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ADDRESS OF CORRESPONDENCE

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

From the Desk of Editor-in-Chief

We are delighted to inform that the Volume 7, Number 2 of the Dhaka Central International Medical College Journal (DCIMCJ) is going to be published very soon. In this issue we have added a new section, Medical Quiz: Images. We are grateful to Almighty Allah. We are sending the complimentary copies of the journal to the libraries of most of the medical college and other medical institutions in Bangladesh. Already our journal has been approved by Bangladesh Medical & Dental Council (BMDC). We invite the doctors of medical colleges and institutes to submit their research articles to the journal committee for publication. We accept both hard & soft copies of the articles. We go through the papers and if necessary, communicate the authors. We also thank all the authors for giving us opportunity to publish their research papers in this journal. We have tried our best to avoid erroneous information. We like to add here that DCIMC Journal and its editorial board accept no liability for any inaccurate and misleading information, opinion and statements. It is the responsibility of the individual author (s). We have mentioned the instruction for the authors in this issue. We request the contributing authors to follow the instructions for their manuscripts. We appreciate our chairman, editors, members and advisors for their encouragement and also appreciate the contributors and reviewers for their participation. Last of all we welcome valuable suggestion, opinion, advice and constructive criticisms for improvement of the quality of the journal.

Prof. Bidhu Bhushan Das
Editor-in- Chief

INFORMATION FOR AUTHORS

Manuscript preparation and submission:

Guidelines for the Authors:

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

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

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

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

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

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

Article types:

Five types of manuscripts may be submitted:

Editorials:

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

Original articles:

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

Short communications:

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

Reviews:

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

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

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

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

Condition for submission of manuscripts:

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

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- Ethical aspect of the study will be very carefully considered at the time of assessment of the manuscript.
- Any manuscript that includes table illustration or photograph that has been 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 will be blackened out.

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

Preparation:

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

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

I. A. 1.a. General Principles:

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

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

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

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

I. A. 2. Title page:

1. Article title. Concise title is easier to read than long, convoluted ones. Titles that are too short may, however, lack important information, such as study design (which is particularly important in identifying type of trials). Authors should include all information in the title that will make electronic retrieval of the article both sensitive and specific.
2. Authors' names and institutions.
3. The name of the department(s) and institution(s) to which the work should be attributed.
4. Disclaimers, if any.
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To prevent potential conflicts from being overlooked or misplaced, this information needs to be part of the manuscript. The ICMJE has developed a uniform disclosure form for use by ICMJE member journal (http://www. icmje/crg/coi_disclosure.pdf) and DCIMCJ has accepted that.

I. A. 4. Abstract:

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

I. A. 5. Introduction:

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

I. A. 6. Methods:

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

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

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

I. A. 6. b. Technical information:

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

I. A. 6. c. Statistics:

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

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

- Define statistical terms, abbreviations, and most symbols.

- Specify the computer software used.

I. A. 7. Result:

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

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

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

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

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

I.A.8. Discussion:

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

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

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

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

I. A 9. References:

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

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

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

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

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

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

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

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

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

I. A. 10. Tables:

- Tables capture information concisely and display it efficiently.

- Use tables/figures that are relevant to study

- Try to limit the number of tables/figure

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

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

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

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

I. A. 11. Illustrations (Figures):

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

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

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

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

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

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

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

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

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

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

- Avoid abbreviations in the title of the manuscript.

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

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

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

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

Submission preparation checklist:

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

Check lists:

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

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- Sample of the above document is available in the following links: http://www.dcimc.com
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General outline for article presentation and format:

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- Title page contains all the desired information (vide supra)
- Running title provided (not more than 40 characters)
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- References cited in superscript in the text without brackets after with/without comma (,) or full stop (.)
- References according to the journal's instructions─abide by the rules of Vancouver system.

Language and grammar:

- Uniformity in the language
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- Numbers from 1 to 10 spelt out
- Numerals at the beginning of the sentence spelt out

Tables and figures:

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- **Title**
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  - Complete author information
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  - Not more than 200 words for case reports and 250 words for original articles
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  - Key words provided – arrange them in alphabetical order (three – five)
- **Introduction:**
  - Word limit 150-200 words
  - Pertinent information only

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

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

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DCIMCJ

Editorial

DCIMCJ 2020 July;7(2):14-16

Importance of Medical Education

Ali SMI[1], Begum R[2], Khatun M[3]

Medical education is education related to the practice of being a medical practitioner, including the initial training to become a physician (i.e., medical school and internship) and additional training thereafter(e.g., residency, fellowship and continuing medical education). Medical education and training varies considerably across the world. Various teaching methodologies have been used in medical education, which is an active area of educational research[1].

The traditional medical education system widely adopted throughout most of the twentieth century has produced generations of scientifically grounded and clinically skilled physicians who have served medicine and society well. Yet sweeping changes launched around the turn of the millennium have constituted a revolution in undergraduate medical education (UME) and graduate medical education (GME)[2-4].While continual assessment leading to measured adaptation is essential for the enduring value of a system, simultaneous and multifaceted change such as that occurring in the traditional medical education system qualifies as disruptive innovation[5].

Medical education is also the subject-didactic academic field of educating medical doctors at all levels, including entry-level, post-graduate, and continuing medical education.

1. **Prof. Dr. S.M. Idris Ali**
Professor & Head, Department of Orthopedics
Dhaka Central International Medical College.

2. **Dr. Rahana Begum**
Assistant Professor, Department of Community Medicine
Dhaka Central International Medical College.

3. **Prof. Dr. Momena Khatun**
Professor, Department of Community Medicine
Dhaka Central International Medical College.

Medical education applies theories of pedagogy specifically in the context of medical education. Specific requirements such as entrust able professional activities must be met before moving on in stages of medical education. The education of a physician has developed to encompass pre-medical preparation, a course of study in a medical school which is typically a major component of an academic medical center (AHC), and medical specialty training in residency and fellowship programs, UME and GME, respectively. This education provides the basis for a professional career enhanced by continuing medical education and life-long learning. Early in the twentieth century, medical education became guided by principles articulated by Abraham Flexner and William Osler. Flexner recommended that medical schools should be university based, have minimum admission requirements, implement a rigorous curriculum with applied laboratory and clinical science content, and have faculty actively engaged in research[6-8].

To promote more active learning and less passive learning, curriculum developers have introduced a variety of approaches, including small group sessions, problem-based learning, self-directed learning, team-based learning, and flipped classrooms as replacements for the traditional lecture format. A major goal of the curriculum reformers is to produce physicians who can deliver an individualized plan of care that reflects the physician's mastery of basic physiology, awareness of the best current evidence, skillful patient communication, and shared decision-making[9,10].

The goal of medical education is to produce competent physicians. However, the educational approach embodied in competence-based curriculum for highly skilled professions including medicine

versus lower level occupations has been found to be philosophically questionable, methodologically complex and highly controversial. The logistics of implementing such programs are daunting and represent another major draw on faculty time to provide evaluation of the ascertainment of the set of competencies and entrustable professional activities (EPAs) of the learners. A more feasible approach would be to maintain fixed time programs but allow accelerated advancement coupled with opportunities for dual degrees, pursuit of research, and other projects.

Medical education calls for a profound change in the way it is taught and learned - a change which provides the welfare society needs, wherever a doctor practices. Where a doctor can be recognized as a leader capable of introducing such a transformation in an unstable world in which previously controlled diseases re-emerge and new ones arise, population aging increases at a rapid pace, systems face health coverage problems and increasing chronic diseases, and health public policy consumes much of our nations' gross domestic product[11].

The medical education represents diversity in different nations; a few courses are 4-year graduate entrance program, others are 5 or 6 years undergrad programs. Numerous courses have early clinical experience and the limits in clinical and preclinical are not precisely clear. In Brazil, there is 6-year program, and the medical educational module is partitioned into 3 main parts as basic (1st and 2nd years), intermediate (3rd and 4th years), and internship periods (5th and 6th years)[12]. But at present, in the United Kingdom, a typical medicine course at university is 5 years or 4 years if the student already holds a degree. Among some institutions and for some students, it may be 6 years (including the selection of an intercalated B.Sc—taking one year—at some point after the pre-clinical studies). All programs culminate in the Bachelor of Medicine and Surgery degree (abbreviated MBChB, MBBS, MBBCh, BM, etc.).

This is followed by 2 clinical foundation years afterward, namely F1 and F2, similar to internship training. Students register with the UK General Medical Council at the end of F1. At the end of F2, they may pursue further years of study. The system in Australia is very similar, with registration by the Australian Medical Council (AMC).

Now a day's, Medical education is increasingly utilizing online teaching, usually within learning management systems (LMSs) or virtual learning environments (VLEs)[13,14]. Additionally, several medical schools have incorporated the use of blended learning combining the use of video, asynchronous, and in-person exercises[15,16]. A landmark scoping review published in 2018 demonstrated that online teaching modalities are becoming increasingly prevalent in medical education, with associated high student satisfaction and improvement on knowledge tests. However, the use of evidence-based multimedia design principles in the development of online lectures was seldom reported, despite their known effectiveness in medical student contexts[17]. To enhance variety in an online delivery environment, the use of serious games, which have previously shown benefit in medical education, can be incorporated to break the monotony of online-delivered lectures[18].

Medical education must be based on a healthcare system with global thinking and local implementation in an interconnected world. The reform of undergraduate medical curriculum should follow this guide in order to contribute to the medical mission. Our experience shows that it is possible to make curriculum changes in medical programs consistent with the current societal needs - a medical education based on the healthcare system. Lastly, more national support and research will be needed to not only establish these programs but to evaluate how to both standardize and innovate the curriculum in a way that is flexible with the changing health care and policy landscape.

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Original Article

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Systemic Disorders in Acute Confusional State: A Cross-Sectional Study

Rahman S[1], Mamun KAA[2], Wazib A[3], Bahar T[4]

Abstract:

Background and aim: Acute confusional state is one of the commonest causes of hospital admission worldwide. Wide variability in aetiology and presentation often creates confusion regarding the actual diagnosis leading to undue delays in management, and higher mortality and morbidity. Systemic diseases often present with acute confusional state, so early and appropriate screening is necessary for timely diagnosis and prompt management. Method: This cross-sectional study was done in the department of medicine at Dhaka Medical College Hospital on 484 acute confusional state patients from January 2018 to June 2018. Results: Of the 484 study participants 66% were male and themean age was 44.6±10.3 years. Systemic diseases causing acute confusional state were found in 71 percent of cases. Acute poisoning (112 cases) topped the list, followed by hepatic encephalopathy (54), hypo/hypernatraemia (52), meningoencephalitis (43), sepsis and hypo/hyperglycaemia (38 each) and acute kidney injury in very few patients (9). Systemic aetiologies were associated significantly with being male and under 60 years of age. Electrolyte imbalance, sepsis, and disturbance of glucose metabolism were common in ≥60 years of age, whereas acute poisoning, hepatic encephalopathy, and meningoencephalitis were common in <60 years. Conclusion: Systemic diseases are common in all age groups with an acute confusional state. Early and necessary screening should be considered for saving lives.

Keywords: Acute confusional state, systemic diseases.

Introduction:

Acute confusional state, also known as delirium, is a complex neuropsychiatric syndrome that is characterized by disturbances in consciousness, orientation, thought, perception, memory, and behavior due to one or more structural and/or physiological abnormalities affecting the brain directly or indirectly[1]. It is a potentially reversible brain dysfunction. The onset is acute and has a fluctuating course. Clinically three subtypes of acute confusional state are described depending upon the psychomotor activity and arousal levels, hyperactive (agitated, hyper-alert), hypoactive (lethargic, hypo-alert), and mixed subtype[2,3]. There are many causes of the acute confusional state which include metabolic abnormalities such as hypoglycaemia or hyperglycaemia, electrolyte imbalance, infections, hepatic encephalopathy, structural lesions of the brain such as intracranial haemorrhage or cerebral infarction, major organ failure, toxins, etc. As many of the causes have overlapping features and similarities to psychiatric illness it remains an under-recognized and underdiagnosed clinical disorder[4].

The acute confusional state is a frequent cause of hospital admission in general medicine. In most cases, it is reversible in 10-12 days[5].

1. Dr. Shaila Rahman, Assistant Professor, Department of Medicine, Enam Medical College, Savar.
2. Dr. Kazi Abdullah Al-Mamun Associate Professor, Department of Neurology, Dhaka Central International Medical College.
3. Dr. Amit Wazib, Associate Professor, Department of Medicine, Enam Medical College, Savar.
4. Dr. Tamanna Bahar, Assistant Registrar, Department of Haematology, National Institute of Cancer Research and Hospital, Dhaka

Correspondence: Dr. Shaila Rahman
E-mail: shailars43@gmail.com

However, there are exceptions where symptoms may persist beyond two months[6]. The study by Levkoff et al. reported persistence of symptoms in one-third of patients at six months[7]. It has a high mortality rate of 10-26%. Delirium is an important risk marker for dementia as well as for death[8,9].

It is a medical emergency and should be managed and treated without delay. It is independently associated with a significant increase in the length of hospital stay, the requirement for institutional care, functional decline, rate of death, and healthcare costs[10,11].

It is vital to detect systemic aetiologies causing delirium by early screening for a prompt diagnosis and subsequent management. This study was aimed at determining the prevalence of systemic diseases in acute confusional state and its association with age and gender.

Material and method:

This was a cross-sectional study on patients admitted with acute confusional state in the department of medicine of Dhaka Medical College Hospital, from January 2018 to June 2018. Study subjects were selected by simple random sampling from the records of 11 units of the department of medicine of Dhaka Medical College. Patients of both genders and ≥ 18 years of age, with a definitive diagnosis, were included in the study. Patients with a head injury, doubtful diagnosis, and incomplete data were excluded. An intracranial lesion was defined as a definite intracranial structural lesion diagnosed with neuroimaging. All other causes (metabolic, sepsis, toxins) were considered systemic. To identify systemic aetiologies Complete Blood Count (CBC), metabolic screening including random blood sugar (RBS), serum electrolytes, routine &microscopic examinations of urine, culture and sensitivity of appropriate samples, urine for drug abuse (DA) profile and appropriate imaging were done. Patients with combined intracranial and systemic pathologies were considered to have intracranial lesions during analysis.

Initially, 500patients were included in the study, however, 16 were excluded because of inadequate information.

Results:

Among 484 study subjects, 319 (66 percent) were males and 165 (34 percent) were females. The mean age was 44.6±10.3 years, with the youngest and the eldest study subjects aged 18 years and 75 years, respectively. Systemic aetiologies were found in the majority of cases (342, 71 percent). Intracranial lesions were present in 142 cases (29 percent) Figure 1.

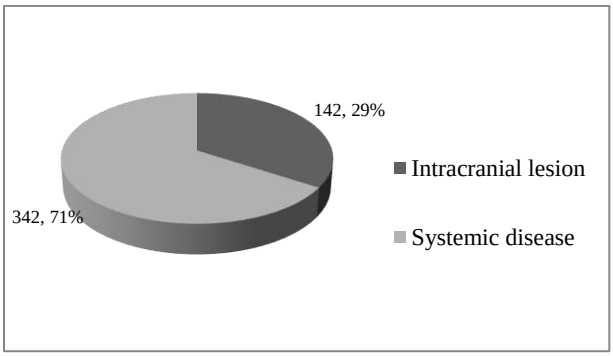

Figure 1: Intracranial and systemic aetiologies in acute confusional state (n=484)

Among systemic aetiologies poisoning was the most frequent cause (112 cases), followed by hepatic encephalopathy (54 cases), hypo/hypernatraemia (52 cases), meningoencephalitis (43 cases), sepsis (38 cases), hypo/hiperglycaemia (38 cases) and acute kidney injury in very few patients (9 cases). Multiple causes were found in four cases where hyponatraemia was found in two cases of sepsis and two cases of me ningoencephalitis. [Figure-2]

Electrolyte imbalance, sepsis (e.g.-pneumonia, urinary tract infection), and disturbance of glucose metabolism (hypoglycaemia and hyperglycaemia) were common in patients of 60 years and above. On the other hand, acute poisoning, hepatic encephalopathy, and meningoencephalitis were more common in patients aged less than 60 years. [Figure-2]

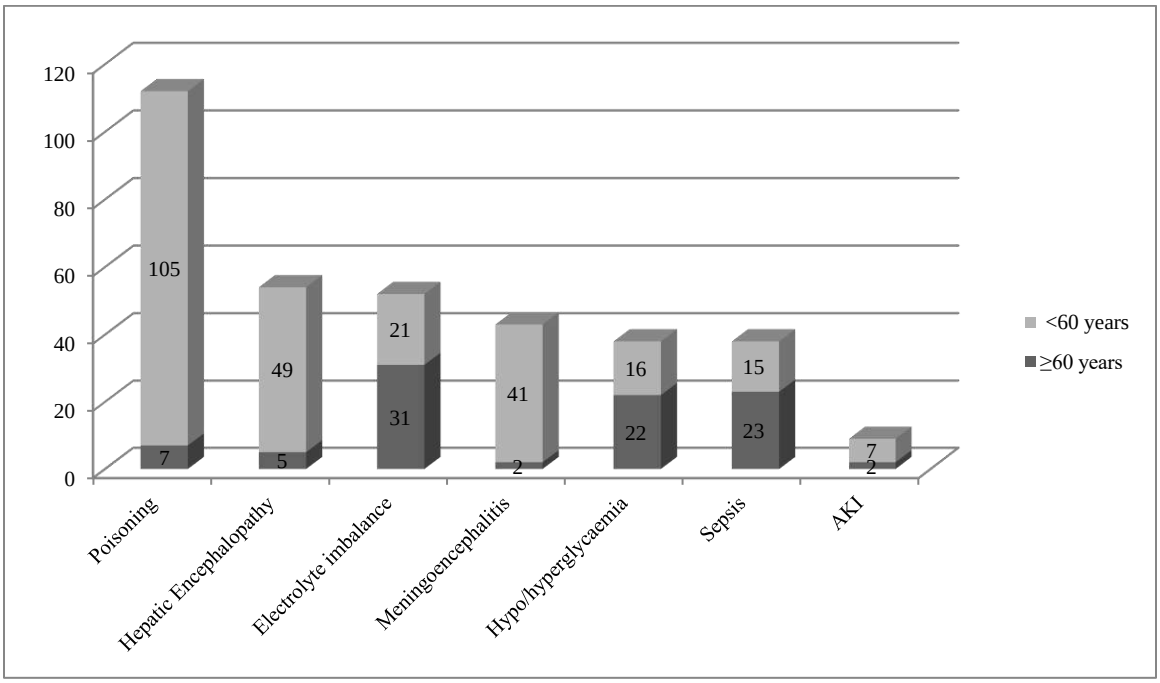

Figure 2: Systemic aetiologies of acute confusional state in different age groups (n=342)

Systemic aetiologies were more frequent among < 60 years age group, which was statistically significant [Table 1]. Systemic diseases were found to be more common in males (AOR 2.8, 95% CIs 1.9-4.3, p =0.0001). [Table-2]

Table 1: Association of age and systemic causes of Acute confusional state (n=484)

Age	Systemic cause (n_1=342)	Intracranial cause (n_2=142)	Odds ratio	95% CI[a]	p-value
<60 years	252	72	2.7	1.8-4.1	<0.0001*
≥60 years	90	70			

[a]CI=Confidence interval *Chi-Square test

Table 2: Association of gender and systemic causes of acute confusional state (n=484)

Age	Systemic cause (n_1=342)	Intracranial cause (n_2=142)	Odds ratio	95% CI	p-value
Male	253	71	2.8	1.9-4.3	<0.0001*
Female	89	71			

[a]CI=Confidence interval *Chi-Square test

Discussion:

Acute confusional state due to systemic aetiologies was more common in males (73%). This finding is supported by a study done by Higashi et al which identifies male gender as an independent risk factor for acute confusional state[12]. Our finding is similar to a study done in Bangladesh where 70.27% of study participants with such presentations were man[13]. In our study, systemic aetiologies were significantly associated with being male though a study by Hossain et al did not support this[13].

Systemic aetiologies were found in 71 percent of the study subjects of which acute poisoning comprised 33 percent cases. This result is similar to the study of Plum and Posner on patients of acute confusional state which showed systemic causes as 65 percent of which poisoning comprised 30 percent cases[14].

Other causes like hepatic encephalopathy, hypo/ hypernatraemia, meningoencephalitis, sepsis, hypo/ hyperglycaemia, and acute kidney injury were found. This result also correlates with a Balkan study on acute confusional state which showed 83 percent of cases are due to systemic aetilogies of which infection was responsible in 28 percent cases[15].

Though from international studies, it was thought that, acute confusional state is predominantly is a state of elderly, but in this study patients < 60 years constituted the highest percentage. This may be due to a large number of acute poisoning cases in young patients as they are the principal victim of acute poisoning. This finding of this study is consistent with the study carried in the Medicine ward of Dhaka Medical College Hospital in 2008 which showed the age group 16-25 constituted the highest percentage (22.32%), followed by the age group 56-65 (18.26%)[13].

Electrolyte imbalance, sepsis & disturbance of glucose metabolism were common in patients of 60 years and above, whereas, acute poisoning, hepatic encephalopathy, and meningoencephalitis were more common in patients aged less than 60 years. Causes found in the elderly are supported by many international studies which showed infections, such as a urinary tract infection or pneumonia, are more common causes of delirium (34-43 percent cases) along with electrolyte imbalance and hypo/ hyperglycaemia[16-20].

Conclusion:

Systemic aetiologies are common in all age groups of patients attending medical emergencies with acute confusional state. Rationale screening should be considered in all age groups for early diagnosis and management.

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Original Article

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Efficacy of ADE Protocol in Newly Diagnosed AML Patients in Bangladesh

Irshadullah NM[1], Kabir AL[2], Hossain MM[3], Wasim M[4], Chowdhury MSZ[5], Rumi MSIS[6], Begum M[7]

Abstract:

Background: Acute myeloid leukaemia (AML) is a not uncommon malignancy in the haematology wards of Bangladesh. Like many other countries of the world the induction of remission here starts with intravenous daunorubicin for 3days and continuous intravenous cytarabine for 7 days (DA 3+7). But, under the United Kingdom Medical Research Council Acute Myeloid Leukaemia protocols (UK MRC AML 10, 12 & 15) ADE regimen is used. ADE regimen uses intravenous push cytarabine and a third drug etoposide, along with alternate day daunorubicin. The effect of ADE regimen in AML patients of Bangladesh was not known before this study. Materials and methods: To know the efficacy of this relatively aggressive protocol ADE, 9 cases of newly diagnosed AML were enrolled in this study. Considering the supportive treatment facility available in Bangladesh, dose modification was done in the ADE protocol. So, a 'modified' ADE protocol was formulated which included Ara-C 100 mg/m^2 BSA I.V. push 12 hourly for D1-10, Daunorubicin 45 mg/m^2 BSA I.V. over 1 hr for D1, 3, 5, and Etoposide 75 mg/m^2 BSA, maximum 100 mg/d, I.V. over 1 hr for D1-5. After peripheral count recovery evaluation of remission status was done according to Döhner criteria. Results: Among the 9 patients 3 died of complications of cytopenic period and all of the remaining 6 were in complete remission. In comparison to historic outcome of DA 3+7 protocols, the study protocol was found to be more toxic and more efficacious. Comparing with the previous ADE trials in other countries, death rate of the patients were very high blurred the efficacy of the study protocol. Conclusion: The authors concluded that, larger study with better supportive care should be done to establish this protocol as a better alternative to established DA protocol for induction of remission for AML patients.

Keywords: Acute myeloid leukaemia, induction therapy, ADE protocols, cytarabine push, MRC AML protocols.

Introduction:

Acute myeloid leukemia (AML) is a heterogeneous clonal disorder characterized by immature myeloid cell proliferation and bone marrow failure[1]. Though newly diagnosed AML shares only 1.3% of all malignancies[2], it is a commonly found disease in the indoors of hematology wards in tertiary level hospitals of Bangladesh. Specific treatment of AML starts with an induction of remission chemotherapy, followed by further chemotherapy or stem cell transplantation to consolidate the remission achieved. Though DA 3+7 protocol is universally used for induction therapy in most types of AML[3], ADE is used in UK MRC AML studies (United Kingdom Medical Research Council Acute Myeloid Leukaemia protocols [MRC AML 10[4], MRC AML 12[5] and MRC AML 15[6]]).

1. Dr. Naseeb Muhammad Irshadullah, Assistant Professor, Department of Haematology, Shaheed Tajuddin Ahmad Medical College.
2. Dr. Amin Lutful Kabir, Associate Professor, Department of Haematology, BSMMU.
3. Dr. Mohammed Murad Hossain, Medical Officer, Hemato-Oncology Unit, National Institute of Cancer Research & Hospital, Dhaka.
4. Dr. Mohammed Wasim, Assistant Professor, Dhaka Medical College.
5. Dr. Md. Sazzad Zayed Chowdhury, Registrar, Hematology & SCT, Apollo Hospitals, Dhaka
6. Dr. Muhammad Shahidul Islam Sikder Rumi, Registrar, Hematology & SCT, Apollo Hospitals, Dhaka.
7. Prof. Masuda Begum, Professor, Department of Haematology, BSMMU.

Correspondence: Dr. Naseeb Muhammad Irshadullah
E-mail: drnaseeb@gmail.com

DA 3+7 protocol uses Daunorubicin 45-60 mg/m^2 body surface area (BSA) for consecutive 3 days by intravenous infusion over an hour, and Ara-C 100 mg/m^2 BSA/day over continuous infusion for 7 days[3]. On the other hand, relatively aggressive ADE protocol uses Ara-C 12 hourly intravenous push (instead of continuous infusion), and for 10 days (rather than 7 days), and etoposide (100mg/m^2 BSA) is added as the third drug (MRC AML protocols, *vide supra*). Use of the latter is justified because it is presumed that 10 days cytarabine is more efficacious[7, 8], addition of etoposide gives prolong remission[9], and there is less chance of drug resistance among the AML clone[4].

Materials and methods:

This observational study was held in two hospitals in Dhaka city for 14 months (from March 2013 to April 2014), one is Bangabandhu Sheikh Mujib Medical University, Shahbagh, other one is Delta Medical College Hospital, Mirpur. Newly diagnosed AML patients of age 15-50 year, suitable for intensive chemotherapy, who gave informed written consent and were able to bear the cost of the drugs and supportive care were enrolled into the study. As the protocol was new to this country, ethical clearance was taken from institutional Review Board (IRB). AML was diagnosed by morphology of bone marrow in all cases, and immunophenotyping was done for patients who could afford that. Nine patients who were newly diagnosed as AML gave consent to receive the treatment. Age of the participants ranged from 16 to 45 years. Seven patients were female and the rest were male. All the patients had leukocytosis, and 3 of them had extramedullary disease (gum hypertrophy, hepatosplenomegaly or lymphadenopathy), but none had central nervous system disease. Considering the supportive treatment facility available in Bangladesh, dose modification was done in the ADE protocol as per suggestions from haematologists experienced in treating AML in both the hospitals. So, a 'modified' ADE protocol was formulated which included Ara-C 100 mg/m^2 BSA I.V. *push* 12 hourly for D1-10, Daunorubicin 45 mg/m^2 BSA I.V. over 1 hr for D1, 3, 5 instead of 50 mg/m^2 BSA in original protocol, and Etoposide 75 mg/m^2 BSA, maximum 100 mg/d, I.V. over 1 hr for D1-5 instead of 100 mg/m^2 BSA in original protocol. Seven out of nine patients were treated in Bangabandhu Sheikh Mujib Medical University and 2 in Delta Medical College Hospital. After the first induction of remission chemotherapy each alive patient was evaluated for response according to Döhner criteria[10], where bone marrow aspiration is done to see remission status of leukaemia after peripheral count recovery, i.e., absolute neutrophil count ≥1.0 X 10^9/L (≥1000/µL) *plus* platelet count ≥100 X 10^9/L (≥100,000/µL) *plus* independence of red cell transfusions.

Result:

The study was done to evaluate efficacy of ADE protocol. Among the nine patients, three died of complications of cytopenic period and all of the remaining six were in complete remission (Figure 1). Two patients died from lower respiratory tract infection and the third one died of neutropenic sepsis. Other common complications were bleeding diathesis, anemia, pain, diarrhea and mucocutaneous complications.

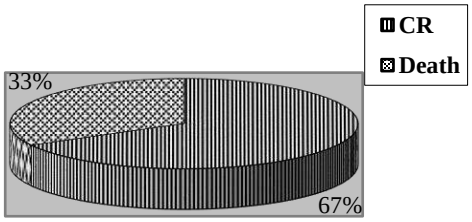

Figure 1: Figure showing outcome among 9 patients getting modified ADE protocol. CR = complete remission.

Two patients died from lower respiratory tract infection and the third one died of neutropenic sepsis. Other common complications were bleeding diathesis, anemia, pain, diarrhea and mucocutaneous complications (Table 1).

Table 1: Complications with ADE protocol

Complication	Number of patient affected (percentage)
Neutropenic fever	7 (78%)
Bleeding diatheses	8 (89%)
Symptomatic anaemia	1 (11%)
Pain	5 (55%)
Diarrhoea	2 (22%)
Mucocutaneous	2 (22%)
Sore throat	2 (22%)
Anorexia	2 (22%)
Thrombophlebitis	2 (22%)
Constipation	1 (11%)
Electrolyte imbalance	1 (11%)
Itching	1 (11%)

Comparing with the other ADE trials (Table 1), in this study death rate blurred the efficacy. Where in the UK, the death rates with higher dosages of chemotherapeutics of ADE protocols (higher than dosage used in this study), were less than 10%, in this study, even the reduced dosage of chemotherapeutics caused death of 33% of the patients. This difference is probably due to better supportive care in the UK. The complete remission rate among the survivors (100%) in this study is higher than the original protocols of the UK, which may be due to small sample size and observer bias. But if remission rate is considered among all the patients receiving the chemotherapy, it would be 67%.

Table 2: Summary of outcome of different UK MRC AML induction therapy

Study	Complete remission (%)	CRi* (%)	Partial remission (%)	Not in remission (%)	Death (%)
UK MRC AML 10[4]	74			17	9
UK MRC AML 12[5]	78 (including CRi)	8	8	8	6
UK MRC AML 15[6]	83 (including CRi)	4	4	7	6

*CRi = Complete Remission (incomplete), bone marrow features consistent with complete remission but peripheral blood count recovery incomplete.

In historical comparison to DA 3+7 protocols, ADE protocol is found to be more toxic and more efficacious (in terms of remission status). In the recent studies with improved supportive care, the death rates with DA 3+7 protocols were around 10-15% (Table 2), but in this study, it is 33%. On the other hand, among the survivors of this study, there were no cases of 'not in remission' or 'partial remission', which means all the survivors were in complete remission. This indicates better efficacy of ADE protocol than DA 3+7 protocol.

Table -3: Summary of outcome of studies using DA (3+7) protocol in AML patients

Study	Complete remission (%)	Partial remission (%)	Not in Remission (%)	Death (%)
Yates, et al. 1982[12]	72	2		26
Dillman et al. 1991[13]	64	7	14	15
Pagnano et al., 2000[14]	63.6		36.4	
Bishop 1999[15]	56-74			10-15
Ashrafi et al., 2013[16]	58.9		41.1	
Tsurumi et al., 2007[17] (elderly)	73		27	
Robak and Wierzbowska 2009[18] (elderly)	60-80		20-40	
Buitrón-Santiago, et al., 2010[19]	62.7	23.2		13.9
Islam 2012[11]	40	24	20	16

Limitations of the study:

1. The sample size is small.

2. Not all patients could afford immunophenotyping and cytogenetics which are now considered very important for diagnosis and prognosis of AML patients.

Conclusion:

The test protocol ADE is found to be more efficacious but more toxic than DA 3+7 protocol. Larger study with better supportive care should be done to establish this protocol as an alternative induction therapy for AML patients.

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Conflicts of interest:

There was no conflict of interest.

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DCIMCJ

Original Article

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Pattern of Admission and Outcome of Intensive Care Unit Patient in Tertiary Level Hospital of Bangladesh.

Yusuf MG[1], Begum ZN[2], Das BB[3]

Abstract:

Background: Intensive care is predominantly concerned with the management of patient with acute life threatening condition in a specialized unit. The availability of this service is limited by variety of factors including financial resources, limitation of beds and well trained stuff. In Bangladesh there are very few studies about the pattern of admission and outcome of intensive care unit (ICU) patients. Objectives: To determine the admission pattern and outcome of patients in the Intensive Care Unit patient in a tertiary level hospital of Bangladesh outside the capital city. Methods: A Retrospective study was carried out in Prime Medical College & Hospital, Rangpur from April 2019 to October 2019. Data were obtained from the ICU admission and discharge registers and doctors handover records. Result: A total 106 patients were studied, mean age of the patient were 50.64 ± 18.08. Male were preponderance 68 (64.2%). The mortality rate in study population was 66 (62.3%). In survivors 40 (37.7%); 18(17%) patients were discharge on request bond, 10 (9.4%) discharge on request and only 12 (11.3%) patients' discharged with advice. Among ICU admission patients frequency of sepsis was high 24 (22.6%) particularly in more than 47 years age group. Length of stay in ICU ranged from 1 to 5 days. Conclusion: Sepsis is the common pattern of admission and outcome shows high mortality rate.

Keywords: Admission, intensive care unit, outcome

Introduction:

In1950, anesthesiologist Peter Safar established the concept of "Advanced Support of Life", keeping patients sedated and ventilated in an intensive care environment. Safar is considered to be the first practitioner of intensive care medicine as a speciality. In response to a polio epidemic (where many patients required constant ventilation and surveillance) Bjorn Aage Ibsen established the first intensive care unit in Copenhagen in 1953[1].

1. Dr. Md. GhulamYusuf, Associate Professor (cc), Department of Medicine & Consultant ICU, Rangpur Community Medical College & Hospital.

2. Dr. Zebun Nessa Begum, Assistant Professor, Department of Gynae & Obs, Rangpur Community Medical College and Hospital.

3. Dr. Bidhu Bhushan Das, Principal and Professor, Department of Medicine, Dhaka Central International Medical College.

Correspondence: Dr. Md. GhulamYusuf
E-mail: piaslefty@yahoo.com

Since then, intensive care units (ICUs) have significantly improved the quality of care and outcomes of critically ill and injured patients, predominantly in high-resource settings[2]. The intensive care unit (ICU) is a health care delivery service for patients who are very ill with potentially recoverable diseases. They can benefit from more detailed observation, monitoring and treatment than is generally available in the standard lying-in ward or department[3]. The well-equipped intensive care unit (ICU) of Prime Medical College Hospital is established in 2012. There were 8 beds not demarcated into male and female sections. With glass partition it is separated from High Dependency Unit (HDU). Patients are jointly managed by the respective physician with the department of Anesthesiology. Data regarding working practices and outcome in the ICU is well- documented[3]. But such study was few in Bangladesh.

So we conducted this study to document the disease pattern and outcome of patients admitted to our Intensive care unit. This may help to assist health workers and planners to pay due attention for better utilization of healthcare facilities because better understanding leads to better management.

Material & methods:

This retrospective study was conducted in intensive Care Unit (ICU) of Prime medical college & Hospital, Rangpur, Bangladesh between April 2019 to October 2019. A total of 106 ICU patients were studied. Approval was obtained from institutional ethical committee. Patients ≥ 18 years of age, both sex, stay in ICU for at least four hours were included in thios study. Data were collected from the admission and discharge registers using a presented structured questionere.

The demographic characteristics were age and sex. Sepsis, MOF, stroke, acute kidney injury, shock, encephalitis, respiratory failures were used as variables of pattern of admission. To see the outcome we used death and survivors as a variable. Length of stay in the ICU was used as a variable to see the average stay time in ICU.

Data were processed and analyzed using software SPSS version-16. The level of significance was set at 0.05 and *p* value <0.05 was considered significant.

Result:

A total 106 patients were studied. Most of the patient 56(52.8%) belongs to more than 47 years age group, 20(18.9%)belongs to 38- 47 years age group.18- 27 and 28-37 years age group has15 (13.2%)patients respectively.

Mean age of the study population was 50.64 ± 18.08 (Table-1). Male patient was more 68 (64.2%) than female patients which was 38 (35.8%) (Table- 2). The outcome of study population showed a mortality rate of 66 (62.3%) and the survivors rate was 40 (37.7%) but among the survivors 18 (17%) patients discharge on request bond, 12 (11.3%) patients discharge with advice and only 10 (9.4%) patients discharge on request(Table- 3, 4). In our study population sepsis was the most common pattern of admission in ICU with 24 (22.6%) frequency, stroke was 20(18.9%) and multi organ failure (MOF) was 18 (17%). Other diseases were 18 (17%) which includes infectious disease, poisoning, functional disease etc.(Table-5). Among ICU admission patient sepsis was the common presentation in more than 47 years age group; MOF and stroke were also common in this age group (Table-6). We found respiratory failure patient in 18-27 and >47 years age group, frequency was 4 in each group. The duration of stay in this unit ranged from 1 to 5 days, mean 2.08 ± 1.10 (Figure 1).

Table-1: Distribution of age group of the study population (n= 106)

Age group	Total number of patients	Percentage (%)
18-27	15	13.3
28-37	15	13.3
28-37	20	18.9
Mean age – 50.64 ± 18.08		

Table-1 Shows distribution of age group of the study population, common age group is 28-37 years, mean age – 50.64.

Table-2: Sex distribution of study population (n=106)

Gender	Frequency	Percentage (%)
Male	68	64.2%
Female	38	35.8%
Mean- 1.36 ± 0.482		

Table-2 shows male are more 68% then female 38%.

Table- 3: Outcome of study population (n= 106)

Outcome	Total number of patients	Percentage (%)	*p* value
Survivors	40	37.7	
Non survivors	66	62.3	0.012

Data were analyzed by Chi-Square test (X^2)

In this table outcome of study population is shown, Survivors are less than non survivors.

Table - 4: Pattern of discharge in study population (n=106)

Survivors	Number of patients	Percentage (%)	*p* value
DORB	18	17	
DOR	10	9.4	0 .273
DA	12	11.3	

DORB- Discharged of request bond, DOR- Discharged on request, DA- Discharged with advice.

Data were analyzed by Chi-square test.

In Table-4 pattern of discharge in study population shows DA-11.3%, DOR-9.4% and DORB-17%.

Table-5: Pattern of admission according to disease (n=106)

Disease	Number of patients	Percentage (%)	*p* value
Sepsis	24	22.6	
Stroke	20	18.9	
MOF	18	17	
Encephalitis	06	5.7	
AKI	04	3.8	0.000
Shock	08	7.5	
RF	08	7.5	
Others disease	18	17	

AKI-Acute kidney injury, RF- Respiratory failure. MOF-Multi organ failure. Data were analyzed by Chi-square test.

In Table-5 Pattern of admission according to disease are shown, most common disease is sepsis.

Table-6: Distribution of disease according to age group (n=106)

Age group	Sepsis no (%)	Stroke no (%)	MOF No (%)	Others no (%)	Shock no (%)	RF No (%)	Encephalitis no (%)	AKI No (%)	*P* value
18-27	-	-	01(7.5)	02(14.3)	04(28.6)	04(28)	02(14.3)	02(14)	0.788
28-37	02(14.3)	02(14.3)	06(43)	01(7.15)	04(28.6)	-	-	-	0.370
38-47	04(20)	06(30)	-	06(30)	-	-	04(20)	-	0.849
>47	16(28.6)	12 (21)	12(21)	10(18)	-	4(7.1)	-	02(3.4)	0.010

AKI-acute kidney injury, RF-respiratory failure, others- other disease, MOF- Multi organ failure Chi-Square test was employed to test significance of difference between different diseases.

Table-6 shows sepsis is most common in >47 years age group

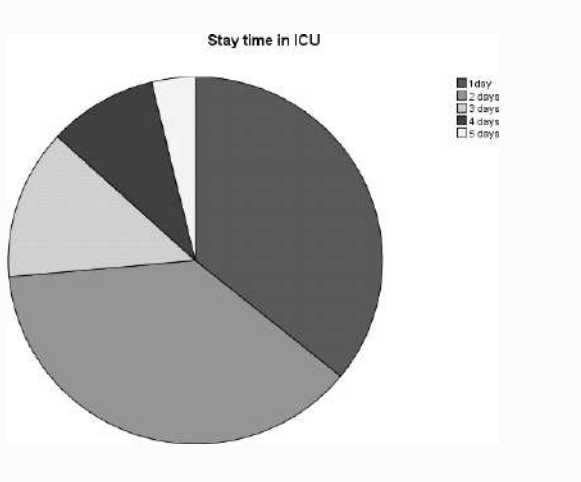

Figure 1: Distribution of stay time in ICU

Discussion:

According to one study 90% of ICU's of Bangladesh were located in its capital[5] but now a day ICUs are developing outside the capital also. There are very few data on ICU population demographics in our country so this makes comparisons between ICU population demographics difficult. A total 106 patients were studied, mean age of the patient was 50.64± 18.08 years which was higher than the studies of Mato et al. and Adudu et al. study (mean ± SD- 31.7±5.6) and (mean- 31.2).

In the present study common age group of the patient was more than 47 years which was consistent with Granja et al. study, in their study he concluded that very elderly patient admitted to ICUs represent a distinct and important subgroup. Our study consists preponderance of male, male- 68 (64.2%) and female – 38 (35.8%) but did not correlate with Adudu et al. and Mato et al. study. Possibly because we did not includes obstetric patient in our study. In Adudu et al. study the outcome of patients admitted into the intensive care unit showed a mortality rate of 35.1% with 2.8% referrals to other hospitals, 12.1% discharged home and 50% transfer to the general lying in wards, in their study 37.9% patients were found in the ICU who were not critically ill. In our study mortality rate were 66 (62.3%) and rest of 40 (37.7%) were survivors, among survivors 18 (17%) discharged on request bond, 10 (9.4%) discharged on request and 12 (11.3 %) discharged with advice. We strongly believed high incidence of DORB were due to increase length of stay associated with increased cost and presence of patient who are not critically ill. To solve this issue admission as well as discharge criteria need to be developed. Mato et al. also mention in their study, overall mortality rate of 24% which is lower than other studies because

significant number of patients admitted were not critically ill. Present study showed that sepsis was the most frequent initial diagnosis particularly in more than 47 years age group and stroke was the second most common cause. This high frequency of non-communicable disease correlate with the study conducted by Hendry et al[2] but did not support the study done by Shafiul et al[4]. In this study, length of stay in ICU was 1 to 5 days but few hours to 65 days in the study conducted by Mato et al[6] study and few hours to 45 days in the study conducted by Shafiul et al[4].

Conclusion:

Sepsis is the most common cause for ICU admission. Beside sepsis non communicable disease like stroke is the second common initial diagnosis among the study population and length of stay is short. Our study shows a mortality rate of 62.3% but among survivors significant number of patient 17% discharged on request bond, because management of critically ill patient requires significant human, infrastructural and financial resources. These resources are typically limited in low income country like Bangladesh. We would like to say our study will give better view to health care professionals in treating ICU patient and health care policy makers of Bangladesh who need to organize effort for promotion of Intensive care unit facilities nationwide.

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Original Article

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Serum Calcium and Albumin Levels in Children of Initial Attack Nephrotic Syndrome Attending in Rangpur Medical College Hospital

Chowdhury MSR[1], Mishu FA[2], Haque SMT[3], Albani SA[4], Chowdhury MMI[5]

Abstract:

Background: Nephrotic syndrome (NS) is an important chronic disease in children. Hypocalcaemia is a common electrolyte abnormality in NS which may remain asymptomatic or sometimes become symptomatic. Even death may occur as a result of contraction of the larynx or hypocalcaemia. Methods: This cross-sectional study was carried out in the department of Paediatrics, Rangpur Medical College Hospital, Rangpur, Bangladesh from February, 2017 to July, 2017. A total of 120 subjects were included in this study. Among them 60 were patients of initial attack aged 2-14 years nephritic syndrome (Case) and 60 were healthy (control). Result: The mean age of the participants were 101±39.9months. In this study serum albumin levels in cases and controls were 3.3±1.5 gm/dl and 4.4±0.8 gm/dl respectively, and there was highly significant difference (p<0.001). Also serum calcium levels in cases and controls were 8.3±1.0 mg% and 9.1±1.1 mg % respectively and there was very significant difference (p<0.01). The correlation between serum albumin and serum calcium level in initial attack cases of NS is highly significant (p<0.001). Conclusion: Serum albumin and calcium were significantly decreased in initial attack cases of nephritic syndrome group in compares to healthy control group aged 2-14 years. Estimation of serum albumin and calcium levels might be incorporated in every nephritic syndrome patients for possible prevention of complications.

Keywords: Nephrotic syndrome, hypoalbuminemia, proteinuria

Introduction:

Nephrotic syndrome (NS) is the clinical manifestation of glomerular diseases associated with heavy (nephrotic-range) proteinuria. Nephrotic-range proteinuria is defined as proteinuria >3.5g/24hr or a urine protein:creatinine ratio >2. The triad of clinical findings associated with NS arising from the large urinary losses of protein are hypoalbuminemia (≤2.5g/dL), edema and hyperlipidemia (cholesterol >200mg/dL)[1]. There is an epidemiological evidence of higher incidence of NS in children from Asia[2]. The annual incidence of NS ranges from 2-7 per 100000 children and prevalence from 12-16 per 100000[3,4]. Most children with NS have a form of primary or idiopathic NS and more common in boys than in girls[4,5] as well as most commonly appears between the age 2 to 15 years of age[5,6].

Total calcium in human body is in three forms, which is ionized, bound to protein and complex with anions. They are in equilibrium each other. Only the ionized calcium has been reported to physiologically active. If the ionized calcium level declines below normal, nervous system progressively becomes more sensitive and provokes clinical symptoms[7].

1. Dr. Md. Shahidur Rahman Chowdhury, Medical Officer, Upozila Health Complex, Bodorgonj, Rangpur.
2. Dr. Farzana Akonjee Mishu, Assistant Professor, Department of Physiology and Molecular Biology, BIRDEM.
3. Dr. Syed Md. Tanjilul Haque, Associate Professor, Department of Forensic Medicine, Anwer Khan Modern Medical College, Dhaka.
4. Dr. Shah Alam Albani, Junior Consultant (Pediatrics), Upozila Health Complex, Badarganj, Rangpur.
5. Dr. Md. Morhed-dul Islam Chowdhury, Medical Officer, Shaheed Suhrawardy Medical College Hospital, Dhaka.

Correspondence: Dr. Md. Shahidur Rahman Chowdhury
E-mail: shahidur819@gmail.com.

Hypocalcaemia in NS is initially attributed to hypoalbuminemia but may also have low ionized calcium levels[8]. It is required for muscle contraction, as an enzyme co-factor and as a second messenger. To maintain this function properly, extracellular calcium concentration must be maintained within a narrow range. Calcium is also a major component of bone; the bone can act as a reservoir to allow serum calcium level to be maintained, but the symptoms of hypocalcaemia depend on the severity of the deficit. Milder hypocalcaemia results in drying of the skin, dehydration, eventually decreased hair and fingernail growth and bone abnormalities. Severe hypocalcaemia may cause seizure, extrapyramidal syndrome, papilloedema, muscle stiffness, myalgia and spasms. Death occurs as a result of contraction of the larynx and/or diaphragm preventing respiration. It is evident especially in children, along with defects in tooth formation. Prolonged hypocalcaemia may also results in mental function problems, hypotention, diaphoresis and cataracts[9].

Calcium absorption in intestine depends on vitamin D. One of the proteins that lost from the body into urine along with albumin is vitamin D binding protein. Patients with NS with normal renal function remain hypocalcaemic in spite of the elevated level of serum parathyroid hormone (PTH) caused by a low serum concentration of 1,25-dihydroxyvitamin D [1,25-(OH)2D] presumably because of lose of 25-hydroxyvitamin D3 (25OHD3) in the urine and also low blood levels[10]. 25OHD3 results in low blood levels of other vitamin D metabolites, such as 1,25-dihydroxyvitamin D [1,25-(OH)2D] and 24,25-(OH)2D3; a deficiency of these compounds may cause defective intestinal absorption of calcium (alpha) and resistance to the calcaemic action of parathyroid hormone (PTH), resulting in hypocalcaemia[11]. Total serum calcium concentration that were normal after adjustment for albumin concentration had low serum ionized concentration. The low values were not due to change in P^H but were associated with hypoalbuminaemia[12].

Corticosteroids are one of the main drugs commonly used in the treatment of NS. Systemic corticosteroid (Cs) was reported to cause hypocalcaemia (HC) by inhibiting the osteoblastic activity and increasing the osteoclastic activity in the bone, as well as by increasing urinary calcium (Ca) excretion from the kidney[13,14]. But no alteration in PTH or calcitonin (CT) level with long and short term corticosteroid treatment[15]. There is a moderately positive liner relationship between ionized calcium and serum albumin level in NS[16,17]. Children with NS are at risk for low bone mass especially those administered higher dose of steroids. These children undergo regular bone mineral density (BMD) evaluations, and appropriate therapeutic interventions should be planned[18]. Hypocalcaemia is a common condition in NS due to hypoalbuminemia, urinary loss of 25-hydroxyvitamin D3[19].

Methods:

This cross-sectional study was conducted in the department of Paediatrics, Rangpur Medical College Rangpur, Bangladesh from February, 2017 to July, 2017 to evaluate the serum level of calcium and albumin in Children aged 2-14 years admitted with initial attack of nephrotic syndrome with age matched healthy children. Out of 120 participants, 60 were patients of initial attack, nephritic syndrome (Case) and 60 were healthy (control). The study protocol was approved by the institutional review committee and written informed consent was obtained from all the participants prior to their enrolment into this study. Relapse cases, Steroid resistant Steroid dependent nephrotic syndrome patients were excluded in this study. Data were collected in a pre-designed data collection sheet. The variables included were- age, sex, clinical presentation. About 3.0ml of blood was collected aseptically with veni-puncture from all participants.The results were analyzed and values were expressed as mean ±SD. The level of significance was determined by employing Student's t- test.

Results:

Table I: Age distribution of the participants (N=120)

Age in months	Frequency (f)	Percentage (%)	Mean±SD
24-60 months	20	16.7	101±39.9
61-96 months	30	25.0	
97-132 months	34	28.3	
133-168 months	36	30.0	
Total	120	100.0	

Table II: Presenting symptoms among the cases (n=60)

Clinical presentation	Frequency (f)	Percentage (%)
Puffiness of face	60	100.0
Generalized oedema	60	100.0
Huge ascites	30	50.0
Cushingoid faces	10	16.6
Scanty urination	50	83.3
Cough and respiratory distress	12	20.0
Abdominal pain	15	25.0
Pain, redness and tenderness of skin	5	08.3
Fever and dysuria	18	30.0
Haematuria	0	00.0
Diarrhoea	8	13.3
Neurodeficit like hemiplegia	0	00.0

Table II: Shows that most frequent clinical presentations are puffiness of face (100%), generalized oedema (100%), scanty urination (83.3%), huge ascites (50%)

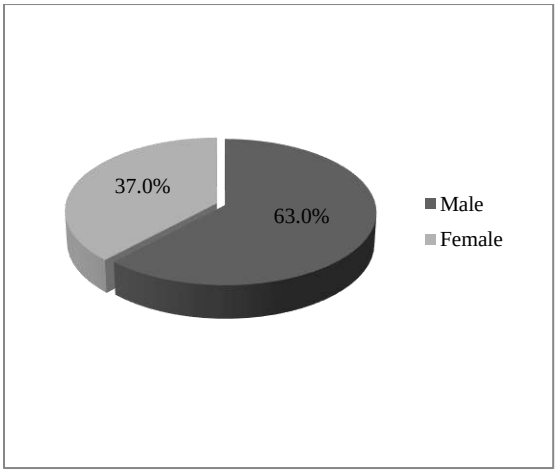

Figure 1: Sex distribution of the participants (n=120)

Most of the patients are Male (76).

Male female ratio is 1.72:1.

Table III: Comparison of Mean ± SD serum albumin and serum calcium level between case and control

Group	Serum Albumin(gm/dl) Mean±SD	Serum calcium (mg%) Mean±SD
Case	3.3±1.5	8.3±1.0
Control	4.4±0.8	9.1±1.1
P value	0.001	0.01

Test- unpaired t-test

Table III: Showed that the mean serum albumin and serum calcium level of cases are lower than control group and highly significant ($p<0.001$) in serum albumin and very significant ($p<0.01$)

Table IV: Correlation of S.albumin and S.calcium in initial attack of nephrotic syndrome

Name of NS	Serum	Mean±SD	P value
Initial Attack NS	s.albumin	3.3±1.5	0.001
	s.calcium	8.3±1.0	

Test- Paired samples t-test

Table IV: showed the correlation between serum albumin and serum calcium level in initial attack cases of NS is highly significant ($p<0.001$).

Discussion:

Nephritic syndrome is an important chronic disease in children and hypocalcaemia is a common electrolyte abnormality in NS. This study was aimed to compare serum calcium and albumin status in between the initial attack NS cases and healthy Children age matched.

In this study, male preponderance was observed with a male to female ratio of 1.72:1.Pais[1] and Hon et al[5]. found 59 % male and 41% female with a male female ratio 1.4:1 which was similar to this study. In current study, the mean age was 101±39.9 months, minimum age was 24 months and maximum age was 160 months. This age variation was due to the fact that most of the children suffer from NS in between 24 to 190 months[6, 10]. In the present study, most frequent clinical features were puffiness of face generalized oedema, huge ascites, scanty micturition. Sahana and Hossain et al. also found oedema, oliguria and ascites as main clinical findings in their studies[6,11].

In current study, serum calcium level in initial attack NS case was lower than normal reference value. Chowdhery et al. in Bangladesh found that mean value of serum calcium level in initial attack NS was decreased which was similar to this study[20]. In present study, comparison between the normal mean value of serum albumin level with initial attack NS was highly significant but no similar study was found.Correlation between serum albumin level and serum calcium level in initial attack NS was highly significant in this study. Hossain and Winata et al. were found positive correlation between serum albumin and serum calcium level, which supports this study[17,19]. In this study correlation between serum albumin level and serum calcium level in initial attack NS was highly significant. Hossain and Winata et al. were also found positive correlation between serum albumin and serum calcium level which supports this study[11,19].

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DCIMCJ

Original Article

DCIMCJ 2020 July;7(2):38-47

Quantitative Analyses of the Question Papers for Understanding How the Recent Trends of Neuroanatomy in the Commonly Recommended Neuroanatomy Textbooks are Reflected in the Postgraduate Written Assessment in BSMMU.

Yasmin QS[1], Aktar Z[2], Hossain S[3]

Abstract:

Context: After any course one's abilities can be assessed by assessment. The changes has been incorporated in the field of Neuroantomy teaching and assessment. One important way to know the changes in other country by analyzing the Neuroantomy books and we can compare their reflection in our country by analyzing the assessment system. Objectives: To analyse question papers of postgraduate written assessment in BSMMU in terms of weights given to different topics. Study design: A descriptive observational study involving quantitative analyses. Materials and methods: The Anatomy written question papers were analyzed to estimate the weights given to Neuroanatomy to different topic's in terms of frequency of 'segments of items covering each. Results: Quantitative analyses of the question papers revealed that the pattern of weights given to different 'topic's in the postgraduate written question papers differed in some aspects from the pattern in the two commonly recommended Neuroanatomy textbooks (although no statistical analyses was feasible). It is observed from analysis the anatomy question papers of neurology examination that there was no question selected on some 'topics' such as 'general aspects of the nervous system', 'diagnostic images' and 'surface marking' few questions of selected from topic 'clinical and problem solving questions and answers'. It is also observed from analysis the anatomy question papers of neurosurgery examination that few questions were selected from topic 'general aspects of the nervous system', 'diagnostic images', 'diagnostic and treatment procedure', 'clinical and problem solving questions and answers' and there was no question from topic 'surface marking'. Conclusions: By incorporating the findings of the present study with the present- day ideas and trends in Neuroanatomy in the developed world as evident from the available literature, suggestions could be formulated on improving the methods of teaching and assessment in Neuroanatomy in Bangladesh.

Keywords: Neuroanatomy, Recent trends.

Introduction:

The written part of assessment of students is one of the most important aspects of any educational course specially in terms of knowledge and understanding. It is a tool for judging what students have learned. The examination or assessment used has a powerful influence over learning. The assessment system is so important that often students learn only what they are assessed for. Any course need to be evaluate regularly[1]. It is essential not only throughout the course but also in the planning of the course. Without assessment improvement of a course is not possible. An evaluation of a course finds out how much the course fulfils the course objectives. Assessment, properly planned and implemented, has a powerful positive steering effect on learning and the curriculum. It conveys what we value as important and acts as the most cogent motivator of student learning. Assessment also fills the gaps in instruction and the curriculum. While it is laborious and time consuming to study the whole course curriculum, the focusing on the assessment system would provide a useful means for having an overview of the whole course[1].

1. Dr. Quazi Shamsunnahar Yasmin, Professor, Department of Anatomy, Dhaka Community Medical College.

2. Dr. Zakia Aktar, Professor, Department of Anatomy, Dhaka Central International Medical College.

3. Dr. Samira Hossain, Professor, Department of Anatomy, Dhaka Central International Medical College.

Correspondence: Dr. Quazi Shamsunnahar Yasmin
E-mail: yasmin110dcmc@gmail.com

Written examinations are integral parts of the postgraduate medical courses of Bangladesh. A good updated assessment system, when efficiently implemented, almost invariably leads to better learning than an ill-updated assessment system does. It is essential to judge the relative usefulness of particular assessment system and specific types of question for specific disciplines and their subdivisions. The same applies to the field of Neuroanatomy. Therefore, analysis of the assessment system is good way of providing an insight into the potentials of a course. One valid way to do this is analysing the written question papers. Results of such a study would also help the curriculum planners in incorporating the recent concepts into the existing curriculum. The present study was aimed at assessing how the contemporary trends are reflected in the written assessment system at the medical postgraduate level in BSMMU.The basis for curricular changes must be founded in the principle that alterations in the educational programs for improving the quality of the medical profession[2]. Neuroanatomy plays a crucial role in the health science curriculum, particularly as a means of preparing students for understanding the anatomical basis of clinical neurology[3]. In the Department of Anatomy BSMMU, a guideline is provided to the students regarding the course content of Anatomy-portion of different postgraduate clinical courses, and it does not fulfill the need of the courses in the light of knowledge of educational sciences. The Anatomy course of DhakaUniversity for Neurology contains the name of the subject as Neuroanatomy Neuroembryology and Histology. Neuroanatomy contains Brain, Spinal cord, Cranial Nerves, Vascular supply, Autonomic Nervous System, Muscles (Course contents of Post graduate course). The Anatomy course of ShahjalalUniversity for Neurology and Neurosurgery contains the name of the subject as Neuroanatomy which contains Embryology of the Nervous system and Special Sense Organs, Spinal cord, Spinal Nerves, The Brain (Gross Anatomy), Internal structure of the Brain, Cranial Nerves, Blood Vessels and Lymphatic, Cranial Dura, Organs of Special Sense.

Embryology of the Nervous system and Special Sense Organs include Histogenesis of the Neural Tube, development of the Brain, Spinal cord and Autonomic Nervous System, Developmental Anomalies of the Nervous System with their explanation (Proposed curriculum for MD, MS, M.Phil and Diploma course, 2002). In an article it was stated that the teaching of Anatomy is currently under close scrutiny[4]. There are many opinions in the world literature about teaching of Anatomy inmedical curricula. Recent reports from the United kingdom and Australia claim the teaching and learning of anatomy in universities is in crisis. This is attributed to less time being allocated to the subject[5]. TheNeuroscience is fascinating but unfortunately notorious for being a difficult subject. The most common reason from all reasons is poor teaching. Better teaching is one way to solve the problem. They also suggested that students and doctors resort to rote learning which they then forget due to overburdening the basic neuroscience and clinical neurology curriculum with irrelevant material[6]. The curriculum should include all the parts of basic neuroscience that a student should understand and exclude details that have neither practical application nor value in illustrating a general principle. Several thousand researchers around the world are currently applying ever more powerful neurobiological tools to unravel the complexities of the brain.[7]Medical schools of the developed countries are being redesigning their undergraduate education programs. Postgraduate training is being restructured, and greater attention is being paid to the process and organization of continuing professional development[8]. Thus their curricula are shifting from more traditional ones.When the amount of different topics to be covered in a curriculum is considered, the question of importance of weight to be given to each topic is a very important issue, often difficult to resolve. The new curriculum has mentioned various topics as ‘core’ and ‘additional’. But it is the relative importance of topics within this ‘core’ that is difficult to decide upon. The issue becomes further more complex when the question of time constraints creeps in.

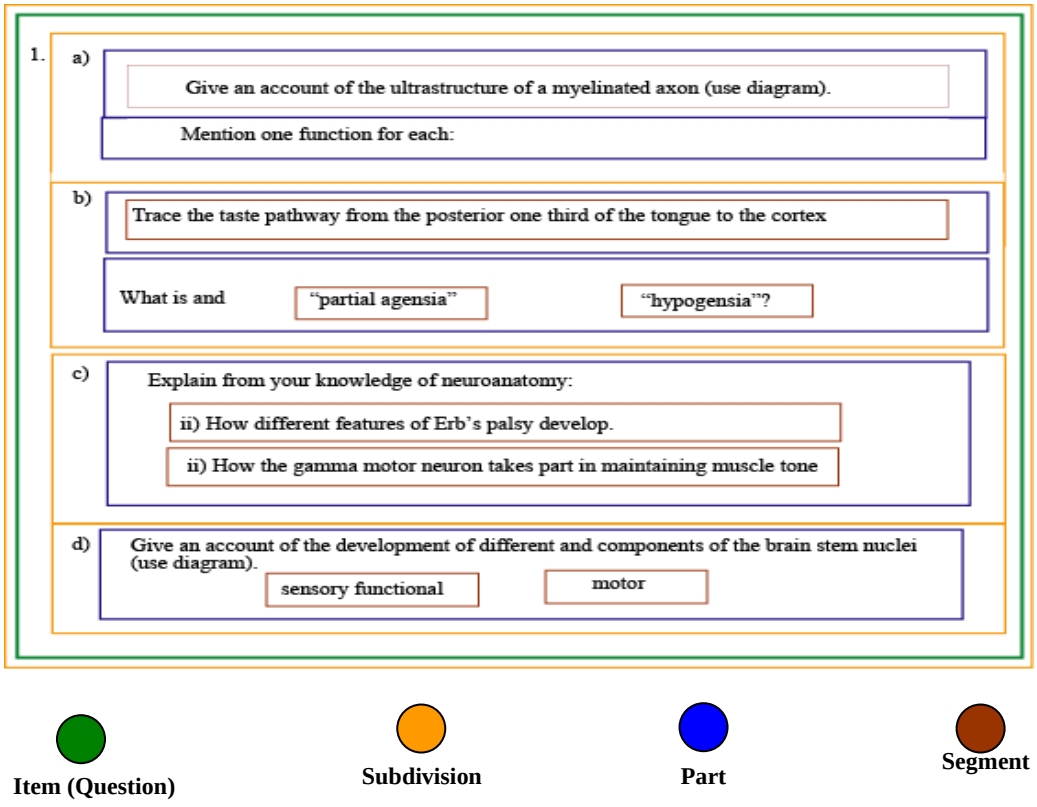
There is also the problem of adequate number of all teachers in ensuring the development of conceptual understanding of the topics among the students.

Materials and methods:

For the analysis of the written question papers, all the available Anatomy question papers of the Neurosurgery exams of BSMMU of Bangladesh held from January, 2004 to July, 2008 were examined. Thus, the available question papers of 5 recent years were studied to look for the reflections of two contemporary Neuroanatomy books on them[9,10].

Operational definitions:

1. **Item (Question)**: The term 'item' was used to denote each numbered question asked in the question papers. Thus, there were two (2) 'item's of each question paper except question papers of 2004(Jan and July) and 2005(Jan) where three (3) 'item's of each question paper in Neurosurgery examination.
2. **Subdivision:** There were eight (8) 'subdivision's of each question paper except question papers of 2004(Jan and July) and 2005(Jan) where nine (9) 'subdivision's of each question paper in Neurosurgery examination.
3. **Part:** This term was used to denote each separate sentence in each of the short answerquestions (SAQ).
4. **Segment:** This term indicated each component of a 'part' of an SAQ that called for a different answer from the examinee. Thus, in some cases, a 'segment' represented a whole sentence (and thus, a whole 'part'). In the others, a 'segment' represented a fraction of a sentence.



5. Weight given: An indirect estimation of the weight given in the question papers to different 'topic's was devised. This was the percentage frequency of the 'segment's of item dealing with each 'topic' expressed as the percentage of the total number of 'segments' of 'item's dealing with Neuroanatomy

Bangabandhu Sheikh Mujib Medical University

Month and year of exams----	**July,2008**		**New Regulation**
Course	"	MS	Time---3hours
Discipline	"	Neurosurgery	Total Marks--100
Part	"	1(One)	Pass Mark..-60
Paper	"	1(One)	
Subject of the paper	"	Anatomy and Pharmacology	

Instructions:

- Answer any thiree parts (from a,b,c,d) of each question(1,2,3,4)
- Use a separate answer script for each question.
- Mention the question no. on the top of the answer script.
- Give specific answers according to the marks break-ups on the right.
- Avoid unnecessary details.
- Note instructions about using diagrams, GAN

Group- A (Anatomy)

Q.1	A	➢ GAN What do you mean by synapse? ➢ Cyt What are its types? ➢ Discuss the various properties of synapse. (Use diagram) Cyt	2+2+4.3=8.3
	B	➢ How does the neural tube develop? (Use diagram) Dev ➢ Discuss the mechanism of development of a meningomyelocele of the spinal cord. Dev, aro	3+5.3=8.3
	C	➢ How does the sciatic nerve is formed? PNS ➢ Mention its course and relation. PNS PNS ➢ What happens in deep peroneal nerve palsy?(Use diagram) Cli dis	3+3+2.3=8.3
	D	**Explain neuroanatomically** ➢ How hyperacusis may develop in facial nerve palsy? Clidis ➢ Why there is wrist drop in radial nerve palsy? Clidis ➢ How tectum is involved in visual and auditory reflexos. Fun, Fun	3+3+2.3=8.3

Q.2	**A**	➢ What do you mean by trisomy? Gn ➢ How does this condition develop? Gn ➢ Write notes on genotype and phenotype. Gn	2+2+2+2.3=8.3
	B	➢ How the basal ganglia modulate motor function? Fun ➢ How would you differentiate cerebellar lesions from lesions of basal ganglia? Cli dis ➢ How anencephaly develop? Dev.ano	4+2+2.3=8.3
	C	➢ Mention the dural folds with their locations. CNS ➢ How is the cavernous sinus communicated with the other venous channels and BI ➢ What is the significance of these communications? Cli dis ➢ What happens in deep peroneal nerve palsy?(Use diagram)	3+2.3+3=8.3
	D	**Write briefly on** ➢ The effect of sympathetic stimulation on the blood vessels of different regions. Fun ➢ Termination of corticospinal tract. CNS ➢ Hydrocephalus. Clidis	3+3+2.3=8.3

I-2	GAN-1	Dev-1	Gn-3
Sb-7	CNS-2	Bl-1	CB-0
P-19	Cyt-2	Cli dis-6	
Sg-22	Fun-4	Dev. ano-2	

Fig. 2: A sample of question paper showing the methods of marking each 'item', 'sub division', 'part' and 'segment' by using a specific colour and a specific symbol according to its identity regarding the 'topic'. In the lower part of the figure, the frequencies have been recorded.

Question (item) numbers 1, 2 and sub division a, b, c, d have been circled as they deal with Neuroanatomy. Each 'segment' has been marked by a black dot.

'GAN', 'CNS', 'PNS', 'Cyt', 'Fun', 'Dev', 'Bl', 'Cli dis', 'Dev ano' are topics which represents 'General aspect of the Nervous system', 'Central Nervous system including autonomic nervous system', 'Peripheral Nervous system including autonomic nervous system', 'Cytological aspects of Nervous system', 'Basic functional aspects of the Nervous system', 'Developmental aspects of the Nervous system', 'Blood supply of the Nervous system', 'Clinical disorders' and 'Developmental anomalies' respectively.

'CNS' and 'PNS' are sub topics under the topic 'Basic anatomical aspects of the Nervous system and its support. 'Cli dis' and 'Dev ano' are sub topics under the topic 'Clinical aspects of the Nervous system'.

'Gn', and 'CB', are Genetics and Cell biology not related to Neuroanatomy.
'I', 'Sb', 'P' and 'Sg' denote 'item', 'Sub division', 'part' and 'segment' respectively.

Result:

It may be recalled that the written anatomy question papers of Neurosurgery examinationof BSMMU were analysed in this article and ten 'topic's were selected for the measurement of the proportion of printed area allotted to text and illustration. During analyses of five years Anatomy question papers of Neurosurgery discipline of BSMMU, these ten topics were also selected for determining the frequencies of 'segment' of 'item's on different 'topic's.It is observed from table 1 that question was selected from topic 'general aspects of the nervous system' only in 2007 years, from topic 'Neuroanatomy of the specific physiological processes' only in 2006 year, from topic 'diagnostic images' only in 2004 year, from 'diagnostic and treatment procedure' only in 2006 year, from 'clinical and problem solving question and answers' only in 2006 year. There was no question from topic 'surface marking.'

Table 1: Mean percentage frequencies of the 'segments' of SAQ 'item's on different 'topic's in the written question papers of the Neurology written exams in BSMMU.

Topic	Year wise percentage frequency					Mean percentage frequency for the 5 years ± SD
	Year 08	Year 07	Year 06	Year 05	Year 04	
1. General aspects of the Nervous system	0.00	6.98	0.00	0.00	0.00	1.39±.3.12
2. Basic anatomical aspects of the Nervous system and its support CNS(including ANS)	27.08	9.30	13.04	26.83	12.77	17.80±8.48.
PNS(including ANS)	6.25	13.95	4.35	7.32	4.26	7.23±.3.98
3. Cytological aspects of the Nervous system	6.25	18.60	13.04	7.32	6.38	10.32±5.41.
4. Histological aspects of the Nervous system	4.17	4.65	2.17	7.32	0.00	3.66±2.75.
5. Basic functional aspects of the Nervous system	14.58	6.98	17.39	12.20	19.15	12.06±5.11.
6. Neuroanatomy of the specific physiological processes	0.00	0.00	2.17	0.00	0.00	0.43±0.97.
7. Blood supply of the Nervous system	2.08	11.63	6.52	7.32	12.77	8.66±.4.29
8. Developmental aspects of the Nervous system	8.33	11.63	6.52	9.76	14.89	10.23±3.21.

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Table 1: Continued from the previous page

Topic	Year wise percentage frequency					Mean percentage frequency for the 5 years ±SD
	Year 08	Year 07	Year 06	Year 05	Year 04	
9. Clinical aspects of the Nervous system						
Clinical disorders	25.00	16.28	28.26	19.51	25.53	22.92±4.88.
• Developmental anomalies	6.25	0.00	0.00	2.44	0.00	1.74±2.73.
• Diagnostic images	0.00	0.00	0.00	0.00	4.26	0.85±1.90.
• Diagnostic and treatment procedure	0.00	0.00	2.17	0.00	0.00	0.43±0.97.
• Surface marking	0.00	0.00	0.00	0.00	0.00	0.00±0.00
• Clinical and problem solving question and answer	0.00	0.00	4.35	0.00	0.00	0.87 ±1.95
10. Others	0.00	0.00	0.00	0.00	0.00	0.00±0.00

- CNS (including ANS)' means Central Nervous system including autonomic nervous system
- PNS (including ANS)' means Peripheral Nervous system including autonomic nervous system

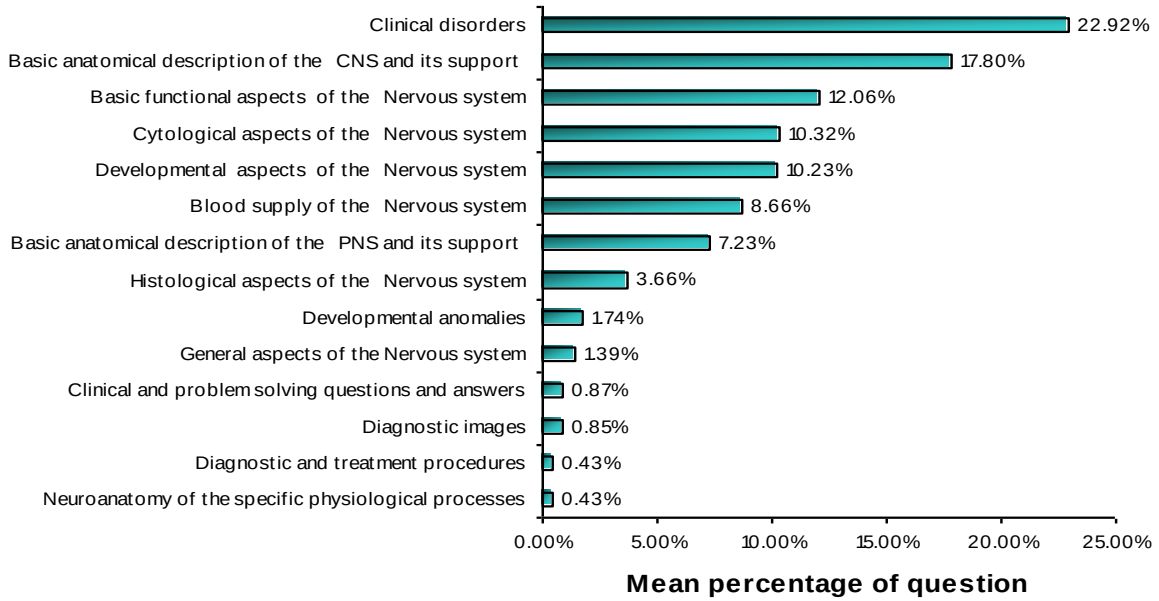

Fig.3 Mean Percentage frequencies of the 'segments' of SAQ items on different 'topic's in the written Anatomy question papers of the Neurosurgery exams in BSMMU.

Table 2 : Mean percentage frequencies of the 'segments' of SAQ 'item's on different 'topic's in the written question papers of the Neurosurgery written exams in BSMMU.

Sl.no.	Topic and segment
1.	General aspects of the Nervous system: What is a dermatome? • How many spinal segments does it need to be damaged to get one dermatome anaesthetized? (Neurosurgery, January, 2007)
2.	Basic anatomical description of the Nervous system and its support: PNS (including ANS): • How does the sciatic nerve is formed? • Mention its course and relation (Neurosurgery, July, 2008)
3.	Basic functional aspects of the Nervous system • What are the functions of the limbic system? • How the cerebellum modulates ipsilateral motor function? (Neurosurgery, July, 2006)
4.	Developmental aspects of the Nervous system: • Name the five secondary vesicles found during the development of the brain • Give an account of the derivatives of the neural tube (Neurosurgery, January, 2004)
5.	Clinical aspects of the Nervous system: Clinical disorders: • What is adiadochokieasis? • Explain neuroanatomically what is the bais of Argyl Roberson pupil? (Neurosurgery, July, 2005)
6.	Diagnostic images: • What do you mean by angiography and what is its importance? (use diagram) (Neurosurgery, January, 2004)

Table 3: Comparison of weights given to different 'topic's in the two commonly recommended textbooks with corresponding weights given in the Anatomy question papers of Neurosurgery examination in BSMMU

Sl. No.	Topic	Mean weight given in two books for text	Mean weight given in two books for illustration	Mean weight given in two books for text and illustration combined	Mean weight given in neurosurgery written question papers
1.	General aspects of the Nervous system	1.63	1.44	1.54	1.39
2.	Basic anatomical aspects of the Nervous system and its support CNS(including ANS)	27.13	40.81	33.97	17.80
	PNS(including ANS)	4.22	7.10	5.66	7.23
3.	Cytological aspects of the Nervous system	9.21	13.49	11.35	10.32
4.	Histological aspects of the Nervous system	6.46	8.36	7.41	3.66

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Table 3: Continued from the previous page

Sl. No.	Topic	Mean weight given in two books for text	Mean weight given in two books for illustration	Mean weight given in two books for text and illustration combined	Mean weight given in neurosurgery written question papers
5.	Basic functional aspects of the Nervous system	11.91	6.72	9.31	12.06
6.	Neuroanatomy of the specific physiological processes	0.93	0.45	0.69	0.43
7.	Developmental aspects of the Nervous system	1.70	2.14	1.92	10.23
8.	Blood supply of the nervous system	3.44	5.09	4.27	8.66
9.	Clinical aspects of the Nervous system				
	• Clinical disorders	16.35	6.14	11.25	22.92
	• Developmental anomalies	0.48	0.43	3.22	1.74
	• Diagnostic images	1.44	5.96	3.70	0.85
	• Diagnostic and treatment procedures	2.99	1.37	2.18	0.43
	• Surface marking	0.60	0.85	0.73	0.00
	• Clinical and problem solving questions and answers	11.34	0.00	5.67	0.87
10	Others	0.20	0.00	0.10	0.00

- 'CNS (including ANS)' means Central Nervous system including autonomic nervous system
- 'PNS (including ANS)' means Peripheral Nervous system including autonomic nervous system

Discussion:

It is observed from the results chapter that proportionately more area (text and illustration combined) for a topic has been allotted for 'central Nervous system including autonomic nervous system, (33.97%). Mean weight given in question papers for that topic is 17.80% in Neurosurgery. Analysis of question papers also revealed that only a negligible amount of questions are made from some topics, like 'developmental anomalies', 'diagnostic images' diagnostic and treatment procedures' in Neurosurgery. But these topics are not neglected in the textbooks.

So our questions should be prepared as considering all these aspect It has been also observed that Snell (2006) has highlighted the topic 'clinical and problem solving question and answers'. It helps the students for assessing their abilities and also it makes the students confident for facing various problems related to diagnosis the diseases during their practice. But such type of questions is very negligible amount in question papers. The topic 'surface marking' is addressed as separate compartment in viva cards. So usually no questions are expected from surface marking.

Analysis of question papers also revealed that most of the questions are being repeated and stereotyped. For understanding one's skills, abilities assessment is essential. This assessment must be on the basis of how teachers teach the students according to the text books and curriculum. So teachers must kept these things in mind during preparing question.

Conclusion:

Although statistical analysis was not feasible, the observations gave the impression that the pattern of weights given to different 'topic's in the postgraduate written question papers differed in some aspects from the pattern in the two commonly recommended Neruoanaotmy text books. The freqeuncey of segments of 'clinical and problem solving question and answers were neglected but this topic occupies the greatest weight in 'Snell'

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Original Article

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Tooth Brushing Practices Among the OPD Patients in Dental Unit Rangpur Medical College

Biswas MTU[1], Rayhan MA[2], Begum F[3], Moury M[4], Mowla A[5], Hasan SMR[6]

Abstract:

Background and aim: Tooth brushing is considered as a reliable method of effective plaque removal, which is essential for prevention of periodontal diseases. Method: A cross sectional study was carried out among 441 respondents(aged 1-70 years) in OPD Patients in Dental Unit Rangpur Medical College to observe their tooth brushing practices through a pre-tested semi-structured questionnaire results showed that , 42.2% respondents were males and the rest 57.8% were females. Table-2 summarized the oral hygiene related variables of the respondents. Out of all, 98.9% brushed their teeth regularly and 1.1% did not. Among them, 58.5% brushed teeth once 37.2% brushed twice and 3.6% brushed three times and 7% brushed their teeth more then three times in a day. The 24.9% respondents used hard tooth brush, 61.5% soft tooth brush, 12.5% finger, 1.1% wood stick. Off all, 64.4% used tooth paste, 34.5% used powder and 1.1% others as tooth cleaning adjuvant. 75.1% respondents brushed their teeth before meal and 24.9% after meal. Brushing motion of teeth of respondents was 42% side to side movement, 6.8% rolling and 3.2% upper jaw down ward movement. Off all 42% brushed their teeth one minute per stoke, 27.2% two minutes and 30.8% more than two minutes. 73.9% respondents did not floss after meal, 23.6% used tooth pick and 2.5% used dental floss. In conclusion respondents would be the appropriate target group to receive the organized intervention towards improving the oral health status and thus reducing the prevalence of oral disease. Institute Based Dental Health Education Program may be one of the most important applicable ways to enhance the success of better oral health for our respondents.

Keywords: Oral health, tooth brushing practice, oral hygiene.

Introduction:

Oral health is integral to general health[1]. Nobody can be healthy without good oral hygiene status. Many general diseases manifest in the mouth and oral disease may be first indication of other life threatening disease[2]. The mouth is visible gate way of rest of the body and reflects what is happening deep inside[3].

Oral health has been defined us “the standard of health of the oral and related tissues which enables an individual to eat, speak and socialize without active disease, discomfort and embarrassment and which contributes to general wellbeing”.

Oral health has strong biological, psychological and social projections, because it affects our aesthetics and communication, and the quality of life affiliated with oral health status[1]. Most oral diseases, like most chronic pathologies in general, are directly related to life style. Oral disease can be considered a public health problem due to its high prevalence and significant social impact.

1. Dr. Mohammad Taz Uddin Biswas, Assistant Professor (OMS), Dental Unit, Rangpur Medical College.
2. Dr. Mohammad Ashik Rayhan, Assistant Professor (Prosthodontics), Dental Unit, Rangpur Medical College.
3. Dr. Ferdousi Begum. Assistant Professor (Conservative Dentistry), Dental Unit, Rangpur Medical College.
4. Dr. Mousufa Moury, Dental Surgeon, Dental Unit, Rangpur Medical College.
5. Dr. Ariful Mowla. Assistant Register, Dental Unit, Rangpur Medical College.
6. Dr. Sayed Md. Rakibul Hasan. Intern Doctor, Dental Unit, Rangpur Medical College.

Correspondence: Dr. Mohammad Taz Uddin
E-mail: tubiswas75@gmail.com

Chronic oral disease typically leads to tooth loss, and in some cases has physical, emotional and economic impacts.

These impacts lead in turn to reduced welfare and quality of life. To minimize these negative impacts of chronic oral disease, there is a clear need to reduce harmful oral health habits. Such a reduction can be achieved through appropriate health education programs[2].

In modern dentistry, "prevention" receives special attention and precedes treatment. Through simple prevention techniques such as hygiene training, fluoride therapy, tooth brushing and supplementary instruments, caries prevalence and periodontal diseases have been reduced significantly. As a result, the needs of treatments that are mostly expensive and time consuming, have been decreased. The change from an unhealthy attitude to a healthy attitude will occur given adequate information, adequate motivation and adequate practice of the measures to be adopted by the subject. The educational program targeted at the individual, aiming to change an unhealthy conduct, will be complete failure if they donot consider the different aspects of the subject' life, both socioeconomic and environmental, that influence their behavior and are responsible for diverse health problems[4]. Oral health is linked to happiness and good general health and there is evidence that aesthetically acceptable and functionally adequate dentitions affect self-esteems, confidence and socialization[5].

Materials and methods:

This cross sectional was carried out among 441 OPD patients in Dental Unit Rangpur Medical College from july 2018 to December 2018 to observe their oral hygiene through a pre-tested semistructered questionnaire. Data was checked and edited after collection. Statistical analyses of the results obtained by Statistical Packages for Social Sciences (SPSS-21) software (SPSS Inc, Chicago, IL, USA).

Results were presented in tables and figures. Statiscal terms included in the study were mean standard deviation, frequency and percentage. The relationship between different variables were analyzed using the Pearsons's Chi-square test. Statistical significane was set at $p<0.05$ and confidence interval at 95% level.

Results:

Table-1 showed that age range of the respondents was one to seventy (1-70) years, 42.2% respondents were males and the rest 57.8% were females. Table-2 summarized the oral hygiene related variables of the respondents. Out of all, 98.9% brushed their teeth regularly and 1.1% did not. Among them, 58.5% brushed teeth once 37.2% brushed twice and 3.6% brushed three times and 7% brushed their teeth more then three times in a day. The 24.9% respondents used hard tooth brush, 61.5% soft tooth brush, 12.5% finger, 1.1% wood stick. Off all, 64.4% used tooth paste, 34.5% used powder and 1.1% others as tooth cleaning adjuvant. 75.1% respondents brushed their teeth before meal and 24.9% after meal. Brushing motion of teeth of respondents was 42% side to side movement, 6.8% rolling and 3.2% upper jaw down ward movement. Off all 42% brushed their teeth one minute per stoke, 27.2% two minutes and 30.8% more than two minutes. 73.9% respondents did not floss after meal, 23.6% used tooth pick and 2.5% used dental floss.

Table No-1: Distribution of participants according to their age

		Frequency	Percent
Valid	1-10 years	48	10.9
	11-20 years	71	16.1
	21-30 years	118	26.8
	31-40 years	78	17.7
	41-50 years	81	18.4
	51-60 years	27	6.1
	61-70 years	18	4.1
	Total	441	100.0

Table No-2: Distribution of participants according to their sex/gender

		Frequency	Percent
Valid	Male	186	42.2
	Female	255	57.8
	Total	441	100.0

Table No-3: Distribution of participants according to habit of tooth brushing

		Frequency	Percent
Valid	Yes	436	98.9
	No	5	1.1
	Total	441	100.0

Table No-4: Distribution of participants according to type of tooth brush

		Frequency	Percent
Valid	Hard	110	24.9
	Soft	271	61.5
	Wood-stick	5	1.1
	Finger	55	12.5
	Total	441	100.0

Table No-5: Distribution of participants according to schedule of brushing

		Frequency	Percent
Valid	Before Meal	331	75.1
	After meal	110	24.9
	Total	441	100.0

Table No-6: Distribution of participants according to duration of brushing

		Frequency	Percent
Valid	1 Minute	185	42.0
	2 Minutess	120	27.2
	More than 2 minutes	136	30.8
	Total	441	100.0

Table No-7: Distribution of participants according to technique of brushing

		Frequency	Percent
Valid	Side to side motion	397	90.0
	Upper jaw downward direction	14	3.2
	Rolling movement	30	6.8
	Total	441	100.0

Table No-8: Distribution of participants according to frequency of brushing

		Frequency	Percent
Valid	1 Time daily	258	58.5
	2 Times daily	164	37.2
	3 Times daily	16	3.6
	More than 3 times daily	3	.7
	Total	441	100.0

Table No-9: Distribution of participants according to materials of brushing

		Frequency	Percent
Valid	Paste	271	61.5
	Gel	13	2.9
	Powder	152	34.5
	Others	5	1.1
	Total	441	100.0

Table No-10: Distribution of participants according to flossing after meal

		Frequency	Percent
Valid	No flossing done	326	73.9
	Toothpick	104	23.6
	Dental floss	11	2.5
	Total	441	100.0

Discussion:

The present study showed that age range of the respondents was one to seventy (1-70) years, 42.2% respondents were males and the rest 57.8% were females. Out of all, 98.9% brushed their teeth regularly and 1.1% did not. Among them, 58.5% brushed teeth once 37.2% brushed twice and 3.6% brushed three times and 7% brushed their teeth more then three times in a day. The 24.9% respondents used hard tooth brush, 61.5% soft tooth brush, 12.5% finger, 1.1% wood stick. Off all. 75.1% respondents brushed their teeth before meal and 24.9% after meal. Brushing motion of teeth of respondents was 42% side to side movement, 6.8% rolling and 3.2% upper jaw down ward movement. Off all 42% brushed their teeth one minute per stoke, 27.2% two minutes and 30.8% more than two minutes. 73.9% respondents did not floss after meal, 23.6% used tooth pick and 2.5% used dental floss.

In another study, out of all, 69.2% respondents brushed their teeth regularly and 30.8% did not. Among them, 69.2% brushed teeth once 27.5% brushed twice and 3.3 brushed their teeth more then three times in a day. The 92.5% respondents used tooth brush, 5.8% finger, 1.7% used other device for tooth brushing. Off all, 83.3% used tooth paste, 15.8% used tooth powder and 8% others as tooth cleaning adjuvant[6].

In a study it was observed that approximately 69% subjects brushed their teeth at least twice daily, while 17% reported irregular tooth brushing. Approximately 83% subjects reported using tooth brush and tooth paste to clean their teeth[7].

In another study it was also observed that more than two third (67.9%) of the respondents using tooth brush as tooth cleaning device. Finger was used as tooth cleaning device by 17.8% respondents. Tooth cleaning adjuvants were tooth paste (42.8%) and tooth powder (35.7%). Only 3.6% respondents were found using no adjuvant for their tooth cleaning. Majority of the respondents (67.9%) brushing their teeth only one time and (28.5%) brushed their teeth twice daily[8].

In another study, 29% respondents brushed their teeth only before breakfast and 53% of them clean their teeth before breakfast and after dinner. Brushing motion of teeth of respondents was 42% side to side movement, 6.8% rolling after dinner, i.e, most of their teeth cleaning time were not correct. About , 64% used tooth paste, 22% used tooth powder as tooth cleaning adjuvant[9].

In another study, among the participants 47.5% brush irregularly, 35% brush regularly but 17.5% do not brush for cleaning teeth, 77% brush once a day and 23% brush twice a day. Among them 76% brush in morning before breakfast, 20.5% brush in morning and night before going to bed and about 3.5% brush in morning after breakfast and night before going to bed. Among the participants 40% use brush and paste, 11.5% use brush and tooth powder, 5% use finger coal dust, 10.5% use finger and tooth powder, 15% use miswake alone, 18% use miswake and tooth powder[10].

Conclusion:

The present study reveal that knowledge of risk factors for oral disease is important in oral health campaigns that aim to promote healthy habits. Institute Based Dental Health Education Program may be one of the most important applicable ways to enhance the success of better oral health for our respondents.

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DCIMCJ

Review Article

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Changing Epidemiology of Extended-Spectrum β-Lactamases: Emergence of E. coli O25b -ST131 Clone.

Begum N[1], Afroz S[2]

Abstract:

Since 2000, CTX-M enzymes (especially CTX-M-15) producing E. coli have emerged worldwide as important causes of community-acquired urinary tract infections and bloodstream infections. Studies suggest that the sudden worldwide increase of CTX-M-15 producing E. coli is mostly due to a single clone named ST131 and that foreign travel to high-risk areas, such as the Indian subcontinent, potentially plays an important role in the spread of this clone across different continents. The intercontinental dissemination of this clone has contributed immensely to rising prevalence of antimicrobial resistance among E. coli. There is a serious need to monitor the spread of this multidrug resistant clone throughout the world. If this emerging public health threat is ignored, it is possible that the medical community may be forced in the near future to use carbapenems as the first choice for the empirical treatment of serious infections associated with urinary tract infections originating in the community.

Key words: ESBLs, CTX-M-15, E. coli, ST131 clone.

Introduction:

β-lactam antibiotics are currently the major antimicrobials utilized worldwide for the treatment of serious infections. However, increasing use of β-lactam antibiotics has led to the emergence of extended-spectrum β-lactamases (ESBLs) producing strains with increased morbidity, mortality and healthcare-associated costs[1]. Of particular concern is the increasing emergence of ESBLs producing E coli. The E. coli ST131 clone is strongly associated with ESBLs, predominantly the CTX-M-15 type[2,3]. In addition, E. coli ST131 clone occurred in both inpatients and outpatients globally, which represents its widespread dissemination. So, today, E. coli ST131 is a pathogen of significant clinical concern.[4,5] Given the ability to withstand antimicrobial treatment, possession of high numbers of virulence factors and widespread dissemination, the E. coli ST131 clone posed a significant threat to human health. This review will present an overview on changing epidemiology of ESBLs and provide an update on the emergence of E. coli 5T131 clone.

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

2. Dr. Samira Afroz, Assistant Professor, Department of Microbiology, Ad-din Women's Medical College, Dhaka.

. **Correspondence**: Dr. Nurjahan Begum
E-mail: nurjahan.begum.akhi@gmail.com

Extended Spectrum β-lactamases (ESBLs):

ESBLs are a group of enzymes which belongs to Ambler molecular class A and D that correspond group 2be and 2de of Bush's functional classification, respectively[6,7] and they confer resistance to the oxyimino-cephalosporins (i.e. cefotaxime, ceftazidime, ceftriaxone, cefuroxime, and cefepime) and monobactams (i.e. aztreonam), but do not affect cephamycins (i.e. cefoxitin and cefotetan) or carbapenems (imipenem, meropenem, doripenem, and ertapenem). These enzymes are inhibited by the so-called 'classical' β-lactamase inhibitors such as clavulanic acid, sulbactam, and tazobactam[8].

With the exception of OXA-type enzymes, which are class D enzymes, the ESBLs are of molecular class A can be divided into three groups: TEM, SHV, and CTX-M types. Most are located on plasmids which allow for efficient and rapid dissemination. This is a major concern as most plasmids also confer resistance to other classes of drugs including aminoglycosides, fluoroquinolones, and trimethoprim

- sulfamethoxazole allowing organisms to present a multidrug resistant phenotype (MDR-defined as concomitant resistance to ≥3 different antimicrobial classes). In the 1990s, TEM and SHV type ESBLs were the most predominant. However, since 2000, CTX-M enzymes have emerged worldwide and are now the most predominant type of ESBLs found in not only the nosocomial setting but in the community setting as well[9,10].

CTX-M β-Lactamases:

CTX-M β-lactamases (which stands for 'active on CefoTaXime, first isolated in Munich') were first reported from Japan in 1986[9]. However, since 2000, E. coli producing CTX-M β-lactamases have emerged worldwide as an important cause of community-onset urinary tract infections (UTIs) and this has been called 'the CTX-M pandemic[10]. This phenomenon accelerated rapidly, and today these enzymes are the most common type of ESBL found in most areas of the world[11]. Presently, CTX-M β-lactamases include more than 80 different enzymes that are clustered into five groups based on their amino acid sequence: CTX-M-1, CTX-M-2, CTX-M-8, CTX-M-9 and CTX-M-25[9]. Members of these clusters exhibit >94% amino acid identity within each group and ≤90% amino acid identity between the different groups. Risk factors for acquiring community-onset infections due to CTX-M producing E. coli include repeated UTIs, underlying renal pathology, previous antibiotics (including cephalosporins and fluoroquinolones), previous hospitalization, nursing home residents, co-morbid conditions (especially diabetes mellitus and underlying liver pathology) and international travel[12].

CTX-M-15 producing E. coli:

Currently, the most widely distributed CTX-M enzyme on a worldwide basis is CTX-M-15, which was first detected in 2001 in E. coli isolate in a hospital in New Delhi, India[13]. CTX-M-15 belongs to the CTX-M-1 cluster and is derived from CTX-M-3 by one amino acid substitution at position 240 (Asp→Gly); however, the flanking sequences of the β-lactamases can be very different.

This substitution confers an increased catalytic activity against ceftazidime, and bacteria producing these enzymes often test resistant to this agent[14]. The $bla_{\text{CTX-M-15}}$ gene is frequently associated with incompatibility group FII plasmids which could play a key role in promoting their rapid and global spread[15]. They are a paradigm of narrow host-range plasmids characterized by a low-copy number in the bacteria. They are mainly found in Enterobacteriaceae and have recently been termed as "epidemic resistance plasmids" due to their propensity to acquire resistance genes and transfer among bacteria[16].

The CTX-M-15 β-lactamase has often been associated with co-production of other β-lactamases such as TEM-1 and OXA-1 as well as the aminoglycoside-modifying enzyme aac (6′)-Ib-cr[17]. Aac (6′)-Ib-cr is a variant of aac (6′)-Ib (a common aminoglycoside acetyl transferase), that has the additional ability to acetylate fluoroquinolones with an unprotected amino nitrogen on the piperazine ring, including norfloxacin and ciprofloxacin but not levofloxacin[18]. Multidrug resistant CTX-M-15-producing E. coli are emerging worldwide, especially since 2003, as an important pathogen causing community-onset and hospital-acquired infections[12] and has been reported in all continents (Europe, Asia, North and South America, Africa, Oceania and Antarctica)[19-27]. Reports from India indicate that E. coli producing *bla*CTX-M-15 is very common in the community as well as hospital settings[28]. It is therefore possible that India represents a significant reservoir and source of E. coli producing CTX-M-15 β-lactamases. CTX-M-15 β-lactamases have also been reported from community and hospital isolates in Bangladesh[29].

Emergence of E. coli ST131 clone:

E. coli ST131 clone has been identified using multilocus sequencing typing among CTX-M-15 producing E. coli isolated during 2000 to 2006 from several countries, including Spain, France, Canada, Portugal, Switzerland, Lebanon, India, Kuwait, and Korea. Serogroup O25 is associated with this clone.

Clone ST131 belongs to the highly virulent phylogenetic group B2 and harbors multidrug-resistant IncFII (incompatibility group FII) plasmids[15,30]. These initial studies showed that clone ST131 had emerged independently in different parts of the world, spanning three continents at the same time, suggesting that the emergence of clone ST131 could be due to either the ingestion of contaminated food/water sources or importation into various countries via returning travelers or both[31]. This clone is associated with numerous community and hospital acquired infections particularly UTIs[32]. The prevalence of ST131 isolates varies from region to region and host population, ranging from 12.5-40%[33,34]. The intercontinental dissemination of this sequence type has contributed immensely to the worldwide emergence of fluoroquinolone-resistant and CTX-M-15 producing E. coli[31,34]. Recent surveillance studies have shown that its overall prevalence ranges from 12.5% to 30% of all E. coli clinical isolates, from 70% to 80% of fluoroquinolone-resistant isolates, and from 50% to 60% of extended spectrum β-lactamase producing isolates[35].Woodford *et al* determined the complete sequences of three plasmids that encode CTX-M ESBLs within three different lineages of clone ST131 and showed that IncFII plasmids harbouring *bla*CTX-M-15, *bla*OXA-1, *bla*TEM-1, tetA, aac(6′)-Ib-cr and aac(3)-II have played a crucial role in the rapid global spread of CTX-M-15 β-lactamases in E. coli[36]. It has been shown that E. coli O25b-B2-ST131 clone exhibits a high virulence score compared to other lineage[37]. Several studies have investigated the presence of different virulence factors (VFs) in clone ST131, and the following VFs have been shown to be specific to clone ST131: uropathogenic-specific protein (usp); outer membrane protein (ompT); secreted autotransporter toxin (sat); aerobactin receptor (iutA); and pathogenicity island marker (malX)[30,38]. A Canadian study demonstrated that travel to the Indian subcontinent (i.e. India and Pakistan), Africa and the Middle East was associated with a high risk of UTI (including urosepsis) with an ESBL-producing E. coli in returning travelers[39].

A follow-up study showed that this high risk of infection was mostly due to the acquisition of clone ST131 producing *bla*CTX-M-15[40]. The high prevalence of the CTXM-15 producing E. coli O25b-ST131 clone has also been reported in Bangladesh (71%)[29].

Molecular epidemiological studies suggested that the sudden worldwide increase of E. coli producing *bla*CTX-M-15 is due to the following mechanisms: the spread of an epidemic clone (such as ST131) with selective advantages (such as multiple antibiotic resistance and enhanced virulence factors) between different hospitals, long-term care facilities and the community; foreign travel to high-risk areas such as Indian subcontinent; and the acquisition of IncFII plasmids harbouring *bla*CTX-M-15[31].

Multilocus sequence typing (MLST) is the most reliable method for identification of clone ST131. This technique is the most suitable typing method for comparing data generated independently from different laboratories and is therefore ideal for tracking antimicrobial-resistant bacteria on a worldwide basis[41]. Unfortunately, MLST is expensive, time consuming and is not really suitable to track resistant clones in a rapid real-time fashion. Methods for rapid and easy identification of clone ST131 have recently been published and include repetitive-element polymerase chain reaction (rep-PCR) typing schemes[42], PCR for the pabB allele[43], PCR for ST131-associated single nucleotide polymorphisms in mdh and gyrB combined with the O25b rfb allele[44]and a triplex PCR that targeted the operon afa FM955459 and part of the CTX-M-15 gene[45].

Conclusion:

These studies suggest that the sudden worldwide increase of CTX-M-15-producing E. coli is due, at least in part, to clone ST131 and that foreign travel to high-risk areas such as the Indian subcontinent potentially play an important role in its spread across different continents.

Emergence of the ST131 clone posed a significant threat to human health because of its combination of successful spread, capability to withstand the effect of various antimicrobial agents, and possession of high numbers of virulence factors. There is a serious need to monitor the spread of this multidrug resistant clone throughout the world and there are methods available for rapid and easy identification of clone ST131. If this emerging public health threat is ignored, it is possible that the medical community may be forced to use the carbapenems as the first choice for empirical treatment of serious infections associated with UTIs originating from the community.

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DCIMCJ

Case Report

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A Case Report on Radiotherapy Induced Hypothyroidism

Ali M[1], Gani MO[2], Mukta M[3], Akib A[4], Aumi MR[5]

Abstract:

The thyroid gland is among the organs at the greatest risk of cancer from ionizing radiation. Epidemiological evidence from survivors of radiation therapy, atomic bombing, and the Chernobyl reactor accident, clearly shows that radiation exposure can cause thyroid cancer and benign thyroid nodules1. Radiation exposure also may induce hypothyroidism but these effects are less well-documented. Here we present a case report on thyroid dysfunction in a gentleman, produced years after local radiation therapy targeted to malignant tissue contiguous to thyroid gland. The objective of this clinical case report is to highlight the possibility of thyroid disorder on the background of radiotherapy so that we don't miss the diagnosis.

Keywords: Primary Hypothyroidism, Radiotherapy, Adrenal insufficiency, Transient pituitary insufficiency, Cortisol, SCC.

Introduction:

Hypothyroidism is defined as a state of thyroid hormone deficiency and primary hypothyroidism is diagnosed by blood levels of thyroid-stimulating hormone (TSH) elevated above the upper limit of the reference value; 4 mU/L is the most frequently applied threshold. Moderately-elevated TSH levels (not higher than 10 mU/L) usually do not cause clinical symptoms of hypothyroidism, since under those conditions, the thyroid mostly can maintain lower limit of normal blood levels of the thyroid hormones thyroxine (T4) and tri-iodothyronine (T3). This compensated state, therefore, is a biochemical diagnosis only and is called "subclinical" or "occult" hypothyroidism. However, according to a meta-analysis of data from more than 55,000 adults, undiagnosed, untreated subclinical hypothyroidism is associated with an increased risk of coronary heart disease and related mortality, especially in elderly patients[1]. At higher TSH levels, and with T4 and T3 levels below reference ranges, clinical symptoms of "clinical" or "overt" hypothyroidism will develop, e.g., weight gain, cold intolerance, obstipation, edema, dry skin, bradycardia, and fatigue[2]. Hypothyroidism commonly presents with generalized weakness. This clinical finding in a patient with history suggestive of causative factor for hypothyroidism should be evaluated by prompt thyroid testing. Treatment with thyroid replacement remains an effective solution with an excellent prognosis.

1. Dr. Mohammad Ali, Associate Professor and Head, Department of Medicine, Dhaka Central International Medical College.
2. Dr. M. Osman Gani, Associate Professor, Department of Medicine, Dhaka Central International Medical College.
3. Dr. Meherunnesa Mukta, Assistant Professor, Department of Medicine, Dhaka Central International Medical College.
4. Dr. Abdullah Akib, Registrar, Department of Medicine, Dhaka Central International Medical College.
5. Dr. Meherul Rizwan Aumi, Intern Doctor, Department of Medicine, Dhaka Central International Medical College.

Correspondence: Dr. Mohammad Ali
E-mail: drmali79@yahoo.com

Case report:

A 63 years old gentleman accompanied with his wife, presented with progressive generalized weakness for few weeks and anorexia and nausea for the same duration. He had no history of weight loss and vomiting during this period. Patient has developed deafness for the last 15 days without history of earache or ear discharge. He was constipated for 3 days. His bladder habit was normal. He was normotensive and non-diabetic.

He was diagnosed as a case of moderately differentiated squamous cell carcinoma of hard palate in June 2017. He was treated with 4 cycles of chemotherapy with Cisplatin & Paclitaxel and local radiotherapy with Co60 from August to December in 2017 and he was reasonably alright until January 2019. After this time, carcinoma recurred with histological evidence and chemotherapy repeated with Cisplatin & Paclitaxel on 16.03. 2020 and completed his last cycle on 04.08.2020.

He underwent "Wide excision" operation for his Carcinoma of Hard palate on 20.11.20 and his post-operative period was uneventful. He is a smoker for 20 years and took 8 pack per year.

On examination, he was mildly anemic, BP was 120/70 mm of Hg and pulse was 122 beats/min. There was no significant findings in systemic examination. Investigation of the patient on 14th February 2021 revealed, Hb% 13.4 g/dl, ESR 13 mm in 1st hour, total count WBC was 12500, Platelet count was 1,90,000 and CRP was 9.0 mg/L. S. Electrolytes revealed, Na+ 122 mmol/L, K+ 3.9 mmol/L, Cl- 97 mmol/L and TCO2 22 mmol/L. Urine RE was normal. Pure Tone Audiometry (PTA) test revealed severe to profound mixed type of hearing loss of right ear and moderate to severe mixed type of hearing loss of left ear. His S. TSH level was 40.3 µIU/L which was significantly high [Reference value: 0.47 –5.01 µIU/L]. On 17th February at night, his blood pressure dropped to 70/30 mm of Hg and immediately and successfully treated with Inj. Hydrocortisone 100 mg, 2 amp, IV stat. Then his morning Cortisol was done & revealed 1.30 µg/dl [Reference value: 4.458 – 22.689 µg/dl]. His Inorganic PO4 (3.3 mg/dl), S. Calcium (9.3 mg/dl), S. Magnesium (1.2 mg/dl) and S. Uric acid (3.2 mg/dl), Anti TG Ab was 6.42 IU/ml [Reference value: <4.11] and Anti TPO Ab was <1.00 IU/mL [Reference value: <5.61]. His Electrolyte imbalance was corrected with Infusion Normal Saline (1L) & Tab. Sodium Chloride. He was treated with Tab. Hydrocortisone 20 mg in divided dose as a replacement therapy, Tab. Levothyroxine 50 µgm, Tab. Domperidone 10 mg, Cap. Esomeprazole 20 mg, Tab. Multivitamins, Inj. Cholecalciferol 200000IU, Tab. Paracetamol 665 mg, Syp. Fluconazole, Tab. Prucalopride & Tab. Silodosin 4 mg.

Later, during follow-up visit after three weeks, short synacthen test revealed Cortisol at 0 hour = 10.70 µg/dl, after ½ hour = 18.70 µg/dl and after 1 hour = 21.90 µg/dl which was normal. Finally, he was diagnosed as a case of Radiotherapy induced Hypothyroidism with H/O Carcinoma of Hard palate with completed cycle of chemotherapy (6 cycles) and radiotherapy with presbycusis.

Discussion:

Oral and oropharyngeal cancer is the sixth most common cancer in the world[3]. At least 50% of all hard palate cancers seems to be squamous cell carcinomas (SCC), while in the soft palate the incidence of this tumor is around 70%[4]. Oral & oropharyngeal cancer is predominantly a loco-regional disease[5], and radiotherapy (RT) and surgery are major treatment options. Approximately 70% of patients receive definitive RT, and the rest are treated with surgery with or without post-operative RT[6]. Radiation to the normal tissues is inevitable during RT. The current advanced treatment modalities allow precise calculation of radiation doses to normal tissues and there is a potential to distribute the dose to reduce radiation hazard to the surrounding tissues. However, this requires knowledge about the radiation tolerance levels of individual organs. Radiation- induced hypothyroidism (RIHT) is a well-known late effect of radiation to the thyroid gland, which can develop months to years after RT[1, 6].

According to American Head & Neck society (AHNS) Up to 50% of patients treated for head and neck cancer with radiation therapy develop hypothyroidism. This can occur years after completion of therapy[7].

Here we presented a case with hypothyroidism developed 4 years after completion of radiotherapy for CA Hard palate.

Initially our patient presented with generalized weakness. During investigation, we found S. TSH level 40.3 µIU/L, which was significantly high and indicative of primary hypothyroidism. Our patient did not have any thyromegaly and subsequent thyroid auto antibody test for anti TPO was normal (<1.00 IU/mL [Reference value: <5.61]) and anti TG was 6.42 IU/ml [Reference value: <4.11]). Though anti TG antibody was minimally raised it was non-significant to reach a diagnosis of autoimmune hypothyroidism in this clinical picture. Spontaneous atrophy of thyroid glands and Radiotherapy was considered in our clinical scenario. As the patient had the history of radiotherapy 4 years back, so this subsequent development of hypothyroidism is most likely due to previous radiotherapy.

Our patient had progressive deafness for which we did PTA that revealed severe to profound mixed type of hearing loss of right ear and moderate to severe mixed type of hearing loss of left ear. Presbycusis was thought to be the likely diagnosis complicated by hypothyroidism giving rise to this mixed type of hearing loss.

As the patient had dyselectrolytemia, extreme weakness, and shock and recovered after steroid therapy; adrenal insufficiency was also a suspected additional morbidity. Morning cortisol was done on 21st February and it was 1.30µg/dl. Afterwards, he was given a treatment of Tab. Hydrocortisone 20 mg in divided dose as we thought of thyroid & adrenal disorder. After 3 weeks during follow-up, a short synacthen test was and the result was normal. So the diagnosis of adrenal insufficiency and transient pituitary insufficiency was ruled out. He was treated with Tab. Levothyroxine 75 µgm, once daily and advised for follow up visit after 6 weeks.

Conclusion:

Hypothyroidism is a frequent late effect after definitive radiotherapy. As the condition has been linked to increased risk of cardiac morbidity and mortality, and decreased quality of life, it is important to consider the risk of RIHT when planning radiation treatment. Furthermore, routine assessment of thyroid gland function should be offered after radiotherapy in the neck area.

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Medical Quiz: Images

Mamun KAA[1]

A 35-year-old female who had undergone gastrectomy for Carcinoma Stomach presented with sudden onset of severe headache with vomiting 3 days after surgery. Gradually she became comatose. She had bilateral papilloedema. There was no focal weakness. At 3 weeks she developed left homonymous haemianopia.

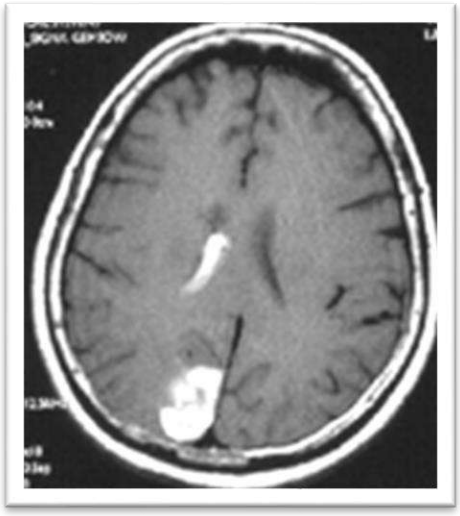

Figure 1: MRI brain

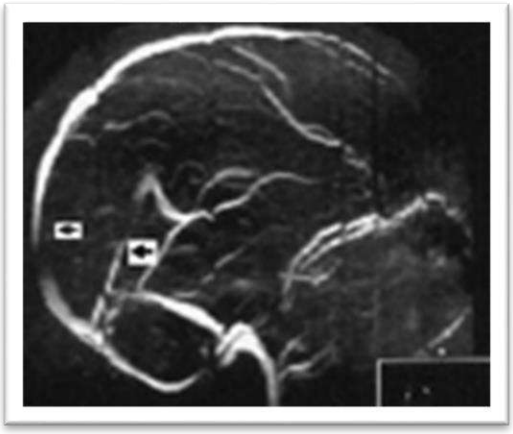

Figure 2: MRV of brain

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

- **Q1**. Mention abnormal findings in MRI brain.
- **Q2**. Mention abnormal findings in MR Venography
- **Q3**. What other investigations should be done?
- **Q4.** What is the diagnosis?
- **Q5**. What is the most important treatment option?

Answer to Medical Quiz: Images

- ✓ MRI brain axial section T1 sequence shows hyperintense lesion in right occipital area and ventricle suggestive of haemorrhage.
- ✓ MR venography shows partial thrombosis of superior sagittal and straight sinuses.
- ✓ Complete blood count, prothrombin time, activated partial thromboplastin time, D-dimer
- ✓ Cerebral venous sinus thrombosis involving superior sagittal and straight sinuses with venous haemorrhage.
- ✓ Subcutaneous low molecular weight heparin (LMWH)

Discussion:

Cerebral venous sinus thrombosis (CVST) is an uncommon condition affecting 3-4 cases/million/year with a mean age of 37 to 38, though any age may be affected[1]. Women tend to be at an increased risk particularly between the ages of 20 - 35, mainly due to the use of the oral contraceptive pill and pregna ncy[2]. Predisposing risk factors can be identified in up to 80% of patients[3,4] ·. Predisposing factors include dehydration, pregnancy, thrombophilia, hypotension, oral contraceptive pill, paranasal sinusitis, meningitis, connective tissue diseases, malignancies, skull fracture, otitis media and facial skin infection are common[4]. The clinical presentation of CVST can include headache, vomiting, papilloedema to focal deficit, seizures and coma[6].

MRI brain combined with MRV is the choice of investigation[7]. It can also show the consequences of thrombosis such as cerebral oedema, infarction and haemorrhage.

Complete blood count should be done to rule out thrombophilia. Suspicion of malignancies or connective tissue diseases should be confirmed with appropriate tests such as chest X-ray or other imaging, inflammatory markers, autoantibodies or tissue biopsies.

Coagulation studies are important particularly in patients with a family or past medical history of thrombotic episodes. The investigations should include protein C and S, antithrombin III, fibrinogen and anticardiolipin antibodies[8]. CVST can be treated with subcutaneous low molecular weight heparin (LMWH) followed by oral anticoagulants[9].

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