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Contents

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NORTH BENGAL MEDICAL COLLEGE JOURNAL

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The North Bengal Medical College Journal (NBMC J) is a peer-reviewed journal published biannually. It is the official organ of North Bengal Medical College, Sirajganj, Bangladesh.

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Letter from the Editor-in-Chief

Dear Readers,

As you can see, we are adhering with the policy continuing of this Journal in bringing out two issues in a year, and it gives me great pleasure to introduce the second issue of NBMCJ but it is the first issue of 2016. I hope that you will find these very varied papers of interest in this issue which also marked with the prestigious ISSN. I would like to take this opportunity to thank the members of the editorial board for their vital contribution to this Journal, by acting as reviewers for the manuscripts those are submitted for publication. Of course, the Journal cannot survive without high-quality papers to publish, and we cannot publish without peer review by suitably qualified and experienced reviewers. Our Editorial Board members work incredibly hard for publishing this Journal and I am very grateful to them on behalf of the whole authority. In addition to that, I would also like to offer an invitation to any of our readers who are interested to be involved in reviewing manuscripts and joining the Editorial Board. If you would be willing to be a reviewer, please email me at *akhossain09@yahoo.com* including brief details of your area of expertise. Needless to say, your contribution would be very much appreciated, and you would have the satisfaction of helping to shape the Journal as we head towards the exciting challenges of 2016. With the support of the Chairman of this institution, I have set the targets for 2016 of getting the endorsement of this Journal by the appropriate authority, with indexed to Pub Med, obtaining its Impact Factor. We cannot achieve these goals without the support of our readers, and without having of your valuable manuscripts.

Thank you for your support in the past; I look forward with confidence to the future.

Best wishes,

Professor S M Akram Hossain

Editor-in-Chief

Editorial

Real Anatomy for Teaching - Plastination

Plastination is a technique for preserving tissues, organs, and whole bodies for medical purposes and public display. Gunther von Hagens[1,2] invented a form of the method in 1977 at Heidelberg University in Heidelberg, Germany, after he observed medical students struggle working with cadavers that quickly decomposed. Von Hagens' body models, called plastinates, have since become widely used educational tools not only for those studying anatomy and medicine, but also for public audiences (Figure 1). By accurately preserving tissues for use in research and education, the technique has contributed to the fields of medicine, anatomy, and embryology.

Figure 1: Plastinated part of Human Body Head & Neck

Plastination is an advanced scientific technique that makes it possible to preserve the complete organs and bodies exhibited in HUMAN BODIES without their original appearance undergoing any change.

Each of the pieces comprising of the HUMAN BODIES exhibition has been carefully selected by the teaching team, paying special attention to their scientific exhibition and educational interest. That is why the exhibits are displayed as carefully and respectfully as possible, thus avoiding any kind of controversy. Two dates stand out as milestones in the recent history of anatomy: 1869 and 1977. It was in 1869 that the German chemist August Wilhelm von Hofmann (1818-1892) formally identified formaldehyde (though its existence had been reported earlier); and in 1977, Gunther von Hagens published his seminal paper on the preservation of biological specimens by plastination reported by Bickley HC et al.[3] Prior to the discovery of formaldehyde, and its solution in water, formalin, anatomical examination of the human (or indeed any other) body, had to be carried out speedily and preferably in winter, so that the process of putrefaction was slowed. Bodies sold to the anatomy schools by the “resurrection men” (grave robbers) fetched higher prices in winter. Dissections usually lasted three days, with the abdominal and chest cavities dissected on the first day, the head and cranial cavity on the second day, and the limbs on the third, following the body’s own, pre-

ordained order of decay. The most celebrated depiction of a dissection, Rembrandt's "The Anatomy Lesson of Dr Nicolaes Tulp" (1532) is remarkable for the fact that it shows the dissection of the left arm, while the rest of the body remains intact –clearly deviating from the accepted practice of the time for artistic effect reported by Afek A et al.[4]; where as "The Anatomy Lesson of Dr Deyman", painted much later, suggests that in this case, the usual sequence has been followed. The shortage of bodies for dissection and their rapid decomposition inevitably led to other avenues being explored in the quest for lasting anatomical specimens. Small specimens could be preserved in alcohol, suspended in glass jars.

Fragonard injected the viscera and blood vessels of his subjects with coloured wax before dehydration, and then applied a secret varnish that greatly improved their preservation to such an extent that specimens prepared in the 1790s can still be seen in the Fragonard Museum near Paris Degueurce et al.[5]

In the eighteenth and nineteenth centuries, there was, notably in Florence, a flourishing industry producing models in wax. Remarkable examples of the wax model-makers' art can be seen at La Specola in Florence, the Josephinum in Vienna, and in the Gordon Museum at Guy's Hospital in London where the great model maker Joseph Town plied his trade or more accurately, his art for over 50 years. Attempts were also made to reproduce anatomical specimens in other materials such as wood and papier mâché. With the discovery of formalin, anatomical models became much less in demand, (though anatomical and clinical models have enjoyed something of a recovery over the last twenty years or so). For nearly a century, nothing much changed in anatomy until Gunther von Hagens burst on to the scene in 1977. I think it would not be an exaggeration to say that anatomy has been transformed by these two events to a degree not seen since the advent of Vesalius nearly five hundred years ago.

In this process, water and lipids in biological tissues are replaced by curable polymers (silicone, epoxy, polyester) which are subsequently hardened, resulting in dry, odorless and durable specimens. The class of polymer used determines the optical (transparent or opaque) and mechanical (flexible or firm) properties of the impregnated specimen.

Silicone is used for whole specimens and thick body and organ slices to obtain a natural look.

Epoxy resins are used for thin, transparent body and organ slices. *Polyester-copolymer* is exclusively used for brain slices to gain an excellent distinction of gray and white

matter. The technique consists of four main steps:

1. *Fixation* can be done by almost all conventional fixatives.
2. *Dehydration* is achieved mainly by acetone because acetone also serves as the intermediary solvent during impregnation.
3. *Forced impregnation* is the central step in plastination: vacuum forces the acetone out of and the polymer into the specimen.
4. *Hardening (Curing)* by exposing it to a gaseous hardener (silicone), or by UVA-light and heat (polyester, epoxy). Plastinated specimens are perfect for teaching, particularly for neuroanatomy. Silicone plastinated brains are useful because they can be grasped literally and they are almost everlasting. Polyester plastination of brain slices provides an excellent distinction of gray and white matter and thus a better orientation.

Plastination is carried out in many institutions worldwide and has obtained great acceptance, particularly because of the durability, the possibility for direct comparison to CT- and MR-images, and the high teaching value plastinated specimens have.

Methods of Plastination:

1. The Silicone S10 Standard Procedure - *(*S10 for opaque and flexible specimens*)*.
2. The COR-TECH-Room Temperature Procedure.
3. The Epoxy E 12 Procedure- *(*E12 for thin, transparent, and firm body and organ slices**).**
4. The Polyester P35/P40 Procedure- *(*P 35/P 40 for semitransparent and firm brain slices).

The invention of plastination has given medical students and wider audiences an educational tool for the study of anatomy and embryology. Plastinates are used globally in medical and dental schools and have been viewed by more than 25 million people around the world through Body Worlds exhibits.[6] Embryo and foetus plastinates give people the opportunity to examine the structures present during prenatal development.

Professor S M Akram Hossain

Professor and Head, Department of Anatomy, North Bengal Medical College, Sirajganj

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Instructions for Authors

Authors are invited for submission of articles in all fields of medical science and all correspondence, should be addressed to

Editor in Chief,

North Bengal Medical College Journal,

North Bengal Medical College and Hospital,

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Email: thenbmcj@gamil.com

Overall general Instructions

- Type manuscripts in British English in double-spaced paragraph including references, figures with legends and tables on one side of the page.
- Leave 2.5 centimeter margin on all sides with number in every page at the bottom of the page (middle, by page/ x or y) beginning with the abstract page and including text, tables, references and figures.
- Cite each reference in text in Arabic numbers (1, 2, 3, ...) numerical order with their lists in the reference section (as Vancouver Style).
- SI units of measurement should be used.
- Assemble manuscript in following order :

  (1) Title page;
  (2) Then next page with author designations and place of work.
  (3) Abstract (structured) within 250 words.
  (4) Main text which includes Introduction, Materials and methods, Results, Discussion, Conclusion, Acknowledgments (if any) and contributions of the authors in that specific study.
  (5) References;
  (6) Tables;
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- Authors' names, highest academic degree, affiliations and complete address for correspondence and they should reveal all possible conflicts of interest on this page.
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The Text

The Following are typical main headings:

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ii. **Materials and Methods**
iii. **Results**
iv. **Discussion and Conclusion.**

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Summarize the rationale for the study with pertinent references. The purpose (s) of the study should be clearly elicited.

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Results:

Present only important results observations in logical sequence in the text, tables or illustrations with relevant statistics.

Discussion:

Emphasize new and important results and the conclusions that follow including implications and limitations. Relate observations to other relevant studies.

Conclusion:

Link the conclusion with the goals of the study, but avoid unqualified statements and conclusions not adequately supported by data. State new hypothesis when warrented.

Acknowledgments:

List all sources of funding for the research with contributions of individuals.

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Accuracy of reference data is the author's responsibility. Verify all entries against original sources. Especially journal tittles, inclusive page numbers, publication dates. All authors must be listed if less than six. Use et al, if more than six. Personal communications, unpublished observations, and submitted manuscripts must be cited in the text as "([Name(s)], unpublished data, 20xx)." Abstracts may be cited only if they are the sole source and must be identified in the references as "Abstract". "In press" citations must have been accepted for publication and add the name of the journal or book including publisher. Use Vancouver style, for example:

1. World Health Organization: WHO Recommendations: Low Birth Weight: preventing and managing the Global Epidemic. Geneva, World Health Org, 2000 (Tech.Rep.Ser., no.894).
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Each Table must be typed on a separate page. The table number should be followed by a Roman brief informative title. Provide explanatory matter in footnotes. For footnotes use symbol in this sequence; *, **, +, ++, etc.

Figures:

Line drawings, photomicrographs, colour prints and halftones should be camera ready, good quality prints. Submit only originals of laser prints, not photocopies. Original figures must be submitted indicating figure number, short figure title on top of figure lightly in pencil. Any abbreviation or symbols used in the figures must be defined in the figure or figure Legend.

North Bengal Medical College Journal
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Original Article

Studies on Antibacterial Activity and Brine Shrimp Toxicity of Leaf Extract of *Cassia sophera*

Ainun Nahar,[1] Omair Abdullah Asif, [2] Nishat Parvin,[3]

K A S M Ziaus Shams Asadi [4]

Revised : August 06, 2015 Accepted : August 16, 2015

Abstract

Introduction: *Natural product plays an important role against microorganisms. Plants are unlimited source of natural products, which still form a major part of ingredients in almost all system of therapeutics. Cassia sophera Linn of Caesalpinaceae family is extensively used in the indigenous medicine as an antimicrobial agent.*

Methods: *The antibacterial activity and brine shrimp toxicity of ethanol extract of leaves of Cassia sophera were evaluated. The present study was carried out in Microbiology laboratory, Institute of Biological Sciences, Rajshahi University, Rajshahi from July/2006 to December/2007. Five Gram positive (Bacillus subtilis, Bacillus megaterium, Sarcina lutea, Streptococcus β-haemolyticus, Staphylococcus aureus) and five Gram negative (Pseudomonas aeruginosa, Escherichia coli, Salmonella typhi, Klebsiella pneumoniae, Shigella dysenteriae) bacteria were tested using disc diffusion method. The harmful impact of the extract was also investigated on brine shrimp.*

Results: *The extract was inactive at the concentration of 30 µg/disc but exhibited improved activity at a concentration of 200 µg/disc against the tested pathogens which had relatively less effect than that of reference drug, Cephradine. In brine shrimp lethality bioassay test, it was observed that LC_{50} value of the extract was 8.62 ppm.*

Conclusion: *Ethanol extract of leaves of Cassia sophera may have some antibacterial as well as toxic effect on brine shrimp.*

Key words: *Cassia sophera Linn., Antibacterial activity, Caesalpinaceae.*

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Introduction

Microbial infection is a common health problem in Bangladesh. People of the rural areas use different parts of plant for the ailment of various bacterial infections. Medicinal plants continue to play an important role for the management of different microbial infections when over medication and long-term side effects of modern drugs have assumed alarming. In recent years, there has been a resurgence of scientific interest in the use of medicinal plants for the development of new pharmacotherapeutic agent for the management of diverse diseases, ranging from simple skin diseases to incurable cancer. The cheap, safe and effective medicinal agents may play as alternative source for cure of microbial infections particularly the resistant cases. The plant *Cassia sophera*, locally called "Chhoto Kalkasunda" belongs to family Caesalpinaceae is a shrub or undershrub, about 2.4-3 meter high, grows annually or perennially throughout the country. Flowering time of the plant: June-July and Fruiting time: Novemer-december.[1] Different parts of the plant are used for ringworm diseases, psoriasis, eczema, cough, bronchitis, diabetes, gonorrhea and in syphilitic sores. The leaves of the plant contain flavanol C glycoside and sennosides. Seeds contain tannic acid, mucilage, fatty oil emodin and a toxalbumin. Root bark contains anthraquinones, chrysophanol, physcion and β-sitosterol.[1,2] Some authors reported the antioxidant and antimicrobial activity of seeds[3] and leaves[4] of *Cassia sophera*. So far it is known from different sources that no antimicrobial work has been done with this plant in Bangladesh. On this perspective, the present study was carried out to investigate the antibacterial activity and brine shrimp toxicity on ethanol extract of leaves of *Cassia sophera* which are abundant in Bangladesh.

Materials and Methods

Cassia sophera leaves were collected from Rajshahi locality and taxonomically identified by an expert (Professor A T M Naderuzzaman (retired), Department of Botany, Rajshahi University). Adhering dirt's of the leaves were removed by washing, cut into small pieces and then dried at room temperature. The dried parts were then grinded to form powder. The dry powder was soaked in ethanol for 5 days in a glass container closed by glass cork with occasional shaking and stirring. The mixture was filtered through cotton-cloth and then concentrated by rotary evaporator at 50 °C under reduced pressure to obtain a semisolid mass. Antibacterial screening and brine shrimp toxicity study were carried out using this crude ethanol extract of *Cassia sophera.*

Ethanol extracts of *Cassia sophera* was examined for their antibacterial activity by disc diffusion method.[5] Ten bacterial species (*Bacillus subtilis, Bacillus megaterium, Sarcina lutea, Streptococcus β-*

haemolyticus, *Staphylococcus aureus* and *Pseudomonas aeruginosa*, *Escherichia coli*, *Salmonella typhi*, *Klebsiella pneumoniae*, *Shigella dysenteriae*) were selected for this investigation. The medium was (nutrient agar, DIFCO) poured into sterile petridishes and the inoculum was adjusted to contain 10^5 to 10^7 bacteria per ml. The extract was dissolved in ethanol to obtain a concentration of 10 µg/µl. The discs (6 mm in diameter) were prepared by sterile filter paper and dried in an oven to remove moisture. The solutions were applied on the dried filter paper discs by micropipette to obtain discs containing 30 µg and 200 µg of extracts in each disc. Cephradine discs (30 µg/disc) were used as standard. The discs were then placed on the petridishes seeded with the bacterial medium containing inoculum and allowed to diffusion at 4°C for 5-6 hours. The petridishes were then incubated at 37°C for 18 hours and the zone of inhibitions observed were measured.

Brine shrimp lethality bioassay test[6] is a convenient bioassay for active plant constituents. Eggs of *Artemia salina* Lech. were placed in one side of a small tank divided by a net containing 3.8 % NaCl solution for hatching. A light source was placed in other side of the tank to attract the nauplii. After two days of hatching period, the nauplii were ready for the experiment. Then 3 mg of the extract was accurately measured and dissolved in 0.6 ml (600 µl) of dimethyl sulfoxide (DMSO) to get a concentration of 5 mg/ml. From the stock solutions 2, 5,10, 20 and 40 µl were placed in 5 different vials making the volume up to 5 ml by NaCl solution. The final concentration of the samples, in the vials became 2, 5, 10, 20 and 40 µg/ml (ppm), respectively. Ten brine shrimp nauplii were then placed in each vial. For the control test of each vial, one vial containing the same volume of DMSO plus seawater up to 5 ml was used. After 24 hours of incubation, the vials were observed using a magnifying glass and the number of survivors in each vial were counted and noted. Resulting data were transformed to the probit analysis[7] for determination of LC_{50} values for the extract.

Results

Table I showed that crude ethanol extract of the leaves of *Cassia sophera* was inactive against the tested bacteria at concentration of 30 µg/disc, whereas at concentration of 200 µg/disc, it showed improved activity against all the tested bacteria exhibiting their zones of inhibition 10-15 mm diameter. The maximum zone of inhibition (16 mm) was observed against *Shigella dysenteriae*. The standard cephradine was found to have pronounced effect (zone of inhibitions 23-28 mm) at the concentration of 30 µg/disc. In the brine shrimp lethality bioassay test, it was observed that LC_{50} value of the extract was 8.62 ppm whereas the standard ampicillin trihydrate showed its LC_{50} value 5.14 ppm (Table II).

Table I: Zone of Inhibition Against Test Organisms with Crude Leaf Extract of *Cassia sophera* and Reference Drug Cephradine

Test Organisms	Diameter of zone of inhibition (in mm)		
	Leaf extract		Cephradine
	30µg/disc	200µg/disc	30µg/disc
Gram positive:			
Bacillus subtilis	00	11	26
Bacillus megaterium	07	13	27
Sarcina lutea	00	11	23
Streptococcus β-haemolyticus	06	13	27
Staphylococcus aureus	07	12	26
Gram negative:			
Pseudomonas aeruginosa	00	10	24
Escherichia coli	05	10	27
Salmonella typhi	07	12	25
Klebsiella pneumonae	06	11	28
Shigella dysenteriae	08	16	26

Table II: LC_{50} Values of the Ethanol Extract of Leaves of *Cassia sophera* and Standard Ampicillin trihydrate

Extracts	LC_{50} (ppm)	95% Confidence Limit		Regression Equation	λ^2 (df)
		Lower	Upper		
Leaf	8.62	4.44	16.73	Y = 3.63 + 1.46 X	0.38 (2)
Ampicillin	5.14	2.57	10.28	Y = 4.12 + 1.23 X	0.15 (3)

Discussion

Medicinal plants are the rich sources of bioactive compounds and thus serve as important raw materials for drug production. Bacterial Pathogens are rapidly growing resistant to conventional drugs like methicillin and vancomycin resistant *Staphylococcus aureus*. Scientists are now engaged to explore alternative drug from plant source to explore new and potent antibacterial principles. In the continuation of new antibacterial drug discovery, we investigated ethanol extract of leaves of *Cassia sophera*, which is being used as a successive medicinal plant in different diseases by folklore practitioner in our locality. In the present investigation, we found greater antibacterial activity of the

crude ethanol extract of the leaves of *Cassia sophera* against the tested pathogens at the concentration of 200 µg/disc but relatively less than that of reference drug, Cephradine. Some workers reported the antibacterial[3,4] activity of the seed and leaf segments of this plant. They observed fairly good activity with the ethanol and methanol extracts against the tested pathogens that correlates our findings. Detailed study is required to isolate the bioactive antimicrobial constituents present in the extracts.

In the brine shrimp lethality study, extract of leaves of *Cassia sophera* was tested for their toxicity against brine shrimp nauplii and showed positive results indicating that these are biologically active. The mortality rates of brine shrimp were found to be increased with increasing concentration of the samples. There was no mortality in the control groups. The LC_{50} value of the extract of *Cassia sophera* was 8.62 ppm whereas the standard ampicillin trihydrate exhibited its LC_{50} value of 5.14 ppm. There are many reports on cytotoxic activities of the extracts of various plants growing in different parts of this region. It was revealed that crude ethanol extract of whole plant of *Commelina bengalensis* and its three organic solvent fractions demonstrated significant activity in the brine shrimp lethality bioassay test.[8] The LC_{50} values were 14.12, 10.00, 10.00 and 19.95 µg/ml for crude ethanol extract, n-hexane, carbon tetrachloride and chloroform soluble fractions respectively. The results correlate with the findings of the present study.

Conclusion

Phytochemical analysis, pharmacological and clinical tests are prerequisites for developing drugs from medicinal plants. The present findings provide a support for the use of the plant in traditional medicine and strongly suggests the necessity to use this as herbal source of antimicrobial agents.

Acknowledgements

We are highly grateful to Professor A T M Naderuzzaman (retired), Department of Botany, Rajshahi University for taxonomical identification of the plant. We are also thankful to Department of Microbiology, Rajshahi Medical College and Department of Pharmacy, Rajshahi University, Bangladesh for providing facilities to study the work properly.

Contribution of the Authors

First author was the main researcher, second and third did the data analysis and computer composing. Last one was the supervisor of this study.

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Original Article

Circadian Variations in the Onset of Acute Myocardial Infarction with Their Association of Some Selected Characteristics of Patients

A T M Fakhrul Islam,[1] Jawadul Haque,[2] Md. Abdul Khaleque,[3] Most. Pervin Akhter[4]

Revised : August 09, 2015 Accepted : August 20, 2015

Abstract

Introduction: *There is an existence of circadian pattern in the onset of acute myocardial infarction (AMI). The aim of this study was to observe the circadian variations in the frequency of acute myocardial infarction and to identify the relationship between these variations in acute attack and some selected characteristics of the patient.*

Methods*: A retrospective study carried out at cardiology ward of Rajshahi Medical College hospital and included all the patients of myocardial infarction between May 2011 and December, 2011. A total of 350 patients with confirmed acute myocardial infarction were investigated. For analysis of the circadian pattern of onset of symptoms, the day was divided into four time period of six hours interval and patients were categorized into different groups and sub-groups according to their characteristic and risk exposers.*

Results: *This study observed the highest (137, 39.15%) incidence of onset of acute myocardial infarction in the 06.01-12.00 hrs time period followed by 32.85% (115) in the 00.01-06.00hrs time period. Those belongs to age group 40 years and above showed the peak incidence at late morning (06.01-12.00 hours) whereas patients below 40 years revealed no significant circadian variations in the frequency of acute attack. Patients with smoking habit showed their peak incidence in 06.01-12.00hrs time period while high incidence in non-smokers found in 00.01-06.00hrs time period (p <.01.). Statistically significant (p<.05) variations found in the patients with parental history of MI (18.29%) and the previous history of AMI (9.43%). Patients with hyperlipidemia, diabetes and hypertension exhibited their high incidence both in early morning (00.01-06.00 hrs) and late morning (06.01-12.00 hrs).*

Conclusion: *This study observed the existence of circadian variations in the onset of acute myocardial infarction with marked peak incidence in the morning.*

Key words: *Circadian rhythm, Acute myocardial infarction Cardiovascular diseases' risk factors*

North Bengal Med. Coll.J. 2016; 2 (1) : 15-22

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Introduction

An appreciation of the existence of circadian pattern in the onset of acute myocardial infarction (AMI) has been reported in several studies.[1] Both the physiological and pathological functions of cardiovascular organs are closely related to circadian rhythm, an endogenously driven 24-h cycle. Heart rate, blood pressure, and endothelial function show diurnal variations within a day. The onset of cardiovascular disorders such as acute coronary syndrome, atrial arrhythmia, and subarachnoid hemorrhage also exhibits diurnal oscillation.[2]

Serious adverse cardiovascular events, including myocardial infarction, sudden cardiac death exhibit a pronounced circadian rhythmicity, with a marked peak in the morning hours when the patient assumes an upright posture and begins daily activities.[3] Circadian variation has been accepted as a factor in acute myocardial infarction (AMI). An increased incidence of cardiac events in the morning has been reported for a long time. Recent reports have indicated that the onset of AMI shows two peaks, which occur in the morning and evening.[4] The recognition of the morning increase of acute cardiovascular events has convinced many that they may be triggered by morning activities. Trigger factors occur relatively frequently and may play a causative role in up to 20% of cases of acute coronary syndromes. Physical exertion, bursts of anger and sexual activity have been proved to have triggering potential.[5] A general hypothesis of the triggering of coronary thrombosis has been proposed. The process begins with the development of a vulnerable atherosclerotic plaque, which may become disrupted by internal forces or by external hemodynamic or vasoconstrictive changes. Once disrupted, the plaque becomes a thrombogenic focus. From a research standpoint, this new information on triggering provides clues to a mechanism of onset that might lead to more effective preventive therapy.[6] The onsets of myocardial ischaemia, unstable angina, acute myocardial infarction, sudden cardiac death, and strokes have been reported to exhibit a circadian variation, with increased frequency in the second quarter of the day.[7] Since initial observations that the incidence of MI onset was time and activity dependent with circadian, circaseptan, and circannual variation, triggering of MI by heavy exertion, sexual activity, anger, mental stress, cocaine and marijuana use, and exposure to air pollution has been demonstrated.[8] Carlos E D'Negri et al.[9] suggested that recognition of particular regional circadian patterns in myocardial ischaemia is important in planning treatment strategies for patients with coronary artery disease to prevent the occurrence of sudden, catastrophic cardiac events. This retrospective study was designed to explore circadian variations in the onset of symptoms of acute myocardial infarction and

to identify the relationship between these variations and the characteristics of patients with aims to improve the awareness of the risk group about the timing of acute attack and to generate new possibilities for prevention of cardiovascular diseases.

Materials and Methods

This was a descriptive type of retrospective study conducted among the patients of acute myocardial infarction (AMI) admitted in the cardiology department of Rajshahi Medical College hospital between May, 2011 and December, 2011. A total of 350 patients with confirmed acute myocardial infarction were investigated to observe the circadian variations in the onset of acute myocardial infarction and explore any potential association between the circadian variations with some selected patients` characteristics. The variables of the study were age, sex, time of onset of symptoms, physical exercise, smoking habits, taking aspirin, dyslipidemia, diabetes mellitus, hypertension, previous history of ischaemic heart disease, parental history of myocardial infarction. A semi-structured questionnaire was used to obtain data from the patients` admission sheet. The study patients and their relatives (when patients were unable to talk) were also interviewed to ascertain the accuracy of the information recorded in the case sheet. Only the patients with complete information were included in this study. Time of onset of acute attack was recorded from the admission file which was the exact or nearest possible time of onset of severe symptoms of AMI. The common symptoms of AMI were chest pain, sweating, dyspnoea, vomiting. All patients were grouped and sub grouped according to some selected characteristics of the patients. For analysis of the frequency of onset of symptom with their circadian variations, the day was divided into four time period of six hours interval. They were as follows: 00.01 – 06.00 hours, 6.01 – 12.00 hours, 12.01 – 18.00 hours and 18.01 – 24.00 hours. The circadian variation in the frequency of onset of AMI was tested for significance by χ^2 test.

Results

The results have been illustrated in following sections with table and graph. The study revealed that the mean age of the AMI patients was 56 years ($\bar{x}\pm$ SD=55.71±9.39 years) and majority (284, 81.14%) of patients were in the age group of ≥60 years followed by 40-59 years group (57, 16.29%). Out of the 350 patients, 78.29% were male patients. Average age of the male was 56 years ($\bar{x}\pm$ SD = 55.99±9.22 years) and that of female was 55 years ($\bar{x}\pm$ SD = 54.74±9.99 years). Maximum (88%) patients were married and 10.28% were widowed. More details were shown in Table I & II and Figure 1 & 2.

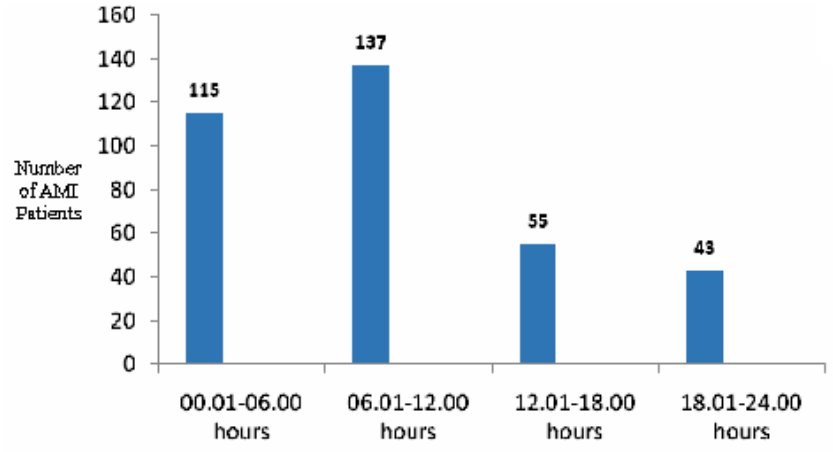

Figure 1: Circadian Variations in the Onset of Acute Myocardial Infarction (N-350)

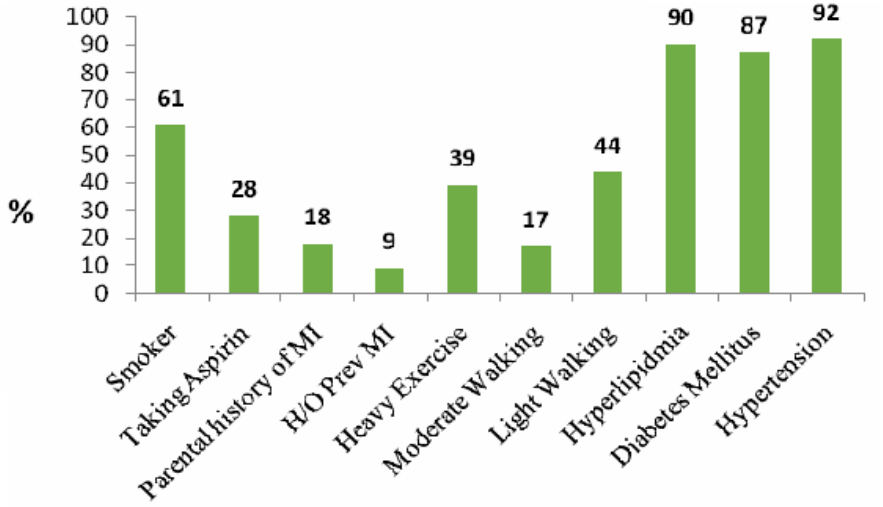

Figure 2: AMI Patients According to their Characteristics and Risk Factors (n-350)

Table I: Age and Gender Distribution of AMI Patients (n-350)

	Gender		
Age Groups	**Total (%)**	**Male Total (%)**	**Female Total (%)**
20-39 years	9(2.57%)	7(2.55%)	2(2.63%)
40-59 years	57(16.29%)	41(14.96%)	16(21.05%)
60-79 years	284(81.14%)	226(82.49%)	58(76.32%)
Total	**350 (100%) $\bar{x} \pm SD = 55.71 \pm 9.39$ years**	**274 (78.29%) $\bar{x} \pm SD = 55.99 \pm 9.22$ years**	**76 (21.71%) $\bar{x} \pm SD = 54.74 \pm 9.99$ years**

Table II: Relationship between Circadian Variations in the onset of Acute Myocardial Infarction and some selected Variables (n-350)

Time of onset of AMI → / Variables ↓	Total (%)	00.01– 06.00 hours (n-115, 32.85%)	06.01 – 12.00 hours (n-137, 39.15%)	12.01 – 18.00 hours (n-55, 15.71%)	18.01 – 24.00 hours (n-43, 12.29%)	p value
Age group:						
20-39 years	9(2.57%)	1(11.11%)	3(33.335%)	3(33.335%)	2(22.22%)	*p >.05.*
40-59 years	57(16.29%)	17(29.82%)	20(35.09%)	12(21.05%)	8(14.04%)	
60-79 years	284(81.14%)	97(34.15%)	114(40.14%)	40(14.08%)	33(11.62%)	
Gender:						
Male	274(78.29%)	87(31.75%)	114(41.61%)	45(16.42%)	28(10.22%)	*p >.05.*
Female	76(21.71%)	28(36.84%)	23(30.26%)	10(13.16%)	15(19.74%)	
Marital Status:						
Married	308(88%)	99(32.14%)	125(40.59%)	49(15.91%)	35(11.36%)	*p >.05.*
Unmarried	3(.86%)	1	1	0	1	
Divorce	3(.86%)	1	0	1	1	
Widow	36(10.28%)	14(38.89%)	11(30.56%)	5(13.89%)	6(16.66%)	
Smoking Habit:						
Smoker	215(61.43%)	66(30.70%)	95(44.19%)	43(20.00%)	11(5.11%)	*p <.01.*
Non-smoker	135(38.57%)	49(36.30%)	42(31.11%)	12(08.89%)	32(23.70%)	
Taking Aspirin:						
Yes	98(28%)	38(38.78%)	52(53.06%)	2(2.04%)	6(6.12%)	*p <.01.*
No	252(72%)	77(30.56%)	85(33.73%)	53(21.03%)	37(14.68%)	
Parental history of MI:						
Yes	64(18.29%)	9(14.06%)	16(25%)	25(39.06%)	14(21.88%)	*p <.01.*
No	286(81.71%)	106(37.06%)	121(42.31%)	30(10.49%)	29(10.14%)	
History of Previous MI:						
Yes	33(9.43%)	7(21.21%)	9(27.275%)	8(24.24%)	9(27.275%)	*p <.05.*
No	317(90.57%)	108(34.07%)	128(40.38%)	47(14.83%)	34(10.72%)	
Physical exercise:						
Light(walking <4 hours/week)	157(44.86%)	55(35.03%)	58(36.94%)	21(13.38%)	23(14.65%)	*p <.01.*
Moderate(walking >4hours/week	58(16.57%)	18(31.03%)	12(20.69%)	16(27.59%)	12(20.69%)	
Heavy(strenuous physical exercise that induce sweat)	135(38.57%)	42(31.11%)	67(49.63%)	18(13.33%)	8(5.93%)	
Lipid Profile:						
Hyperlipidemia= Total Cholesterol > 200mg/dl	316(90.29%)	104(32.91%)	127(40.19%)	50(15.82%)	35(11.08%)	*p >.05.*
Normal= Total Cholesterol < 200mg/dl	34(9.71%)	11(32.35%)	10(29.41%)	5(14.71%)	8(23.53%)	
Diabetes Mellitus:						
Normal= <7.8 mmol/l	46(13.14%)	13(28.26%)	15(32.60%)	9(19.57%)	9(19.57%)	*p >.05.*
Diabetic= >7.8mmol/l	304(86.86%)	102(33.55%)	122(40.14%)	46(15.13%)	34(11.18%)	
Hypertension:						
Normotensive	27(7.71%)	8(29.62%)	7(25.93%)	7(25.93%)	5(18.52%)	*p >.05.*
Hypertensive	323(92.29%)	107(33.13%)	130(40.25%)	48(14.86%)	38(11.76%)	

Discussion

This study observed that the high (137, 39.15%) incidence of onset of acute myocardial infarction was in the 06.01-12.00 hrs time period which was followed by 00.01-06.00 hrs time period (115, 32.85%). Those belong to age group 40 and above showed the peak incidence at late morning hours (06.01-12.00hrs), whereas patients below 40 years distributed equally their frequency of acute attack in all time series. Statistically, we found no significant relation between age groups of patients and circadian pattern of incidence of AMI (p>.05.). In male & female subset of patients, there were circadian variations observed in the incidence of acute MI but it was not statistically significant (p >.05.). This may be due to relatively small size of our female patients (76 patients out of 350). A similar study was conducted by Chowta et al.[10] in India.They observed the statistically significant peak incidence in the second quarter (06.01-12.00hrs) of the day among the female patients within the age group of 60 years and above. They also cited that the frequency of attack in the evening (12.01-18.00hrs) time period and night (18.01-24.00) equally distributed which was also observed with small variations in this study (Table II). In other study, Graham I, et al.[11] quoted that heart attacks are at least three times more likely to occur in the morning than in the late evening.

Patients with smoking habit showed highest frequency (44.19%) of attack in 06.01-12.00 time period where as among non-smoker group high incidence found in the early morning phase (00.01-06.00 hours) (p<.01). This findings are consistent with the study of Juan B López Messa et al.[12] Our study revealed the morning peak incidence of AMI in both diabetes and non-diabetic patients which was also consistent in the research paper of Jamal S. et al.[13]

Periods with highest incidence (06.01-12;00) of onset of MI were same in both aspirin and non-aspirin group. Only 64 (18.29%) patients had the parental history of MI. Their highest periods of onset of acute attack was 12.01 – 18.00 hrs (p<.01.). Patients with the history of previous AMI (33, 9.43%) exhibited their frequency of current acute attack equally in all time period (p<.01.). Those exposure to regular heavy exercise 157 (44.86%) showed their highest incidence of attack at 06.01-12.00 hrs (p<.01). Patients with hyperlipidemia, diabetes and hypertension exhibited their high incidence both in early morning and late morning. Several study findings[12,13,14] documented that smoking, diabetes, hyperlipidemia, hypertension can modify the standard circadian rhythm of onset of myocardial infarction.

Limitations of this study were the reliance on the subjective reports by patient about the timing of acute myocardial infarction, small size of the study population and enrollment of the patients only from a single regional hospital.

Conclusion

In this study, a circadian variations in the onset of AMI was perceived with a morning peak and an early morning and it was more or less apparent in all groups of patients irrespective of their risk exposure. Further study with a much larger sample from the hospital of different regions suggested to ascertain the factors influence the circadian variations in the onset of AMI.

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Contribution of the Authors

First author designed and conducted the study, wrote the manuscript. Second author critically reviewed the manuscript. Third and fourth authors helped in data collection.

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Original Article

Family Members have Greater Risk of Hepatitis B due to Horizontal Transmission

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Abstract

Introduction: *Hepatitis B virus (HBV) infection is found worldwide. Its prevalence and predominant mode of transmission vary among geographic regions. The mode of horizontal transmission is important especially in household contacts of HBV living in an endemic area. The aim is to asses the predominant mode of HBV transmission among family members of index persons positive for hepatitis B surface antigen (HBsAg).*

Methods: *100 subjects positive for HBsAg and their family members were tested for the markers of HBV infection by ELISA following the manufacturers' methodology. Their state of infection and rate of exposure in various age groups, occupational groups and in particular risk groups were analyzed to assess over the mode of transmission of HBV in the families.*

Results: *A total of 100 families, including a total of 532 subjects (age: 25.98 ± 15.66 years, mean ± SD; sex (male/female): 280/253 were studied of whom 506 (95%) were obligate family members, 161(30.3%) had previous history of jaundice, 121(22.7%) had history of surgery and 63 (11.9%) had history of blood transfusion. Most of the subjects (n=252) belonged to the wide age groups of 5-60 years. 191(35.9%) were students followed by 112 (21.1%) housewives, 105 (19.7%) service holders, 42 (7.9%) businessmen, 10 (1.9%) health care personnel and 68 (12.8%) had no particular occupation. Overall 309 (58.1%) subjects were exposed to HBV. Exposure was more among house wives (68.8%), service holders (66.7%), businessmen (64.3%), health care personnel (60.0%) and students (48.2%). Though there was a male preponderance (53.4%) to HBV exposure than females (46.6%), frequencies for exposure were higher in females in the preschool age group (male vs. female: 20.0% vs. 80.0%), school age group (44.4% vs. 55.6%) and in young adults (47.8% vs. 52.2%). Chronic infection was observed in 110 (20.6%), acute infection in 30 (5.6%) and 115 (21.6%) had recovered after exposure while 53 (10.0%) showed atypical serology. Among the risk groups, 37% of the HBV exposed had history of jaundice, 23.7% had history of surgery and 8.1% had history of blood transfusion.*

Conclusion: *Results of this study suggests a high rate of HBV infection in the family members of persons with positive HBV markers. Horizontal transmission due to repeated contacts among the family members may be an important mode of transmission of the HBV.*

Key words: *HBV infection, Family contact, Horizontal transmission*

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Introduction

Hepatitis B virus (HBV) infection is one of the major health problems in all geographical areas of the globe. In Bangladesh, there is paucity of information on the prevalence of HBV infections among general population and majority of the previous studies were conducted in selected group of people with higher risk factors such as blood donors, drug addicts, commercial sex workers (CSWs) or hospitalized patients.[1,8] However, a recent report showed 5.5% HBsAg positivity among the general population living in Savar, a semi-urban area on the outskirts of Dhaka.[9] Although HBsAg is the most reliable biological biomarker of HBV infection, and the anti-HBc antibody is an important marker for surveying the burden of HBV infection as it persists even after resolution of infection, and thus identifies both past and current HBV infection.[10] Among the different modes of transmission, horizontal transmission of the HBV is important for an endemic area like Bangladesh which has not yet been investigated in the country. Horizontal transmission is not attributable to sexual contact, parenteral contact with blood or blood products, or to vertical transmission from mother to child, but to small wounds, wound exudates, saliva or by other means.[11] This way of transmission is important in household contacts of HBV carriers, in institutions for the mentally handicapped persons and to lesser extent in nursery schools. It occurs especially in preadolescent children in an endemic area. However, the mechanisms of horizontal transmission are not clear. Children acquiring the disease under the age of 5 years usually become chronic carrier.[12] In most cases, they acquire the disease from infective mothers but may also be infected from other family members as well as from playmates.[12] These carrier children usually remain unknown following subclinical infections and serve as a major source of infection. Thus an initial perinatal transmission ultimately leads to multiple horizontal transmissions. In low endemic areas, HBV infection is acquired usually in adult life, most often through parenteral or sexual contact and is common only in certain high risk groups (e.g. intravenous drug abusers, promiscuous homosexual, health care personnel etc).[13] In contrast, in endemic areas like Southeast Asia, the infection is often acquired at or near the time of birth from a carrier mother, more often the infection occurs later in childhood, in the absence of identifiable maternal, sexual or parenteral exposure to the virus.[13] However, perinatal transmission of the disease is reported to be the most important mode of transmission in Southeast Asian countries.[13] Hepatitis B virus infection is a major cause of morbidity and mortality related to chronic

liver diseases.[14] Asymptomatic carriers are considered to be the commonest source of infection with hepatitis B virus.[14] As carriers of hepatitis B is a potent source of infection in a family, all the member live in his contact are at risk of acquiring the disease. Even after identification of an acute or chronic cases of hepatitis B, attending physicians only concentrate to the management of the diseased individual ignoring the potential hazard of transmission of the disease to other family members. Most of the adult patients recover after an infection but during the disease period, the younger family members may acquire the disease and they are more prone to develop a chronic carrier state. Therefore, prevention of the infection should be considered equally important. Unless the risk potential is studied and documented, awareness among the clinician may not be achieved. We have experienced that just after knowing a family member positive for hepatitis B surface antigen (HBsAg), apprehensive relatives run for vaccination. Usually they undergo prevaccination screening for HBsAg and get vaccinated. In some cases, even the vaccination is done without prior screening. But it is not realized that the known HBsAg positive individual may be the first or only exposed or infected person in that family. There may be one or more infective carriers within the family and the known positive person might have acquired the disease from the apparently healthy carrier. Alternatively, the HBsAg positive individual might have acquired the disease from outside and has already disseminated the disease to other family members in contacts.

We would like to investigate the extent and mode of disease transmission among the household contacts of HBV carriers as well as acutely infected individuals. This will reveal the importance of horizontal transmission compared to sexual and perinatal transmission of HBV in our society. Development of a vaccination strategy and selection of HBV markers during prevaccination screening of high risk families would also be possible by a serological study on such family members. This study is also targeted to develop awareness both among the physicians as well as the family members of patients with hepatitis B. Once we could know extent and predominant mode of disease transmission within the family members, we can propose a prevaccination screening strategy for high risk family. Selection of the HBV markers for prevaccination screening will depend on the rate of exposure (clinical or subclinical infection), rate of complete recovery with development of neutralizing antibody, and rate of infected acute or chronic carrier states within these families.

Materials and Methods

This cross sectional study population included 100 HBsAg positive patients randomly selected from the routine test service in the department of Immunology at BIRDEM hospital March 2009 to February 2010. All the family members of HBsAg positive patients were investigated for markers of HBV infection (HBsAg; hepatitis B e antigen: HBeAg; antibody to hepatitis B surface antigen: anti-HBs; antibody to hepatitis B core antigen: anti-HBc (both IgM and IgG) to find out the state of infection. Exposure to HBV was defined by the presence of anti-HBc, HBsAg, IgM anti-HBc and anti-HBs singly or in combination; carrier state defined by positive HBsAg and anti-HBc but negative for IgM anti-HBc; while immunity due to natural infection was defined by positive anti-HBc plus anti-HBs. Serological tests were performed by ELISA using commercially available kits following the instructions of the manufacturers. Ethical clearance was obtained from the ethical review committee of Diabetic Association of Bangladesh. Data were expressed in frequencies and mean ± SD unless mentioned otherwise. Each person positive for HBsAg in a family was considered as a potential source of infection. Analysis about impact of relationship among persons in that family was done holding each HBsAg positive person as index case in that circumstance. Comparison among different groups was done by Chi-square, Student's t-test or ANOVA. Relationship and predictive capability among the markers in the individuals at different state of infection were analyzed by Spearman's correlation and Logistic regression. P values ≤0.5 were considered as significant. Data were analyzed using SPSS version 16.

Results

Out of 100 families, 532 subjects were studied for various markers of HBV (Table I). Average number of subjects per family was 5 with a near equal sex distribution (male/female: 280/253). Mean (±SD) age was 25.98 ± 15.66 years ranging between 0.5-76 years. Some 506 (95%) were obligate family members (506/533), 161 (30.3%) had previous history of jaundice, 121 (22.7%) had history of surgery and 32 (60%) had history of blood transfusion. Vaccine against HBV was taken by 63 (11.9%) subjects.

Table I: Profile of the study subjects (n=532)

Character	Values
Number of families	100
Number of subjects studied	532
Average number of family members	5.0
Age (mean±SD; range) yrs	25.98 ± 15.66 (0.5-76.0)
Sex (male /female)	280 / 253
Obligate family members	506 (95%)
Family associates	27 (5%)
History of jaundice	161 (30.3%)
History of surgery	121 (22.7%)
History of blood transfusion	32 (6.0%)
History of vaccination for HBV	63 (11.9%)

A good number of subjects fell into active age group of 25-60 years (49.4%) followed by young adults (22.4%), children of school going age (20.7%), children of preschool age (4.3%), persons of retired age group (2.3%) and infants of age below 1 year (0.9%). Considering occupation of the subjects, highest number was observed for students (35.9%) followed by house wife (21.1%), service holder (19.7%), businessmen (7.9%), healthcare personnel (1.9%). Some 0.8% of the study subjects were servants while 12.8% had no particular occupation.

Table II: Age and Occupational groups of the subjects

Age group (years)		Occupational group	
Ages	n (%)	Occupation	n (%)
< 1 year	5 (0.9)	Service	105 (19.7)
1 - 4 years	23 (4.3)	Business	42 (7.9)
5 - 14 years	110 (20.7)	Student	191 (35.9)
15 - 24 years	119 (22.4)	House wife	112 (21.1)
25 - 60 years	263 (49.4)	Servant	4 (0.8)
> 60 years	12 (2.3)	Heath care personnel	10 (1.9)
		Others	68 (12.8)
Total	**532 (100)**	**Total**	**532 (100)**

(Within parentheses are percentages over column total)

HBV exposure: age groups, occupational groups and sex groups

Overall exposure to HBV was 58%. Exposure was comparably higher in the elderly group (83.3%) followed by active age group (67.7%), young adults (58.0%), school going children (40.9%), infants of <1 year (40.0%) and 21.7% in preschool going age group. However, exposure rate was statistically different among these age groups ($\chi 2=39.4940$; p=0.000) (Table III).

Table III: Age Groups: Exposure vs. no Exposure to HBV Infection

Age group (years)	n	Exposed (%)	Not exposed (%)	$\chi 2$	p
< 1 year	5	2 (40.0)	3 (60.0)		
1 - 4 years	23	5 (21.7)	18 (78.3)		
5 - 14 years	110	45 (40.9)	65 (59.1)	39.4940	0.000
15 - 24 years	119	69 (58.0)	50 (42.0)		
25 - 60 years	263	178 (67.7)	85 (32.3)		
> 60 years	12	10 (83.3)	2 (16.7)		
Total	**532**	**309 (58.1)**	**223 (41.9)**		

(Within parentheses are percentages over corresponding row totals)

As shown in Table IV, exposure to HBV among occupational groups was observed in 68.8% of house-wives, 66.7% of service holders, 64.3% of business persons, 60.0% of health care personnel, 48.2% of the students and about 53.0% of the persons having no particular occupation. However, among servants the rate of exposure was only 25% (1/4).

Table IV: Occupational risk for HBV infection

Occupational group	N (532)	HBVexposed	HBVnot exposed	$\chi 2$	p
Service	105	70 (66.7)	35 (33.7)		
Business	42	27 (64.3)	15 (35.7)		
Student	191	92 (48.2)	99 (51.8)		
House wife	112	77 (68.8)	35 (31.2)	19.340	0.004
Servant	4	1 (25.0)	3 (75.0)		
Heath care personnel	10	6 (60.0)	4 (40.0)		
Others	68	36 (52.9)	32 (47.1)		
Total	**532**	**309 (58.1)**	**223 (41.9)**		

(Within parentheses are percentages over corresponding row totals, n = number of population)

Among the HBV exposed persons, on the basis of serological markers, 30 (5.6%) had acute infection, 110 (20.6%) had chronic infection. Of them 3.2% and 5.8% were in infective state respectively, 115 (21.6%) were found to be recovered after exposure to HBV and 35 (10.0%) showed some infrequent serology [e.g.HBsAg only: 12 (2.3%); anti-HBc only: 41 (7.7%)] (Table V).

Table V: State of HBV infection among the exposed subjects (n=308)

State of infection	n	%
Acute infection	30	5.6
Infective state	17	3.2
Non-infective state	13	2.4
Chronic infection	110	20.6
Infective	31	5.8
Non-Infective	79	14.8
Exposed but recovered	115	21.6
Infrequent serology	53	10.0
HBsAg only	12	2.3
Anti-HBc only	41	7.7
Total	308	100

(***** 1 subject was not tested for all markers, so excluded from calculation)

Among HBV exposed subjects, 37.0% had history of previous jaundice (p=0.000), 23.7% had history of surgery (p=0.272) and 8.1% had history of blood transfusion (p=0.012) in comparison to 20.6%, 21.1% and 3.1% negative for HBV markers respectively (Table VI).

Table VI: HBV Exposure (n=308) and risk factors

Risk factors	Exposed	Not exposed	$\chi 2$	p
	(n = 308)	(n = 223)		
History of jaundice (n=160)	114 (37.0)	46 (20.6)	16.698	0.000
History of surgery (n=120)	73 (23.7)	47 (21.1)	0.510	0.272
History of blood transfusion (n=32)	25 (8.1)	7 (3.1)	5.660	0.012

(Within parentheses are percentages over column total)

Discussion

Bangladesh is an intermediate endemic area (>2% but <7% chronic carrier) for HBV infection having a chronic carrier rate of about 4%.[1-8] Usually the carriers do not donate blood and reuse of syringes is not practiced for injection purposes. Sexual promiscuity is also not common and intravenous drug abuse also not high. All these information suggest perinatal and horizontal transmission may be the predominant modes of the disease spread. A family clustering tendency of HBV infection may be possible.

The present study investigated the markers of HBV infection in 100 families. Subjects were included on the basis of a single person positive for HBsAg and subsequently other members of the family were tested for the markers of HBV. Thus, holding 100 persons as index cases, 532 subjects were encompassed, of which 309 persons were observed positive for HBV markers. Therefore, it is clear that unless the family members would have been tested for the markers, at least 309 cases would probably remain unknown about their HBV exposure and likely that they could perpetuate the disease in some cases into other close mates and family members.

In the present study, 95% of the subjects were obligate family members. Most of them were of active age group or young adults. However, a good number also encompassed school going and preschool aged children. In regards to occupation, highest frequency was observed for students and housewives followed by service holders and business persons. Therefore, chance of frequent social contacts related to service and business as well as repeat contacts of usual nature in the family related to the house wives are likely possibilities for transmission of HBV if it happened so in this study. As a matter of fact, exposure rate was comparatively higher among the very elderly groups who are supposed to be staying most of their time in the household as well as in the active age group and young adults, many of whom should fall into the group of housewives and service or business persons. On the other hand, exposure in the younger age group ranged from 22 to 41 percent. Younger age group acquiring the disease usually have more chance of becoming chronic carrier and serve as major source of infection in the community. Moreover, morbidity and mortality becomes more concerned for younger age group because they have to live longer times in their lives than the elderly people. Therefore, a relatively lower rate of exposure in the younger age group is not safe in the sense that they are real people who perpetuates the disease in the

community and because of their longer time survival after being exposed to HBV, ultimately overwhelms the risk of transmission in the family and community. Similar results were also found in other studies elsewhere.[15-17]

This study revealed overall exposure rate was 58.1%. About 69% of the housewives were exposed. Housewives become a constant source of transmission in the family by various modes. On the other hand, exposure was also very higher ranging from 60 to 70 percent among the health care personnel, service holders and business persons. These groups of people are real source of horizontal transmission of the virus in the community. We have seen, 95 % of the subjects were obligate family members; it is more likely that transmission was more in the family atmosphere than by other environmental possibilities. A good number of students (48%) who are likely to be abide by in the family atmosphere or may be hostel living, were also found to be exposed to HBV indicating the possibility of transmission by close mates in the institutions or housewives (mother or such relatives of students) in the household, because of the possibility that these two types of persons are likely to be frequently in contact with the subjects of student age group.

On overall, there was a male preponderance for HBV exposure. But, it was interesting to observe that in the age group of 1 to 24 years there was a female preponderance for the exposure. This can be explained in a way that due to estrogen influence in these females, as has been observed by some other investigators, there was a female preponderance in these age groups. However, more important is the risk they bear for future transmission. Because, the younger females in the family becomes more carrier and during their child bearing ages they also transmit the infection vertically in addition to their constant risk of transmitting the infection in the household atmosphere by other modes. Therefore, this perpetuating phenomenon of the females becomes vicious unless broken by preventive measures for the younger aged members of the family. These results are similar to study carried out by Abdool Karim SS et al.[18]

Transmission of HBV does not follow any definitive rule. In our study, it was difficult to identify among the family members, who transmitted and who acquired the virus. But, as has been mentioned earlier, about 2/3rd of the exposed persons would not come into notice unless tested for the viral markers on being convinced and approached through the HBsAg positive index member of the family. Therefore, it is really alarming that

the rate of transmission of HBV is much more than it is assumed and in many instances the transmission is likely to be by some different way than the conventionally believed modes of transmission. Those alternative modes are likely to be some way of close or repeat contacts in the family atmosphere, broadly claimed as horizontal transmission.

In regards to the state of infection among the exposed subjects, 30 had acute infection of which 17 were in infective state; while 31 out of 110 of chronic infected persons were in the infective state. Thus, only 48 cases were holding infective state during the time of testing for the markers, and a few might have been in the window phase of acute infection. Therefore, most of the observed total 309 HBV exposed cases must have been exposed either earlier or by other means than the conventionally believed state and mode of transmission. These results were in concordance with other studies.[19-20] There is a strong possibility that persons positive for HBV markers may have the capability of transmitting the virus even in some state of infection which are not conventionally thought to be much important for transmission of the virus.

Of the risk factors, 37% of the subjects with previous history of jaundice, 24% of subjects with history of surgery, and 8% of subjects with history of blood transfusion were positive for HBV markers. Similar results were also found in other studies.[21-22] None of these factors could explain the high rate of positivity among the subjects observed in the study. Risk factors should be emphasized; but, other modes and possibilities of HBV must be kept in mind for the possibility of HBV infection in the community as which is observed and vivid from the present study.

Conclusion

In this study findings indicate that there is higher rate of transmission of HBV among the family members in Bangladesh which can not be assessed by any particular predictor. Horizontal transmission due to repeated contacts among the family members may be one of the most important modes of transmission of HBV in a family and community in our country.

Contribution of the Authors

First author was the main researcher of this study. Second author helped in data collection and computer composing.

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Original article

Ultrasonographic Measurement of Renal Cortical Thickness in Chronic Kidney Disease Patients

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Abstract

Introduction: *Cortical thickness measured by ultrasound is said to be related more closely to estimated glomerular filtration rate (eGFR) in patients with chronic kidney disease (CKD). As the burden of CKD continues to rise with increase in treatment cost, measurement of renal cortical thickness by ultrasonography in CKD patients may be done in monitoring and managing CKD more cost-effectively.*

Methods: *This cross sectional study was carried out in the department of Radiology and Imaging Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) to determine the correlation of ultrasonographically measured renal cortical thickness with estimated glomerular filtration rate in patients with CKD.*

Results: *The age of the patients ranged from 40 to 88 years and the maximum number was found in 7th decade. The mean (±SD) age was 67.9 years with standard deviation ±19.6 years. Male were 23 (58.97%) and female were 16 (41.03%). It was seen that maximum (56.41%) patients' CG eGFR belonged to 30-59 ml/min. The mean (±SD) CG eGFR was 34.3±14.0 ml/min with range from 9.0 to 65.1 ml/min. Majority (56.36%) of the patients had MDRD eGFR within 30-59 ml/min/1.73m^2. The mean (±SD) MDRD eGFR was found 36.3±14.6 ml/min/1.73m^2 with range from 11.0 to 60.9 ml/min/1.73m^2. Mean renal cortical thickness on the right side was 0.61±0.20 cm with range from 0.28 to 1.04 cm and the mean renal cortical thickness on the left side was 0.64±0.21 cm with range from 0.29 to 1.1 cm. Significant positive correlation was found between mean renal cortical thickness and CG eGFR, MDRD eGFR of patients with the clinical diagnosis of chronic kidney disease.*

Conclusion: *Renal cortical thickness measured at ultrasound appeared to relate to the degree of renal impairment in patients with CKD, who were not on dialysis. Routine measurement of renal cortical thickness during reporting should be considered in CKD patients.*

Key words: *Renal cortical thickness, Chronic Kidney Disease, Glomerular Filtration Rate*

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Introduction

Chronic kidney disease (CKD) is a worldwide public health problem. The incidence and prevalence of kidney failure are rising, the outcomes are poor, and the costs of management are high.[1] The incidence, prevalence, mortality, and cost for patients with kidney failure treated by dialysis and transplantation, the end stage of CKD, have increased steadily during the past two decades. Increasing evidences indicates that some of these adverse outcomes can be prevented or delayed by early detection and treatment.[2] Glomerular filtration rate (GFR) is the best measure of overall kidney function in health and disease. The GFR represents the rate at which an ultra filtrate of the plasma is formed by the glomeruli. The normal level of GFR varies according to age, sex, and body size of the patient.[3] Normal GFR in young adults is approximately 120 to 130mL/min per 1.73 m^2 and declines with age. A GFR level less than 60 mL/min per 1.73 m^2 represents loss of half or more of the adult level of normal kidney function. Below this level, the prevalence of complications of chronic kidney disease increases.[4] Determination of endogenous creatinine clearance (measured creatinine clearance) is also used to measure GFR. Creatinine clearance can be computed from a timed urine collection (for example, a 24-hour urine collection) and blood sampling during the collection period. This timed urinary collection is cumbersome and susceptible to error.[3] So in CKD patients because of tubular secretion of creatinine, overestimation of true GFR occurs.[2,4] Chronic kidney disease is defined as either kidney damage or GFR <60 mL/min/1.73m^2 for ≥3 months. Kidney damage is defined as pathologic abnormalities in blood or urine tests or imaging studies. The current Kidney Disease Outcomes Quality Initiative (K/DOQI) guidelines of the National Kidney Foundation (NKF) advocate creatinine based equations for estimating GFR to identify patients with potential kidney disease and to classify them into different stages on the basis of these results.[4] The Cockcroft-Gault (CG) and the Modification of Diet in Renal Disease (MDRD) equations are the most widely used formulas to assess renal function and have been proposed by the K/DOQI guidelines to calculate the estimated GFR (eGFR).[1] Ultrasonography is one of the several methods to evaluate renal morphology. Different studies showed that ultrasonography is a rapid and noninvasive diagnostic method for renal diseases and also the first method of choice for screening and follow up of patients and healthy people.[5] Sonography of the kidneys is frequently employed during the evaluation of renal failure. Prior studies also have

evaluated imaging measurements as surrogate markers of renal function. The ultrasound machine is widely available and provides real-time information on the renal dimensions particularly in resource poor settings. In patients with CKD, the renal cortical echogenicity increases at ultrasound. In addition, the renal cortex often becomes thinned. Often this finding occurs with a normal bipolar renal length and an increase in the relative amount of central sinus fat.[6] As the change in renal cortical thickness (RCT) is an important sign of renal disease, ultrasonographic measurement of RCT has been suggested as an index for studying the health status of the kidney.[7,8] This study, was carried out to evaluate ultrasonographic measurement of renal cortical thickness in CKD.

Materials and Methods

The cross sectional study was carried out in the department of Radiology and Imaging, Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) for a period of one year from July 2011 to June 2012 enrolling 56 patients having the clinical diagnosis of chronic kidney disease (CKD) who were not on dialysis and who had at least three elevated serum creatinine reports within three months. Patients on dialysis were not included in this study because examining the relationship of renal function on the basis of serum creatinine with renal cortical thickness and renal length would be inherently flawed in this group because the creatinine used for calculation would be a measure of dialysis efficacy rather than native renal function. A total of 17 subjects were excluded due to sonographic findings of hydronephrosis and 39 patients were finally enrolled in this study. A detailed history and physical examination with emphasis on the urinary system was recorded. The lowest creatinine level tested within three months of the ultrasound was used for estimated glomerular filtration rate (eGFR) calculations. The Cockcroft-Gault (CG) and the Modification of Diet in Renal Disease Study (MDRD) equations were used for estimated glomerular filtration rate (eGFR) calculation. All the patients underwent ultrasound examination to measure renal cortical thickness of both kidneys. The renal ultrasound examinations were done by the researcher at first, and then confirmed by a consultant of the Department of Radiology and Imaging to eliminate subjective bias. The Cockcroft-Gault (CG) equation is eGFR (mL/min) = (140 − age) × (Weight in kg) × (0.85 if female)/(72 × S_{cr}), where S_{cr} is serum creatinine in mg/dL. The equation for MDRD study was eGFR (mL/min/1.73 m^2) = 186 × $(S_{cr})^{-1.154}$ × (Age) $^{-0.203}$ × (0.742 if female) × (1.210 if African American), where S_{cr} is serum creatinine in

mg/dL. Creatinine was measured by auto analyzer. All the relevant collected data were compiled on a master chart first. Then the data were organized by using scientific calculator and standard statistical formulae. Further statistical analysis of the results was done by computer software devised as the statistical package for the social sciences (SPSS ver. 20.0).The results were presented in tables, figures, and diagrams. Mean cortical thickness was used in analyses. The relationships between ultrasound measurements and estimated glomerular filtration rate were tested using Pearson's correlation coefficient test. Significance was considered at a 'p' value < 0.05.

Results

The age ranged from 40 to 88 years and the maximum number was found in 7th decade. The mean (±SD) age was 67.9 years with standard deviation ±19.6 years. Male were 23 (58.97%) and female were 16 (41.03%) (Table I).

Table I: Age Distribution of the Study Patients (n=39)

Age (in year)	Number of patients	Percentage
≤50	04	10.25
51-60	09	23.07
61-70	17	43.58
71-80	06	15.38
>80	03	07.72
Total	**39**	**100.0**

It was observed that maximum (56.41%) patients' CG eGFR belonged to 30-59 ml/min. The mean (± SD) CG eGFR was 34.3 ± 14.0 ml/min with range from 9.0 to 65.1 ml/min (Table II).

Table II: Distribution of the Study Patients according to CG eGFR (n = 39)

CG eGFR (ml/min)	Number of patients	Percentage
<15	02	05.12
15-29	12	30.75
30-59	22	56.41
60-89	03	07.72
Total	**39**	**100.00**

Table III shows the MDRD eGFR of the study patients and it was found that maximum (56.36%) patients had MDRD eGFR within 30-59 ml/min/1.73m^2. The mean (±SD) MDRD eGFR was found 36.3±14.6 ml/min/1.73m^2 with range from 11.0 to 60.9 ml/min/1.73m^2.

Table III: Distribution of the study Patients according to MDRD eGFR (n=39)

MDRD eGFR (ml/min/1.73m^2)	Number of patients	Percentage
<15	03	07.72
15-29	11	28.20
30-59	22	56.36
60-89	03	07.72
Total	**39**	**100.00**

Table IV shows the mean renal cortical thickness of the study patients. The mean renal cortical thickness on the right side was 0.61±0.20 cm with range from 0.28 to 1.04 cm and the mean renal cortical thickness on the left side was 0.64±0.21 cm with range from 0.29 to 1.1 cm. The mean renal cortical thickness was 0.62±0.20 cm with range from 0.28 to 0.98 cm.

Table IV: Mean Renal Cortical Thickness of the study Patients (n=39).

	Mean± SD	Range (min-max)
Mean cortical thickness right (cm)	0.61±0.20	(0.28 – 1.04)
Mean cortical thickness left (cm)	0.64±0.21	(0.29 – 1.1)
Mean cortical thickness of both (cm)	0.62±0.20	(0.28 - 0.98)

Correlation between mean renal cortical thickness and CG eGFR (n=39)

Sonographically measured mean renal cortical thickness of 39 patients with the clinical diagnosis of chronic kidney disease was expressed in cm and CG eGFR in mL/min. Significant positive correlation was found between mean renal cortical thickness and CG eGFR of patients with the clinical diagnosis of chronic kidney disease. The values of Pearson's correlation coefficient was 0.826, which is significant ($p<0.001$). Therefore, there was linear strong positive correlation between mean renal cortical thickness and CG eGFR of patients with the clinical diagnosis of chronic kidney disease (Figure 1).

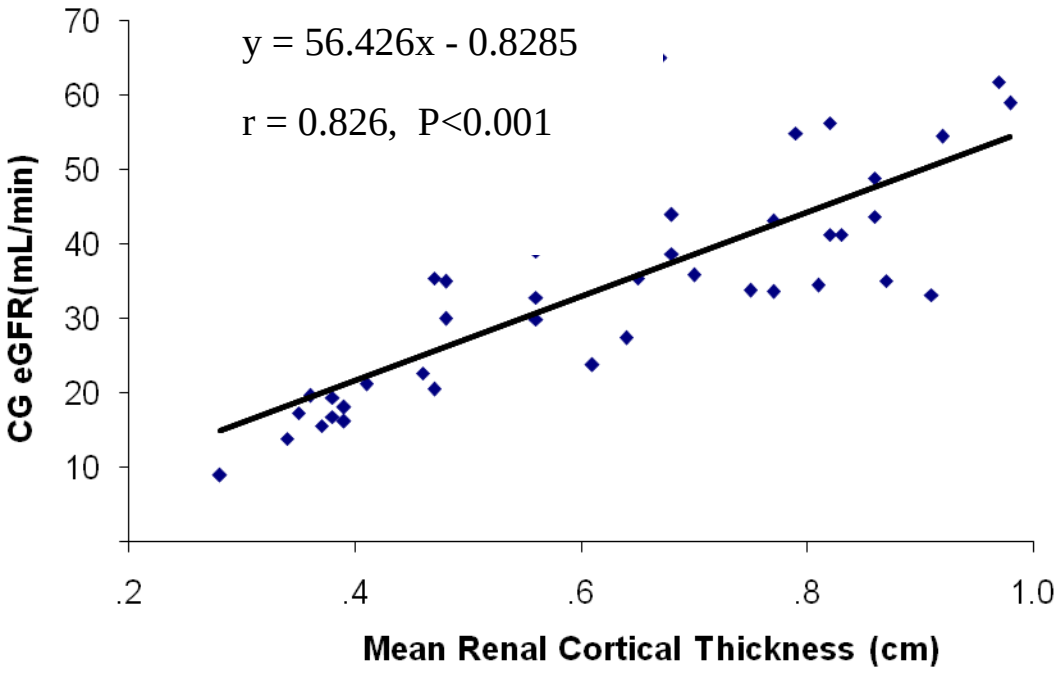

Figure 1: Scatter Diagram Showing the Strong Postive Correlation (r=0.826, p<0.001) between Mean Renal Cortical Thickness (cm) and CG eGFR (mL/min)

Correlation between mean renal cortical thickness and MDRD eGFR (n=39)

Sonographically measured mean renal cortical thickness of 39 patients with the clinical diagnosis of chronic kidney disease was expressed in cm and MDRD eGFR in mL/min/1.73m^2. Significant positive correlation was found between mean renal cortical thickness and MDRD eGFR of patients with the clinical diagnosis of chronic kidney disease. The values of Pearson's correlation coefficient was 0.847, which is significant (p<0.001). Therefore, there was linear strong positive correlation between mean renal cortical thickness and MDRD eGFR of patients with the clinical diagnosis of chronic kidney disease (Figure 2).

Discussion

Renal length has traditionally been considered a surrogate marker of renal function because renal length decreases with decreasing renal function. Renal lengths are universally reported and are usually the only measurements given at renal ultrasound. Cortical thickness measured at ultrasound may be related more closely to estimated glomerular filtration rate (eGFR) than renal length in patients with chronic renal failure.[7] As the burden of CKD continues to increase,

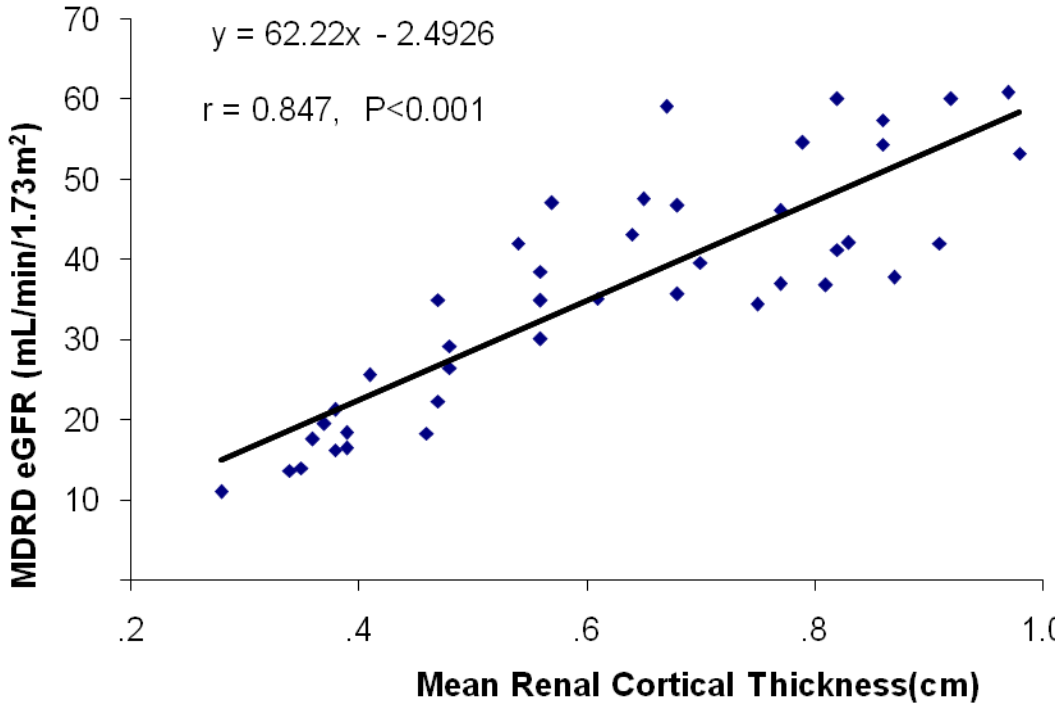

Figure 2: Scatter Diagram Showing the Strong Postive Correlation (r =0.847, p<0.001) between Mean Renal Cortical Thickness (cm) and MDRD eGFR (ml/min/1.73m^2)

efforts to reduce the cost of monitoring and managing this disease are needed. In this current study it was observed that the age ranged from 40 to 88 years and the maximum number was found in 7th decade. The mean (±SD) age was 67.9 ±19.6 years. Male were 23 (58.97%) and female were 16 (41.03%). Researcher[9] found the mean±SD age 56±16 years with range from 34 to 76 years which is comparable with the current study. Levey AS et al.[1] showed that the mean±SD age was 50.6±12.7 years. Studies conducted[9, 10] revealed that the mean age was 45 years with range from 15-82 years and 41±11 years with range from 18-72 years respectively. In this current series it was observed that the mean (±SD) CG eGFR was 34.3±14.0 ml/min with range from 9.0 to 65.1 ml/min and maximum (56.41%) patients had eGFR within 30-59 ml/min and the mean (±SD) MDRD eGFR was found 36.3±14.6 ml/min/1.73m^2 with range from 11.0 to 60.9 ml/min/1.73m^2 and maximum (56.36%) patients had moderately decreased GFR (30-59 ml/min/1.73m^2). Similarly, Beland et al.[7] found the mean eGFR using CG was 34.8 mL/min with range from 10.6–99.4 mL/min and 36 mL/min with range from 8–66 mL/ min using MDRD, which is closely resembled

with the current study. In the current study it was observed that the mean renal cortical thickness of the right kidney was 0.61±0.20 cm with range from 0.28 to 1.04 cm, of the left kidney was 0.64±0.21 cm with range from 0.29 to 1.1 cm and the mean renal cortical thickness of both kidneys were 0.62±0.20 cm with range from 0.28 to 0.98 cm. Previous study[7] showed that the mean cortical thickness was 0.59 cm with range from 0.32–0.11 cm, which was closely matched with the current study. Moghazi S et al.[11] showed the Mean ±SD cortical thickness was 0.83±0.82 cm with range from 0.47-1.25 cm. Adibi A et al.[8] found the mean RCT was 0.91 mm (CI 95%:0.89-0.93mm). The mean RCT was 0.90 cm (CI 95%:0.883-0.921cm) for the right kidney and 0.92 cm (CI 95%:0.90-0.94cm) for the left kidney (P=0.15). In male the mean RCT was 0.93 cm (CI 95%:0.90-0.95 cm) and 0.89cm (CI 95%:0.86-0.91) in female, which was significantly (p=0.02) higher in male subject. Beland MD et al.[7] showed a statistically significant positive relationship between eGFR and mean cortical thickness using both the CG and the MDRD equations (CG, r=0.812, $p < 0.001$; MDRD, r=0.539, $p < 0.001$). There was also a statistically significant relationship between CG eGFR and mean renal length (r=0.548, $p<0.001$) but not MDRD eGFR (r=0.361, $p>0.05$). In another study, Adibi A et al.[8] showed a correlation between GFR and ultrasonographic kidney sizes, especially the kidney thickness. Muto NS et al.[13] mentioned in their study that renal cortical volume had a strong positive relationship with the renal function.

Conclusion

Renal cortical thickness had strong positive correlation with eGFR. Renal cortical thickness measured at ultrasound appeared to relate to the degree of renal impairment in patients with chronic kidney disease, who were not on dialysis. Routine measurement of renal cortical thickness during ultrasonography reporting should be considered in CKD patients.

Contribution of the Authors

First author designed and conducted the study. Others helped in data collection and statistical analysis.

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Original Article

Association of Depression and Anxiety in Acne Vulgaris Patients

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Abstract

Introduction: *Acne vulgaris is a chronic, inflammatory disease of pilosebaceous follicle characterized by comedons, papules, pustules and nodules. Many psychological problems associated with acne have been reported. Among them depression and anxiety are more common psychiatric problems.*

Methods: *This was a cross sectional study carried out to diagnose depression and anxiety among patients with facial acne at North Bengal Medical College, Hospital during the period of 6 months study enrolling 110 acne patients who were selected by nonrandom purposive sampling.*

Results: *In this study, General Health Questionnaire (GHQ) positive case was 54 (49%). Among them Major Depressive Disorder (MDD) was 21(19.1%) and Generalized Anxiety Disorder (GAD) was 18 (16.4%). Total female was 75 (68.2%) and male 35 (31.8%). Mean age of female and male were 16.4 years and 19.2 years respectively. Married person were 42 (38.2%) and unmarried were 68 (61.8%) Middle class families were 37 (33.6%) and lower classes were 73(66.4%). Among social background urban were 49 (44.5%) and rural were 61 (55.5%). In severity of acne, mild were 13 (11.8%), moderate were 40 (36.3%) and severe were 57 (51.9%) cases.*

Conclusion: *Acne vulgaris may cause depression and anxiety. So physicians should pay attention to rule out psychiatric problems in patients with acne vulgaris.*

Key words: *Acne vulgaris, Depression, Anxiety*

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Introduction

As a sense organ, the skin is the site of events and processes crucial to the way we think about, feel about, and interact with one another. To have normal skin seems to be a necessary prerequisite both in terms of an individual's physical and mental health, and also sexual attractiveness.[1] Acne vulgaris is a chronic inflammatory disease of pilosebaceous follicles characterized by comedones, papules, pustules and nodules. It is a common dermatological disorder in individuals aged 13-35 years which mostly involves face and trunk and lesions may vary in number during the natural course of the disease.[2] Acne vulgaris develops earlier in females than in males, which may reflect the earlier onset of puberty in females. The most severe form of acne vulgaris occur more frequently in males but this tends to be more persistent in females.[3] In Bangladesh, the prevalence of acne is 6.25%.[4] Adolescent are more affected and the incidence and severity of acne peaks at 14-17 years in 40% girls and at 35% in boys aged 16-19 years.[5] Many psychological problems associated with acne have been reported to date. These include decrease in self-esteem, impaired overall perception of his/her well-being and self-image, embarrassment, fear of rejection, social withdrawal, anger, restrictions in lifestyle, problematic family relations, excessive mental engagement in his/her acne, depression, and anxiety.[1] Assessing psychiatric morbidity can help patients providing better services by acknowledging their real needs and interfering with treatment decision. There are effective treatments for acne and administration of these therapies can cause an improvement in psychological health. To our knowledge, a very few studies had conducted regarding psychiatric morbidities of acne patients in our country. The aim of our study is to assess psychiatric morbidity in patients with acne vulgaris.

Materials and Methods

This was a descriptive cross sectional study; sampling technique was convenient and carried out in the Department of Psychiatry in collaboration with the Department of Dermatology and Venereology, North Bengal Medical College Hospital (NBMCH), Sirajganj from June 2015 to November 2015. Patients were diagnosed as acne vulgaris by consultant dermatologist of NBMCH.

A structured questionnaire was prepared to determine socio-demographic characteristics such as age, sex, marital status, economic status, social background etc. At first all 110 patients were screened by General Health Questionnaire (GHQ). Those who scored 15 or more out of 36 were further evaluated by Diagnostic and Statistical Manual for Mental disorder (DSM-5) criteria for

depression and anxiety. Both male and female patients aged over 12 years and have diagnosis of acne vulgaris with no family history of psychiatric disorder were included in the study. An informed written consent was taken from each and every patient by using consent form. The research was conducted in full accord with ethical principle.

Data collection tools and instruments:

1. Structured questionnaire for socio-demographic and relevant information
2. General Health Questionnaire - 12 (GHQ-12) Bengali versions.
3. Mental State examination (MSE) sheet
4. Diagnostic and statistical manual for mental disorders (DSM-5) criteria.

Measurement of severity of acne vulgaris

In this study all the manifestations of acne from comedones to nodules, not only by its presence but also number was recorded. The acne severity was then graded. The number of inflammatory lesions (red papules and pustules) and non-inflammatory lesions (comedones) on the face were counted at the initiation of the study. Lesion counting involved recording the number of each type of acne lesion and overall severity was determined. Lesion counting categorized acne into four groups based on the number of inflammatory lesion on face and/or other location.[6]

- Mild: lesion counts 0-5 inflammatory lesions.
- Moderate: Between 6 and 20 inflammatory lesions.
- Severe: Between 21 and 50 inflammatory lesions.
- Very severe: More than 50 inflammatory lesions.

A GHQ-12 Bengali version sheet was supplied to all the selected subjects and advised to fill up the questionnaire. After that, those patients got 15 points or above were further evaluated by MSE and DSM-5 criteria for the diagnosis of depression and anxiety. All data were recorded for analysis.

Results

In this study, we observed 31.8% male and 68.2% female patients with facial acne vulgaris, in which about 61.8% patients were unmarried and 38.2% were married (Figure 1).

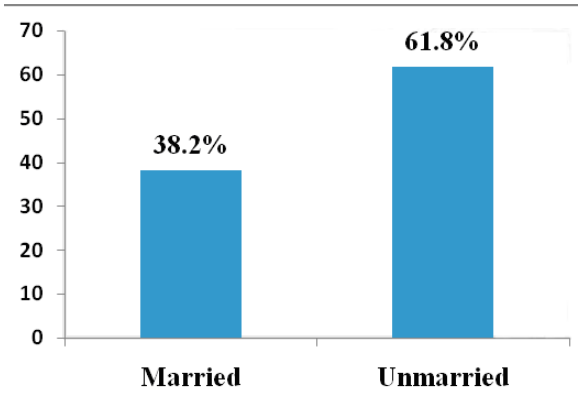

Figure 1: Distribution of Respondents by their Marital Status

The socio-economic status of acne patients were 73 (66.4%) in lower class followed by 37 (33.6%) in middle class group (Table 1).

Table I: Distribution of Acne patients by their Socioeconomic Status

Socioeconomic Status	Frequency (%)
Middle Class	33.6
Lower Class	66.4

The severity of acne vulgaris was categorized as mild 13 (11.8%), moderate 40 (36.3%) and severe 57 (51.9%) group (Figure 2).

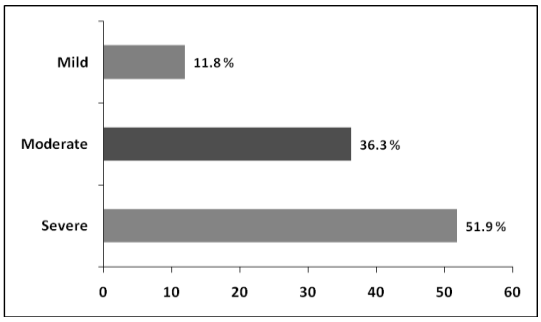

Figure 2: Distribution of the Acne Patients by Severity of Acne

The Patients were hailed from rural area were 61(55.5%) and from urban area were 49 (45.5%) (Table II).

Table II : Distribution of Acne Patients by their Social Background

Social background	Frequency (%)
Urban	44.5
Rural	55.5

The association of co-morbid depression and anxiety among the acne patients were 21 (19.1%) and 18 (16.4%) respectively (Table III).

Table III: Distribution of Acne Patients by Depression and Anxiety

Co morbid Psychiatric disorder	Frequency (%)
Major Depressive Disorder (MDD)	19.1
Generalized anxiety Disorder (GAD)	16.4

Discussion

Acne vulgaris is the most common dermatological condition encountered in adolescents. It affects almost 85% people of 12–24 years of age group. It commonly affects young people during the time when they are undergoing maximum psychological, social and physical changes.[7] Acne commonly involves the face. Facial appearance represents important aspects of one's perception of body image. Therefore, it is not surprising that a susceptible individual with facial acne may develop significant psychosocial disability. Emotional stress can also exacerbate acne, and patients with acne may develop psychiatric problems as a consequence of their problem.[7] Even than mild acne can pose a significant problem for some patients, diminishing their quality of life and in some

cases their social functioning.[8] Skin disease can have a major impact on one's quality of life. Overall quality of life is an all-inclusive concept incorporating all factors that impact upon an individual life. The concept can be divided into several components, including psychological, social and physical domains. The impact of acne on a particular patient is not always easy to judge clinically. It was found that both women and men find the effects of acne on appearance to be the most bothersome aspect of their disease and the negative effects of acne occur in both older and younger patients.

In this study the screening of psychiatric morbidity among facial acne vulgaris patients were done by using GHQ-12. GHQ-12 screening of psychiatric morbidity was positive in 54 (49%) respondents among the patients of facial acne vulgaris. The finding of the present study is in agreement with many similar studies.[8, 9] In this study there were 35 (31.8%) male and 75 (68.2%) female among the patients of facial acne vulgaris indicting female preponderance of acne vulgaris. This result was in agreement with another study.[10] But one study reported slight male preponderance of acne vulgaris.[11] The mean age of female was 16.4 years whereas mean age of male was 19.2 years.

The result of the present study may be due to young female were more conscious about their looking and there by visited more at skin outdoor and chronic skin lesions produce disfigurement and more chance for economic burden. Regarding the marital status, majority patients with facial acne vulgaris were unmarried 68 (61.8%). These findings were consistent with another similar study.[11] Most of the patients with facial acne vulgaris were in young adult. So percentage of unmarried persons were increased. In the present study total number of MDD was 19.1% and GAD was 16.4%. Other studies have also reported frequencies of general psychiatric co-morbidity in acne patients ranging from 23% to 46%.[12-15]

Conclusion

Despite a number of limitations such as purposefully selected institution and relatively small sample size, this study has provided a baseline information on the proportion of depression and anxiety among acne patients. A high proportion of depression and anxiety was found in patients with acne vulgaris. So it is necessary for the physicians to pay attention for co morbid depression and anxiety during treating of acne patients.

Contribution of the Authors

First and second authors were directly involved in research for this study. Others helped in data collection and statistical analysis.

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Original Article

Electrophoretic Patterns of Human Rotavirus among Adults in Mymensingh

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Abstract

Introduction: *Rotavirus gastroenteritis is a major cause of severe dehydrating diarrhea in children worldwide. Group A rotavirus causes approximately 3-14% of hospitalization for diarrhea in adults. The aim of our study was to assess the occurrence of Human Rotavirus (HRV) electropherotypes.*

Methods: *Polyacrylamide gel electrophoresis (PAGE) and silver staining was applied to detect rotavirus dsRNA from acute diarrheic stool of 364 hospitalized adults. The study was conducted in MMCH, Bangladesh from January, 2013 to December, 2014.*

Results: *Among 364 stool specimens 34 (9.3%) were rotavirus positive in adults by PAGE. The rate of infection was highest in 26-35 years of age. Males were affected slightly higher than females and infection rate was more occurs in winter. Among 34 positive samples, 20 were positive for group A and 14 were positive for group B rotaviruses. RNA profiles of the analyzed specimens, 20 reaveled short electropherotype of group A, there were no long, mixed and no electropherotype detected.* ***Conclusion:*** *Electropherotyping technique can be applied as and excellent method for studying genomic variation, tracing mixed infections, detecting atypical rotaviruses.*

Key words: *Rotavirus, PAGE, Reverse transcriptase polymerase chain reaction*

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Introduction

Worldwide diarrheal illness rank as one of the top six causes of all death from an infectious disease.[1] Human Rotavirus (HRV) is the leading cause of severe diarrhoea in children under five years of age and causing approximately 527,000 each year.[1] It is responsible for an estimated 30% to 50% cases of hospitalization for acute gastroenteritis.[2] In Bangladesh it causes 6,000-14,000 deaths each year in infants and young under 5 year children.[3] Bishop and his colleagues discovered the rotavirus and its association with severe endemic diarrhea in infants and young children. On the basis of antigenic groups, Rotaviruses are classified into groups A to G.[1]

Group A rotavirus causes gastroenteritis also in adult, though a low frequency, which has been described as epidemic outbreaks, travel related gastroenteritis and endemic cases.[2] In some reports G2 and G3 was described as the common cause of outbreaks in adult.[4] Group A rotavirus causes approximately 3-14% of hospitalization for diarrhea in adults. The prevalence of ICDDRB, of group B rotaviruses is 2.4% which is not higher than group A.[13]

The rotavirus genome contains 11 segments of dsRNA, which fall into four classes is evident by PAGE of RNA. These RNA segments are numbered in order of migration during PAGE. The slowest RNA segment designated as gene 1 and so on.[1] Electropherotyping of rotavirus RNA has been shown to be an excellent method for studying genomic variation, tracing mixed infections, detecting atypical rotaviruses. Genomic variation and atypical rotaviruses cannot be detected by ELISA or Latex agglutination test. PAGE may be used to detect rotaviruses of different species and groups.

The HRV genome can be detected by the PAGE and Reverse transcriptase polymerase chain reaction (RT-PCR), both of which have proven most useful for taxonomic and molecular epidemiologic studies. Although HRV can be cultivated in cell culture system, it is not a useful diagnostic test.

In this study, we detected the occurrence of HRV electropherotypes among adult with acute gastroenteritis at Mymensingh Medical college Hospital (MMCH).

Materials and Methods

Stool specimens were collected from inpatients and outpatients at SK Hospital, Mymensingh, during two year period between January 2013 to December 2014. A total of 364 faecal specimens were collected from adult patients. All stool samples were stored at 20^0C before examination for rotavirus infection. Laboratory work was done in the department of Microbiology, Mymensingh Medical College, Mymensingh.

Extraction of RNA from stool

The presence of rotavirus in stool specimens was determined by detection of migration pattern of dsRNA segments of rotavirus following polyacrylamide gel electrophoresis.[14] Faecal suspension was prepared with phosphate buffer saline in the ratio of 10%. The suspension was vortexed for few seconds and centrifused at 12,000 rpm for 10 minutes at 4^0C (Digi System VM-2000). Four hundred µl of supernatant was mixed with 60 µl disrupting solution in a 1.5 ml micro-centrifuge tube and incubated at room temperature for 30 minutes. The deprotenisation was done with 0.5 ml saturated phenol. The tubes were vortexed for 30 seconds and then centrifuged at 12,000 rpm for 2 minutes. The supernatant was poured in another 1.5 ml micro-centrifuge tube. Then the RNA was precipitated by adding 0.8 ml of chilled ethanol and 10 µl of 5M NaCl and vortexed for 5 seconds. The tubes were then incubated at 20^0C for overnight. After thawing, the tubes were centrifuged at 12,000 rpm for 10 minutes and the supernatant was discarded by pipetting. Then the pellets were dried up under table lamp for one hour. The RNA pellets at the bottom of the tubes were re-suspended with 10 µl simple buffer. Then half of the suspension was used for electrophoresis in polyacrylamide gel and remaining portion kept in 20^0C freezers for further use.

Polyacrylamide gel electrophoresis for rotavirus dsRNA

For routine detection of RNA, a 90 mm x 80 mm dimension 10% polyacrylamide gel was casted using in 1mm thick spacer. A separation gel containing 10% polyacrylamide (30% acrylamide and 0.8% bisacrylamide) was prepared by mixing reagent in a conical flask. The separation gel was poured into glass sandwich. A 1 mm thick and 18 well comb was inserted into the gel and gel was allowed to polymerize for 1 hour. After that the comb was removed gently and the wells were flushed several times using distilled water. There after, the spacer was removed from the gel and placed in buffer chamber containing running buffer. The buffer chamber was filled with running buffer. Extracted RNA 15 µl was mixed with 6 µl of loading buffer and loaded into each well. Then it was allowed to run for 3.5 hours at room temperature at constant current of 20 mA per gel using electrophoresis power supply in vertical gel electrophoresis apparatus.

Silver Nitrate staining of the gel and visualization of dsRNA

Rotavirus RNA segments were detected by silver staining of polyacrylamide gels as described by Herring AJ et al.[15] with some modifications. Briefly, following electrophoresis, gels were removed and the upper comb portion of the gels were trimmed away and discarded. The upper

right corner of the gels was cut away for identification of lanes in chronology. Gel were placed in 50ml of silver nitrate solution in a transparent tray and rocked for one hour at room temp and drained off. The gels were rinsed briefly three times with double distilled water and drained off. Then, 50 ml developer solution was added and gels were rocked until the RNA bands were satisfactorily visible in about 5-10 minutes. The developer solution was discarded and replace with sufficient amount of 5% acetic acid. Gels were examined on a white view box and photographed (ATTO, PRINTGRAPH Bio-instrument, AE-0905H Image Saver HR, Japan).

Results

A total 364 samples screened, 34 (9.3%) were positive for group A rotaviruses. The positive specimens were examined by PAGE, all showed clearly stained electrophoretic patterns of viral RNA which enabled their classification into different electropherotypes. Among the positive samples 58% (20/34) were positive for group A and 42% (14/34) were positive for group B rotaviruses. RNA profiles of the analyzed specimens of group A, 20 reaveled short electropherotype, there were no long, mixed and no electropherotype detected. Remaining 14 were group B.

Table I. Detection of Group A and Group B Rotaviruses among adults

Group	Positive in adult
A	20 (58.8%)
B	14 (41.2%)

Out of 34 cases, Group A positive was 20 (58.8%) and Group B was 14 (14.2%).

In adults the highest incidence was found 26-35 years age group 7.1% (8/113), followed by 36-45 years age group, 6.3% (6/96).

Table II: Age Distribution of Rotavirus in Adult

Age in years	No. of Diarrheal cases	PAGE Positive (%)
16-25years	68	3 (4.4%)
26-35years	113	8 (7.1%)
36-45years	96	6 (6.3%)
>45years	47	3 (6.4%)

The incidence of rotavirus infection was slightly higher in males than female, though the difference was not statistically significant. The rate of detection is highest in winter 62%, decreasing in summer and lowest in March-April (18%).

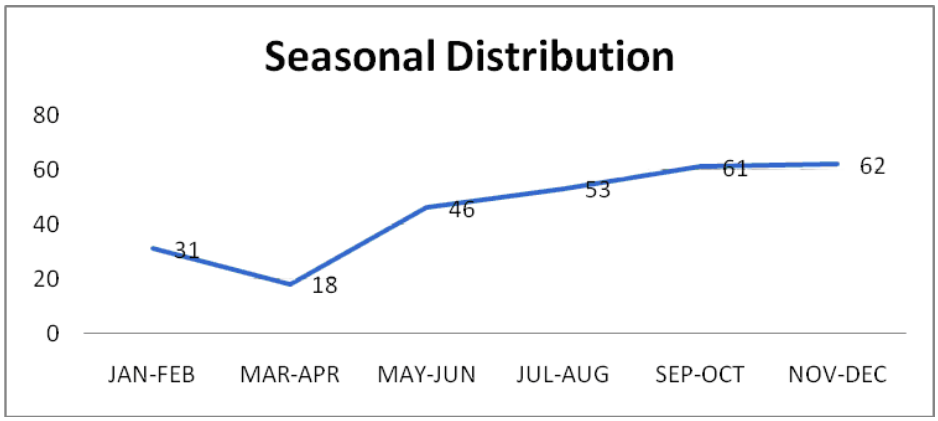

Figure 1 Percentile of Seasonal Distribution of PAGE Positive Rotavirus Strains

The electropherotypes of group A were assigned into short types from Lane 1 to 12 and lane 14-15

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

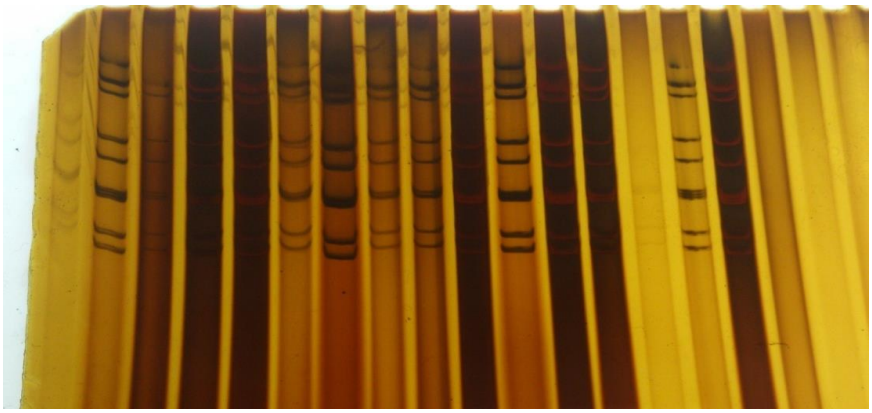

Figure 2 : Short Electropherotype of Group A Rotavirus Strain isolated in this Study

The electropherotypes of group B were assigned into Lane 2, 6, 8, & 10

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

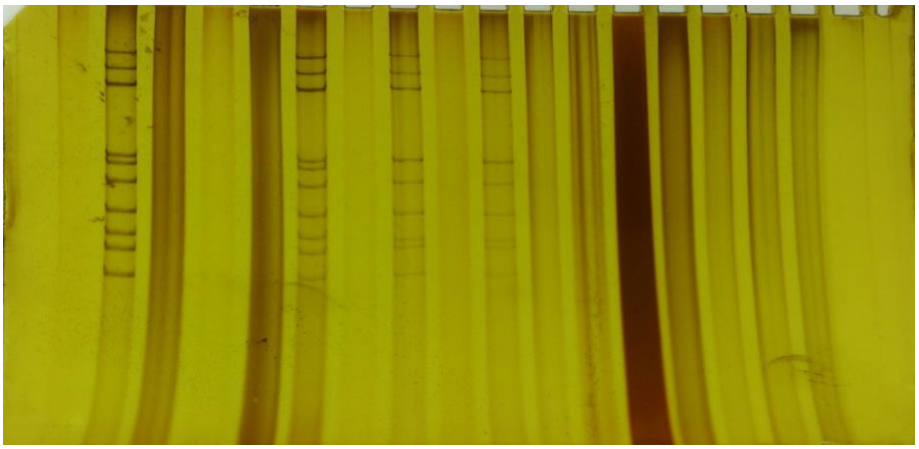

Figure 3 : Group B Rotavirus Strain from Adult isolated in this study

Discussion

Group A rotaviruses are the single most important cause of severe acute gastroenteritis in infants and young children in both developed and developing countries worldwide.[1] The high annual morbidity in developed countries and high mortality in developing countries necessitates development of effective rotavirus vaccine. Rotavirus diarrhea in adult populations has been noted mostly as sporadic cases and occasionally as outbreaks. Polyacrylamide gel electrophoresis of the RNA genome of rotavirus is a valuable tool for identification, group detection as well as strain differentiation in epidemiological studies. Several studies conducted with this technique have yielded important information on the molecular epidemiology of rotavirus infection. The detection rate of rotavirus in sporadic cases of diarrhea in adults has been described as 2-17% in most reports of different countries in the world.[1-5] In Bangladesh the adults rotavirus detection rate was 10.1% (99/895).[2] In the present study, the rotavirus positive rate in adult cases were 9.2% (both group A and group B rotavirus) which may be comparable with the epidemiologic study of rotavirus in Wuhan, China where the detection rate was 9.0% [4] and 7.6% [5] in adult population. Electropherotyping of rotavirus RNA has been shown to be an excellent method for studying the genomic variation, tracing mixed infection, detecting atypical rotaviruses with lacking group antigen and characterizing virus strains in any outbreak.

In the present study, 20 (58%) of 34 rotavirus RNA positive specimens showed long patterns and no short, mixed electropherotype, remaining group B strains revealed short patterns. In present study specimens from (1.8%) patients revealed mixed infection. Several studies have reported the presence of mixed rotavirus electropherotypes in diarrheic patients.[9, 10] The report from Kenya long electropherotypes accounted for 60% and short electropherotype accounted for 40% in adult.[12.] Rotavirus disease has been reported to have a seasonal pattern in many parts of the world. In temperate climate, a definite peak of disease occurs during the winter due to low humidity, but in monsoon it is not common. In tropical climates, there is no consistent seasonal pattern, rotavirus infections frequently occur throughout the year. In the America, Canada, Spain, Poland, Japan, Vietnam and Europe, rotavirus infection occurs primarily during the winter. A few studies from Indian researchers suggested the disease occurs year-round there. The peak of infection occurs during the winter (October-January).[8,11] In the present study, it was observed that the number of rotavirus

associated diarrhea was relatively high in November-December and relatively low in March- April. Seasonal shifts of group A rotavirus strains may be a possible mechanism of persistence of strains in human population. In the present study, rotaviruses were detected throughout the year. Our study is consistent with the study conducted in Mymensingh in 2008 by paul SK et al.[6]

In the present study it was observed that the percentage of rotavirus associated diarrhoea was higher in males than females but the difference was not statistically significant ($p > 0.05$).[6, 7]

Conclusion

It has been concluded that Rotavirus associated diarrhoea in adult population has been noticed mostly as sporadic cases and occasionally as epidemic outbreaks.

Contribution of the Authors

First author was the principal researcher for this study. Others helped in data collection and statistical analysis.

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Review Article

Assessments of Competence for Health Professional Education

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Abstract

The assessment is a process of judgment or preparing an opinion after considering carefully the *academic readiness, learning progress or educational needs of students. Following this argument assessments of competence for health professions are growing in popularity as an alternative path to a postsecondary degree. Freed from the seat-time constrains of conventional higher education programs, competency-based medical education (CBME) students can progress at their own pace and complete their postsecondary education having gained relevant and demonstrable skills by an effective and comprehensive assessment system. That provides students with the opportunity to progress through the requirements of an educational program by demonstrating appropriate knowledge and skills during a series of carefully developed assessments. The evaluations that come up from it are important at the level of the trainee, the program, and the community. When designing an assessment system for CBME, medical education stakeholders must attend to the context of the multiple settings where clinical training occurs. CBME further requires assessment processes that are more continuous and frequent, criterion-based, developmental, work-based where possible. It also uses assessment methods and tools that meet minimum requirements for quality, in making judgments about trainee's progress. Like all changes in medical education, CBME is also in progress. So, medical education society will need more collaborative research to address several major challenges in assessment, including "best practices" in the context of systems and institutional culture and how to train all faculties in a best way, to perform as better evaluators. Our ultimate goal is to remember those expertise peoples with competence and should maintain a career plan that includes ongoing assessment.*

Key words: *Competence based education, Evaluation methods for students, Assessment of Competence*

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Introduction

The main aim of medical education is to foster the development of clinical competence in students at all levels. The proficiency assessment of the students is done through different type of examinations in the educational institutes of public and private sector at undergraduate and postgraduate levels. In view of large number of admissions in medical colleges, considerably more and larger groups of students have been admitted in various programmes and it is very difficult now to assess the students under common parameters. The theoretical examinations are used to assess the knowledge of students, whereas the purpose of practical examination is to assess the cognitive, psychomotor and affective domain as well. But this purpose is not met somewhat as most of the time the students are assessed for knowledge only but not for attitude and skill. It is well known fact that the students learn for what they are assessed, i.e.," learning is assessment driven". A single assessment method is not comprehensive in assessing a student. It is well known that conventional practical examination has several problems.[1,2,3] Further the subjectivity also effects the correlation negatively between marks given by different examiners and performance of same candidate.[4] Oral /viva examinations has been replaced by objective structured practical examination (OSPE) and objective structured clinical examination (OSCE) in Basic Medical Sciences and Clinical Sciences respectively to overcome the problems which are faced in traditional practical examinations in medical institutions.

The past decade has seen an increasing interest in the assessment of clinical and practical skills and it has been recognized that many aspects of medical competence cannot be adequately judged using traditional oral or written examinations. Educators put a lot of time and effort in preparing the assessment and evaluation of their students; and clinical evaluation is one of such intensely prepared assessment. Clinical evaluation in health professional education as stated by Bartfay W J et al.[5] is an essential requirement with potential implications for student, teachers, recipients and the environment. The conventional clinical and practical examinations as observed by Ananthakrishnan N et al.[4] is overwhelmed with many problems.

The authors further stated that although marking should depend only on student variability, patient/ experiment variability, but examiner variability significantly affects the scoring. In fact, the subjectivity involved in the use of this assessment method may reduce the overall marks given by the

different examiners for the same candidate to a very low level. In addition, the marks awarded also reflect only global performance of the candidate and does not demonstrate the individual competencies. So, the absolute goal is to find out the specific assessments system/methods for clinical competence of health professional education.

Materials and Methods

1. Objective Structured Clinical Examination (OSCE)

The Objective Structured Clinical Examination (OSCE) has gained acceptance as a benchmark for clinical skills assessment since its development in the 1970s.[5] OSCE is an assessment tool in which the component of clinical competences, e.g., history taking, physical examination, communication, attitude and simple procedures like wound dressing, administration of drugs, giving a health talk, checking vital signs[6] etc. are tested using agreed checklists and rotating the student around a number of stations in a circuit by the ring of a bell, preferably in a clock wise direction with some stations having observers and time allowed is the same for all the stations, where at each station; clinical competencies have to be performed. In the year 1975 Harden R M[7] later by Harden R M and Gleeson F in 1979[8,9] stated that in evaluating students' clinical competence in OSCE, examiners plan carefully the area to be examined. Since the stations are independent of each other, the student can start at any of the stations and complete the cycle. Each station is designed to test a clinical competence. At some procedure stations students are given tasks to perform on patients, models or simulators. At all such stations, examiners observed the students with agreed checklists to score performance.[5,10,11]

2. Objective Structured Practical Examination (OSPE)

On the other hand, "The OSPE is a way of organizing tests of communication skills, decision-making skills and knowledge. Certainly a well-designed OSPE would test the students' ability in all these areas." [12] It has similar characteristics as the OSCE assessment method. The students rotate through a series of stations and undertake a variety of procedure, for instance chemical analysis, use of an instrument, or communication with someone. In some stations, the students may be asked to recall their findings or interpret what was done in the previous station. There may also be examiners in some stations while other stations may have no examiners. The number of stations normally vary from 14-20 and the time allocated in each station is about 5 minutes. Examiners use checklists and scoring cards to assess the student. At question stations, the student may be asked to answer short questions, and multiple-choice questions.[6]

Advantages of OSCE/OSPE

The OSCEs/OSPEs are potentially more reliable method of assessment because of the following reasons:

- It reduces the chances of examiners' bias and assesses the students' skills perfectly.[8]
- Large samples of students' clinical abilities can be assessed.
- The examiner can specify in advance what has to be assessed.
- The use of checklist encourages a more objective assessment.
- Each student has a number of examiners.
- All students have the same, nearly identical patients/simulations.

The benefit of OSPE as observed by Rentschle D D et al.[13], is that it provides a formative evaluation for both students and the educational institute. Following a research study carried out by these researchers on the use of OSCE, they arrived at a conclusion that the faculty, students and standardized patients found OSCE to be significant experience.

Limitations of OSCE/OSPE

The process of conducting OSCE/OSPE on the other hand is not without limitations. They include likely the risk of observer/examiner fatigue especially where the examiner has to record the performance of several candidates on lengthy checklist. Since all stations invariably require equal time, care must be taken to organize the stations. Some educators feel that breaking clinical skills into individual competence is artificial and not meaningful.[14]

Views about perceptions of the introduction of (OSPE)/ (OSCE) :

A structured questionnaire pilot study was carried out in the Government Medical College, Ananthapuram, Andhra Pradesh, India, during the period from May 2014 to July 2014.[4] This study was conducted on 50 members of medical education trained (MET) faculties for the perceptions of the introduction of objective structured practical examination (OSPE)/objective structured clinical examination (OSCE)[15]: as mentioned in (Table 1-VI).

Table I: Faculty of the Different Departments Involved

Department	No. of Faculty	Department	No. of Faculty
Pediatrics	8	Social and preventive medicine	
Radiology	1	Pathology	4
Obstetrics and gynecology	3	Forensic	7
General surgery	1	Pharmacology	4
General medicine	2	Microbiology	2
Orthopedics	2	Anatomy	3
Anesthesia	1	Physiology	2
Ophthalmology	1	Biochemistry	3
Ear, Nose and Throat	1		5
Total			50

Table II: Faculty with Different Number of Years of Teaching Experience Involved

Teaching Experience	No. of Faculty
<5 years	8
5-10 years	17
10-15 years	17
>15	8

Table III: The views of the trained faculty regarding acceptance of OSCE/OSPE

Acceptance of OSCE/OSPE	Faculty (%)
Comprehensiveness	80
Transparency	98
Authenticity of required tasks	40
Fairness	94

Table IV: The views of the trained faculty regarding concern of OSCE/OSPE

Concerned Regarding	Faculty (%)
Anxiety producing experience	30
Ambiguity of questions	10
Fixed time allotment for stations	100
Taxing mentally and physically	80

Table V: The views of the trained faculty regarding rating of OSCE/OSPE

Rating of OSCE/OSPE	Percentage (%)
Reliability	80
Effective	70
Interesting	90
Challenging	20

Table VI: The views of the trained faculty regarding OSCE/OSPE workshop (feedback)

OSCE/OSPE as	Excellent	Good	Satisfactory	Poor
Teaching technique	8	90	2	
Accuracy of teaching	2	98		
Rationale		90	10	
Insight		92	8	

Discussion

The OSCE was first described by Harden R M[16] as a means to assess the clinical skills of final year medical students. This type of examination got an international popularity. People observed that, it can also be used to measure preclinical skills that other test does not perform.[17] So, OSPE and OSCE developed in many countries is a gold standard in clinical skills assessment. This method of examination completely eliminates subjectivity, favoritism and simultaneously the student gets greater chances to express their knowledge. This experience provided an opportunity to know the students' and teachers' responses about OSCE. They raised some issues about advantages and disadvantages of this method of examination and also gave some suggestions for further improvement of OSCE. Both students and teachers acknowledged that this type of examination is better than the traditional examination. The conventional university examination usually held in both morning and afternoon session and all the examiners are supposed to take examination of every student. The examiners complain about extensiveness of exam and students complain about variability and irrelevance of questions by examiners. Most of the students and teachers agreed that examiners' bias may be eliminated by following this type of assessment. They also approved that it is easier to pass OSCE/OSPE as compared to conventional practical exam. Several studies have proved the Objective Structured Clinical/Practical Examination as a reliable assessment tool.[8,18-21] Van Der Vleuten AJJA et al.[22] confirmed that any examination like OSCEs is a well known source of

stress and anxiety, considered as quite stressful. But student disagreed that OSCE/OSPE is a stressful examination in contrast with the opinion of the authors/teachers. Our students seemed to be comfortable with this type of examination. They argued that this type of examination may be exhausting and stressful if number of stations will be increased. These findings were contrary to the findings of Smee S[19] where he observed that OSCE is less stressful that traditional examination. However, students found difficulty in management of time at some stations so they demand more time to be given for the stations. But basic science students expressed their experiences that repeated practice in formative assessment exams self-indulgent their dissatisfaction with time available. The student may get practice for management of time if there will be prior demonstration of one or two mock examination ("dry run"). Our faculty members and students agreed that this method of assessment should follow in basic science education which will be helpful to improve the teaching methods. But in our experience it was obvious that the students sometimes were encountered with the examiner; they wanted examiners to ask some questions. Even the teachers also suggested that should be allowed to ask some questions related to the task at station. The examiners should be involved in teaching a skill prior to assess it, which may be helpful in enhancing the quality of OSCE/OSPE. The examiners and assessors should be trained to ensure reliability and consistency in scoring criteria.[23]

Recommendations

Some health professional institutions in the country are still using the conventional practical examination, adopted long time ago. Although, the deficiencies observed in this examination are well known. The objectivity and validity in practical examination like any other examination is necessary to be pragmatic. The method for practical examination is recommended for the evaluation of individual competencies of students with reliability. Considering the advantages of OSCE / OSPE as against few limitations, there is great need for the medical students, nursing and other health students to make deliberate efforts and commitments to adopt OSCE/ OSPE as a tool for assessing students' clinical skills. The following implementation processes are suggested:

Medical educators should take a leaf from Center for Medical Education (CME) and start the OSCEs utilizing some pilot study programmes. OSCE/OSPE demonstration workshops for educators are advocated for competence in structuring valid and reliable blueprint for clinical/practical evaluation in

general medical education, e.g., basic, clinical and other health professionals teaching areas.

With a sound blueprint as suggested, this will ensure that different domains are evaluated equitably and the balance of subject areas tested is fairly decided. Educators, who are already knowledgeable and conversant with the process of OSCE/OSPE, should be invited to work in collaboration with health professional educators to structure the procedure and question stations including their checklist with accuracy.

Conclusion

This attempt has been made to discuss the current conventional clinical evaluation methods and explain the acronyms OSCE/OSPE, view their methodologies, advantages and limitations. Recommen-dations are also made. It has highlighted many interesting findings; some are in equivalence with literature. The OSCE/OSPE type of evaluation has been widely used in various health institutions, because it has several advantages. All the researchers were in favour of using this assessment method, because it has been proved to provide a valid and reliable means of assessing the clinical skills of students and also afford feedback to students and teachers during course assessment. Many institutions prefer using this type of assessment because of wide coverage of skills during the assessment. So it is applicable in any subject where practical skills are obligatory. Therefore it is recommended that OSCE/OSPE should be used on pilot basis before fully adopted. A good assessment requires continuous efforts and sufficient resources like manpower, money and time.

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Case Report

Polyglandular Auto-immune Syndrome with Myasthenia Gravis

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Abstract

Individual autoimmune disease is frequently encountered in day to day practice. But polyglandular auto-immune (PGA) syndromes are rare. They are characterized by immune dysfunction affecting two or more endocrine glands as well as certain non-endocrine organs. Coexistence of Graves' disease and Vitiligo fulfill the criteria of PGA type 3. Association of the above two with Myasthenia Gravis is extremely rare. We are reporting a case of 36 years old male having Myasthenia Gravis, Graves' disease with Vitiligo.

Key words: *Polyglandular auto-immune syndromes, Myasthenia gravis, Graves' disease, Vitiligo*

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Introduction

Polyglandular auto-immune (PGA) syndromes are rare entity. They are characterized by immune dysfunction affecting two or more endocrine glands as well as certain non-endocrine organs. The PGA syndromes are classified in to four types: PGA Type 1 , PGA Type 2, PGA Type 3 and PGA Type 4.[2] PGA Type 1, also called autoimmune polyendocrinopathy candidiasis-ectodermaldysplasia (APECED), requires at least two of chronic mucocutaneous candidiasis, hypopara-thyroidism and autoimmune adrenal insufficiency (Addison's disease) for diagnosis. PGA Type 1 is usually recognized in the first decade of life, shows autosomal recessive inheritance and may be associated with other endocrine defects like hypogonadism, hypothyroidism, type I diabetes mellitus (DM), dental enamel hypoplasia, nail dystrophy etc. PGA Type 2, also known as Schmidt's syndrome is polygenic and usually presents in adulthood. The relatively common member diseases of PGA Type 2 are Addison's disease, autoimmune hypothyroidism, Graves' disease (GD) and Type I DM. Other autoimmune disorders like myasthenia gravis (MG), primary hypogonadism, vitiligo, alopecia and coeliac disease can also be associated.[1] In PGA type 2, presence of Addison's disease should always be present. When two or more members of PGA type 2 disorders are present in absence of Addison's disease, the association is classified as PGA type 3. The combination of two or more organ specific autoimmune diseases which do not fit into above mentioned types is classified as PGA type 4.[2] Epidemiological studies show that Autoimmune thyroid disorders (AITD) including GD and Hashimoto's thyroiditis occur in approximately 5-10% of patients with MG, while MG is reported in only 0.2% of patients with AITD. [3] MG, GD and Vitiligo are auto-immune diseases and the coexistence of these three diseases is extremely rare. In this study, we report a case having Myasthenia Gravis, Graves' disease with Vitiligo.

Case Report

A 36 year old married male, normotensive, non diabetic, farmer hailing from a village of Sirajganj, presented with easy fatigability and bilateral drooping of upper eyelids with diurnal variation, more marked at evening for last 7 years. He had excessive sweating, heat intolerance and weight loss of about 10 kg over past 2 years. There is no history of fever, cough, shortness of breath, change in complexion, joint pain or swelling. His appetite and bowel and bladder habits were normal.

Figure 1: The photo shows expressionless facies with bilateral ptosis and wrinkling over forehead

Physically the patient was conscious & oriented. Bilateral symmetrical ptosis, expressionless facies with over wrinkling of forehead, diffuse goiter and fine hand tremor were noted (Figure 1). Vitiligo was present in both palms and soles. Pulse rate was 110 beats/minute (regular), Blood pressure 125/80 mm Hg without postural drop. He was thin but anaemia, icterus, cyanosis and lymphadenopathy were absent. Ocular examination revealed bilateral ptosis, mild exophthalmos and equal pupils with normal response to light and accommodation. Motor examination revealed normal muscle tone and reflexes, muscle power 4/5 and positive fatigability tests viz. Counting test, Peek test and Ice on eyes test. All the investigations including blood counts and ESR, routine urine and biochemical results were normal except suppressed TSH (0.03 μIU/mL), elevated Free T_4 (18.53ng/dL) and Free T_3 (40.00 pg/mL). Radioactive iodine uptake were 15% at 2 hours, 70% at 24 hours and 20% at 48 hours. Repetitive nerve stimulation as well as single fiber electromyography, antiacetylcholinereseptor antibody, chest CT scan & MRI of brain and orbits could not be done for financial constraints.

With suggestive clinical features and available laboratory evidences, MG with GD and vitiligo were diagnosed that fulfill the criteria of PGA. Pyridostigmine 60 mg 3 times daily was started and observable improvement of ptosis was noted in the first week. Carbimazole 15 mg 3 times daily was added after 7 days. Patient was followed up again after 4 weeks and substantial improvement of tachycardia, tremor, ptosis and muscle power were observed. Ethical clearance had been taken form Institutional ethical committee and the subject had given informed consent for publication purpose.

Discussion

The prevalence of type 2 PGA is 1:20.000. Although it appears at any age, it is more common between the ages 30 and 40 and in females.[2, 3] PGA type 2 and 3 diseases are associated with HLADR3 and/or DR4 haplotype and shows polygenic inheritance.[5,6] Adrenal insufficiency is expected in all patients with type 2 PGA, whereas autoimmune thyroid disease (AITD) is expected in 69-82% and type 1 DM in 30-52%.[4] The most common

combinations are type 1 DM with autoimmune thyroid disease (41%), autoimmune thyroid disease with Addison disease (14.6%), type 1 DM with vitiligo (9.9%) and Type 1DM with Addison disease (3.3%).[7] Many of the endocrine disorders of PGA are adequately managed with hormonal replacement therapy if recognized early. The therapies regarding the different components of PGA are similar whether they occur as single or in multiple associations with other autoimmune diseases. PGAs are rare entities and all are more common among females.[8] In our case the clinical features were favourable to consider to diagnose as rarer PGA type 3 rather than PGA type 2. Vitiligo was easily recognized but proximal muscle weakness and easy fatigability are common both in GD and MG which could lead to failure of recognition of either. The presence of ptosis and diurnal variation gave us the clue to recognize MG in addition to GD.

Conclusion

Polyglandular auto-immune syndromes (PGAs) are various associations of organ specific endocrine and non-endocrine disorder having wide clinical spectrum. Due to its inclusion of a large group of diseases, it is important to evaluate the clinical and laboratory parameters of patients. This case report emphasizes on the need of high index of suspicion of coexisting Myasthenia Gravis in patients with both signs of thyroid eye disease, ptosis and vitiligo. The report also shows that it is still possible to diagnose the presence of Myasthenia Gravis indirectly using ice pack test in limited resource centers (even though it may not be confirmatory). Our case is a good reminder that the clinical features of autoimmune diseases can overlap. The presence of one autoimmune disease should require a detailed investigation for other autoimmune diseases. Also, it should be remembered that ptosis is not only expected symptom in MG. If ptosis or paresis of the orbicularis oculi muscle develops in a patient with MG, incidence of AITD should be considered.

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Case Report

A 9-year Old Boy with Ebstein's Anomaly

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Abstract

Ebstein anomaly is the apical displacement of the septal and posterior leaflets of the tricuspid valve, which results in an enlarged right atrium, functionally integrated with the inlet region of the right ventricle. Its clinical manifestations depend on the degree of tricuspid valve regurgitation and any associated cardiac defects. We are reporting a case of 9 years old, apparently healthy boy, hailing from Salop,Ullapara, Sirajganj, came to cardiology out patient department (OPD) of North Bengal Medical College Hospital, Sirajganj, with 6 weeks history of palpitation on exertion. Clinical examination revealed, pansystolic murmur in tricuspid area with end inspiratory accentuation. Transthoracic echocardiography showed, apical displacement of septal and posterior leaflets of tricuspid valve with atrialised right ventricle, which is termed as Ebstein anomaly.

Key words: *Atrialization, Apical displacement, Posterior leaflet*

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Introduction

The tricuspid valve anomaly was described by Ebstein in 1864, consists of apical displacement of the septal and posterior tricuspid leaflets, which results in an enlarged right atrium functionally integrated with the inlet region of the right ventricle ("atrialized" right ventricle). The outlet and trabecular portions of the right ventricle constitute an often hypoplastic, "functional" ventricle. Ebstein anomaly occurs in 5 per 100 000 live births, accounting for 0.5% of all cases of congenital heart disease.[1] Risk factors believed to be associated with the condition are a family history of Ebstein's anomaly or other congenital heart disease, northern European ancestry and maternal exposure to benzodiazepines or lithium.[1,2,3] More than 30% of patients with Ebstein's anomaly have associated cardiac defects.[1] In this study, we reported a rare case of Ebstein's anomaly.

Case Report

A 9 years old, previously healthy school boy, hailing from Salop, Ullapara, Sirajgonj, came to the cardiology OPD of North Bengal Medical College Hospital, Sirajganj, with a 6-week history of palpitations. The symptoms occurred during exertion, 1-2 times per week, lasted up to 20 minutes at a time and were associated with dyspnoea. On physical examination, there was pansystolic murmur of grade 2/6, in the left sternal edge, which was best heard after breath holding on inspiration. ECG showed no abnormality, but cardiac shadow was enlarged in postero-anterior view of chest X-ray. Transthoracic echocardiography demonstrated the presence of Ebstein's anomaly of the tricuspid valve, with apical displacement of the valve and formation of an "atrialized" right ventricle (a functional unit between the right atrium and the inlet [inflow] portion of the right ventricle) (Figure 2). The anterior tricuspid valve leaflet was elongated, whereas the septal leaflet was rudimentary. Ethical clearance had been taken form institutional ethical committee and the informed consent of the subject had been taken from patient's guardian for study.

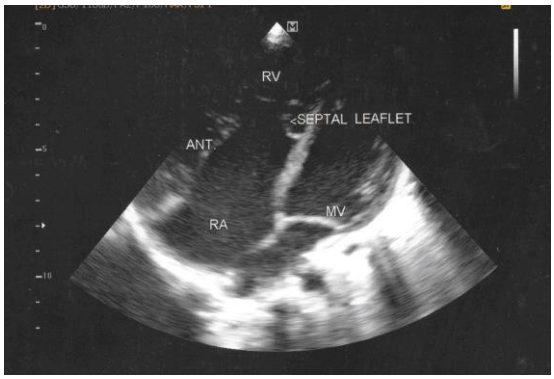

Figure 2: Echocardiogram showing Ebstein's anomaly (apical displacement) of the tricuspid valve with long anterior leaflet and rudimentary septal leaflet (Arrowed) and formation of an "Atrialized" Right Ventricle (ARV)

Discussion

The clinical manifestations of Ebstein's anomaly depend on the degree of tricuspid valve malformation and consequent regurgitation, and any associated cardiac defects.[2,3] Many patients first experience symptoms as adults, but the onset can occur after birth or in infancy or childhood. In newborns, the anomaly often presents as cyanosis and, in the absence of surgical repair, is associated with a 20% mortality in the first year of life. In infants, it may present as congestive heart failure and in children as an incidental murmur. In adults, the anomaly commonly presents with arrhythmias. Factors associated with a worse outcome are young age at diagnosis, male sex, cardiothoracic ratio of more than 0.65 and the presence of cyanosis.[2]

The treatment of Ebstein's anomaly has to be tailored to the individual patient. Patients with heart failure and little impairment in functional capacity can be managed medically. Atrial arrhythmias without evidence of pre-excitation can be treated pharmacologically, whereas percutaneous radiofrequency ablation is indicated in the presence of an accessory pathway. In general, surgical intervention with tricuspid valve repair or replacement is restricted to patients with severe heart failure, cyanosis, intractable arrhythmias or paradoxical embolization (passage of thrombi from the venous circulation into the arterial circulation through a right-to-left shunt at the atrial level). Patients with Ebstein's anomaly should be assessed regularly for signs of deterioration in functional capacity, increasing cyanosis or presence of arrhythmia. Prophylaxis against infective endocarditis is warranted in all cases.

References

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