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From the Desk of Editor-in-Chief

We are delighted to inform that the 7th issue of the Dhaka Central International Medical College Journal (DCIMCJ) is going to be published very soon. 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. Md Azizul Islam.
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).

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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.

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Review process: All manuscripts are initially screened by editor and sent to selective reviewer. Decisions will be made as rapidly as possible, and the journal strives to return reviewers comments to authors within 3 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:

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- Manuscripts are received with the explicit understanding that they are not under simultaneous consideration that are not under simultaneous by any other publication.
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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
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    - References
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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.
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- Electronic formats have created opportunities for adding details or whole sections, layering information, cross linking of extracting portions of the articles.
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- Double-spacing all portions of the manuscript- including the title page, abstract, text, acknowledgments, references, individual tables, and legends- and generous margins make it possible for editors and reviewers to edit the text line by line and add coments and queries directly on the paper copy.
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- 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.

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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).

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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.

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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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8. A short running head or foot line, of no more than 40 characters (including litters and spaces). Running heads are published and also used within the editorial office for filing and locating manuscript.

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- Structured abstracts are essential for original research and systematic reviews. Structured abstract means introduction, methods, results and conclusion in abstract

- Should be limited to 250 words

- The abstract should provide the introduction of the study and blinded state and should state the study's purpose, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), 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).

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- 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.

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- Authors submitting review article should include a section describing the methods used forlocatin, selection, extracting, and synthesizing data. These methods should also be summarized in the abstract.

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

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- 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:

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- On the other hand, extensive lists of references to original work of a topic can use excessive space

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I. A. 10. Tables:

- Tables capture information concisely and display it efficiently.

- Use tables/figures that are relevant to study

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- 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.

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

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2. Authorship and conflicts of interest form
3. Manuscript

- Sample of the above document is available in the following links: http://www.dcimc.com

- If you have submitted mentioned document (1, 2, 3) above, when you first submitted your article then you don't need to re-submit but if there is change in the authorship or related then you have to re-submit it.

General outline for article presentation and format:

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

Language and grammar:

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- Mention conflict or interest if any

- **Abstract**
  - Do not use subheadings in the abstract
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- **Introduction:**
  - Word limit 150-200 words
  - Pertinent information only

- **Material and Methods**
  - Study Design
  - Duration and place of study
  - Ethical consent
  - Patient consent
  - Statistical analysis and software used.

- **Result**
  - Clearly present the data
  - Avoid data redundancy
  - Use table information at the end of the sentence before full stop between the small bracket
- **Discussion**
  - Avoid unnecessary explanation of someone else work unless it is very relevant to the study
  - Provide and discuss with literatures to support the study
  - Mention about limitation of your study

- **Conclusion**
  - Give your conclusion
  - Any recommendation

- **Acknowledgement**
  - Acknowledge any person or institute who have helped for the study

- **Reference**
  - Abide by the Vancouver style
  - Use reference at the end of the sentence after the full stop with superscript

- **Legends**
  - Table
  - Figures

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

DCIMC

Editorial

New Treatment Targets in Ankylosing Spondylitis

Alam KM[1], Nomany BMS[2]

Introduction:

Ankylosing spondylitis (AS) is a chronic inflammatory disease of the axial skeleton manifested by back pain and progressive stiffness of the spine. Characteristically it affects young adults with a peak age of onset between 3rd to 4th decades of life. There may be involvement of peripheral joints and extra-articular tissues also.

Workup for ankylosing spondylitis includes confirmation of the diagnosis, as well as assessing the disease activity. In addition to ESR and CRP, MRI of sacroiliac joints with short tau inversion recovery (STIR) sequences is used to detect presence of inflammation. Several other tools have been developed to assess AS disease activity. The Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) questionnaire assesses fatigue, pain in the neck, back, and hip, peripheral joint pain and swelling, discomfort, and severity and duration of morning stiffness. Bath Ankylosing Spondylitis Functional Index (BASFI) questionnaire is used to assess physical function, while Bath Ankylosing Spondylitis Metrology Index (BASMI) evaluates range of motion of the cervical and lumbar spine. Another tool, Assessment in Ankylosing Spondylitis (ASAS) core set of domains measures disease activity and includes patient global assessment of disease activity, patient assessment of back pain, BASFI, morning stiffness, synovitis and enthesitis score, ESR, CRP level, and fatigue.

Physical therapy and exercise including swimming, postural training, spinal extension and deep beathing exercise are important components of treatment. Maintaining an erect posture during daily activities and sleeping on a firm mattress with a thin pillow also tend to reduce the tendency toward thoracic kyphosis.

1. Khondoker Mahfuzul Alam
Registar, Department of Medicine
DhakaCentral International Medical College Hospital.

2. Bakhtiare Mohammad Shoeb Nomany
Associate Professor, Department of Medicine,
Dhaka Central International Medical College Hospital.

NSAIDs form the first line of pharmacologic therapy for AS. DMARDs including Sulfasalazine and Methotrexate can be used when indicated. Corticosteroids are needed in most cases. Intra-articular route is preferable, as systemic corticosteroids may cause numerous adverse effects, and also does not alter the outcome of the disease. Biologic agents like Etanercept, Infliximab, Adalimumab, Golimumab, and Certolizumabpegol are becoming increasingly available, but the high costs limit their use. Surgery is also an option in selected cases, with vertebral osteotomy, fracture stabilization and joint replacement being the options.

Despite overall good efficacy of currently available treatment for AS and other spondyloarthritides, up to 40% of the treated patients do not achieve an acceptable clinical improvement during the therapy. Therefore, there is a continuous search for novel treatment targets. Blockade of the naturally occurring cytokine IL-17A seems to be a promising choice. IL-17A is involved in normal inflammatory and immune responses. The interaction of IL-17A with its receptor can be blocked by the novel human IgG1 monoclonal antibody Secukinumab.

Secukinumab has been approved in January 2016 for adults with active ankylosing spondylitis, moderate-to-severe plaque psoriasis in patients who are candidates for systemic therapy or phototherapy and for psoriatic arthritis patients. Its half-life is 22-31 days, with slow systemic clearance (0.14-0.22 L/day). It is available as 150 mg injection for subcutaneous administration. For ankylosing spondylitis, and psoriatic arthritis patients with coexistent moderate-to-severe plaque psoriasis the dosage schedule is 150 mg SC at weeks 0, 1, 2, 3, and 4 (loading dose) and 150 mg monthly thereafter. Patients with plaque psoriasis can follow the same schedule, with the dose being 300 mg instead of 150 mg. It can be administered with or without methotrexate.

Approval of secukinumab for AS was based on 2 phase 3 trials (MEASURE 1 and 2). In MEASURE 1 (N=371), the Assessment of Ankylosing spondylitis

20(ASAS20) response rates at week 16 were 61%, 60%, and 29% for SC secukinumab doses of 150 mg and 75 mg and for placebo, respectively (P<0.001 for both comparisons with placebo). In MEASURE 2 (n=219), the rateswere61%, 41%, and 28% for SC secukinumab doses of 150 mg and 75 mg and for placebo, respectively (P<0.001 for the 150-mg dose and P=0.10 for the 75-mg dose)1. The significant improvements were sustained through 52 weeks.

For psoriasis, 2 phase-3 trials were done. ERASURE and FIXTURE studies compared the efficacy of secukinumab with etanercept and placebo in patients with moderate-to-severe plaque psoriasis for 52 weeks. The proportion of patients with a response of 0 or 1 on the modified investigator's global assessment at week 12 was higher with each secukinumab dose than with placebo or etanercept: in the ERASURE study, the rates were 65.3% with 300 mg of secukinumab, 51.2% with 150 mg of secukinumab, and 2.4% with placebo; in the FIXTURE study, the rates were 62.5% with 300 mg of secukinumab, 51.1% with 150 mg of secukinumab, 27.2% with etanercept, and 2.8% with placebo (P<0.001 for each secukinumab dose vs. comparators)[2].

Whether Secukinumab is going to open a new horizon in the treatment of spondyloarthropathies is a NSAIDs form the first line of pharmacologic therapy for AS. DMARDs including Sulfasalazine andmatter of debate and only time can answer this. However, it is encouraging that new molecules are in the pipeline, and hopefully in the near future we will have more options in our repertoire of medications to choose from.

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Original Article

DCIMCJ 2017 January; 4(1): 14-18

Estimation of Stature from Upper Arm Length in Christian Adult Garo Tribal Bangladeshi Females- An Anthropometric Study

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Abstract:

Stature or standing height is defined as distance between head vertex and standing surface. Reconstruction of the stature is one of the important aspects of various parameters of identification for establishing the individuality of a person. The present study was done to estimate the stature from upper arm length of individuals having age group of 25-45in Garo adult females of Bangladesh. This study was carried out on 100 Garo female at different locations of Dhaka city and Mymensingh district. All individuals were measured for height and upper arm length. The data thus obtained has been subjected to statistical computation for deriving the regression equations. The results obtained concluded that upper arm length in Garofemale exhibit highly significant correlation. This conclusion will be of utmost importance to anthropologist and forensic experts in estimation of stature where mutilated, decomposed or fragmentary skeletal remains are recovered.

Keywords: Anthropology, Correlation, Multiplication factor, Stature

Introduction:

The presence of multiple isolated commingled fleshed limbs or limb parts generates a significant challenge for forensic investigators in wars, mass disasters, and criminal assaults in the process of identification[1]. The relationships among different body measurements have made researchers look for ways to estimate one measurement from another. However, it has been noted that relative proportions of different body parts may not be seen in all populations. Although upper limb measurements have been used to establish individual identity in terms of sex and stature with high success, there is a scarcity of data concerning the correlations within upper limb parts.[1] Hence, this study was planned to assess the relationships within upper limb parts such as upper arm length and develop regression formulae to reconstruct the stature from upper arm length.

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Methods:

The study was basically observational, cross-sectional and descriptive in nature. The study was carried out on 100 Christian Garo adult females at different locations of Dhaka city and Mymensingh district. To measure the stature the subject was said to stand with her heel together and her back as straight as possible so that her heels, buttocks, shoulders and the head touched the wall. The arms were hung freely by the sides with the palm facing the thighs. After asking the subject to take a deep breath and holding it, a measuring scale (steel plate) was placed against the head and wall to determine maximum height on the wall, and this was marked.The subject was then told to breathe and to step away from the wall. The height was then measured from the floor to the mark on the wall with steel tape which represents the stature in centimeters to the nearest 0.1 centimetres[2].

Procedure for measuring the lengths of the upper arm:

This was best done by holding the forearm at right angles to the upper arm, when the capitulum of the humerus could be palpated very easily[3]. The length of the upper arm was measured, using a spreading caliper from the most lateral point on the end of the

acromial process of shoulder blade to the most distal point on the capitulum humeri.[3]

Calculations of multiplication factor:

Each multiplication factor is the ratio of the stature to the respective physical measurements of upper arm length. A mean multiplication factor was then calculated for each measurement. These mean multiplication factor were used for estimating the stature from those variables.

According to Lal and Lala[4] multiplication factor is

$$M F = \frac{\text{Stature}}{\text{Upper limb variables (upper arm length)}}$$

Statistical analyses of data:

Results were prepared on the basis of collected data and their distributions, central tendencies and standard deviations (SD) were calculated using a computer based programme (SPSS version-11.5 & MS Excel). Regression analysis were done. Mathematical relationships between sets of two measurements were calculated as multiplication factors (i.e., ratios between the two).Using the paired t test, the measured values were compared with the corresponding values estimated (using the corresponding multiplication factors) from other relevant measurements.

Results:

By physical procedure stature and different upper limb variables of 100 Christian Garo females were obtained. Significance of correlation of upper limb variables was seen. Individual multiplication factor (M.F) was determined and mean multiplication factor then obtained. This is shown In Table 1.

The stature of the 100 Christian Garo adult females' ranged from 137.00 to 168.50 centimeters, as shown in Table 1. The table also reveals that the stature showed significant positive correlation with all the upper limb dimensions except the hand breadth in which the correlation did not reach the statistically significant level.

The length of the right upper arm of Christian Garo adult females subjects varied from 25.00 to 37.00 centimeters, as shown in Table 1. In more than 70% of the subjects, the right upper arm length was between 28.00 and 33.99 centimetres (Figure 1). The right upper arm length also showed significant positive correlation (r=0.63, p=0.000) with the stature (Figure. 2).The multiplication factor (M.F.)

regarding the right upper arm length for estimating stature is mentioned in Table 1.

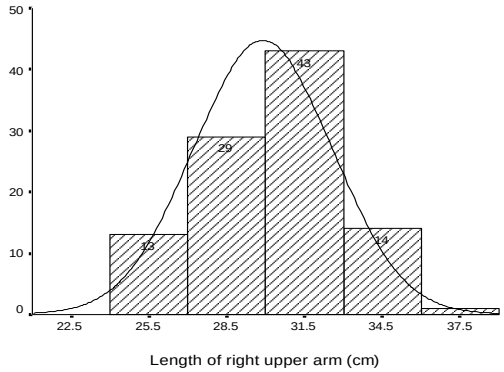


Fig. 1 Frequency curve showing the frequency distribution of the length of the right upper arm of the Christian Garo adult females (N=100).

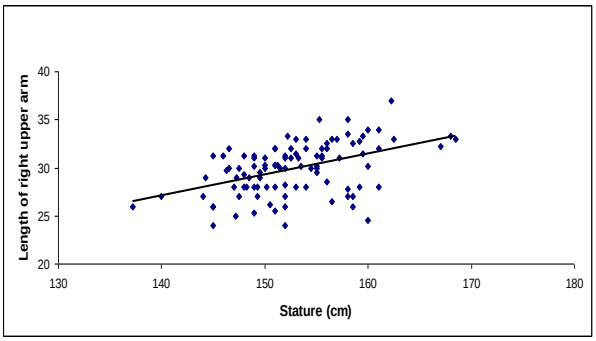


Fig. 2 Scatter diagram with regression analysis showing significant (p< 0.001) positive correlation (r = 0.63) between the stature and the length of right upper arm of the Christian Garo adult females (N=100).

The length of the left upper arm of these subjects varied from 25.20 to 36.75 centimeters, as shown in Table 1. In more than 70% of the subjects, the left upper arm length was between 28.00 and 33.99 centimetres (Figure 3). The left upper arm length also showed significant positive correlation (r=0.64, p=0.000) with the stature (Figure 4). The multiplication factor (M.F.) regarding the left upper arm length for estimating stature is mentioned in Table 1.

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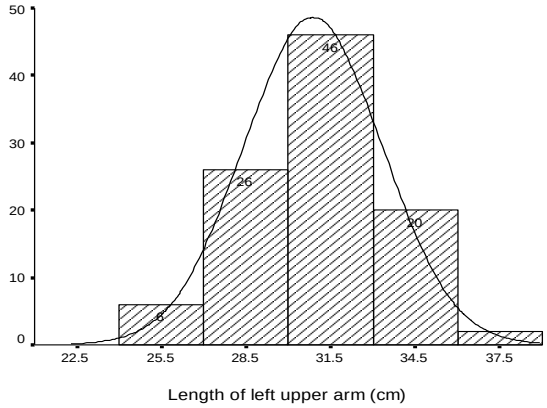


Fig.3 Frequency curve showing the frequency distribution of the length of the left upper arm of the Christian Garo adult females (N=100).

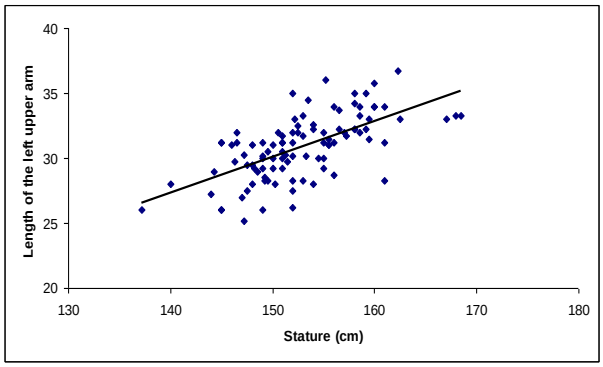


Fig. 4: Scatter diagram with regression analysis showing significant (p<0.001) positive correlation (r = 0.64) between the stature and length of the left upper arm of the Christian Garo adult females (N=100)

Table 1. Stature and upper arm length, their descriptive statistics, multiplication factors and correlation with stature (N= 100)

Variable	Range (cm)	Mean (cm) ± SD	Mean multiplication factor*	Significance of correlation (p value)
Stature	137.00-168.50	152.79 ±5.62	_	0.00(S)
Length of upper arm				
Right	24.00-37.00	29.89 ± 2.67	4.98	0.00(S)
Left	23.50-36.75	30.04 ± 2.61	4.97	0.00(S)

n :100 for each variable

S: significant at 5% level in regression analysis

Table 2. Comparison between the 'measured' stature and the stature 'estimated' fromlength of upper arm (N=100)

Measurement from which the stature was estimated	Measured stature (cm)	Estimated stature (cm) †		Significance of difference (p value)
	Mean ± SD	Range	Mean ± SD	
Length of upper arm				
Right	152.79 ±5.62	124.50-184.26	153.64 ±13.08	0.46 (NS)
Left		125.50-183.02	158.03± 12.58	0.42 (NS)

†The mean estimated stature against upper arm lengthwas obtained by multiplying each individual value for that variable by the respective mean multiplication factor and then calculating the mean for that.

Discussion:

Although no statistical analysis could be done between the results of the present study and those of other studies, some observations may be worth mentioning.

When the mean stature of the Garo females of the present study was compared to that of different female populations of the world, the following observations could be made .The mean stature of the Christian Garo females is 152.79 (±5.62) centimetres within close range of those of the Chinese[6] and Japanese[6] and Mongoloid[7] populations. While it is relatively greater than that of a rural Bengali female population [14], it is smaller than that of an urban Bengali female population.[8] The Garo's mean stature as found in the present study is also greater than that of the Austro-Asiatic "Santhals" of West Bengal[9] but smaller than that of the "South Indians"[10] female populations.

However, the Christian Garos show a smaller mean stature than the Turk[11]. The mean values of the average lengths of the right and left upper arms of the females of different populations of the world as compared to the mean value of the Christian Garo females of the present study. In the present study the mean value of the average length of the right and left upper arm of Christian Garo females was 29.96 centimeters. Interestingly, the Garo's mean length of the upper arm reveal a relatively greater value than those of other female populations of the Mongoloid[7] race like Thai [6] and Japanese[6] populations. However, it is broadly within close range of those of the Caucasoid populations like White Americans[12] and German[13] as well as that of a like Black Americans[12] population of Nigroid females. According to the results of present study, there was relationship between the Upper arm length and height and Upper arm length can be a moderate predictor for stature estimation.

Conclusion:

The results of the present study will provide a baseline information, regarding some variables of a particular population (defined for the present study as Christian adult Garo females). It could be lead to the development of a standard for such data on various subgroups of the population (and the population as a whole).

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Original Article

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Histopathological Outcome of Beta Tricalcium Phosphate as Bone Substitute after Enucleation of Jaw Cysts.

Biswas MTU[1], Hasan MM[2], Rahman QB[3]

Abstract:

Jaw cyst is a common pathology in clinical practice.The aim of the study was to assess the status of bone formation after enucleation of jaw cysts with using alloplastic bone substitute beta tricalcium phosphate. Fifty one patients with small and medium sized (1 to 8 cm) jaw cysts were treated by enucleation. Twenty six cases were in study group and rest were in control group. Post operative clinical and histopathological examination were performed at day one, then at 1, 3, 6 months postoperatively. The rate of bone formation in the small and medium sized bony defects was measured by direct digital radiography. Healing and spontaneous filling of the bony cavities were obtained in all cases. Computer analysis of the post operative radiography showed reduction in size of the residual cavities and gradual increase in bone density is better in study group than control group among all bony defects all over the follow up period in all cases. Uniform bone regeneration could be obtained after enucleation of small and medium sized jaw cysts with use of beta tricalcium phosphate.

Keywords: Beta tricalcium phosphate, Cyst, Osteoconductivity, Radiography, Histopathology.

Introduction:

Cyst is one of the common pathologies of jaw bone. Dentigerous cyst is the most common type of developmental odontogenic cyst of the jaws and is nearly 15%-18% of all jaw cysts. Radicular cyst is the most common type of inflammatory odontogenic cysts of the jaws, which is nearly 65%-70% of all jaw cysts[1, 2]. After conventional treatment of cysts (eg. Enucleation), the bony cavity may be restored by auto or allo-bone graft or by alloplastic material like beta tricalcium phosphate (Beta TCP). It has been used also in dentistry after tooth extraction, augmentation of the ridge for prosthodontic appliance or also after osteotomy[3].

The calcium phosphate materials have the following characteristics: similarity in compostion to the bone mineral, bioactivity, osteoconductivity and ability to form an unique strong interface with bone[4-8]. Calcium phosphate materials are available as granules, blocks, coatings on dental and medical implants and as cements. Unlike the Calcium phosphate bioceramics in granules or preshaped form, CPCs have the major advantage of being able to readily adapt to the shape of the bone defect. These CPCs are rapidly integrated into the bone sturucture and are transformed into new bone[9] by the action of bone cells (osteoclasts and osteoblasts) responsible for the local bone remodelling[10, 11].

To facilitate the bone healing process, bone void fillers should at least be osteoconductive. Beta tricalcium phosphate bone formulation influenced by three factors: overall porosity, interconnection of macropores and presence of micropores has been designed to optimize these features so that it can closely mimic cancellous bone and provide an ideal scaffold for bony infiltration. A high porosity enhances the osteoconductivity, although a porosity that is too high weakens the material's compressive strength. Porosity offers optimal environment for vascularization and bony infiltration. In addition, the macropores are interconnected to allow bone formation throughout the entire implant. On the other hand the microporosity increases the surface area where new bone forms and allows circulation of body fluids. To assess the histological[12-16]. chanage of cystic cavity after using beta-TCP for understanding of bone formation and healing process.

Materials and Methods:

The prospective interventional study was conducted in the Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, BSMMU and Department of

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Oral and Maxillofacial Surgery, Dhaka Dental College Hospital, Dhaka over a period of 24 months from January 2009 to December 2010. The Ethical Review Committee, Dhaka Dental College approved the study protocol and all the patients signed written, informed consent. A total of 51 patients, 31 male and 20 female, aged 15 to 49 years diagnosed with cyst in maxilla and mandible were included in this prospective study. Diagnosis was made by accurate history, clinical examinations, and histopathological examination. Inclusion criteria: Non infected radicular, dentigerus and other cysts and sized of the cyst between 1 cm to 8 cm. in diameter. Exclusion criteria: Patients with any systemic bone disease, diabetic, tuberculosis, rheumatic heart diseases, renal failure patients and psychologically abnormal patients. Gamma sterilized bone graft substitute material beta tricalcium phosphate supplied by IFGL Refactories Ltd-unit-1, Sector-A, Kalunga Industrial Estate, Kalunga- 770031: Dist: Sundergarth, Odisha, India. The patients were stratified into 2 groups, 26 patients were selected for study group where enucleation of cyst from jaw as a standard conventional method was followed by alloplastic bone substitute and beta-TCP and 25 patients were selected for control group without alloplastic bone substitute. The standard surgical procedure was performed meticulously in sterile environment under local anesthesia. Enucleation of cyst was done and all granulation tissue was removed. After enucleation of cyst bony cavity was irrigated with diluted 10% povidone iodine for the purpose of debridment. Prior to introduction of the alloplastic bone substitute in to the bony cavity, it was mixed with autogenousbloo were inserted into the cavity. Surgical wound was then closed with suture 3/0 vicryl to make the wound water seal. Then a pressure pack was given over the wound for haemostasis and underlying tissue structure adaptation to prevent the formation of dead space. Prophylactic antibiotics like cephradine 500 mg 8 hourly continue for 7 days, metronidazole 400 mg three times daily continue for 5-7 days, analgesics like NSAID and mouthwash were prescribed. Sutures were removed after seven days. Histopathological examination was done after six month of operation. Few of the patients were randomly selected from both controlled and study group. Tissue taken from all these cases just after reflecting the mucoperiosteum at the previous lesion area.

All the data sheet of history were collected and analyzed scientifically with the help of computer based programme in SPSS software. Result of study provide a correct and unbiased result of the study, consultation was taken with an expert bio-statistician. Chi-square test was done to find out association between different variables and‘t’ test was done for comparing outcome scores between the treatment groups. Level of significance was set at ($P<0.05$).

Results:

Table 1: Distibution of the patients by age and sex (N=51)

Age	Sex		Total
	Male	Female	
15-20 years	4 (7.84%)	4 (7.84%)	8 (15.69%)
20-29 years	9 (17.65%)	3 (5.89%)	12 (23.53%)
30-39 years	11 (21.57%)	5 (9.80%)	16 (31.37%)
40-49 years	7 (13.73%)	8 (15.69%)	15 (29.41%)
Total	**31 (60.78%)**	**20 (39.22%)**	**51 (100.0%)**

Table 2: Distribution of cysts clinically and histologically between study and control group (N=51)

Diagnosis	n	Percentage
Clinical type		
Odontogenic	47	92.2
Non odontogenic	4	7.8
Histological type		
Redicular	40	78.4
Dentigerous	6	11.8
Globulomaxillary	4	7.8
Nasopalatine	1	2.0

Table-3: Distribution of site and size of cysts

Lesion	n	Percentage
Site		
Maxilla	33	64.7
Mandible	18	35.3
Size		
Small (< 2 cm)	35	68.6
Medium (> 2 cm)	16	31.4

Table -4: Comparison of histopathologicalout comes of the patients between two management groups (with alloplastic bone substituteandwithoutalloplastic bone substitute)

Management group	Osteoblast cell	Osteoid	New bone	Chronic inflammatory cell	Fibrous tissue
With alloplastic bone substitute	+ + +	+ + +	+ ++	-	-
Without alloplastic bone substitute	+ +	+	+ +	+	+ +

'+ 'Indicates Present
'-' Indicates Negative
'+++'Numerous
'+ +' Few

Presence of osteoid, new bone and osteoblast cell in with alloplastic grafting patient indicates that good osteoblastic activity. On the other hand presence of chronic inflammatory cell and fibrous tissue in without allopastic bone substitute patient indicates no osteoblastic activity.

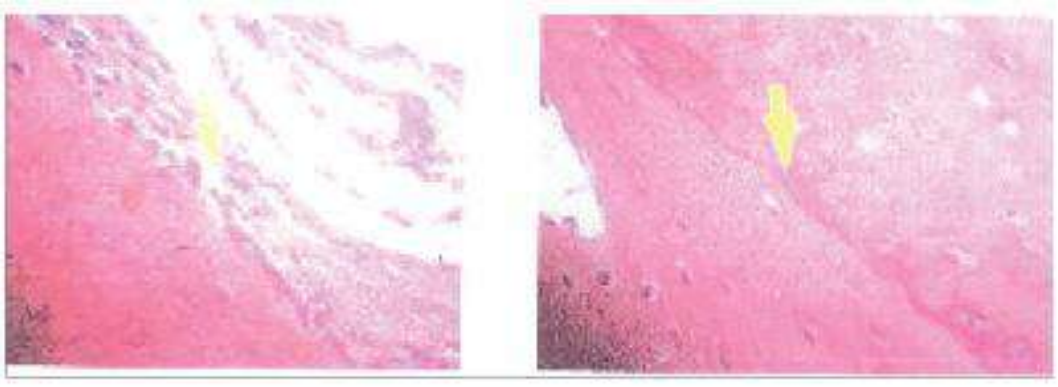


Figure-1: Six months after surgery, jaw tissue from a patient treated with alloplastic bone substitute with low magnification (Left) shows osteoblastic activity and high magnification (Right) shows cementing line which indicates woven bone formation.



Figure-2: Six months after surgery, jaw tissue from a patient treated by only conventional enucleation shows fibrous tissue deposition (Left) and chronic inflammatory cell (Right) indicates no new bone formation.

Discussion:

The presented research studied 51 cases of jaw cysts to evaluate the status of bone regeneration after enucleation of cyst and filling the bony cavity with or without beta tricalcium phosphate. Among the study population 60.78% were male and the rest 39.22% were female and the age ranges from 15 to 49 years. Mean age of patient was 32.94±10.54 years (Table-1). Among the male population 30 to 39 years comprises the highest 21.57% subject but among the female 40 to 49 years comprises the highest percentage (15.69%). This study divided the cysts according to clinical and histological type. Clinical type showed 92.2% of the total population was odontogenic cyst but non odontogenic cyst comprises only 7.8%. Among the histological type radicular cyst comprises the highest 78.4% and dentigerous cyst 11.8% but nasopalatine cyst was the least (Table-2). According to Cawson et al.[1] the frequency of radicular cyst is 65 to 70% and dentigerous cyst 15 to 18% and nasopalatine 5 to 10%. The frequency result of the present study matches with that of Cawson et al[1]. Site and size of the cyst has a strong relation with the outcome (bone regeneration) of treatment. Relative bigger bony cavity takes time for complete bony healing after enucleation but small sized bony cavity takes less time and showed uniformed bone formation. In this study the categorized our 51 cases into small (< 2 cm) and medium (>2cm) sized bony cavity. Most (68.6%) of our cases were small sized group and the rest 31.4% were medium sized (Table-3). Where as the study done by Marble (1968) showed that allograft in defects more than 3 cm in diameter had approximately the same rate of success as those in small defects[17]. Histopathology of newly formed bone in both the groups was done based on five parameter such as number of osteoblast present, amount of osteoid and new bone, presence or absence of inflammatory cell and fibrous tissue ingrowth. Study showed after 6 month study group with numerous osteoblasts, osteoid and new bone but absence of chronic inflammatory cell and fibrous tissue (Figure-1). On the other hand control group showed relatively small number of ostoblast but scanty osteoid and moderate amount of new bone formation, chronic inflammatory cell and fibrous tissue also present (Figure-2).

Conclusions and Recommendations:

The histopathological outcome of the patients who were treated with alloplastic bone substitute were satisfactory in comparison with those who were treated with conventional enucleation without any bone substitute. Only one patient with alloplastic bone substitute was infected, which might be caused by bad oral hygiene or inability to achieve primary closure. Gamma sterilized alloplastic bone substitute can be preserved for three years prolonged period in room temperature. It is readily available and itsgrafting procedure is comparatively simple. It can be used extensively in maxillofacial surgery but needs proper judgment for a successful graft before using alloplastic bone substitute. Although the result of our series with 51 cases were quite predictable however it needs further studies with large number of cases and for longer duration of follow up.

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DCIMC

Original Article

DCIMCJ 2017 January; 4(1): 24-28

Different Types of Heart Block Complicating Acute Inferior Wall Myocardial Infarction in a Tertiary Level Rural Cardiac Centre

Sakib MAM[1], Moniruzzaman M[2], Khan MAI[3], Chowdhury MAM[4], Gani MO[5], Mir AS[6], Hoque SM[7]

Abstract:

Myocardial Infarction is an important cause of heart block.This retrospective observational study aimed to see the incidence and significance of different types of heart block among patients with inferior myocardial infarction in Bangladeshi population. It was conducted in the Department of Cardiology, KhwajaYunus Ali Medical College and Hospital (KYAMCH), Sirajgonj, Bangladesh, from April 2012 to December 2012. A total of 83 patients with inferior myocardial infarction were included. Age group was 30-75 years, with 47 (56.62%) male and 36 (43.38%) female subjects. Among patients with inferior MI, different types of Heart block (HB) was present 40 patients (48.1%); with 18(21.68%) patients having first degree, 8(9.63%) patients second Degree and 12(14.45%) patients having complete HB. Two patients had variable heart block. Right ventricular infarction was detected in 22(26.5%) patients. Temporary pacemaker was needed in 14 (16.87%) cases. Mortality was 4.81%. Heart block is a common complication of acute MI in elderly patients, particularly among patients with inferior MI who received reperfusion therapy. It is independently associated with short-term but not long-term mortality.

Keywords: Complete Heart Block, Heart block, Inferior Myocardial Infarction

Introduction:

Inferior myocardial infarctions account for 40-50% of all acute myocardial infarctions[1,2]and are generally viewed as having a more favorable prognosis than anterior wall infarctions. Data from a number of recent trials of thrombolytic therapy in acute infarction appear to support this view, with mortality rates of 2-9% reported among patients with inferior infarctions assigned to the "standard care" or control groups within these studies.[1-3] It is, thus, not surprising that many of these trials have failed to demonstrate reduced mortality after thrombolytic therapy in the subset of patients with inferior infarction.[1,3,4] It is important to note, however, that nearly 50% of patients suffering inferior infarction will have complications or distinguishing features associated with an increased mortality that will substantially alter an otherwise favorable prognosis. It isthe purpose of this study to find out the frequency of different types of heart blocks occurring in patients with acute inferior myocardial infarction in a tertiary care hospital.

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Methodology:

This retrospective observational study was conducted in the Department of Cardiology of KhawjaYunus Ali Medical college Hospital in Enayetpur, Sirajganj from April 2012 to December 2012.This study reports our experience with 83 patients with acute inferior wall myocardial infarction. An attempt was made to clarify the indications and value of temporary-pacemaker insertion.

Inclusion Criteria:

All patients with acute inferior wall MI (diagnosed by having chest pain of more than 30 minutes not relieved by two doses of glyceryltrinitrate and ECG showing ST segment elevation of >2mm in at least two consecutive inferior chest leads) of any age and either gender were included in the study.

Exclusion criteria:

Patients with renal failure (creatinine more than 2mg/dl), history of coronary artery bypass graft, history of valve replacement or septal repair, patients with hypo and hyperkalemia, patients taking beta blockers, non-dihydropyridine calcium channel blockers (varapamil, diltiazem), amiodarone and digoxin were excluded. Complete heart block (CHB) was defined as atrioventricular dissociation (no 1:1 correlation between P waves and QRS complexes) and escape junctional or ventricular rhythm. Data was analyzed using statistical package for social sciences (SPSS) version 15. Categorical variables like sex and CHB were presented as frequencies and percentages. Numerical variables like age were presented as Mean± SD.

Results:

This retrospective observational study aimed to see the incidence and significance of different types of heart black among patients with inferior myocardial infarction.in Bangladeshi population. Among the 83 patients with inferior myocardial infarction, different types of HB was present in 40 patients (48.1%) in which 18(21.68%) patients had first degree, 8(9.63%) patients had second degree and 12(14.45%) patients had Complete HB. Variable HB was present in 2 patients. Among the patients, male were 47(56.62%) and female were 36(43.37%). Age of the patients ranged from 30-75 years. RV infarction was detected in 22(26.5%) patients. Temporary pacemaker was inserted in 14 (16.87%) patients.

Table 1: Baseline demographic characteristics of the study population (N=83)

Parameters	
Age	
• Mean±SD	49.89 (± 9.04)
• Range	30-75 years
Sex	
• Male	47(56.62%)
• Female	36(43.37%)

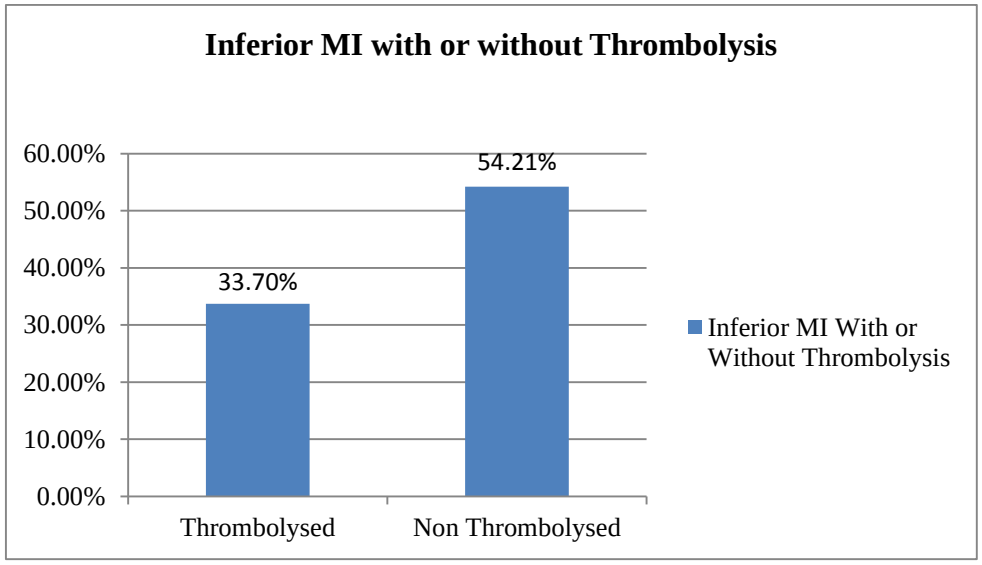


Figure-1: Thrombolysis in patients with inferior MI (N=83)

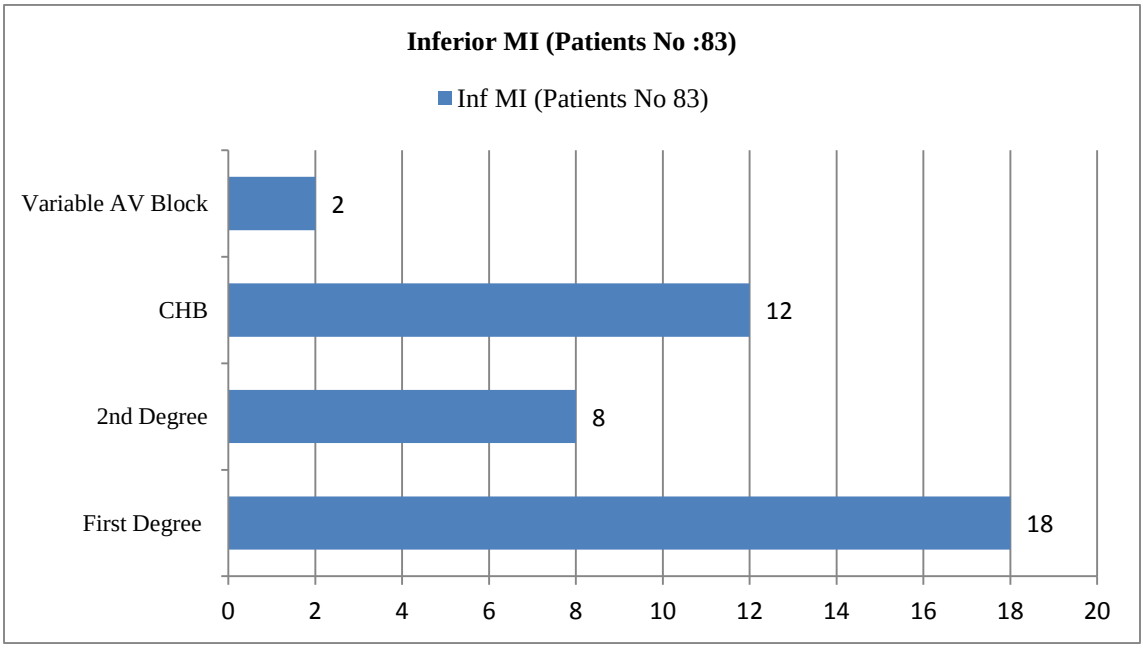


Figure-2: Different types of heart block in patients with inferior MI (N=83)

Mode of Death:

Total 4(4.81%) patients with inferior MI died, with 3 of them having heart block. The cause of death was cardiogenic shock in all patients. Death occurred within the first 24 hours in one of them, and between the third and the seventh days of hospitalization in the remaining. All of the 3 patients with heart block had temporary pacemakers inserted.

Indications for Pacemaker Insertion:

Temporary transvenous pacemakers were inserted in the 14 patients with complete heart block & variable AV block.

Discussion:

Heart block is a fairly common complication of acute MI in elderly patients, with a prevalence of 48.1% among our study. Patients with heart block had poorer outcomes, including increased numbers of in-hospital events, length of hospitalization, and short-term mortality. Although heart block is more common in the setting of inferior infarctions (7.3%), particularly among those who received reperfusion therapy (8.3%), patients with inferior and anterior acute MIs had a comparable increase in their relative risk of in-hospital mortality if heart block occurred. Anterior infarction survivors trended toward an increased risk of mortality at 1 year if heart block occurred, whereas patients with inferior MI who survived to discharge had a lower risk of mortality at 1 year compared with patients who did not have heart block. Heart block was associated with high in-hospital mortality, but these rates differed from mortality rates reported among other acute MI cohorts with heart block. In our study heart block patients had a lower overall in-hospital mortality rate (4.8%) than reported by the Thrombolysis in Myocardial Infarction phase II(TIMI II) trial (8.4%),[5] the Thrombolysis and Angioplasty in Myocardial Infarction (TAMI) trial (20%),[2] and in a study by Nicod et al (24.2%),[3] and the Secondary Prevention Reinfarction Israeli Nifedipine Trial (SPRINT) (37%)[6] and the Worcester Heart Attack Study (49%).[7] These findings are difficult to compare given the differences in the respective study cohorts. Although the SPRINT trial and the Worcester Heart

Attack Study used a more inclusive enrollment,[6,7] higher mortality rates observed in these settings undoubtedly reflect the inclusion of patients with third-degree, rather than second- and third-degree, heart block and evaluation of historic prethrombolytic-era cohorts.

Prior studies found better outcomes among patients with second-degree heart block, [8,9] suggesting that the lower mortality among heart block patients in this analysis may be attributable to the more favorable prognosis among the subset of patients with second-degree heart block.

In our study reperfusion was done in 28 (33.73%) patients. Interestingly, we found an increased prevalence of heart block among inferior infarction patients who received reperfusion therapy. This may reflect a selection bias associated with the increased use of reperfusion therapy among patients with heart block. However, examination of only those patients who had heart block after admission indicated an increased incidence among those treated with reperfusion therapy. Although heart block is most common among patients with inferior MI, the relative 20% increase in heart block incidence (1.4% absolute increase compared with patients with inferior infarction who did not receive reperfusion therapy) raises the possibility that heart block, in some patients, may actually be precipitated by thrombolytic therapy, as suggested in a study.**[10]** The large sample size and older age of this study cohort may have unmasked this effect of reperfusion therapy, conceivably arising as a result of reperfusion injury or thrombolysis induced elevation in vagal tone, undetected in prior analyses. Alternatively, heart block may arise as a result of re-occlusion after successful reperfusion.[10]

Differences in mortality based on acute MI location likely reflect different mechanisms for the development of heart block in patients with inferior and anterior infarctions. Inferior MI patients typically have heart block within the atrioventricular node,[11] most often as a result of increased sensitivity to vagal tone,[12] and may represent a subset with larger inferior infarctions.[13] Despite its frequent occurrence, heart block in the setting of an inferior infarction is almost always transient[8] and conveys an increased risk of mortality limited to the in-hospital setting. In contrast, heart block among patients with anterior infarctions is less common but frequently involves disease at the level of the His bundle or bundle branches in association with extensive necrosis and does not readily resolve[11]. Use of reperfusion therapy diminishes the risk associated with heart block among patients with inferior infarctions at 1-year follow- up to lower than that of subjects without heart block, suggesting that lower mortality may represent a delayed survival benefit from reperfusion. Such an effect supports the apparent association between heart block and reperfusion therapy among subjects with inferior infarctions. If reperfusion therapy is associated with increased occurrence of heart block among patients with inferior infarctions, this effect has only deleterious consequences in the short term. In contrast, reperfusion therapy does not appear to alter heart block's mortality risk among anterior infarct survivors who received reperfusion therapy. Heart block has consistently been associated with increased in-hospital and short-term mortality; however, findings have been inconsistent for long-term follow-up. Although most prior studies found no independent association between heart block and long-term mortality after discharge[1].Archbold et al,[15] Forsberg and Juul-Moller,[16] and Kaul et al[17] identified increased long-term mortality among patients with heart block. However, these three studies are significantly limited in their generalizability because of their small sample size and the fact that only one included patients treated in the era of reperfusion therapy. In addition, it is unclear if these studies excluded patients who died during hospitalization from long-term follow- up; if not, these authors may be attributing differences in long-term mortality to an in hospital effect.

Limitations:

Our study has several limitations. First, we relied on data from a retrospective chart analysis. As a result, we were unable to determine the precise onset or duration of heart block and thus cannot distinguish effects attributable to transient versus sustained heart block during hospitalization. Second, we were unable to distinguish between second- and third-degree heart block or Mobitz I and II of second-degree block. The prognostic significance of second- and third-degree heart block differ; thus our findings likely reflect the aggregate mortality influence of these conduction disorders. Third, we were unable to evaluate the effects of treatment for heart block such as temporary or permanent pacemaker implantation. Fourth, because our data were derived from ECG reports, we may have missed transient episodes of heart block,

which may underestimate the incidence of heart block and weaken its true association with patient outcomes. Finally, we were unable to evaluate patients' specific clinical sequence of in-hospital events. Given that in hospital events likely influence mortality and we only adjusted for patient history and arrival findings, the risk of mortality associated with heart block developing during hospitalization may be overestimated.

Conclusion:

Patients with inferior infarction complicated by heart block, concomitant precordial ST-segment depression, and RV involvement have larger infarctions and a worse prognosis than patients without these features. The effect of thrombolysis on these high-risk groups is not well known. At the present time, there is conflicting evidence regarding the efficacy of thrombolytic therapy in patients with inferior infarction. In view of the increasing evidencethat patients with the largest infarctions benefit the most from acute reperfusion, patients in these high-risk subgroups may be particularly good candidates for thrombolytic therapy.

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Original Article

DCIMCJ 2017 January; 4(1): 29-33

Effect of DPP-4 Inhibitor Sitagliptin on HbA_1c, Serum Creatinine and BMI of Type 2 Diabetes Patients

Roy MD[1], Biswas AK[2], Begum F[3], Chowdhury MJ[4].

Abstract:

Sitagliptin is a newly introduced oral hypoglycemic agent in our country belongs to DPP-4 group. It is very necessary to find out its effect on our different body system. With this view this prospective comparative study was conducted in the Department of Pharmacology in Sylhet M.A.G Osmani Medical College, in active collaboration with Sylhet Diabetic Hospital, Sylhet during the period from January 2012 to December 2012 to find the effectiveness of sitagliptin on hbA1c, body weight and serum creatinine of poorly controlled type 2 diabetes mellitus patients. For this purpose, 60 patients of poorly controlled type 2 diabetes mellitus being treated with 240 mg gliclazide and 1500 mg metformin per day were selected full to exclusion and inclusion criteria. Patients were added sitagliptin at a dose of 100 mg/day with their current treatment schedule. It was observed that sitagliptin has no statistically significant effect on body weight and serum creatinine with good safety profile but did not effectively decrease HbA_1c level in 12 weeks treatment period.

Keywords: Diabetes mellitus, Sitagliptin, Incretin, DPP-4 inhibitor

Introduction:

Incretins are gut hormones that are secreted from enteroendocrine cells into the blood within minutes after eating. One of their many physiological roles is to regulate the amount of insulin that is secreted after eating. There are two incretins, known as glucose-dependent insulinotropic peptide (GIP) and glucagon-like peptide-1 (GLP-1) that share many common actions in the pancreas but have distinct actions outside of the pancreas. Both incretins are rapidly deactivated by an enzyme called dipeptidyl peptidase 4 (DPP4). A lack of secretion of incretins an increase in their clearance is not pathogenic factors in diabetes. However, in type 2 diabetes in combination with metformin or thiazolidinediones[3]. Several studies demonstrated or (T2DM), GIP no longer modulates glucose-dependent insulin secretion, even at supraphysiological (pharmacological) plasma levels, and therefore GIP incompetence is detrimental to β-cell function, especially after eating. GLP-1, on the other hand, is still insulinotropic in T2DM, and this has led to the development of compounds that activate the GLP-1 receptor with a view to improving insulin secretion Sitagliptin is one of the DPP-4 inhibitors which prevent the inactivation of incretins, increasing the endogenous active incretin levels[1-3].

Hypoglycemia is very rare (less than 3%) during treatment with sitagliptin as monotherapy or that sitagliptin do not increase body weightcompared to thiazolidinediones, sulfonylureaand insulin[2,4-7]. A low frequency of hypoglycemia and weight gain in patients treated with sitagliptin may be explained by incretin-mediated glucose-dependent insulin secretion[8-10].

We prospectively studied effects of 3-month-treatment with sitagliptin on HbA_1c, body weight and renal function (serum creatinine) in patients with type 2 diabetes.

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Current research suggests that GLP-1 (glucagon-like peptide 1) is the most important. Their action is terminated by enzymes known as dipeptidyl peptidase-4 (DPP-4) [3-5,11,12]. The observation that the incretin response may be diminished in individuals with type 2 diabetes mellitus has led to advances in the management of this disease. Agents that act as incretinmimetics, such as exenatide and liraglutide, and DPP-4 inhibitors, such as sitagliptin phosphate and saxagliptin, improve glycated hemoglobin levels either as monotherapy or in combination with other agents. Importantly, these agents either lead to weight loss or are weight neutral and are associated with a low risk of hypoglycemia—properties that further contribute to their clinical utility [11-14, 16].

Sitagliptin is an oral, once-daily, potent, and highly selective dipeptidyl peptidase–4 inhibitor for the treatment of type 2 diabetes[17,18]. In subjects withnormal renal function (creatinine clearance 80 ml/min), 75–80% of an oral dose is excreted unchanged in urine[16,17]. Renal clearance is 350 ml/min, indicating that active secretion of sitagliptin rather than only filtration is involved inrenal excretion. Thus, renal excretion is the primary mechanism of elimination for sitagliptin[19,20].

Materials and Methods:

This prospective comparative study was done on poorly controlled Type 2 DM patients of both sexes treated with 240 mg/day dose of gliclazide and 1500 mg/day metformin and who were attended at outdoor patient department, Diabetes Hospital, Sylhet from January 2012 to December 2012. A total number of 60 patients were assigned in this study fulfilling inclusion and exclusion criteria. Inclusion criteria were: Poorly controlled Type 2 DM patients treated with 240 mg/day dose of gliclazide and 1500 mg/day metformin, Patients willing to add sitagliptin to improve their glycemic status, Patients who refused intake of insulin due to fear of injection or and advised sitagliptin as alternative. Exclusion criteria were: Complications of DM (e.g. Diabetic retinopathy, diabetic nephropathy etc), those diabetic cases in whose insulin was last resort of treatment and unwilling Patient to add a newer drug.

Age of the patients ranged from 41 to 50 years in group (mean age of patients was 53.6 ± 9.1 years); There were 36.7% male and 63.3% female in the group.

Results:

A total 60 patients were included in this study Quantitative data was expressed as mean & SD. It was found that sitagliptin exert no statistically significant effect on serum creatinine and body weight. But there is no significant effect of sitagliptin on HbA_1c during 12 weeks study period. After appointed at outdoor patient department clinical histories of the patients were recorded and each patient was examined thoroughly. All the findings, previous history and reports and investigations were recorded in a preformed data collection sheet prepared for this purpose. Type 2 diabetic patients who were getting gliclazide 240 mg/day and metformin 1500 mg/day and blood glucose level demonstrated at poorly controlled were included in the study. Poorly controlled DM may be defined when target of glycemic control could not able to achieve by proper medication. The glycemic target for type 2 DM patient treated with OHA is: FBG 3.9-7.2 mmol/l, PPBG is <10 mmol/l and HbA_1c is <7% (American Diabetes Association 2013). When this target will not achieve then this case will be defined as poorly controlled DM. BMI, HbA_1c, serum creatinine were estimated. Tablet sitagliptin 100 mg was added at single dose at lunch with previous treatment. Body weight, HbA_1c and serum creatinine were estimated at initiation and at 12^{th} week of treatment period. At every follow up visit evidence of any unwanted effect were recorded. Then the percentage changes in HbA_1c before and after intervention were estimated and compared.

All data were collected and recorded in pre-designed data collection sheet. Quantitative data will be expressed as mean & SD .Qualitative data will be expressed as frequency & percentages. Statistical analysis will be performed by using SPSS (Statistical package for social science) for windows version 16.0. A probability value (p) of <0.05 will be considered as significant.

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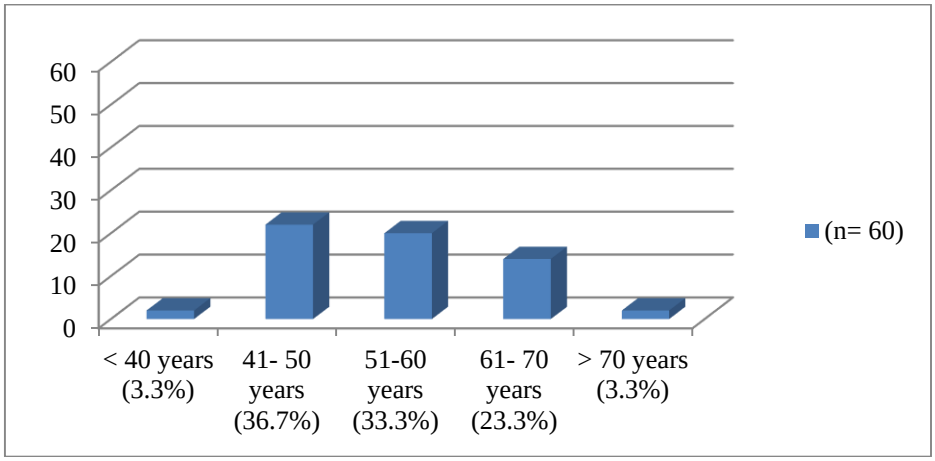


Figure- I: Distribution of the patients by age

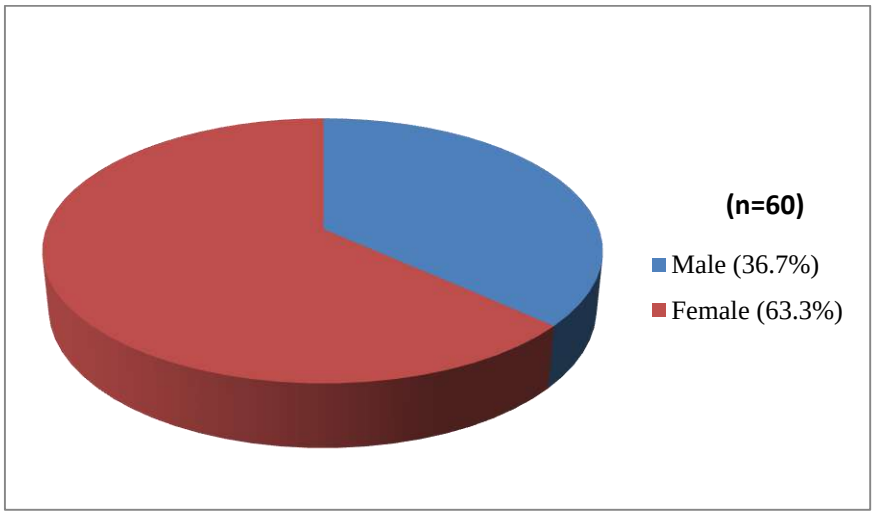


Figure-II: Distribution of the patients according to sex

Table-I: HbA_1c level before and 3 months after initiation of treatment (n=60)

HbA_1c level	Befo re treatment	3rd month after treatment	*p value
Mean	9.29	9.25	p=0.085
Standard deviation	± 1.64	± 1.66	(NS)

Data were presented as mean ± standard deviation in percentage.

*Paired‘t’ test was applied to analyze data. NS=Not significant.

Table- II: BMI before and 3 months after initiation of treatment (n=60)

Study group	Evaluation		†*p* value
	Before treatment	After treatment	
(n=60)	25.20 ± 2.48	25.16 ± 2.49	p=0.222

Data were presented as mean ± standard deviation in Kg/ m^2

†Paired't' test was applied to analyze data.

Table-III Serum creatinine level before and 3 months after initiation of treatment (n=60)

Serum creatinine level	Before treatment	After treatment	**p* value
Mean	0.81	0.81	p=0.380
Standard deviation	± 0.11	± 0.10	

Data were presented as mean ± standard deviation in mg/dl.

*Paired't' test was applied to analyze data.

Discussion:

In this study, the mean age of the patients was 53.6 ± 9.1 years. Same age range were also observed by Aschner et al. [53.3± 9.1 years][3]. Current study showed that, there were 22 (36.7%) male and 38 (63.3%) female. Similar female preponderance was reported by Kubota et al.[4]

The effect of sitagliptin on body weight during 12 week treatment period was neutral asobserved in our study. Same result observed by Aschner et al.[5], Raz et al.[14], Seck et al.[15]

The change of serum creatinine level was insignificant in sitagliptin treated group. Barzilai et al. was found same result during studied sitagliptin in old aged type2 DM patients [16].

The effect of sitagliptin on HbA_1c was insignificant (p=0.085) during our 12 weeks study period.

There were no drug related adverse effects in 12 weeks study period (hypoglycemic episode, GIT adverse events etc). Generally sitagliptin was well tolerated. No sitagliptin related adverse events were observed in several studies[16, 17].

Conclusion:

It has been suggested that sitagliptin exhibited no statistically significant effect on serum creatinine. It also exhibited neutral effect on body weight during treatment period. There was no drug related adverse effect or hypoglycemic episode during our study period. But sitagliptin had no significant effect on HbA_1c during 12 weeks study period. As Sitagliptinrecently introduced in our country so further extensive study with a wide range of doses on large number of patients for a long period of time is recommended to exclude the actual effect of this drug on our different organ system.

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DCIMC

Original Article

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Status of Atherogenic Lipoprotein Phenotype among the Obese High School Children in Bangladesh

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Abstract:

Background: Worldwide developing countries are increasingly vulnerable to the epidemic of obesity. High school children in our country are an important group of young people with respect of their future profession and social responsibilities. They are also in the risk of this situation. Obesity itself is a harbinger of morbidity & mortality out of various medical problems moreover if it is superimposed by the atherogenic lipoprotein phenotype; risk increases many fold. Objective: The aim of the study was to assess status of atherogenic lipoprotein phenotype among the obese high school children in Bangladesh.Methodology: One hundred (100) obese high school children of the age 11-16 years were selected conveniently after consent. The status of atherogenic lipoprotein phenotype was assessed by measuring serum triglycerides, serum total cholesterol, serum HDL, serum LDL, serum ApoB& small dense LDL. Positive athrogenic lipoprotein phenotype was indicated by increased serum triglyceride, decreased HDL cholesterol & presence of small dense LDL. Results: Among the 100 obese high school children 19% were found atherogenic lipoprotein phenotype positive. Among them 16% (95%CI=11.3-22.9) were male and 22% (95% CI= 10.5-33.4) were female. In this study we have selected a specific segment of people in our society who are the high school children and we have found, the status of atherogenic lipoprotein phenotype among them is very much alarming. Conclusion: Increasing trend of atherogenic lipoprotein phenotype positivity among the obese high school children is of serious concern in the context of healthy future generation in our country. The findings of our study will help the high school children to build up their awareness & to modify their life style & eating habit and further large scale study is recommend in this issue in every segment of population of our country.

Keywords: High School Children, Obesity, Atherogenic Lipoprotein Phenotype

Introduction:

Obesity is an important health problem in Bangladesh, which is currently experiencing a rapid epidemiological transition. Bangladesh is experiencing a nutritional transition in food choices from their typical Bangladeshi food into fast-food pattern. Because of less physical activity, excess fast food consumption, excess TV viewing, etc, a large group of young people throughout the world are suffering from obesity, which is common enough among the sedentary young people that we can consider as an epidemic. Especially in our country, school, college and university going students are being habituated with this kind of life style. Obesity is related to atherogenic lipoprotein phenotype[1]. The atherogenic lipoprotein phenotype is defined as, the predominance of small dense LDL (sdLDL) particles along with hypertriglyceridemia & reduced HDL cholesterol in an individual[2]. The atherogenic lipoprotein phenotype is associated with an approximately 3 fold increased risk of atherosclerotic disease[3-6]. Several prospective studies have shown that, atherogenic lipoprotein phenotype profile of the patients with obesity is associated with a 20 fold increased risk of developing coronary artery disease[7]. Obesity itself is a harbinger of morbidity & mortality out of various medical problems moreover if it is superimposed by the atherogenic lipoprotein phenotype; risk increases many fold. High school

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children in our country are an important group of people with respect to their future profession and social responsibilities. It is apprehended that increasing trend of obesity superimposed with positive atherogenic lipoprotein phenotype among the high school children is of serious concern in the context of healthy future generation. Due care must be taken to deal this problem by implementation of multidimensional preventive strategies since obesity is mostly a preventable problem. To chalk out the preventive measures at the very onset we should know the magnitude of the problem by finding out the status of atherogenic lipoprotein phenotype among the high school children of Bangladesh. Purpose of this study was to assess the status of atherogenic lipoprotein phenotype among the obese high school children of Bangladesh to build awareness about the complications which may ultimately help to improve this condition in an attempt to ensure a healthy future generation that is very much needed for a nation.

Materials and Methods:

This cross sectional analytical study was done in the Department of Biochemistry, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh from July 2014 to June 2015 after taking the permission of ethical committee. Conveniently 100 obese high school children from each divisional cities of Bangladesh were selected according to set criteria by non probability sampling. Purpose and procedure of the study were explained to each enrolled subject in detail and informed written consent was taken from all the study subjects. Status of atherogenic lipoprotein phenotype was also compared among male & female high school children.

Study Parameters:

Following parameters were analyzed in all study subjects-Height, weight, waist circumference and hip circumference, serum triglyceride, serum total cholesterol, serum HDL, serum LDL, serum Apo B & small dense LDL (Sd LDL).

Results & Observation:

During the period of July 2014 to June 2015 a total of 100 obese high school children of both sex were enrolled in the study conveniently & their serum apoprotein B and lipid profile were measured, LDL-C/apo-B ratio were calculated and presence of sdLDL was determined by the ratio of LDL-C/apo-B less than 1.0. Then Atherogenic lipoprotein phenotype positive obese students were identified by serum triglyceride >150 mg/dl, serum HDL <40 mg/dl & presence of sdLDL. All results were expressed as percentage with 95% confidence interval.

Table 1: show that, out of the selected 100 obese high school children 50 were male and 50 were female. Among the 50 obese male high school children, serum triglyceride level was >150 mg/dl in 16 young students and <150 mg/dl in 34 students, serum total cholesterol level was >200 mg/dl in 15 students and <200 mg/dl in 35 students, serum HDL level was <40mg/dl in 12 students and >40 mg/dl in 38 students and serum LDL level was >130mg/dl in 9 students and <130 mg/dl in 41 students. Among the 50 obese female students, serum triglyceride level was >150 mg/dl in 30 students and <150 mg/dl in 20 students, serum total cholesterol level was >200mg/dl in 22 students and <200 mg/dl in 28 students, serum HDL level was <40mg/dl in 14 students and >40 mg/dl in 36 students and serum LDL level was >130mg/dl in 11 students and <130 mg/dl in 39 students.

Table-1: Distribution of 100 obese subjects on the basis of their lipid profile: (N=100)

Total Subject	Sex distribution	Triglyceride		Total cholesterol		HDL		LDL	
		>150	<150	>200	<200	<40	>40	>130	<130
100	Male (50)	16	34	15	35	12	38	9	41
	Female (50)	30	20	22	28	14	36	11	39

Table-2 shows sub grouping of 100 obese subjects according to their lipid profile. 42 obese high school children were found normolipidaemic, among them 24 were male and 18 were female and 58 obese high school children were found dyslipidaemic, among them 26 were male and 32 were female. Normolipidemia was determined based on TG, TC, HDL & LDL, <150, <200,>40 &<130 respectively. Dyslipidemia was determined with any of the above parameter beyond the desired level

Table-2: Sub grouping of 100 obese subjects according to their lipid profile:

Subgroup	Total	Male	Female
Normolipidaemic	42	24	18
Dyslipidaemic	58	26	32

Among 24 normolipidaemic male students, sd LDL was present in 9 subjects & absent in 15 subjects. Among 18 normolipidaemic female students, sd LDL was present in 8 subjects & absent in 10 subjects. Among 26 dyslipidaemic male subjects, sd LDL was present in 5 subjects & absent in 21 subjects. Among 32 dyslipidaemic female subjects, sd LDL was present in 12 subjects & absent in 20 subjects (Table-3).

Table -3: Distribution of the sdLDL among the normolipidaemic & dyslipidaemic subjects:

Subgroup		sdLDL present	sdLDL absent
Normolipidaemic n=42	**Male n=24**	9	15
	Female n=18	8	10
Dyslipidaemic n=58	**Male n=26**	5	21
	Female n=32	12	20

Table-4: shows the status of atherogenic lipoprotein phenotype among the total 100 obese subjects of both sexes. 19% (95% CI=11.3-22.9) obese high school children were found atherogenic lipoprotein phenotype positive. Among them 16% (95%CI=11.3-22.9) were male and 22% (95% CI= 10.5-33.4) were female. Comparison of atherogenic lipoprotein phenotype positivity between male & female was done by Z-test of proportion and it was found that, there was no sex difference with respect to the atherogenic lipoprotein phenotype positivity.

Table -4: Status of AtherogenicLipoprotein Phenotype amongtheObese Subjects:

Total obese subjects	Male obese	Female obese	Atherogenic Lipoprotein phenotype positive			
			Both sex	Male	Female	P-value
100	50	50	19 (19%) (95% CI= 11.3-22.9)	8(16%) (95%CI= 5.9-26.1)	11 (22%) (95% CI= 10.5-33.4)	>0.05

P-value reached by Z-test of Proportion.

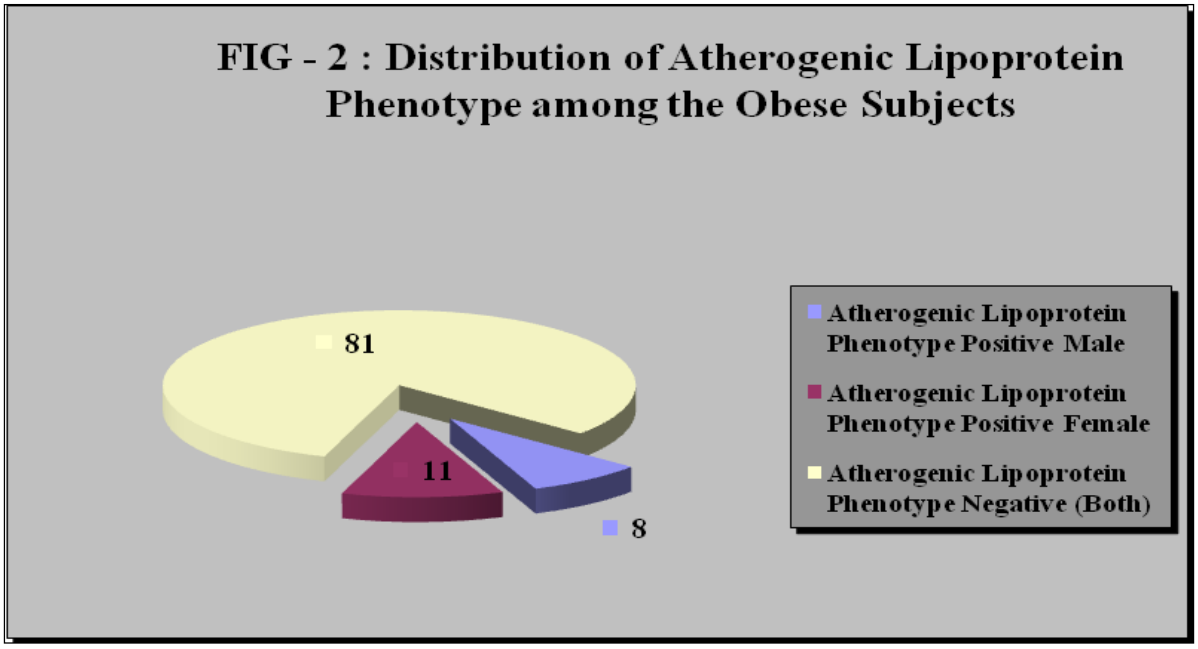


Fig-1: Distribution of Atherogenic Lipoprotein Phenotype among the Obese Subjects

Fig-1 shows among 100 obese subjects 8 obese male and 11 obese female subjects are atherogenic lipoprotein phenotype positibe. Remaining 81 obese subjects are atherogenic lipoprotein phenotype negative.

Discussion:

In this study our aim was to assess the status of atherogenic lipoprotein phenotype among the obese high school children of Bangladesh. With this aim, we have enrolled 100 obese high school children of both sexes & measured the serum triglycerides, total serum cholesterol, serum HDL, serum LDL, serum Apo B &small dense LDL. We have found quite high

(58) percentage of dyslipidemia among the obese high school children. Among them; female (32) students were more dyslipidemic than male (26). With respect to sd LDL profile, it was quite high (17 out of 58) in dyslipidemic obese high school children. This result was found consistent with that of other studies done in different countries. A study was done on 80 obese youths in USA & the prevalence of sd LDL was found to be 54%[8]. A study was done on 7 to 13 years old pre pubertal Japanese obese children where prevalence of sd LDL was found to be 9.3%[9]. Our study also found, sd LDL to be present in a good number of normolipidemic obese high school children, which may indicate that the normolipidemic obese high school children are also at risk irrespective of the classical lipid status.

This study has showed the atherogenic lipoprotein phenotype positivity among 19% of obese high school children which is very much alarming. It also unveiled that, the atherogenic lipoprotein phenotype positivity to be identical between male and female.

We hope that, this study will aware them about the present situation and they will modify their eating habit & lifestyle. We also hope that, this study will stimulate & facilitate further broad based large study on this issue in different sectors of population in our country.

Summary and Conclusion:

Obesity now has become a global epidemic. Both developed and developing countries are increasingly vulnerable to the worldwide epidemic of obesity, which affects all segments of the population. We have witnessed a dramatic rise of the prevalence of obesity superimposed with atherogenic lipoprotein phenotype among the people in our country. Among them young high school children are an important group because of their future profession & social responsibilities. Increasing trend of obesity & atherogenic lipoprotein phenotype among them is of serious concern in the context of healthy future generation in our country. To provide different types of preventive measures, we should know the magnitude of the problem.

The findings of our study are almost near to the previous observations. So, it can be apparently concluded that, the status of atherogenic lipoprotein phenotype positivity is alarmingly high among the obese high school children of Bangladesh. Among them, female high school children are more positive. The findings of our study will help the high school children to build up their awareness & to modify their life style & eating habit & since obesity is mostly a preventable problem, due care can be taken to deal this problem by implementation of multi dimensional preventive strategies. So, we will recommend further large scale studies on this issue in every segment of population of our country, which will provide further information about the magnitude of obesity & risk of atherosclerosis among them.

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DCIMC

Original Article

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Clinicopathological Study of Metastatic Neck Node

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Abstract:

Background: The diagnosis of every malignancy has two aspects; one is clinical and radiological aspects and the confirmatory aspect is the histopathological aspects with some exceptions. Methods: This observational cross sectional study was carried out Department of Otolaryngology and Head- Neck surgery Surgery, in Dhaka Medical College Hospital. Patients diagnosed as metastatic neck nodes in Department of Otolaryngology and Head- Neck surgery, DMCH were included in the study. Results: Seventy eight percent patients were male & 22% were females with a ratio being 3.54:1. Age range was 20 to 90 years. Among the clinical presentation were Dysphagia, Hoarseness of voice, Respiratory distress, Cranial nerve palsy, Thyroid gland swelling, Stridor, Referred otalgia, Anorexia & weight loss, Pain in throat which were 43%, 38%, 13%,12%,13%, 8%, 8%, 12% and 8% respectively. The disease was unilateral in 81% cases, bilateral in 17% cases & contralateral in 2% cases. Nodes were found less than 3 cm in 27% cases, 3 to 6 cm in 33% cases & more than 6 cm in 40% cases. But study carried out by cm in size in 15% cases only. Lymph nodes were hard in 53% cases, firm to hard 40% cases, firm 5% cases & soft 2% cases. In 60% cases lymph nodes were found mobile & 40% cases were found fixed. Conclusion: most common cancer was squamous cell carcinoma of upper aerodigestive tract origin detected by FNAC and Histopathology.

Keywords: Neck Node, Malignancy, Histopathology

Introduction:

Lymph nodes are the most common site of metastatic malignancies and sometimes, constitute the first clinical manifestation of the disease[1]. Metastatic neck disease is commonly encountered in our country. It is difficult to give an exact incidence of metastatic neck disease as only few studies are available in our country and most of the studies were carried out with cervical lymphadenopathy where metastatic neck node was described as one of the commonest cause of cervical lymph node enlargement in adult[2].

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The presence of cervical lymph node metastases is an important prognostic factor in patients with head-neck cancer as well as chest and abdomen which worsens significantly the treatment outcome[3-10]. It may be from unknown primary despite extensive diagnostic workup, including physical examination, fiberoptic endoscopy, examination with general anesthesia and targeted biopsies of potential primary sites, computed tomography or magnetic resonance imaging, and more recently positron emission tomography (PET)[11,12]. Several prognostic factors have been described, of which the histopathology status of the neck nodes is most significant[9]. Specific primary sites, higher T stage, and level of neck involvement have been associated with a greater likelihood of occurrence of metastatic disease below the clavicles consequently, a poorer prognosis[13-15]. Several studies have found that recurrent disease at the primary site and regional recurrence are predictors of distant metastases[14,16]. The choice of management depends on the existence and extent of lymph node metastases in the neck. So, it is essential to determine the presentation, extension and pathological demonstration of metastatic neck nodes from different sites of the body. Therapy could consist of surgery, radiation therapy, chemotherapy,

or a combined therapy. However, all these therapies have a considerable morbidity and mortality[17-22].

Materials and Methods:

This observational cross sectional study was carried out Department of Otolaryngology and Head- Neck surgery Surgery, in Dhaka Medical College Hospital. The patients of Department of Otolaryngology and Head- Neck surgery, DMCH were included purposively. The inclusion criteria were patients diagnosed as metastatic neck nodes and who wishes to be included in the study. Patients diagnosed as lymphadenopathy due to other causes like non-specific infection, tuberculous neck node, lymphoma etc, recurrent cases and necks swelling only other than lymph node swelling were excluded from this study

pertaining to the signs and symptoms manifested by a patient, and also the results of laboratory studies, as they relate to the findings in the gross and histologic examination of tissue by means of endoscopy or biopsy. A questionnaire and a consent form were prepared, sample was selected on the basis of inclusion and exclusion criteria, questionnaire was filled with informed written consent, relevant investigations was done. After collection of data, data were edited by meticulous checking and rechecking. SPSS (statistical Package for Social Science) version 19.0 package program was used for analysis of these data. The statistics used to analyze the data were descriptive statistics and tests done were students't' test and χ^2 test. Level of significance was set at 0.05 and $p<0.05$ was considered significant.

Results:

The mean age was 53.75(±7.64) years. There was higher incidence of metastatic neck node in males in comparison to females. Male: female ratio 3.54:1(Table-1). The incidence of metastatic neck node with known primary is six times more common than that of the unknown primary.(Table-2) Histopathology of eighty seven patients revealed that 70(80.46%) cases of metastatic neck node whose primary lesions arise from the squamous epithemlium of upper aerodigestive tract and 17(19.54%) cases from a non-squamous origin.(Table-4) Among the tumours of squamous origin, larynx was the most notorious site to present with metastatic neck node followed by pyriform fossa and nasopharynx. While among the tumours of non squamous origin, thyroid gland showed higher spread than parotid gland (Table-5) revealed that the wide range of clinical presentation besides enlarged lymph nodes reflecting their primary site of origin (Table-6) showed highest lymph node involvement in level II & III(Table-8) highest lymph nodes presentation in N_2 stage. However, a good number of presentations were seen in stage N_3 (table-9) revealed that the highest Ca-larynx is not unlikely to present with bilateral metastatic neck nodes(Table-10).

Table 1: Demographic characteristics (N = 100)

	n	%
Mean ±SD	53.75(±7.64)	Range 20-90 years
Sex		
• Male	78	78
• Female	22	22
Total	100	100

Table – 2: Incidence of known primary & unknown primary (N = 100)

Type of primary tumor	n	%
Known primary	87	87
Unknown primary	13	13

Table – 3: FNAC findings of metastatic neck node (n = 87)

Type	n	%
Squamous	66	75.86
Mucoepidermoid carcinoma	05	5.75
Adenocystic carcinoma	05	8.05
Medullary carcinoma	04	4.60
Papilary carcinoma	07	5.75

Table – 4: Histopathological diagnosis of primary tumor (n = 87)

Type	n	%
Squamous	70	80.46
Non-squamous	17	19.54

Table- 5: Distribution of known primary sites (n = 87)

Primary site	n	%
Larynx	31	35.63
Pyriform fossa	13	14.94
Nasophaynx	06	6.90
Base of the tongue	04	4.60
Buccal Mucosa	03	3.45
Oral Mucosa	02	2.30
Nose	02	2.30
Tonsil	02	2.30
Thyroid gland	11	12.64
Parotid gland	03	3.45

Table-6: Accompanying symptoms on clinical presentation (N = 100)

Clinical	n	%
Hoarseness of voice	38	38
Respiratory distress	13	13
Stridor	08	08
Dysphagia	43	43
Referred otalgia	08	08
Pain in throat	08	08
Cough	07	07
Haemoptysis	03	03
Nasal obstruction	07	07
Epistaxis	05	05
Cranial nerve palsy	12	12
Thyroid gland swelling	13	13
Parotid gland swelling	03	03
Trismus	02	02
Severe headache	05	05
Discharging fistula in neck	02	02
Dysarthria	05	05
Anorexia & weight loss	12	12

Table-7: Distribution & status of involved lymph node (N = 100)

Distribution of nodes	n	%
Unilateral	81	81
Bilateral	17	17
Contralateral	02	02
No. of the involvement		
Single	37	37
Multiple	63	63
Consistency		
Hard	53	53
Firm to hard	40	40
Firm	05	05
Soft	02	02
Mobility		
Mobile	60	60
Fixed	40	40
Size of lymph nodes		
<3cm	27	27
3-6cm	33	33
>6cm	40	40

Table – 8: Level of lymph nodes (N = 100)

Level of lymph node	n	%
Level-I	05	05
Level-II	37	37
Level-I+II	05	05
Level-III	03	03
Level-II+III	28	28
Level-IV	02	02
Level-II+IV	02	02
Level-II+III+IV+V	03	03
Level-IV+V	02	02

Table - 9: Staging of lymph nodes (n = 60)

Stage	n	%
Stage- N_1	33	33
Stage- N_2	40	40
Stage-N_3	27	27

Table – 10: Primary sites in Bilateral neck metastases (n = 17)

Primary site	n	%
Larynx	05	29.41
Thyroid gland	03	17.65
Nasopharynx	02	11.76
Base of the tongue	02	11.76
Unknown primary	05	29.41

Discussion:

Metastatic neck disease is commonly encountered in our country. It is difficult to give an exact incidence of metastatic neck disease as only few studies are available in our country and most of the studies were carried out with cervical lymphadenopathy where metastatic neck node was described as one of the commonest cause of cervical lymph node enlargement in adults[9]. More than one third of the total body lymph nodes are distributed in the neck certain areas of head and neck are studded with dense capillary network of lymphatics. So the rate at which neoplasm metastasize form is very high. An FNAC of enlarged lymph node in neck showing metastatic deposit of squamous or non-squamous origin was taken as primary selection criteria. Leveling of lymph node group was done on the level system as described by the Memorial Sloan Kettering Cancer Center, New York[23]. Staging of lymph node group was done using both AJC & UICC criteria[24].

In the present series altogether 100 cases of metastatic neck node has been studied. A primary site remained undetected in 13% cases. A study of Rahman et al found undetected cases were 11.7%[2]. A study carried out in our country found 6.8% cases of unknown primary sites[25]. However, two studies carried out abroad showed similar rate of incidence. One of the studies in Liverpool, England showed 89.3% cases of known & 10.3% cases of unknown primary and another in USA revealed about 90% cases of known & 10% cases of unknown primary[26,27]. Among the primary sites, 70 (80.46%) cases took origin from squamous lining of upper aerodigestive tract and 17(19.54%) cases having a non-squamous origin from thyroid gland (12.64%) and parotid gland (3.45%). The study showed that metastases from thyroid gland carcinoma were not a very uncommon entity. The incidence of metastatic neck node of thyroid origin in other series varied from (6.25% to 9.5%). In our series metastatic neck node of thyroid origin was found in 8 (13.33%) cases. The higher incidence in the present series might be due to the fact that there was no selectivity for either the site of primary tumour or the histologic type[2]. Among the known primary site, highest incidence of metastatic neck node was found with carcinoma of larynx (35.63%). All of them were located in supraglottis. In 40% cases which may explain the high rate of metastasis in case of supraglottic growth. No glottic or subglottic growth was seen with neck node metastases. Incidence of carcinoma pyriform carcinoma of pyriform fossa was seen in 13(14.94%) cases. 6(6.90%) cases of metastatic neck node took origin from nasopharynx, 2(2.30%) cases from base of the tongue, 3(3.45%) cases from buccal mucosa, 2(2.30%) case from nose, 2(2.30%) from oral

mucosa. The studies carried out with metastatic neck node in the department of otolaryngology Mount Sinai Hospital & Sunnybrook Medical center, Toronto, 40% cases, primary lesions took origin from carcinoma of tongue, 20% from carcinoma of larynx, 20% case from carcinoma of floor of mouth, 7% from tonsil, 3% from palate & 10% from miscellaneous sites. The absence of selectivity for primary sites was the reason behind it as noted by them[28]. Another study with metastatic neck node in Khartoum Teaching Hospital, Sudan, most common primary site was found nasopharynx[29]. It might be due to their social habits and genetic predisposition. In two studies carried out in our country showed highest incidence of metastasis from carcinoma of pyriform fossa[25]. While in another study highest incidence was seen from carcinoma of larynx. Seventy eight percent patients were male & 22% were females with a ratio being 3.54:1 of ages ranging from 20 years to 90 years which is in fair agreement with almost all the studies revealing metastatic nodes to be more frequent males above the age of 40. Five (8.3%) cases presented in second decade. Three (5%) of which took origin form carcinoma of nasopharynx, two (3.3%) from carcinoma of parotid gland are not at all unlikely for these sites to present with neck node in early age. In a study carried out in our country 81.85% patients were found to be male & 18.75% patients to be female with the ratio being 4.3:1 and all were above 40 year of age[27]. In another study out of 21 cases, 18(85.71%) patients were male & 03(14.29%) were female with highest incidence in 4th and 5th decade. Male predominance is also proved in another study abroad being male 74.7% female 25.3%[29]. Ca-larynx (29.41%) was found to be most commonly occurring carcinoma spreading to neck in males & Ca-thyroid (17.65%) in females. History of smoke of crude tobacco leaves was found in a 96 years old patient presented with Carcinoma pyriform fossa. In this study common clinical presentation were dysphagia, hoarseness of voice, respiratory distress, cranial nerve palsy, thyroid gland swelling, stridor, referred otalgia, anorexia & weight loss, pain in throat which were 43%, 38%, 13%,12%,13%, 8%, 8%, 12% and 8% respectively. Among the clinical presentation, enlargement of lymph node was present in 60 (100%) cases, next to that, 26(43.33%) patients presented with dysphagia, 23 (38.33%) cases with hoarseness of voice, 08(13.33%) patients with respiratory distress, 5(8.33%) patients with referred otalgia, 05(8.33%), patients with pain in throat, 04(6.67%) patients with nasal obstruction, 03(5%) patients with epistaxis, 03(5%) patients with severe headache, 03(5%) patients with dysarthria, 01(1.675) with trismus, 01(6.67%) patient with discharging fistula in neck, 07(11.67%) patients with cranial nerve palsy & 07(11.67%) patients with anorexia & weight loss. 08(13.33%) patients presented with thyroid swelling & 02(3.33%) 4patients with parotid gland swelling. These finding are in conformity with the findings of other published series.The disease was unilateral in (81%) cases, bilateral in (17%) cases & contralateral in (2%) cases. This is supported by other works done with metastatic neck node[30]. In study of Rahman et al.[2] found status of lymph node unilateral 49 (81.67%), bilateral 10(16.67%), Contralateral 01 (1.66%). Lymph node involved was single in 37% patients & multiple in 63% cases. G.B. Snow & his team of Netherland Cancer Hospital, Amsterdam got 61.3% cases of single node enlargement & 38.7% cases of multiple lymph node enlargement in their series[31]. The other studies showed lymph node enlargement was solitary in 52.4%-62.5% cases & multiple in 37.5%-47.6% cases[32]. This picture is not consistent with the findings of present study which might be due to more inclusion of metastatic neck node in advanced stage.

In this study, nodes were found less than 3 cm in 27% cases, 3 to 6 cm in 33% cases & more that 6 cm in 40% cases. But study carried out by Snow GB and his team showed enlarged lymph node less than 3 cm in size in 85% and more than 3 cm in only 15% cases[31]. This indicates more late presentation of the patients of our country which corresponds with the ignorance, illiteracy & poor socioeconomic status of our people.

Lymph nodes were hard in 53% cases, firm to hard 40% cases, firm 5% cases & soft 2% cases, in other studies hard & firm to hard lymphodes were found in 87.5% to 9.5% cases & firm lymp node in 9.5% to 12.5% casus. In 60% cases lymph nodes were found mobile & 40% cases were found fixed. Mobility of the node varied 57% to 60% & fixity 43% to 40% in studies carried out in Bangladesh[9]. In studies abroad fixity of nodes varied from 16.4% to 29.6% representing their early presentation once again.

While leveling of the lymph node most commonly involved lymph node region was found to be level II

28% followed by level II+III 30%. In a study with metastatic neck node in the department of Otolaryngology, BSMMU and Dhaka Medical College Hospital, found 40% in level II followed by 30% in level II + III. It is found in agreement with most of the other studies carried out at home and abroad[33].

Thirty three percent cases fell in stage N_1, 40% in stage N_2A, 27% in stage N_3. The result of the part of study could not be compared due to lack of studies.

Conclusion:

In this series of metastatic neck disease collected from indoor patient department of Otolaryngology and Head-Neck surgery of DMCH. Male were predominant, most common cancer was squamous cell carcinoma of upper aerodigestive tract origin detected by FNAC and Histopathology. By the FNAC we can predict primary lesion. So we can plan surgery, radiotherapy and chemotherapy depending on FNAC.

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Review Article

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Liver Function Tests in the Diagnosis of Hepatic Diseases

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Abstract

Since the liver performs a variety of functions like metabolic, synthetic, excretory etc. therefore, no single test is sufficient to provide complete estimate of function of liver. Liver function tests (LFT) are a helpful screening tool, which are an effective modality to detect hepatic dysfunction. Interpretation of abnormalities in liver function tests is a common problem faced by clinicians. This has become more common with the introduction of automated routine biochemistry testing. Not all persons with one or more abnormalities in these tests actually have liver disease. An isolated or conjugated alteration of biochemical markers of liver damage in patients can challenge the clinicians during the diagnosis of disease related to liver directly or with some other organs. Often clinicians are faced with reports that do not tally with the clinical condition of the patient and they face difficulty in interpreting the LFT. The various biochemical tests, their pathophysiology and an approach to the interpretation of abnormal liver function tests are discussed in these review.

Keywords: LFT (Liver function test), Alanine aminotransferase (ALT), Aspartate aminotransferase (AST), Prothrombin time (PT)

Introduction:

Liver is a versatile organ of the body and it performs different kinds of biochemical function such as metabolic, synthetic, excretory, detoxification etc[1]. Its primary functions are synthesis of proteins and biochemical products necessary for digestion. More specifically, the liver has the following physiological functions: protein synthesis (90% of the plasma proteins, such as albumin, factors involved in coagulation and fibrinolysis, transport proteins as transferrin, and acute phase proteins, such as fibrinogen, α and β-globulins), detoxification of endogenous products (urea production from ammonia) and exogenous products and toxic drugs (mainly cytochrome p450). In addition, the liver acts in the synthesis and storage of carbohydrates (gluconeogenesis), lipid metabolism (responsible for esterifying free fatty acids into triglycerides for export to other tissues in form of VLDLs or LDLs). The liver plays a vital role in bile acid excretion allowing cholesterol and phospholipids metabolism and it is essential for the absorption of lipids and fat-soluble substances (vitamins A, D, E and K). Any abnormality or dysfunction of the liver leads major impairment of the organ function, which in turn, influences the health of the individual. Liver disease is a collection of conditions, diseases and infections that affect the cells, tissues, structures or functions of the liver[2].This can be assessed by biochemicaltests that reflect the damage or dysfunction of the liver. However, no single biochemical test can detect the global function of liver. A series of tests are employedfor initial detection and management of liver diseases and these tests are usually referred as "Liver function test." Liver function test (LFT) are one of the most commonly requested screening blood tests. Whether for the investigation of suspected liver disease, monitoring of disease activity, or simply as 'routine' blood analysis, these tests can provide a host of information on a range of disease processes. The title 'liver function tests' is however, somewhat a misnomer[3]. The commonly available tests include alanine transferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), gamma glutamyl transferase(GGT), serum bilirubin, prothrombin time and serum albumin[4].

Abnormal LFT are frequently seen in asymptomatic patients, as many screening test panels now include them routinely.[5] On the other hand, individual patients can have baseline fluctuations in serum aminotransferase levels. In a large cross-sectional population based study, more than 30% of adults with abnormal LFTs had normal tests upon retesting[6]. The sensitivity and specificity of the serum aminotransferases, used to discriminate those with

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and without liver disease, depend on the cutoff values chosen to define an abnormal test[7]. There is wide variability in what is considered to be the upper limit of normal for alanine aminotransferase (ALT) across different laboratories. The most sensitive cutoff for ALT in adults is 29 IU/L for men and 22 IU/L for women[8].

There are some limitations with LFT[9,10] which include:

1) A normal LFT does not ensure that the patient is free of liver disease (e.g. Compensated cirrhosis).
2) These tests are not specific for liver function.
3) These tests do not usually provide a specific etiology, but are indicative of a liver disorder.Therefore the clinical significance of any abnormal LFT must be interpreted in each individual patient's case:

Test that evaluate liver function can be divided into five catagories[11]

1) Those that indicate liver injury (liver enzymes ALT and AST)
2) Those that indicate impaired bile flow or cholestasis (Alkaline phosphatase, Gamma glutamyl transferase GGT)
3) Tests that indicate impaired liver synthetic functions (Serum Albumin, prothrombin time)
4) Tests that show impaired hepatic excretory functions (Bilirubin, bile acids)
5) Tests that show hepatic metabolic functions, indicating the role of the liver in detoxification and clearance of endogenous metabolites such as urea.

Liver enzymes are commonly used in the evaluation of patients with a range of diseases. Classically they are used to give information on whether a patient's primary disorder is hepatic or cholestatic in origin. However knowledge of enzyme ratios and pattern recognition allow much more information to be derived from these simple tests.[3] Usually ALT and AST are more elevated in patients with hepatocellular injury, whereas ALP and gamma glutamyl transferase are more elevated in cholestatic injury. On the other hand bilirubin, albumin and prothrombin time are standard tests to evaluate the liver function[12].

Bilirubin:

Bilirubin is the catabolic product of hemoglobin produced within thereticuloendothelial system, released in unconjugated form which enters into the liver, converted to conjugated forms bilirubin mono and diglucuronides by the enzyme UDP-glucuronyltransferase[13]. When the liver function tests are abnormal and the serum bilirubin level is more than 17 µmol/L suggest liver disease[14]. Jaundice occurs when bilirubin becomes visible within the sclera, skin, and mucous membranes at a blood concentration of around 40 µmol/L[15]. The occurrence of unconjugated hyperbilirubinemia occurs due to over production of bilirubin, decreased hepatic uptake or conjugation or both. It is observed in genetic defect of UDP-glucuronyltransferase causing Gilbert's syndrome, Crigler-Najjar syndrome and reabsorption of large hematomas and ineffective erythropoiesis[16,17]. In viral hepatitis, hepatocellular damage, toxic or ischemic liver injury higher levels of serum conjugated bilirubin is seen. Hyperbilirubinemia in acute viral hepatitis is directly proportional to the degree of histological injury of hepatocytes and the longer course of the disease[18].

Alanine Amino Transferase (ALT):

Alanine amino transferase (ALT), also called Serum Glutamate Pyruvate Transaminase (SGPT) is an enzyme present in kidney, heart, muscle, and greater concentration in liver compared with other tissues of the body[13]. ALT catalyze the transfer of the α amino group of alanine to the α keto group of ketoglutaric acid (alanine +α-ketoglutarate =pyruvate +glutamate)[19]. ALT is a cytoplasmic enzyme and normal serum of ALT is 10-56 U/L[20]. Any type of liver cell injury can reasonably increase ALT levels and values up to 300U/L are considered nonspecific. Marked elevations of ALT levels (>500 U/L) are observed most often in persons with diseases such as viral hepatitis, ischemic liver injury and toxin induced liver damage. Viral hepatitis like A,B,C,D and E may be responsible for a marked increase in aminotransferase levels and hepatitis C infection tends to be more than hepatitis A or B. Despite the association between greatly elevated ALT levels and its specificity to hepatocellular diseases, the absolute peak of the ALT elevation does not correlate with the extent of liver cell damage[21]. Persistence of elevated ALT for more than six months after an occurrence of acute hepatitis is used in the diagnosis of chronic hepatitis. Elevation in ALT levels are greater in persons with nonalcoholic steatohepatitis (NASH)

than in those with uncomplicated hepatic steatosis[22]. In a recent study, it was observed that the hepatic fat accumulation in childhood obesity and nonalcoholic fatty liver disease causes serum ALT elevation. Moreover increased ALT level was associated with reduced insulin sensitivity, adiponectin and glucose tolerance as well as increased free fatty acids and triglycerides[23]. One of the recent studies has shown that coffee and caffeine consumption reduces the risk of elevated serum ALT activity in excessive alcohol consumption, viral hepatitis, ironoverload, overweight, and impaired glucose metabolism[24].

Aspartate aminotransferase (AST):

AST exist in two different isoenzyme forms which are genetically distinct, the mitochondrial and cytoplasmic form. AST is found in highest concentration in heart compared with other tissues of the body such as liver, skeletal muscle and kidney[13]. Aspartate aminotransferase (AST) is also called Serum Glutamic Oxaloacetic Transaminase (SGOT). AST catalyze transamination reaction (aspartate + α-ketoglutarate= oxaloacetate +glutamate). Normal serum AST level is 0 to 35 U/L[20]. Elevated mitochondrial AST seen in extensive tissue necrosis during myocardial infarction and also in chronic liver diseases like liver tissue degeneration and necrosis. About 80% of AST activity of the liver is contributed by the mitochondrial isoenzyme, whereas most of the circulating AST activity in normal people is derived from the cytosol isoenzyme[18]. However the ratio of mitochondrial AST to total AST activity has diagnostic importance in identifying the liver cell necrotic type condition and alcoholic hepatitis[25]. AST elevations often predominate in patients with cirrhosis and even in liver diseases that typically have an increased ALT[26].

AST/ALT ratio:

The ratio of AST to ALT has more clinical utility than assessing individual elevated levels. A coenzyme pyridoxal-5'-phosphate deficiency may depress serum ALT activity and consequently increases the AST/ALT ratio[27, 28]. The AST: ALT ratio (De Ritis ratio) may assist in differentiating the site of biliary obstruction. When associated with a cholestatic picture, an AST:ALT ratio of <1.5 suggests an extrahepatic obstruction. In such circumstances the ALT titre is frequently considerably higher than AST. An AST: ALT ratio of >1.5 indicates intrahepatic (mechanical or medical) cholestasis is more likely[29].

The ratio of AST to ALT is of use in Wilson disease, CLD and alcoholic liver disease and a ratio of more than 2 is usually observed. In NASH the ratio is less than one in absence of fibrosis on liver biopsy[14]. In viral hepatitis the ratio is usually less than one. The ratio invariably rises to more than one as cirrhosis develops possibly because of reduced plasma clearance of AST secondary to impaired function of sinusoidal cells[30]. ALT exceeds AST in toxic hepatitis, viral hepatitis, chronic active hepatitis and cholestatic hepatitis[18,19].

Alkaline Phosphatase (ALP):

Alkaline phosphates are a family of zinc metaloenzymes, with a serine at the active center; they release inorganic phosphate from various organic orthophosphates. ALP is present in mucosal epithelia of small intestine, proximal convoluted tubule of kidney, bone, liver and placenta. Alkaline phosphatase from the liver, bone and kidney are thought to be from the same gene but that from intestine and placenta are derived from different genes[19]. Normal serum ALP is 30-120 IU/L[20]. In acute viral hepatitis, ALP usually remains normal or moderately increased. Elevation of ALP with prolonged itching is related with Hepatitis A presenting cholestasis. Hepatic and bony metastasis can also cause elevated levels of ALP. Other diseases like infiltrative liver diseases, abscesses, granulomatous liver disease and amyloidosis may cause a rise in ALP. Mildly elevated levels of ALP may be seen in cirrhosis, hepatitis and congestive cardiac failure[19]. Low levels of ALP occur in hypothyroidism, pernicious anemia, zinc deficiency and congenital hypophosphatasia[31]. The serum activity is mainly from the liver with 50% contributed by bone[13]. Highest levels of alkaline phosphatase occur in cholestatic disorders and levels are likely to be very high in extrahepatic biliary atresia[14]. ALP has been found elevated in peripheral arterial disease, independent of other traditional cardiovascular risk factors[32]. Clinicians are often confused in differentiating liver diseases and bony disorders when they see elevated ALP levels and in such situations measurement of gamma glutamyl transferase assists as it is raised only in cholestatic disorders and not in bone diseases[19,33].

Albumin:

Albumin synthesis is an important function of the liver. Approximately 10 g is synthesized and secreted daily. With progressive liver disease serum albumin levels fall, reflecting decreased synthesis. Albumin levels are dependent on a number of other factors such as the nutritional status, catabolism, hormonal factors, and urinary and gastrointestinal losses. These should be taken into account when interpreting low albumin levels. Having said that, albumin concentration does correlate with the prognosis in chronic liver disease[4].

ProthrombinTime:

The synthesis of coagulation factors (except factor VIII) is an important function of the liver. The prothrombin time measures the rate of conversion of prothrombin to thrombin (requiring factors II, V, VII, and X) and thus reflects a vital synthetic function of the liver. Vitamin K is required for the gamma carboxylation of the above named factors. Prothrombin time may therefore be prolonged in vitamin K deficiency, warfarin therapy, liver disease, and consumptive coagulopathy. It is important to distinguish a prolonged prothrombin time due to hepatocellular disease from that due to chronic cholestasis with fat malabsorption. In practice a useful way of differentiating the two is the administration of vitamin K, which will reduce a prolonged prothrombin time due to fat malabsorption but not due to intrinsic liver disease[4].

Table 1: Standard liver function tests, their origin and abnormalities:[4,12]

Parameter	Origin	Associated disease
ALT 0-45 IU/L	Liver, skeletal muscle, cardiac muscle, red Blood cells, brain, pancreas, lungs.	Hepatocellular injury of any cause, Myopathies, hemolysis.
AST 0-35I U/L	Liver, kidneys, skeletal muscle	Hepatocellular injury due to any cause, myopathies. myocardial infarct.
ALP 30-120 IU/L	Liver, bone, placenta, kidneys,intestines	Cholestatic liver disease, sarcoidosis, pregnancy,lymphoma bone, kidney and intestinal disease.
GGT 0-30 IU/L	Biliary epithelial cells, kidney, pancreas, prostate	Biliary or pancreatic disease, myocardial infarct, renal diseases, chronic lung diseases, diabetes.
Bilirubin 2-17µmol/L	Hemolysis, insufficient excretion from the liver	Hemolysis, severe liver injury from any cause, Rotor syndrome, Dubin Johnson syndrome, Gilbert syndrome, Crigler Najjar syndrome.
Albumin 40-60 g/L	Produced in hepatocytes	Decreased in Nephrotic syndrome, Malnutrition, protein losing enteropathy.
Prothrombin time 10.9-12.5sec	Clotting factors produced in hepatocytes.	Prolonged in liver disease, vitamin K deficiency.

Conclusion:

Laboratory liver tests help to elucidate the alteration of markers which reflect the liver disease. The assessment of enzyme abnormalities like, the predominant pattern of enzyme alteration, the magnitude of enzyme alteration in the case of aminotransferases, isolated elevation or in conjunction with some other parameter, the rate of change and the nature of the course of alteration or follow up of 6 months to 1–2 years helps in the diagnosis of the disease. But a single laboratory liver test is of little value in screening for liver disease as many serious liver diseases may be associated with normal levels and abnormal levels might be found in asymptomatic healthy individuals. The pattern of enzyme abnormality, interpreted in the context of the patient's symptoms can aid in directing the subsequent diagnosis.

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Review Article

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Pituitary Tuberculosis

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Abstract

Tuberculosis of the pituitary gland is a rare entity. In most of the cases diagnosis is delayed due to absence of typical constitutional features and features of tuberculosis elsewhere in the body. The manifestation is like that of a space occupying lesion in the region of sella turcica, with headache and visual disturbance being the common presentations. Females are affected more than males. Features due to endocrine disturbances are variable, both clinically and on biochemical investigations. MRI remains the most important investigation, showing thickening of the pituitary stalk. Definitive diagnosis is done by histopathological examination of the resected specimen. With the surgical resection of the lesion followed by anti-TB chemotherapy, prognosis is good, although reversal of the hormonal deficits are variable.

Keywords: Tuberculosis, Pituitary gland

Introduction:

More than a century after the discovery of Mycobacterium tuberculosis by Robert Koch, tuberculosis still remains an important public health concern. After the advent of anti-tuberculous chemotherapy, for several decades it was thought to be a disease of the developing countries only. But with the emergence of HIV infection, the TB-HIV co-infection has become a threat to the developed countries also. At present, tuberculosis is the second most common cause of death from infectious diseases after HIV/AIDS; it is also the leading cause of death from an infectious disease in HIV co-infected patients[1].

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It is well known that tuberculosis can affect virtually any organ. Indeed, there is a popular saying that tuberculosis can mimic any disease except true pregnancy. However, in some sites, like the sella turcica, it is relatively uncommon. Tuberculoma of the central nervous system comprises 0.15%–4% of intracranial space occupying lesions[2], but only 1% of all intracranial tuberculomas occur in the sellar and suprasellar region[3]. Therefore, it poses a considerable diagnostic challenge to the physician that needs to be solved by clinical, imaging, and histological analysis.

Historical perspective:

In 1855, Popham described a fatal, cheesy, scrofulous tumour in the pituitary gland of a 10 year old girl[4]. The association of pituitary tuberculosis with Simmonds' disease was first described in 1916[5]. Garland and Armitage in 1933 also mentioned about sellartuberculoma in their discussion on intracranial tuberculoma[6]. However, the first ever case of confirmed pituitary tuberculoma was reported by Coleman and Meredith, who in 1940 described a 57 years old female presenting with headache, bitemporal hemianopia, optic atrophy and enlargement of sella turcica[7]. A transfrontal craniotomy was done to excise the presumed pituitary tumour, but the frozen section biopsy showed epithelioid and giant cells, resembling tuberculoma. Sheehan and summers described 6 more cases in 1949[8]. Since then, more than 80 cases has been described, with the largest series by Sharma et al in 2000, comprising of 18 cases of intrasellar tuberculomas[9].

Pathophysiology:

Tuberculoma is defined as a well-circumscribed mass composed of granulomatous chronic inflammatory tissue that may occur in the cerebral hemispheres, cerebellum, brainstem, or perimeningeal spaces. The pathway for spreading mycobacterium tuberculosis to the sellar region is unclear; either haematogenous spreading or contiguous extension from tuberculous meningitis or local tuberculous infection of the paranasal sinuses has been proposed[10]. However, Sharma et al reported that history of existing tuberculous infection elsewhere in the body was present only in 30% of their patients[9]. Another author reported that only 28.5% of the 35 patients with pituitary tuberculoma had history of systemic tuberculosis[11]. Therefore, mere absence of documented tuberculosis elsewhere in the body does not exclude the possibility of sellar tuberculosis.

The microscopic picture is classically that of a granulomatous lesion, with the presence of epithelioid macrophages, lymphocytes and plasma cells along with Langhans type of giant cells. However, caseation necrosis may not always be present. In the largest case series, only 50% had caseation necrosis on histopathology[9]. In another series of 8 patients, there was no caseation in 3 cases[12].

Clinical Features:

Female preponderance is evident in the case reports, with male: female ratio being 1:2.35 to 1:2.6 in different studies[9,12]. In most of the cases, symptoms are due to the local compressive effect of the tuberculoma. Constitutional features of tuberculosis are frequently absent. The most common feature is headache, which is usually of sudden onset and throbbing in nature[9]. Visual disturbance is the next common feature. As presumed, there is visual field defect in the form of bitemporal hemianopia, with variable degrees of defect in visual acuity and colour vision. Fundoscopy may reveal optic atrophy. Paralysis of other cranial nerves may also be present.

Endocrine disturbances are not always evident at presentation. In one case series, only 38.6% of the patients had features of endocrinopathies in the form of amenorrhoea- galactorrhoea syndrome, hypogonadism and hirsutism[9]. Interestingly there are two case reports of pituitary tuberculosis presenting with acromegaly[9, 13]. However, this may be a chance association as both the cases were reported in India where incidence of tuberculosis is high[13]. There are 4 cases where the patients presented with pituitary apoplexy. Posterior pituitary dysfunctions are unusual.

Low grade fever may be present in upto one-fifth of the patients. As stated previously, history of documented tuberculosis elsewhere in the body is present only in one-third of the cases[9].

Table-1 summarizes the clinical features in some of the published cases of pituitary tuberculosis.

Investigations:

As expected, in most of the cases there will be laboratory features of hypopituitarism. About 30-50% of patients may have anterior pituitary hormone deficiencies or central diabetes insipidus at the onset. The earliest manifestation is growth hormone (GH) deficiency, followed by gonadotropin (LH/FSH) and ACTH deficiency. However, in cases of tuberculoma of the pituitary gland, the most frequent deficiencies encountered are ACTH, TSH and hyperprolactinemia[14]. But it is to be noted that many patients may not have any hormonal disturbance despite having pituitary tuberculoma, and the pattern of hormonal imbalance is not useful for differentiation between tuberculoma and other causes of hypopituitarism.

Radiological investigations of the sellar region provide important clues to the diagnosis of tuberculoma. Tuberculomas typically appear as rim-enhancing masses on CT and MRI. They may be intrasellar, suprasellar, or both, and are frequently mistaken for pituitary adenomas. One important feature is thickening of the infundibulum on MRI (Figure-1), evident in over 80 % of cases[15].

On imaging, contrast-enhanced CT scan may show either brilliantly enhancing focal lesions or a hypodense, poorly enhancing sellar space-occupying lesion. Iso or hypointensity of intracranial lesions on both T1- and T2-weighted MR imaging are characteristic of the caseous necrotic content that is usually found in tuberculomas. Noncaseous tuberculomas typically display a hypointense signal on T1 and a hyperintense signal on T2-weighted

imaging, with homogeneous enhancement after gadolinium administration[16]. They may occasionally appear hyperintense on T1 weighted images owing to high protein content. These signal characteristics are nonspecific and overlap with those of pituitary adenomas. Pituitary abscesses however may show peripheral contrast enhancement on contrast-enhanced MRI. In selected cases, the adjacent meninges may also show abnormal enhancement[17].

Table-1: Clinical features of pituitary tuberculoma in selected cases

Author &Year	Age (Years) and Sex	Sex	Headache	Visual distur-bance	Visual field defect	Fever	Feature of documented extracranial tuberculosis (Present/Past)	Endocrine disturbances	Others
Coleman et al[7] 1940	57	F	Yes	Yes	Bitemporal hemianopia (Incomplete)	No	No	No	Bilateral primary optic atrophy
Brooks et al[18] 1973	33	F	Yes	Yes	Not mentioned	No	Yes (Previous pulmonary TB)	Amenorrhoea	Orthostatic dizziness, weakness, bilateral optic atrophy, diabetes mellitus
Eckland et al[19] 1987	37	F	Yes	Yes	Right temporal hemianopia	No	Yes (Previous tubercular lymphadenopathy)	No	Right VI nerve palsy
Esposito et al[20] 1987	55	F	Yes	No	No	No	Yes (Previous pulmonary TB)	No	No
Ashkan et al[21] 1997 (2 cases)	33	F	Yes	No	Not mentioned	No	No	Yes (Amenorrhea)	Fatigue, weight loss, anterior uveitis, bilateral hilar lymphadenopathy
	31	F	Yes	Yes	Bitemporal upper quadrantopia	No	Yes (Previous pulmonary TB)	Yes (Amenorrhea, Galactorrhea)	No
Sharma et al[9] 2000 (18 cases)	8 to 43	M= 5 F= 13	16/18	10/18	Not mentioned	3/18	Concomitant=1 Past= 5	7/18 Amenorrhea-galactorrhea= 4 Hirsutism= 1 Hypogonadism= 1 Acromegaly=1	Vomiting= 7 Cranial nerve palsy= 4 Hoarseness= 1 Weight gain= 1
Arunkumar et al[2] 2001	27	M	Yes	Yes	No	No	No	No	History of acute confusional state
Kumar et al[22] 2001	40	F	Yes	No	No	No	No	Yes (galactorrhea)	Vomiting
Paramo et al[11] 2001	32	F	Yes	No	No	No	No	Yes (Amenorrhea)	Asthenia

Dominguez et al[23] 2002	46	F	No	No	No	No	No	No	Acute confusional state
Kim et al[12] 2003	28	F	Yes	Yes	No	No	No	No	No
Bhadada et al[24] 2004	24	F	Yes	No	No	No	No	Yes (acral enlargement, coarse facial features, amenorrhea, galactorrhea, excessive body hair)	No
Ahmad et al[25] 2005	22	F	Yes	Yes	No	No	No	No	No
Deogankar et al[26] 2006	27	F	Yes	No	No	No	No	No	Left sided ptosis, left facial numbness
Dutta et al[27] 2006	13	M	Yes	Yes	Left temporal hemianopia	Yes	Yes (concurrent tuberculous meningitis)	Yes (arrested puberty)	Polyuria, decreased appetite, cold intolerance, drowsiness
Husain et al[28] 2008	40	F	Yes	No	No	No	No	No	Fatigue
Sundar et al[29] 2010	57	M	Yes	No	Not mentioned	Yes	No	No	Apathy, unresponsiveness, history of leprosy
Furtado et al[30] 2011	31	F	Yes	Yes	Yes	No	No	Yes (Amenorrhoea)	No

Table-1 (Continued)

Author &Year	**Age (Years) and Sex**	**Sex**	**Headache**	**Visual - disturbance**	**Visual field defect**	**Fever**	**Feature of documented extracranial tuberculosis (Present/Past)**	**Endocrine disturbances**	**Others**
Gul et al[31] 2012	39	M	Yes	No	No	No	Yes (Concurrent skin TB)	Yes (Decreased libido)	No
Mascarenhas et al[32] 2013	45	M	No	No	No	No	No	Yes (decreased libido, decreased shaving frequency, delayed relaxation of tendon reflexes)	Lethargy, weight gain, body ache, diabetes mellitus
Majumdar et al[33] 2014	25	F	Yes	No	No	No	Previous empirical anti-TB treatment for hilar lymphadenopathy	Yes (Amenorrhea)	Nausea
Tanimoto et al[34] 2015	50	F	Yes	No	Not mentioned	No	Yes (previous erythema nodosum)	Yes	Nausea
Srisukh et al[14] 2016	25	F	Yes	Yes	Yes	Yes	No	No	Malaise

Behari et al[13] found that the classical imaging characteristics of brain tuberculomas – multiple coalescing contrast-enhancing lesions – may not always be present. Therefore, they classified the radiologic findings of sellar tuberculomas into five types:

1. A mass lesion
2. Multiple coalescing ring lesions
3. Intrasellar abscess
4. Skull-base lesion
5. Pachymeningitis with extension to the sellar–suprasellar region.

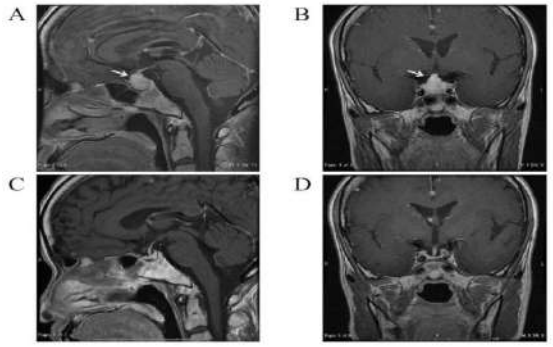


Figure-1: Enhanced T1-weighted sagittal (A) and coronal (B) MRI scans in a patient with pituitary TB. The tumor in the sellar and suprasellar region measured 1.7cm in size and was enhanced heterogeneously. The pituitary stalk was slightly thickened. Six months after the administration of antituberculous therapy, the sellar and suprasellar mass had disappeared on enhanced T1-weighted MRI (C, D). (Tanimoto et al[34]).

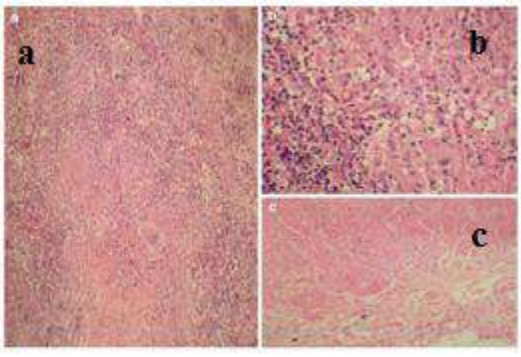


Figure-2: Paraffin sections showing multiple epithelioid cell granulomas with Langhans type of giant cell (a), epithelioid cells with slipper shapednuclei (b), and focal areas of necrosis (c) in a specimen of pituitary tuberculosis. (Furtado et al[30])

The mass lesions must be distinguished from inflammatory lesions such as lymphocytic or granulomatous hypophysitis, sarcoidosis, and Langerhan's cell histiocytosis, and from neoplasms such as astrocytoma, lymphoma, metastasis, germ cell tumor and meningioma. The ring enhancing lesions must be especially distinguished from neurocysticercosis and abscess[13]. MR spectroscopy may play a role in distinguishing between these lesions[35].

Management:

It is extremely difficult to diagnose sellar tuberculosis on the basis of clinical, biochemical and radiological features. Therefore, surgery is needed in almost all of the cases for confirmation with histopathology (and microbiologic tests if possible). Most of the times transsphenoidal drainage or resection of the tubercular lesion is preferred, but the approach may differ depending on presence of other features, like the presence of suprasellar extension. In many cases, dense adhesion to the optic apparatus is noted, and subtotal resection or simple fenestration should be employed[15].

Histopathology of the resected specimen is similar to tuberculous lesions in other areas: chronic inflammation, granulomatous change, central caseating necrosis, Langhans giant cells, and epithelioid cells (Figure-2). Microscopy for AFB, Mycobacterial culture and PCR may be done, but negative results does not exclude the possibility of tuberculoma in presence of typical histopathological features.

Following diagnosis and surgical management, patients are placed on long-term antitubercular treatment for 6–18 months. There is no consensus regarding the duration of the anti-TB regime[17]. Steroids are added in most of the cases, as well as prophylactic anticonvulsants[13]. Outcomes following surgical and antibiotic management are typically good, with few reports of recurrence[15]. Reversal of hormonal deficits is variable. Nevertheless there are reports of normalization of prolactin and improvement of Diabetes insipidus (DI) on antituberculous therapy without any specific hormonal treatment[16].

Conclusion:

Even for an expert physician, tuberculosis poses a serious diagnostic challenge. It becomes much more

difficult in case of tuberculosis occurring at an unusual site. Even in Bangladesh where tuberculosis is endemic, pituitary tuberculosis is a neglected and less discussed topic. Therefore, whenever there are clinical and/or radiological clues suggestive of a pituitary lesion of inflammatory nature, the possibility of sellar tuberculosis must be contemplated.

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Case Report

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Right Sided Bochdalek Hernia-a Report of Rare Case

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Abstract:

Bochdalek hernia is a type of congenital diaphragmatic hernia that typically presents in childhood - the clinical manifestation of symptoms and diagnosis in late age is extremely rare.There are fewer than 20 cases of right-sided Bochdalek hernia reported in adults in the literature.We report a case of a 10-year-old girl with right-sided Bochdalek hernia having right intrathoracic stomach, liver, gall bladder, omentum, jejunum and transverse colon, misdiagnosed initially, and treated as a case of pulmonary tuberculosis. The diagnosis was made by chest X-ray, computed tomography and barium meal. The hernia was treated via right lateral thoracotomy, reduction of the viscera into the abdominal cavity and simple primary repair of the diaphragmatic defect. Recovery was almost uneventful. Right-sided Bochdalek hernia is very rare. Even though rare, this disorder should be recognized, treated appropriately as early as possible to avoid complications.

Keywords: Bochdalek hernia, Congenital diaphragmatic hernia, Diagnosis and approach

Introduction:

In 1848, Bochdalek first described a congenital hernia resulting from the developmental failure of the posterolateral foramina to fuse properly[1].Bochdalek hernia is a congenital anomaly usually diagnosed in neonatal and postnatal patients, the clinical manifestation of symptoms and diagnosis in adults is extremely rare. Most of the hernias (80 to 90%) are found on the left side. Right-sided hernias are rarer because the right pleuroperitoneal canal closes earlier and the liver buttresses the right diaphragm [2].

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There are fewer than 100 cases of Bochdalek hernia reported in adults in the literature and fewer than 20 of those cases involve right-sided hernias[1]. We report the case of 10 year-old female whose right sided Bochdalek hernia was treated via thoracotomy.

Case Report:

A 10 years old girl, presented to us with cough, shortness of breath, discomfort in right chest after meal and constipation all for about 2 months. Prior to presentation, the patient had been taken to several hospitals where she was diagnosed as a case of recurrent bronchopneumonia since her 10 month of age but her problems did not subside completely. She was also misdiagnosed as a case of pulmonary tuberculosis and was treated with Anti T.B for six months. Despite the treatment, her symptoms persisted. The patient is the youngest child of her parents. She has one elder brother. She is a student of class four. Her father is a local business man, while the mother is full time house wife. There is no history of chronic illness or congenital abnormalities in the family. The antenatal history was uneventful. The mother claimed that her antenatal ultrasound was normal .patient was delivered by spontaneous vaginal delivery at 36 weeks in hospital and she cried immediately after birth. Patient was immunized according to EPI schedule of Bangladesh. There was no any history of chest trauma.Physical examination revealed a 10 years female child who was well oriented, cooperative, calm, acyanosed and not

jaundiced. Growth and development was normal according to demography. There was no sign of respiratory distress and no digital clubbing, eczema or other signs of allergy.

Her respiratory rate was 20 breaths per min, HR -98 beats/minute, temperature 37°C, SPO_2 was 98%.The trachea was central. Chest movements were less on the right side in comparison with left side, Breath sounds were diminished vesicular in nature and crepitations were present in the right lower part of the chest posteriorly. There were no wheezes. Bowel sounds were audible in the right lower chest on auscultation. Examination of the abdomen revealed scaphoid in shape, cardiovascular, neurological and musculoskeletal systems were unremarkable.

Her Complete blood count, serum urea, creatinine, electrolytes and liver function tests were within normal limits. Plain chest x-ray (postero-anterior view) (Figure 1) showed right sided pleural effusion but there was no diaphragmatic margin seen in right side. A plain computed tomography (CT) scan of the chest (Figure 2) showed bowel loops in right hemithorax. A barium follow through study (Figure 3) revealed herniated loops of gut in right hemithorax.Abdominal ultrasound showed some bowel loops and part of liver in the right hemithorax. Her echocardiography was normal.

After complete evaluation, our patient underwent an elective operation; short right lateral thoracotomy through the sixth intercostal space was performed. There was no hernia sac. Omentum, the right lobe of the liver, gall bladder, Jejunum, and flexura hepatica of the colon were herniated into the thoracic cavity (Figure 4). There was no adhesions so it was confirmed that this was a case of congenital right sided diaphragmatic hernia. The herniated organs were moved back to the abdominal cavity. A 10-cm long, 5cm wide defect in the diaphragm was closed with interrupted sutures without tension. (Figure 5). Post operatively patient was kept nothing by mouth, NG-suction, parental nutrition upto 4thpost operative day then oral feeding wasstarted.

In the second post operative day breath sound was increased than before and chest X ray showed expansion of right lung except lower lobe which was partially re-expanded. (Figure 6). On fifth post operative day one spike of fever was recorded andchest x –ray showed small encysted pleural effusion. After one course of intravenous antibiotic her fever subsided and repeated chest x-ray show resolving effusion. The postoperative course was uneventful and the patient was discharged 15 days after the operation. At follow-up, she had no symptoms and her chest X-ray was normal.

Discussion:

Bochdalek hernia is a congenital anomaly in neonatal and postnatal patients and occurs in about one in 2,200 to 12,500 live births, but it is rare in late childhood[2]. Most Bochdalek hernias are diagnosed in children who present with acute pulmonary symptoms [3]. In contrast to the acutepresentation by infants with these hernias, most adults present with more chronic symptoms, such as chronic dyspnoea, chest pain and pleural effusion. Recurrent abdominal pain, postprandial fullness and vomiting are the most common abdominal symptoms in adults [2].Our patient was experiencing the typical symptoms of repeated constipation, respiratory infection, intermittent vomiting and discomfort in right chest after meal. Some patients have no symptoms and the disorder is unexpectedly detected on chest X-ray[5, 6]. The hernia size varies and the content of the hernial sac may differ in each case. In 50% of acute presentations, the hernia sac contains colon, and in 40% the sac may contain multiple other viscera including small bowel, stomach, liver, kidney and gallbladder[1]. There was no sac seen in our patient.

The clinical presentation of a right-sided Bochdalek hernia can also manifest as strangulation of the contents of the hernia, colon necrosis and hemothorax[4,5]. A Bochdalek hernia can also masquerade as a tension pneumothorax on the chest X-ray, which can complicate the treatment[7].Increased intra-abdominal pressure for long duration, such as that seen during pregnancy, and also the acute rise in pressure during parturition, can predispose the mother to herniation[2]. A hernia sac has been reported to be present in 10 to 38% of cases[4]. Long-term survival may be due to the persistence of a pleuroperitoneal sac, and the rupture of the sac in adult life may trigger the characteristic symptoms[6]. In our patient, no hernia sac was present. The diagnosis in our patient was ascertained by a combination of chest X-ray and CT. On chest X-ray, a Bochdalek hernia can show up as gas and fluid-filled viscera or, as in our patient, as a pleural effusion. Contrast-enhanced CT is the most useful examination for this

diagnosis. Typical findings are fat or soft tissue contour on the upper surface of the diaphragm. Another characteristic of a Bochdalek hernia is its posterolateral location. These findings were also present in our patient. Other possible investigations include upper gastrointestinal contrast series, which can exclude malrotation but may miss complications[1]. Some patients have presented with signs of a pneumothorax[8] .The location of the diaphragmatic defect was posterolateral, our diagnosis was a Bochdalek hernia.Management of a Bochdalek hernia includes reducing the abdominal contents and repairing the defect through a laparotomy or thoracotomy. Successful laparoscopic and thoracoscopic repairs of Bochdalek hernias have both been described. Right-sided defects are traditionally dealt with by a thoracic or thoracoabdominal approach because of the presence of the liver. For left-sided hernias some advocate a transthoracic approach while others suggest a transperitoneal approach[1,3]. In our patient the size of the defect in the diaphragm that we detected was more than 10 cm. Because of the large size of the defect and multiple contents like omentum,liver,loops of gut gall bladder, we decided to perform a thoracotomy and open repair of the hernia instead of attempting thoracoscopic repair.



Figure 1: Chest X-ray showing homogeneous opacities in Right hemithorax.

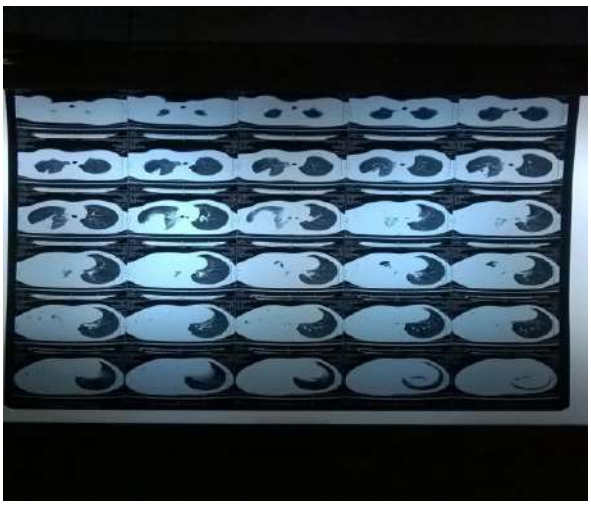


Figure 2. CT scan of chest



Figure 3: Barium follow through x-ray showing gut in Right hemithorax.



Figure 4: Intraoperative finding after right lateral thoracotomy

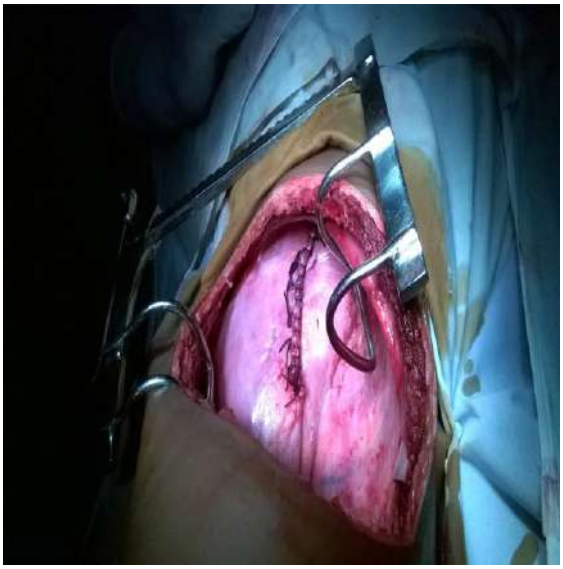


Figure 5: After reduction from Right.hemithorax to abdomen and primary closure.



Figure 6: Early post operative chest X-ray showing complete expansion of right side lung.

Conclusion:

Right-sided Bochdalek hernia is a rare. Patients with a Bochdalek hernia may not have any symptoms and the disorder may be detected unexpectedly, or the symptoms and expressions may vary from mild to serious complications. Even though rare, this disorder should be recognised, and treated appropriately as early as possible to avoid complications.

Abbreviations:

CT: computed tomography.

Consent:

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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