variation .The finding of this study showed somewhat contrary to those of Tripathi et al, (2010) who worked on the Uttar Pradesh, Indian population. The measured values of the present study coincide with Apostol et al (2014) on Greek and Italian population.

The present study was carried out in tibia collected from Bangladesh. Skeletons that are available in Bangladesh also come from neighboring countries. Bangladeshis are mixed race of Caucasoid, Negroid, Mongoloid and Australoid group. However, the maximum length in present study was nearly similar to the mean values of other researchers.

Conclusion:

From the result of the present study it can be concluded that the mean (±SD) value of maximum length of fully ossified dry human left tibia were greater in male than that of female. The present study have direct applications in forensic, anthropometric, and also archaeological investigations for the identification of the remains of unknown bodies using linear regression equations in the Bangladeshi population.

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Review Article

Tumor Diagnosis in Laboratory: A Review

Ahmed MU[1] , Islam S[2] , Hossain MI[3] , Ali MS[4] .

Abstract:

Tumor describes when cell proliferate in an abnormal manner that is not coordinated with the surrounding tissue.These neoplastic cells cannot be controlled in the way that normal cell can because they do not die when they should and they divide more quickly.As these excessive growth persists, a lump or tumor that has no purpose or function in the body is eventually formed. This is referred to as a neoplasm and it may be non-cancerous or benign, precancerous or premalignant or cancerous or malignant. Most malignancy are initially recognized either because of the appearance of sign or symptoms or through screening. Neither of these leads to definitive diagnosis, which requires the examination of a tissue sample by pathologist. People with suspected malignancy are investigated with medical test commonly include blood test, x-rays, CT scans and biopsy, FNAC, immunohistochemistery and cytogenic analysis.

Keywords: *Tumor, Dysplasia, Immunohistochemistry*

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Introduction:

Tumor or tumour means any form of swelling that may be neoplastic or not. Tumor as a synonym for a neoplasm that means enlarged in size. Neoplasm also means a solid or fluid-filled cystic lesion that may or may not be formed by an abnormal growth of neoplastic cells. Some neoplasm do not form a tumor like leukaemia and carcinoma in situ.

The term Mass and Nodule are used synonymously with tumor. Generally tumor is used without reference to the physical size. Mass is used when the lesion has a maximal diameter of at least 20 millimeters. Nodule is used when the size of the lesion is less than 20 millimeters in greatest dimension.(25.4mm= 1 inch).

Human body is composed of four types of tissue, Epithelial tissue, Connective tissue, Muscular tissue and Nervous tissue. Benign, Precancerous and Malignant all types of tumor can occur in these tissues.[1,2]

Incidence and Types:

An individual developing a cancer may be expressed by national incidence and mortality rate .For example,residents of United states have about a one in five chance of dying of cancer. It is estimated about 1437180 new cancer cases and 565650 deaths from cancer in 2008, representing 23% of all mortality, a frequency surpassed only by deaths caused by cardiovascular disease.This data do not include an additional 1 million that readily curable , non-melanoma cancer of skin and 122000 cases of carcinoma in situ,largely of the female breast and melanomas.The most common tumor in men are prostate, lung and colon , rectum and in women cancer of the breast, lung, colon and rectum are the most frequent. Cancer of the lung, female breast, prostate and colon/rectum constitute more than 50% of cancer diagnosis and cancer death in US population.Lung cancer is the leading cause of cancer deaths in both women and men.[2,3]

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Benign tumor that are non malignant tumor, usually localized and does not spread to other parts of body like papilloma, fibroma, lipoma.[2,3]

Premalignant tumor are pertaining to tissue that is not yet malignant but is poised to become malignant like leukoplakia, xeroderma pigmentosum, radiodermatitis, Vulval intraepithelial neoplasia (VIN),Vaginal intraepithelial neoplasia (VAIN), Barrett's oesophagus, Cervical intraepithelial neoplasia (CIN), Bowen disease etc.[2,3]

Malignant tumor is cancerous growth like carcinoma, sarcoma, melanoma. Malignant tumor may be Primary that are originated from that tissue or Secondary that originate from another tissue but metastasize to that tissue.[2,3]

Malignant tumor may be non-invasive like carcinoma in situ and invasive like invasive squamous cell carcinoma. Cancer by definition is malignant. There are some other tumor like locally malignant tumor which are locally invasive but show little or no tendency to metastasize, example basal cell carcinoma of skin, glioma etc.[2,3]

Intermediate tumor are locally aggressive tumor cannot be grouped either benign or malignant, example atypical lipomatous tumor, desmoid tumor etc.[2,3]

Latent carcinoma are those that the tumor is clinically silent but has the histologial feature of carcinoma and does not metastasize, example carcinoma of prostate..[2,3]

Dormant cancers are those that after surgical removal and anticancer therapy there may be no clinically detectable tumor remaining in the patient but malignant cells may remain occult or dormant and causing sign and symptoms after several years. [2,3]

Familial cancer are those that occur in higher frequency in certain families without a clearly defined pattern of transmission like breast cancer, ovarian cancer, and pancreatic cancer.[2,3]

Dysplasia that means disordered growth of epithelial tissue characterized by loss of uniformity of the individual cells as well as a loss in their architectural orientation. Dysplasia may be a precursor to malignant transformation but it does not always progress to cancer like Barrett oesophagus etc.[2,3]

Desmoplasia that occurs when parenchymal or epithelial cell stimulate the formation of abundant collagenous stroma to stony hard like female breast schirrous tumor.[2,3]

Carcinoma in situ means when dysplastic changes are marked and involve the full thickness of the epithelium but does not penetrate the basement membrane, it is considered as pre invasive neoplasm, once the tumor cells breach the basement membrane, then it is said invasive neoplasm.[2,3]

Aetiology:

Environmental triggers both play a role in the pathogenesis of cancer, environmental in nature are thought to be the more significiant contributors in most common sporadic cancers. In one large study the proportion of risk from environmental causes were found to be 65%, whether heritable factors contributed 26% to 42% of cancer risk [2,3]

Environmental Factor: Cateogorized as follows:

A. Chemical carcinogens:
   a. Direct acting carcinogen:
      1. Alkylating agents: *B*-propriolactone, Dimethyl sulfate, Diepoxybutane, Anticancer drugs
      2. Acylating agents: 1-acetyl-imidazole, Dimethylcarbamyl chloride
   b. Procarcinogens that require metabolic activation:
      1. Polycyclic and heterocyclic aromatic hydrocarbons: Benzanthracene, Benapyrene.
      2. Aromatic amines,amides,azo dyes: 2-Naphthylamine,benzedine
      3. Natural plant and microbial products: Aflatoxin B, Griseofulvin,Cycasin, Safrole.Betel nuts
      4. Others: Nitrosamine and amides,Vinyl chloride, Nickel, Chromium, Insecticides, Fungicides, Polychlorinated biphenyls.[2]
B. Radiant energy:
   a. Ultraviolet rays:
      1. UVA(320-400)
      2. UVB(280-320)
      3. UVC(200-280)

b. Ionizing radiation:

1. Electromagnetic: X-ray,Gamma ray.
2. Particulate: alpha particle, beta particle.[2]

C. Oncogenic microbes:

1. Oncogenic virus:DNA oncogenic virus:Human papilloma virus(1,2,4,7,16,18),Epstein Barr virus, Hepatitis B virus, Kaposi sarcoma associated virus(Herpes-8). RNA oncogenic virus:Hepatitis C virus, Human T cell Leukaemia virus type 1.
2. Oncogenic Bacteria: Helicobacter pylori causes gastric carcinoma and gastric lymphoma.
3. Oncogenic parasites:Schistosoma haematobium causes bladder cancer. Clonorchis sinensis causes cholangiocarcinoma of bile duct.[2]

Host factor:

A.Age: carcinoma occurs usually above 60 years , Sarcoma at young age usually 1st and 2nd decade.[2]

B.Sex: Breast carcinoma is greater in female than male, Gastric carcinoma,Colorectal carcinoma is more in male[2].

C.Diet: Aflatoxin B causes Hepatocellular carcinoma. Nitrosamine causes carcinoma of stomach[2]

D.Social habits: Cigarette smoking: Bronchogenic carcinoma

Betel nut chewing: Buccal mucosal cancer

Car exhaust fumes: Lung carcinoma

Non breast feeding: Breast carcinoma

Physical inactivity: Any cancer.[2]

E.Alcohol and smoking: carcinoma in mouth, pharynx, larynx and oesophagus.[2]

F.Drugs: Anticancer drugs cause leukaemia, Immunosuppressive drugs cause leukaemia, Arsenic causes skin cancer.[2]

G.Reproductive history: Exposure to estrogen without progesterone increase the risk of endometrial and breast carcinoma.[2]

H.Genetic factor: Familial risk is evident in breast cancer , colon cancer and ovarian cancer.[2]

Tumor due to autosomal dominant inheritance like neurofibromatosis, Marfan's syndrome etc.

Autosomal recessive disorder like cystic fibrosis, sickle cell anemia etc.

X linked dominant disorder like Vitamin D resistant ricket,

X linked recessive disorder like Duchene muscular dystrophy,Haemophilla A and Haemophillia B etc.,

Glycogen storage disease like Type 1 for deficiency of enzyme Glucose 6 phosphatase, Type 2 for deficiency for lysomal acid maltase etc.

Lysosomal storage disease like Type 2 pompe disease ,Gaucher disease,Nieman pick disease etc.[2]

I. Precancerous or Premalignant condition in the body: Xeroderma pigmentosum, Leukoplakia, Chronic gastric ulcer, Cirrhosis of liver.[2,3]

Pathogenesis: Nonlethal genetic damage lies in the heart of carcinogenesis. Genetic damage may be acquired or inherited. Tumor cell are monoclonal. 4 types of cellular genes are involved in molecular carcinogenesis 1. Growth promoting protooncogens. 2.Growth inhibiting tumor suppressor genes 3.Gene that regulate apoptosis 4. Gene involved in DNA repair. All cancers display 7(seven) fundamental changes in cell physiology, which are considered the hallmarks of cancer. 1. Self-sufficiency in growth signals 2. Insensitivity to growth inhibitory signals 3. Altered cellular metabolism 4.Evasion of apoptosis 5. Limitless replicative potentials (immortality) 6.Sustained angiogenesis. 7. Ability to invade and metastasis.[2]

Importance of laboratory test used in tumor diagnosis:

Laboratory tests are helpful in diagnosis of cancer or precancerous conditions before a person has any symptoms of disease in many ways.

1. To provide the information about the severity of malignant tumor and whether or not the tumor has spread.
2. To plan treatment, to monitor patient's general health during treatment and to check for potential side effects of the treatment.
3. To determine whether a cancer is responding to treatment and to find out whether a cancer has recurred.[4]

Laboratory tests used in tumor diagnosis:

A laboratory test is a procedure in which a sample like blood, stool, urine, body fluid, FNAC sample, and tissue biopsy is examined to get information about a person's health. Some laboratory test provides precise and reliable information about specific health problems other test provides more general information that helps doctors identify or rule out possible health problems. Preparation depends on the type of test being done.

Laboratory test that are usually done are:

1. History and physical examination: Health workers may learn from talking to the patient and by direct examination may give clues to the presence of a neoplasm. Sign and symptom ,such as weight loss, fatigue, and pain may be present. A mass may be palpable or visible. [2,3]

2. Radiographic techniques: The use of plain films(x-rays), computed tomography(CT scan), magnetic resonance imaging (MRI), mammography and ultrasonography, Scintimmaography, PET scan may be very helpful to detect the presence and location of mass lesions. The findings from this method may aid in staging and determination of therapy.[2,3]

3. Laboratory Analyses: Complete blood count, Blood chemistry test like any enzyme, Sputum test, Urine analysis, Urine cytology for malignant cell, Fecal occult blood test, Other body fluid like cerebrospinal fluid and lumber puncture fluid , Ascitic fluid, Pleural fluid for cytology.[2,3]

4. Tumor marker tes**t:** Tumor markers are 2 types.

a. **Tumor associated markers** are those like alpha-fetoprotein (AFP), carcinoembryonic antigen (CEA), human chorionic gonadotropin (HCG) etc.

b. **Tumor specific markers** are those that increase in specific types of tumor like prostate specific antigen(PSA) level increase in prostate carcinoma, CA 125 for ovarian carcinoma.[2,3]

5. Cytopathology: Cytopathologically cells are collocted by 2 ways:

a. Exfoliative cytopathology are 2 types-

1. Spontaneous cytopathology like bronchial washing , stool etc

2. Mechanical cytopathology like bronchial brushing , pap's smear etc.

b. Intervention cytopathology are 2 types-

1. FNAC(Fine needle aspiration cytology) from enlarged lymph node, any swelling, lump in breast etc.

FNAC done from

i. Palpable lesion or superficial lesion like enlarged lymph node, Thyroid swelling etc.

ii. Non-palpable or deep lesion like thoracic, mediastinal, lung, abdominal like liver, kidney, pelvic like ovary, retroperitoneal organ like colon or anogenital organ like testis etc.

FNAC are 2 types -

1. FNAC without guide
2. FNAC with guide like ultrasonogram guided,CT scan guided FNAC.

2.. Sediment cytopathology like pleural fluid, peritoneal fluid, ascitic fluid , urine after centrifuge the fluid sediment slide are made .[2,3]

6. Histopathology: Resected organ by surgery or biopsy tissue (small piece of tissue from living body by endoscopy, colonoscopy or bronchoscopy) specimen examined by histo-cyto pathologist after paraffin sectioning to determine the malignancy with grade and in some cases with stage after routine and special staining .In some cases frozen section specimen for urgent diagnosis or the tissues that may destroy by paraffin sectioning like fatty tissue.[2,3]

7. Genetic Testing: Genetic markers include chromosomal alteration(translocation, deletions, duplication etc), karyotyping, specific gene defect, single nucleotide polymorphism, gene rearrangement, detection of specific gene such as BRACA- 1.[2,3]

8. Immunohistochemistry: Immunohistochemistry (IHC) is adjunct to histopathology. In case of undifferentiated type of tumor can be diagnosed by IHC like CD30 for Hodgkin lymphoma, HMV-45 for melanoma, Vimentin for sarcoma etc.It also helps in leukaemia and lymphnode malignancy like CD13,CD33,CD 117, CD41,

CD61 for myeloid leukaemia and CD19,CD20, CD22,CD79a,CD38 for B cell lymphoid leukaemia ,CD2,CD3,CD5,CD7 for T cell lymphoid leukaemia.[2,3]

9. Ancillary Test**:** Immunofluorescence study for renal and skin cancer, Flow cytometry for blood cancer and other cancers. Anti-malignin antibody screen test, Biological terraine assessment test, PCR, Northern bloating, Southern bloating, Western bloating, Electro dermal screening.[2,3]

10. Autopsy**:**Some times neoplasm are not detected or completely diagnosed during life. The autopsy serves as a means of quality assurance for clinical diagnostic method. [5]

Tumor grading and staging:

Grading:

Tumor grade is the description of a tumor based on how abnormal the tumor cells and the tumor tissue look under a microscope. It is an indicator of how quickly a tumor is likely to grow and spread.

Grading systems differ depending on the types of cancer.If a grading system for a tumor is not specified, the following system is generally used.

Gx: Grade can not be assessed, maximum cells appear close to normal.Undetermined grade tumor.

G1: The tumor cells and the organization of tumor tissue appear close to normal.>75% cells appear close to normal. Well differentiated tumor or low grade tumor.These tumors tend to grow and spread slowly.

G2: The tumor cells and organization of tumor tissue appear close to normal cells and tissue. 50%-75% cells appear close to normal. Moderately differentiated or intermediate grade tumor.These tumor tend to grow and spread slowly but faster than grade 1.

G3: The tumor cells and tissue are not like normal cells and tissue. 25%-50% cells appear close to normal. Poorly differentiated or high grade tumor. These tumor tend to grow rapidly and spread faster than G2.

G4: The tumor cells and tissue are not like normal cells and tissue.<25% cells appear close to normal.Undifferentiated tumor or very high grade tumor.These tumor grow very rapidly and spread very faster.

Some cancers have different grading system. Breast and Prostate cancers are the most common types of cancer that have their own grading system.[6,7,8,9]

Staging:

Cancer stage refers to the size and extent of primary(original) tumor in the body and whether or not cancer cells have spread in the body. Cancer stages is based on factors such as the location of the primary tumor, tumor size, regional lymph node involvement and the number of tumor present. Determination of staging done by Physical examination like examination by palpation, looking and listening. Imaging studies like x-ray, ultrasonogram, CT scan, MRI,PET. Laboratory test like Blood, Urine, AST, Tumor markers. Pathology report like biopsy report, cytopathology report like FNAC ,Body fluid ,Pap report.

TNM system: Most common system for staging cancer accepted by UICC and AJCC.

Based on T = extent of tumor
N = extent or spread to lymph node.
M = presence of metastasis.

Number: It indicates size, extent of primary tumor and extent of spread or metastasis. Like $T_4N_3M_2$, means 4 cm size, 3lymph node involvement,2 organ metastasis.[6,7,8,9,10]

Conclusion:

The outcome varies greatly for different types of tumor depending on tumor grade, staging and other factors. If the tumor is benign, the outlook is generally very good. A benign tumor can cause severe problems, such as brain. If the tumor is cancerous, the outcome depends on the grade type and stages of the tumor at diagnosis, Some cancer can be cured and some that are not curable but can still be treated, people can live for many years with that cancer. Some tumor may quickly spread and are life threatening.[11]

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Case Reports

Primary Omental Torsion as an Incidental Finding at Laparotomy Following Clinically Suspected Acute Appendicitis: A Case Report

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Abstract

Omental torsion is a rare cause of acute abdominal pain, and clinically mimics acute appendicitis. A 25-year-old male presented with symptoms and signs suggestive of acute appendicitis. An ultrasonogram of abdomen revealed findings suggestive of acute appendicitis. Diagnostic laparotomy confirmed the diagnosis of torsion of a segment of the greater omentum. Though rare,it should be kept in mind as a differential diagnosis for acute appendicitis.

Keywords: *Acute appendicitis, omental torsion*

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Introduction

Eitel first described omental torsion in 1899[1]. Torsion of the omentum is a condition wherein the organ twists along its long axis to such an extent that it's vascularity is compromised. Depending on associated conditions, it is classified as primary and secondary. Omental torsion is a cause of acute abdominal pain and sometimes mimics acute appendicitis in its presentation. Although omental torsion is rarely diagnosed preoperatively, knowledge of the entity is important to the surgeon. In most cases, other differentials are considered before omental torsion. We present a case of a patient 25-year-old male who presented with acute abdomen with symptoms mimicking acute appendicitis. Laparotomy revealed torsion of the omentum. Omentectomy and appendicectomy were done, and the patient discharged four days after following a remarkable recovery. Current choice for management of omental torsion is laparotomy or laparoscopic surgery.

Case Report

An 25-year-old male presented with right-sided lower abdominal pain of two days. There was no history of any surgical interventions in the past. On general examination, pulse was 96 beats/min, temperature was 100°F.Physical examination revealed tenderness in right iliac fossa, with mild muscle guarding. Hernial orifices and the genitalia

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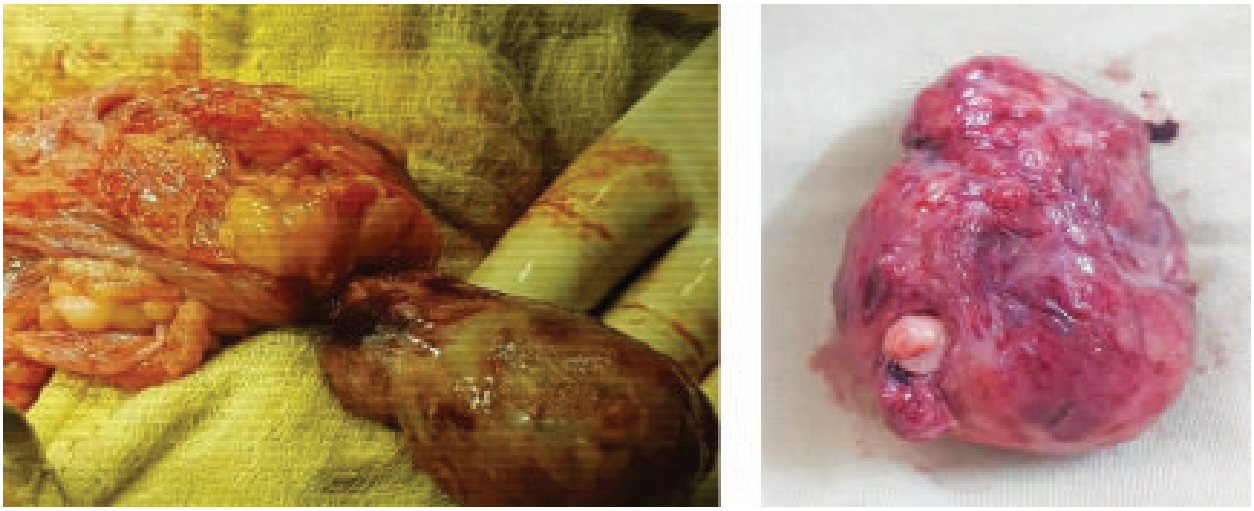

Fig.-1: *Peroparative picture of omental torsion*

were also normal. Ultrasound examination revealed an echogenic mass in the right iliac fossa suggestive of early appendix mass. Blood investigations showed a total leukocyte count of 13,000/cmm with predominant neutrophilia(86%), and the other laboratory tests were within normal limits. As patient was in severe pain, urgent laparotomy was done instead of CT scan. Laparotomy revealed gross inflammation of parietal peritoneum over anterior abdominal wall. A segment of greater omentum, measuring 7× 4 × 3 cm, was rotated around its longitudinal axis at the base. The omentum distal to the twisted segment was discolored, edematous, inflamed and freely mobile. About 50ml free serosanguinous fluid was noted in the pelvis , the appendix was normal. A segmental omentectomy was done. Appendicectomy was also done. The postoperative period was uneventful. The histopathology report was suggestive of acute omentitis with areas of hemorrhage and necrosis.

Discussion

Omental torsion is a rare pathology. Eitel first reported a case of omental torsion unassociated with a hernia.[1] Since that time many reports have appeared in the literature, notably that by Morris in which 164 authentic cases of torsion of the omentum were gathered from 1905 to 1930[2].

Patients commonly present with right iliac fossa pain resembling the pain associated with acute appendicitis, but often lacking the associated gastrointestinal symptoms of nausea, vomiting, or anorexia. Kimber et al, reviewed over 8000 cases of appendectomies, quoting omental torsion as being the finding in one out of every 600 operations for presumed appendicitis, when the appendix was found to be normal[3].

Omental torsion can be primary or secondary. Primary torsion is unipolar with one end of the omentum free while secondary torsion is bipolar where the end opposite to the vascular pedicle is fixed to adhesions or some other pathological condition. Primary torsion is said to occur when there is no pathological cause found, and normally occurs in fourth or fifth decade of life. It has also been described in children above the age of four years, probably, due to the increase in omental fat deposition as the child grows[4]. Redundancy of the omental veins as compared to the arteries, results in venous engorgement of a dependent vein, precipitating thrombosis has been proposed as an etiological factor. In one of the study, it was shown that it often torts around the right epiploic artery[4].Spitz *et al*, suggested multiple predisposing factors like changes in omental consistency including inflammation, edema, and excess fat deposition (obesity) or anatomic malformations including tongue-like projections and bifid and accessory omentum[4]. Secondary omental torsion is always associated with abdominal pathology including tumors and cysts, postsurgical scarring, and hernias. Most cases of secondary omental torsion occur with inguinal hernias as reported by Moris et al.,[2]. Factors leading to a rise in intra-abdominal pressure such as lifting weights, coughing, forceful vomiting, hardlabour, ingestion of heavy meals, abdominal

trauma, hyper peristalsis, forceful purgation or taxis of a hernia causes passive displacement of the omentum[5]

The omental torsion determines the omental twist around a pivotal point, usually in a clockwise direction. Engorgement of the tortuous veins that are more easily compressed may compromise venous return, and the distal omentum becomes congested and oedematous. Recovery may follow or the process may go on[2]. Resultant haemorrhagic extravasations create a characteristic serosanguineous fluid inside the greater omentum and in the peritoneal cavity. As the torsion progresses it causes arterial occlusion leading to acute haemorrhagic infarction and eventually to necrosis of the omentum.

Clinically, primary and secondary omental torsions are similar. The most frequent complaint is pain in the right iliac fossa, which is sudden in onset and, at times, may be associated with nausea, vomiting, and low-grade fever. A past history of a similar but less severe pain may be present. Goti et al, stated that 66% of these cases mimic appendicitis, and 22%, cholecystitis[6].

Ultrasonography may show a complex mass and mixture of solid material and hypoechoic zones and free fluid within the peritoneal cavity. On the other hand, CT scan is very sensitive for showing an omental mass but not specific for making a diagnosis of torsion. Classical signs of omental torsion on CT scan are of a hazy fatty mass with concentric linear strands in the greater omentum, the whirl sign. These strands are twisted blood vessels whirling around a central rod. However, there are other differential diagnoses of hazy fatty mass with associated stranding, such as omental hernia, inflammation of epiploic appendages, paniculitis, and fat-containing neoplasms. Balthazar et al., showed that MRI was effective even when omental torsion is complicated by bleeding or development of an abscess[7]

As far as treatment is concerned, it can be conservative and is expectant in stable patients[8].This includes reassurance, analgesics, and antibiotics, and resolution is expected in two weeks. However, our patient already presented late and had severe persisting tenderness and muscle guard and hence, emergency surgery was planned. Normal appendix, gall bladder and pelvic cavity make the diagnosis of omental torsion likely. Free serosanguineous fluid as a result of haemorrhagic extravasion is a characteristic finding in the peritoneal cavity. Omental torsion is being visualized easily, and the chances of missing the pathology at surgery are now rare. In our case, diagnosis was suspected by USG scan and laparotomy confirmed the pathology. Treatment involves resection of the diseased segment of omentum and to correct any secondary pathology, if present. In the literature the treatment of choice included additional appendicectomy to prevent future diagnostic problems[9].It has been observed that, if the omentum is not excised it may become atrophic and fibrotic and, on rare occasions, the pedicle may even autoamputate, leading to automatic clinical regression[10] .Also, at times in case of untreated situation, one may see omental necrosis because of hemorrhagic infarction, intra-abdominal abscesses, peritonitis, or bowel obstruction.[11] Spontaneous derotation may be possible and may explain omental adhesions found during laparotomy that have no clear cause. Hence, laparotomy is the best method of diagnosis, therapy and to shorten the course of the disease.

Conclusion:

Omental torsion is very rare, and its diagnosis is usually made only after surgery.It mimics many acute abdominal pathologies and hence awareness of omental torsion as a differential diagnosis for acute abdomen and a thorough inspection of omentum in a negative laparotomy are recommended for appropriate management. At laparotomy, omental torsion is suspected when the appendix is normal and the symptoms and findings of torsion are present. In cases, where, imaging may not help, laparotomy can be used as a diagnostic and therapeutic tool. Laparotomy is a safe and effective approach for the diagnosis and management of omental torsion, with the advantages of reduced post operative pain, early recovery and reduced hospital stay.

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Granulomatous Hepatitis due to Common Variable Immunodeficiency – A Case Report

Ghosh J

Abstract:

Introduction: *Common variable immunodeficiency (CVID) is the immune system disorder which is characterized by low immunoglobulin (Ig) level and recurrent infections mainly involving sinuses, lungs and gastrointestinal tract. There is heterogeneity of liver involvement in CVID disorders and it may rely on immune dysregulation. Granulomatous disease due to CVID may affect about 10-22% patients which is also an important cause of pyrexia of unknown origin (PUO).*

Case Report: *A 7 years old girl who presented with recurrent episodes of fever since her 8 months of age and diagnosed as a case of CVID on the basis of low IgG1, IgG2 and IgM. Flow cytometric immunophenotyping for B cells showed reduced memory B cells and switched memory B cells. She had evidence of granulomatous hepatitis on the basis of deranged liver function tests (LFT) with very high serum alkaline phosphatase (ALP) and hepatic granuloma in liver biopsy report. She was treated with IVIg, prednisolone, ursodeoxycholic acid and antibiotic.*

Conclusion: *This case report points to the possibility of granulomatous hepatitis due to CVID which is the second most common cause of rare primary immunodeficiency disease. CVID disorders should be kept in mind of physician during management of patients with PUO or unexplained recurrent infections or granulomatous disease.*

Key words*: Common variable immunodeficiency, Granulomatous hepatitis.*

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Introduction

Common variable immunodeficiency (CVID) is the immune system disorder which is characterized by low immunoglobulin level (i.e. IgG, IgM, IgA). It is the second most common cause of rare primary immunodeficiency disease after IgA deficiency. It has heterogeneous clinical manifestation like recurrent bacterial infections, autoimmune disease, gastrointestinal disease, as well as lymphocytic infiltration of tissues which can cause splenomegaly, hepatomegaly, lymphadenopathy and formation of granuloma. Liver involvements in CVID are heterogeneous and rely on immune dysregulation.[1] Granulomatous hepatitis may be the first clue to an ongoing systemic disease and it is an important cause of fever of unknown origin in up to 13% of patients.[2] Although granulomas are most common in adults, up to a third of pediatric patients with CVID can also have this complication.[3] The exact cause of CVID is poorly understood and genetic mutation is identified in only 10% of people.

Case Report

A 7 years old girl who was suffering from recurrent febrile episodes since 8 months of life, documenting up to 101-102^0 F, not associated with rash, joints pain, abdomen pain, burning micturition, jaundice and had no history of lethargy and decreased appetite. Febrile episodes were intermittent, lasting for 3-6 days, 5-7 febrile episodes/month with history of multiple hospital admission. At 5 years of life her parents consulted with physician for recurrent febrile episodes without focus and she was treated for 6 months with anti-tuberculosis drugs due to close contact with pulmonary tuberculosis patient, despite work up for tuberculosis was normal. Her initial investigations including blood counts, urine and other tests for infections like Widal, Weil Felix, Brucellosis, Leptospirosis and Malarial parasites were normal. Bone marrow examination and biopsy ruled out blood malignancies.

Her Liver function tests (LFTs) were abnormal (Table-1). Microbiological analysis excluded some

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viral infections (HBV, HCV, HIV, CMV, and EBV). Standard immunological markers (ANA, LKM, SMA, AMA, Anti ds-DNA and RA test) excluded for autoimmune and rheumatoid disease. Screening tests of serum immunoglobulin showed decreased concentrations of IgG, IgG1, IgG2 and IgM with normal IgA level. Lymphocyte immunophenotyping showed decreased CD3+ (T Lymphocytes) and CD19 (B Lymphocytes). Flow cytometric immunophenotyping for B cell revealed reduced memory B cell and switched memory B cells which was consistent with clinical diagnosis of CVID.

CXR revealed normal findings but USG of abdomen expressed hepatosplenomegaly with abdominal lymphadenopathy. Her liver biopsy showed mild portal inflammation with bile duct damage and a small portal based epithelioid cell granuloma. The definite etiology of hepatic granuloma could not be determined. With these findings possibility of sarcoidosis was considered but serum angiotensin converting enzyme (ACE) level was also normal. She was treated with prednisolone which had been gradually tapered. She had been initiated on cotrimoxazole prophylaxis and advised to get monthly IVIg (10 gram). Pediatric Hepatology consultation was taken for deranged LFT and advised to initiate ursodeoxycholic acid for cholestatic hepatitis.

Table-1. Liver function tests

Tests	Patient's value	Normal value
Serum total bilirubin	1.1 mg/dl	0.2-1.2 mg/dl
Serum ALT	116 U/L	30-65 U/L
Serum AST	245 U/L	15-37 U/L
Serum GGT	395 U/L	M: up to 61, F: up to 39 U/L
Prothrombin time	12 seconds	11-15 seconds
Serum ALP	2199 U/L	45-150 U/L
Serum albumin	38 gm/L	35-50 gm/L

Table-2. Serum immunoglobulin and lymphocyte immunophenotyping tests

Tests	Patient's value	Normal value
S. IgG	418 mg/dl	688-1251 mg/dl
S. IgG1	309 mg/dl	
S. IgG2	<36 mg/dl	
S. IgM	<25 mg/dl	65-132 mg/dl
CD3+ (T lymphocyte)	88.4%	60-76%
CD19 (B lymphocytes)	6.54%	13-27%

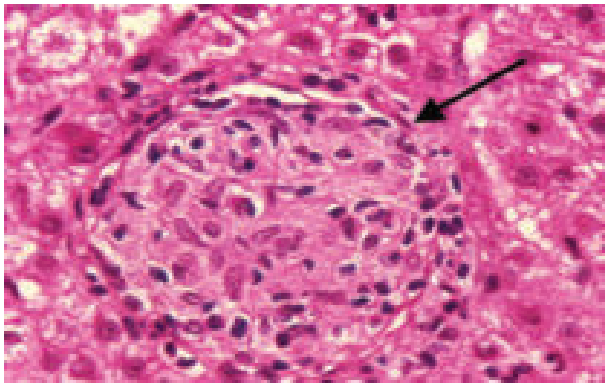

Fig.-1: Hepatic granuloma (H & E, x 400).

Discussion

In this case report, the author presents an unusual presentation of granulomatous hepatitis associated with CVID. The clinical spectrum of CVID is broad, heterogeneous and nonspecific.[2] Its frequency varies from 1: 10000 to 1: 50000. Diagnosis is based on reduced level of IgG, IgA and/or IgM, which is a consequence of impaired B cell development.[4] The disease manifests itself between 5 to 10 years and 20 to 40 years of age. Clinical manifestations include recurrent infections of the respiratory tract, chronic lung disease, various autoimmune pathology, gastrointestinal disease, granulomatous infiltrative diseases, lymphoproliferative disorders and malignancies.[5,6,7] Multisystem granulomas are well documented causes of increased morbidity and mortality in patients with CVID. Lungs are the most commonly affected site, though other organs such as liver, skin, spleen, and gastrointestinal tract can also be involved.[8,9] Granulomatous diseases in CVID may affect about 10–22% of patients.[10, 11]

Hepatic granulomas are aggregates of macrophages, often transformed to an epithelioid appearance in the liver parenchyma (Figure-1) and can be found in 4-10% of needle liver biopsies. It has broad differential diagnosis that includes autoimmune disorders like sarcoidosis and primary biliary cirrhosis, systemic infections like tuberculosis, fungal infections, Q fever, and brucellosis or malignancy, drugs or it may be idiopathic. Clinically patients of hepatic granulomas are usually symptomatic with fever of unknown origin and elevated liver function tests.[12] Patient of this case report had H/O recurrent episodes of fever with low level of IgG and IgM. Lymphocyte immunophenotyping showed decreased CD3+ (T Lymphocytes) and CD19 (B Lymphocytes). Flow cytometric immuno-phenotyping for B cell revealed reduced memory B cell and switched memory B cells which was consistent with clinical diagnosis of CVID. Liver biopsy did not show bile duct destruction characteristic of primary biliary cirrhosis, or any evidence of malignancy. The patient was not taking any offending drugs. Histological appearance and distribution of granuloma was not consistent either with the diagnosis of hepatic sarcoidosis or with tuberculosis. Angiotensin converting enzyme level was also normal. However, granulomatous hepatitis in this patient can be well explained by CVID.

The primary treatment of CVID is replacement of antibody by IV or subcutaneous route. Usually doses are 400 to 600 mg/kg body weight per month. This patient was advised for monthly IVIg 400 mg/kg body weight for lifelong with cotrimoxazole prophylaxis. Although expensive, the use of IVIg can allow patients to lead a near normal life and perform productive work. On the other hand, granulomatous hepatitis may subside spontaneously or necessitate short or long-term prednisolone treatment. The ultimate prognosis is excellent. Patients who are not responding or unwilling to take corticosteroids may benefit from azathioprine or low dose oral pulse methotrexate.

Conclusion

This case report points to the possible occurrence of granulomatous hepatitis due to common variable immunodeficiency which is the most common cause of rare primary immunodeficiency disease. CVID disorders should be kept in mind of physician during management of patients with PUO or unexplained recurrent infections or granulomatous disease.

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We acknowledge the patient and her parents for giving consent to write and publish this case report.

Conflict of interest

The author declared no conflict of interest.

Abbreviations

ALT= Alanine aminotransferase, AST= Aspartate aminotransferase, GGT= Gamma glutamyl transferase, ALP= Alkaline phosphatase, IV= Intravenous.

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Abstract From Current Literatures

(MH Samorita Med Coll J 2020; 3(1): 37-40)

ASSOCIATION BETWEEN MALNUTRITION AND ANEMIA IN UNDER-FIVE CHILDREN AND WOMEN OF REPRODUCTIVE AGE: EVIDENCE FROM BANGLADESH DEMOGRAPHIC AND HEALTH SURVEY 2011

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Background: Bangladesh is one of the most anemia prone countries in South Asia. Children of age under five years and women of reproductive age are particularly vulnerable in this region. Although several studies have investigated the risk factors of anemia, only few have explored its association with malnutrition, despite its high prevalence in the same group. The objective of this paper is to investigate the association of malnutrition with anemia by conducting separate analyses for under-five children and women of reproductive age using data from the nationally representative 2011 Bangladesh Demographic and Health Survey.

Methods: Two binary outcome variables are considered separately: presence of anemia in children under five years of age (Hb<11.0g/dl) and presence of anemia in women of child bearing age (Hb<12.0g/dl). The exposures of interest corresponding to these two outcomes are stunting (low height-for-age) and low BMI (<18.5kg/m2), respectively. Preliminary analysis involves estimating the association between exposure and outcome while controlling for a single confounder by computing adjusted odds ratios (adjOR) using the Cochran-Mantel-Haenszel approach in stratified analysis. Later, associations between the exposures and outcomes are estimated separately for under-five children and women of reproductive age by fitting multivariable regression models that adjust simultaneously for several confounders.

Results: The prevalence of anemia is found to be higher among both the stunted children and women with low BMI compared to their healthy counterparts (Children: 56%vs48%; women: 50%vs43%). Furthermore, stunted children and women with low BMI have significantly increased odds of developing anemia, as reflected by the adjusted Ors of 1.76(95%CI:1.10–2.83) and 1.81(95%CI:1.11–3.48), respectively. The association of stunting with anemia in children was modified by their age and socio-economic condition, where risk of being anemic decreases with increasing age but with a lower rate for stunted children from richest family. In addition, stunted children of anemic mothers are at greater risk of being anemic compared to non-stunted children of anemic or non-anemic mothers. Again the association between BMI and anemia in women is modified by the level of education, with risk of anemia being lowest among women with low BMI and higher education.

Conclusion: Evidence–based policies targeting the vulnerable groups are required to combat anemia and nutritional deficiencies simultaneously under the same program.

POPULATION-BASED INCIDENCE OF CHILDHOOD PNEUMONIA ASSOCIATED WITH VIRAL INFECTIONS IN BANGLADESH

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Background: The contribution of respiratory viruses to childhood pneumonia in tropical low- and middle-income countries is poorly understood. We used population-based respiratory illness surveillance in children 5 years of age or younger in Dhaka, Bangladesh, to characterize these illnesses.

Methods: We conducted weekly home visits to children who were referred to clinic for fever or respiratory symptoms. Standardized clinical data were collected. Nasopharyngeal washes were

collected for one fifth of children diagnosed with a febrile or respiratory syndrome, with virus isolation testing for influenza and reverse transcription polymerase chain reaction testing for other viruses. Pneumonia was defined as age-specific tachypnea and crepitations on chest auscultation by study physicians.

Results: From April 2004 to February 2008, 17,584 children were followed for 17,644 child-years; 6335 children had 12,499 clinic visits with eligible illnesses, including 6345 pneumonia episodes (incidence of 36 episodes/100 child-years). Annual incidence of pneumonia/100 child-years ranged from 88.3 for children 0–6 months of age to 13.1 for those 36–60 months of age. Of 1248 pneumonia visits with laboratory testing, 803 (64%) had detection of viral pathogens, including 274 respiratory syncytial virus (22% of pneumonia visits with laboratory testing; incidence 7.9/100 child-years), 244 adenovirus (19%; 7.0/100 child-years), 198 human metapneumovirus (16%; 5.7/100 child-years), 174 parainfluenza (14.0%; 5.0/100 child-years), and 81 influenza (6.5%; 2.3/100 child years).

Conclusions: Viral pathogens contribute to a majority of childhood pneumonia episodes in Bangladesh, a setting with high pneumonia rates, especially in children 2 years of age or younger. Developing effective prevention strategies targeting these children is a high priority. Given less sensitive laboratory method used for influenza detection, influenza rates may be underestimated.

Key Words: pneumonia, low income countries, pediatric respiratory infections, respiratory viruses.

EYE DISEASES: THE NEGLECTED HEALTH CONDITION AMONG URBAN SLUM POPULATION OF DHAKA, BANGLADESH

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Introduction: Globally, eye diseases are considered as one of the major contributors of nonfatal disabling conditions. In Bangladesh, 1.5% of adults are blind and 21.6% have low vision. Therefore, this paper aimed to identify the community-based prevalence and associated risk factors of eye diseases among slum dwellers of Dhaka city.

Methods: The study was carried out in two phases. In the first phase, a survey was conducted using multistage cluster sampling among 1320 households of three purposively selected slums in Dhaka city. From each household, one family member (e" 18 years old) was randomly interviewed by trained data collectors using a structured questionnaire. After that, each of the participants was requested to take part in the second phase of the study. Following the request, 432 participants out of 1320 participants came into the tertiary care hospitals where they were clinically assessed by ophthalmologist for presence of eye diseases. A number of descriptive and inferential statistics were performed using Stata 13.

Result: The majority of total 432 study participants were female (68.6%), married (82.6%) and Muslim (98.8%). Among them almost all (92.8%) were clinically diagnosed with eye disease. The most prevalent eye diseases were refractive error (63.2%), conjunctivitis (17.1%), visual impairment (16.4%) and cataract (7.2%). Refractive error was found significantly associated with older age, female gender and income generating work. Cataract was found negatively associated with the level of education, however, opposite relationship was found between cataract and visual impairment.

Conclusion: Our study provides epidemiologic data on the prevalence of eye diseases among adult population in low-income urban community of Dhaka city. The high prevalence of refractive error, allergic conjunctivitis, visual impairment, and cataract among this group of people suggests the importance of increasing access to eye care services.

Keywords: Refractive error, Cataract, Visual impairment, and Bangladesh.

PATHWAYS OF ANTIBIOTIC USE IN BANGLADESH: QUALITATIVE PROTOCOL FOR THE PAUSE STUDY

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Introduction: Global actions to reduce antimicrobial resistance (AMR) include optimising the use of antimicrobial medicines in human and animal health. In countries with weak healthcare regulation, this requires a greater understanding of the drivers of antibiotic use from the perspective of providers and consumers. In Bangladesh, there is limited research on household decision-making and healthcare seeking in relation to antibiotic use and consumption for humans and livestock. Knowledge is similarly lacking on factors influencing the supply and demand for antibiotics among qualified and unqualified healthcare providers. The aim of this study is to conduct integrated research on household decisionmaking for healthcare and antibiotic use, as well as the awareness, behaviours and priorities of healthcare providers and sellers of antibiotics to translate into policy development and implementation.

Methods and analysis: In-depth interviews will be conducted with (1) household members responsible for decision-making about illness and antibiotic use for family and livestock; (2) qualified and unqualified private and government healthcare providers in human and animal medicine and (3) stakeholders and policy-makers as key informants on the development and implementation of policy around AMR. Participant observation within retail drug shops will also be carried out. Qualitative methods will include a thematic framework analysis. A holistic approach to understanding who makes decisions on the sale and use of antibiotics, and what drives healthcare seeking in Bangladesh will enable identification of routes to behavioural change and the development of effective interventions to reduce the health risks of AMR.

Ethics and dissemination: Approval for the study has been obtained from the Institutional Review Board at the International Centre for Diarrhoeal Disease Research, Bangladesh following review by the Research and Ethics Committees (PR-16100) and from Loughborough University (R17-P081). Information about the study will be provided in a participant information letter in Bangla (to be read verbally and given in writing to participants). A written informed consent form in Bangla will be obtained and participants will be informed of their right to withdraw from the study. Dissemination will take place through a 1 day dissemination workshop with key stakeholders in public health and policy, practitioners and scientists in Bangladesh, and through international conference presentations and peer-review publications. Anonymised transcripts of interviews will be made available through open access via institutional data repositories after an embargo period.

REDUCING CHILDHOOD MALNUTRITION IN BANGLADESH: THE IMPORTANCE OF ADDRESSING SOCIO-ECONOMIC INEQUALITIES

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Objective: To obtain projections of the prevalence of childhood malnutrition indicators up to 2030 and to analyse the changes of wealth-based inequality in malnutrition indicators and the degree of contribution of socio-economic determinants to the

inequities in malnutrition indicators in Bangladesh. Additionally, to identify the risk factors of childhood malnutrition.

Design: Cross-sectional study. A Bayesian linear regression model was used to estimate trends and projections of malnutrition. For equity analysis, slope index, relative index and decomposition in concentration index were used. Multilevel logistic models were used to identify risk factors of malnutrition.

Setting: Household surveys in Bangladesh from 1996 to 2014.

Participants: Children under the age of 5 years.

Results: A decreasing trend was observed for all malnutrition indices. In 1990, predicted prevalence of stunting, wasting and underweight was 55·0, 15·9 and 61·8 %, respectively. By 2030, prevalence is projected to reduce to 28·8 % for stunting, 12·3 % for wasting and 17·4 % for underweight. Prevalence of stunting, wasting and underweight were 34·3, 6·9 and 32·8 percentage points lower in the richest households than the poorest households. Contribution of the wealth index to child malnutrition increased over time and the largest contribution of pro-poor inequity was explained by wealth index. Being an underweight mother, parents with a lower level of education and poorer households were the key risk factors for stunting and underweight.

Conclusions: Our findings show an evidence-based need for targeted interventions to improve education and household income-generating activities among poor households to reduce inequalities and reduce the burden of child malnutrition in Bangladesh.

RENAL INSUFFICIENCY AMONG URBAN POPULATIONS IN BANGLADESH: A DECADE OF LABORATORY-BASED OBSERVATIONS

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Objective: The objective of this study was to describe the age and sex-specific prevalence of renal insufficiency, and observe its trends over a decade at an urban Bangladesh setup.

Method: This was a cross-sectional study, in which we observed the Estimated Glomerular Filtration Rate (eGFR) of 218,888 adults, aged e"19 years, who had submitted their blood specimen to the Clinical Biochemistry Laboratory of the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) during the years 2006–2015. We applied CKD-EPI definition in estimating eGFR using their age-and sex-specific serum creatinine concentrations. Based on the eGFR, we classified the population into five stages of renal insufficiency (stage-1 to stage-5), at age intervals of five-years. Data were analysed using the Linear Regression and Multinomial Logistic Regression models.

Results: Females constituted 43% (n = 94,931) of the study population; and 34% (n = 42,576) of the males and 31% (n = 29,830) of the females had their serum creatinine concentrations above the upper limit of the laboratory reference cut-off. The overall prevalence of stage2 to stage-5 renal insufficiency were 24% (n = 52,126), 17% (n = 38,539), 8% (n = 16,504) and 6% (n = 12,665) respectively; the prevalence were 23% (n = 1,890), 19% (n = 1,579), 9% (n = 769) and 9% (n = 770) respectively in 2006, and 24% (n = 10,062), 17% (n = 6,903), 6% (n = 2,537) and 5% (n = 1,924) respectively in 2015. The prevalence was higher among the females. . At least 2% of the adults, younger than <44 years ,had stage-4 and stage-5 in 2015. The age-adjusted eGFR was significantly lower among the post- menopausal females (aged e"46 y) compared to the same age group males (64.08±10.83 vs. 66.83±10.41 mL/min/ 1.73 m2 ; p<0.001). Compared to 2006, the number of individuals with renal insufficiency (stage 2 and above) had increased at least two times, irrespective of age, in 2015. A single year of increase in the age was significantly associated with 1.32 unit reductions in the eGFR; and the reductions were higher for females who also had higher odds of renal insufficiency stages-2 and beyond.

Conclusion: This study observed high prevalence of stage-2 to stage-5 renal insufficiency in Bangladeshi populations, irrespective of age, and especially among the females.

Notes and News

(MH Samorita Med Coll J 2020; 3(1): 41)

CME Presentations
(July – December 2019)

No.	Date	Department	Presenter	Topic
1.	11.07.2019	Forensic Medicine	Dr. Md. Iqbal Hossain Associate Professor	Lead Poisoning
2.	25.07.2019	Community Medicine	Third year MBBS students	1. Knowledge on antenatal care among the mothers of a selected rural community. 2. Knowledge on risk factors and prevention of diabetes mellitus among adults in a selected rural community.
3.	07.08.2019	Medicine	Prof.Dr. Dilip Kumar Dhar Principal Dr. Mustafizur Rahman Registrar	Dengue fever: its update and management
4.	29.08.2019	Dermatology & Venereology	Dr. Sarker Mahbub Ahmed Shamim Assistant Professor	Management of Ex-foliative Dermatitis
5.	12.09.2019	Ophthalmology	Dr. Sumaiya Mahmud Intern Doctor Dr. Shrabonti Saha Intern Doctor	Few Childhood Ophthalmic Diseases
6.	26.09.2019	Paediatrics	Dr. Saira Khan Associate Professor Dr. Gazi Md. Imranul Haque Assistant Professor	Thalassaemia in children: A concern of Bangladesh
7.	10.10.2019	Otolaryngology	Dr. Asif Abdullah Assistant Registrar	Rhinosinusitis – An Update
8.	24.10.2019	Pharmacology	Dr. Tazkia Anjum Lecturer	Drug Interactions
9.	14.11.2019	Nephrology	Dr. Muhammad Ehsan Jalil Assistant Professor	Dietary Consideration in Renal Failure
10.	28.11.2019	Prosthodontics	Dr. Md Khabir Uddin Assistant Professor Dr. B M Rafiqul Hasan Mehedi Lecturer	1.ABCD of Dental Implant with case presentation. 2. Advanced and new technology of dental implant.
11.	12.12.2019	Critical Care Medicine	Dr. Syed Tariq Reza Asst. Professor	Update On Sepsis
12.	26.12.2019	Medicine	Dr. Saraf Anjum Intern Doctor Dr. Sanchari Paul Intern Doctor Dr. Naziat Haque Intern Doctor	An update on non-alcoholic fatty liver disease

Following student obtained honours in respective subject against his name.

Name	Course	Type of Exam	Year of Exam	Exam. Roll No.	Subject
Amoolya Soti	MBBS	Final professional	November , 2019	3144	Medicine