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From the Desk of Editor-in-Chief

We are delighted to inform that the Volume 8, Number 1 of the Dhaka Central International Medical College Journal (DCIMCJ) is going to be published very soon. In this issue we have added a new section, Medical Quiz: Images. We are grateful to Almighty Allah. We are sending the complimentary copies of the journal to the libraries of most of the medical college and other medical institutions in Bangladesh. Already our journal has been approved by Bangladesh Medical & Dental Council (BMDC). We invite the doctors of medical colleges and institutes to submit their research articles to the journal committee for publication. We accept both hard & soft copies of the articles. We go through the papers and if necessary, communicate the authors. We also thank all the authors for giving us opportunity to publish their research papers in this journal. We have tried our best to avoid erroneous information. We like to add here that DCIMC Journal and its editorial board accept no liability for any inaccurate and misleading information, opinion and statements. It is the responsibility of the individual author (s). We have mentioned the instruction for the authors in this issue. We request the contributing authors to follow the instructions for their manuscripts. We appreciate our chairman, editors, members and advisors for their encouragement and also appreciate the contributors and reviewers for their participation. Last of all we welcome valuable suggestion, opinion, advice and constructive criticisms for improvement of the quality of the journal.



Prof. Bidhu Bhushan Das
Editor-in- Chief

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

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

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

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

Article types:

Five types of manuscripts may be submitted:

Editorials:

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

Original articles:

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

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

Reviews:

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

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

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

Condition for submission of manuscripts:

- All manuscripts are subject to peer-review.
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    - Title page
    - Summary/abstract
    - Text
    - Acknowledgement
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Page should be numbered consecutively at the upper right hand corner of each page beginning from the title page

I. A. 1.a. General Principles:

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

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- Double-spacing all portions of the manuscript- including the title page, abstract, text, acknowledgments, references, individual tables, and legends- and generous margins make it possible for editors and reviewers to edit the textline by line and add coments and queries directly on the paper copy.
- If manuscripts are submitted electronically, the files should be double-spaced to facilitate reviewing and editing.
- Authors should number on right upper corner of all of the pages of the manuscript consecutively, beginning with the title page, to facilitate the editorial process.

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

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1. Article title. Concise title is easier to read than long, convoluted ones. Titles that are too short may, however, lack important information, such as study design (which is particularly important in identifying type of trials). Authors should include all information in the title that will make electronic retrieval of the article both sensitive and specific.
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- Structured abstracts are essential for original research and systematic reviews. Structured abstract means introduction, methods, results and conclusion in abstract
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- The abstract should provide the introduction of the study and blinded state and should state the study's purpose, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations. Articles on clinical trials should contain abstracts that include the items that the CONSORT group has identified as essential (http: //www. consort-statement. org).
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- Provide only directly pertinent primary references, and do not include data or conclusions from the work being reported.

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

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I. A 9. References:

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- Tables capture information concisely and display it efficiently.

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- Try to limit the number of tables/figure

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

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

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

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

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

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General outline for article presentation and format:

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- Title page contains all the desired information (vide supra)
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Language and grammar:

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  - Avoid data redundancy
  - Use table information at the end of the sentence before full stop between the small bracket
- **Discussion:**
  - Avoid unnecessary explanation of someone else work unless it is very relevant to the study
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  - Mention about limitation of your study
- **Conclusion:**
  - Give your conclusion
  - Any recommendation
- **Acknowledgement:**
  - Acknowledge any person or institute who have helped for the study
- **Reference:**
  - Abide by the Vancouver style
  - Use reference at the end of the sentence after the full stop with superscript
- **Legends:**
  - Table
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The editor reserves the right to style and if necessary, shorten the material accepted for publication and to determine the priority and time of publication

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DCIMCJ

Editorial

DCIMCJ 2021 January;8(1):13-15

Vaccination against COVID-19 to Fight the Pandemic

Das BB[1], Akhter Z[2]

Introduction:

Coronaviruses are a large family of virus that cause illness ranging from the common cold to more severe disease. The Novel coronavirus is the latest member of this family, that has not been previously identified. This new virus was subsequently named the "COVID-19" virus. On 31st December 2019, 1st case of pneumonia of unknown cause in Wuhan city, China was reported and on 7th January 2020 novel corona virus was identified as the cause of it. The Chinees othority WHO declared novel coronavirus outbreak a public health emergency of international concern. 13th January on 2020, due to rapid increase in the number of cases outside china WHO declared it Pandemic[1]. Since then worldwide impact of this pandemic is frightening. The human race is also facing a crisis due to mandatory quarantine and lockdown. The world economy is already facing long-lasting dent, and the situation will surely worsen if the viral spread is not controlled[2]. Until today (6th June, 2021) 173,717,565 cases are detected worldwide and we have already lost 3,736,092 of our human fellows. It is considered as the worst crisis since World War II[3]. Here in Bangladesh total 809,314 cases were detected and 12,801 of our relatives have already left us forever[4].

About the virus:

Alpha, beta, gamma and delta are the four classes of the coronavirus (CoV) family, all featuring a single-stranded positive-sense RNA genome. The membrane envelops encapsulating the viral genome are decorated with glycoprotein spike transmembrane proteins. The word "coronavirus" is named for the club-shaped protein spikes on their surface when viewed under a transmission electron microscope (TEM).

1. Dr. Bidhu Bhushan Das, Principal and Professor, Department of Medicine, Dhaka Central International Medical College.
2. Dr. Zakia Akhter, Professor & Head, Department of Anatomy, Dhaka Central International Medical College.

The causative agent behind the COVID-19 pandemic belongs to the beta class. The same coronavirus class was responsible for the severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome (MERS)[5]. Fever, dry cough, fatigue, and difficulty in breathing are among the initial symptoms of a SARS-CoV-2 infected patient[6].

This is the more contagious virus in its class and majorly affects the lower respiratory system initiating viral pneumonia. Vital organs including heart, liver, kidneys, gastrointestinal tract (GIT), and the central nervous system (CNS) may also be affected, causing multiple organ complicacies[7-9]. Until recently there is no known specific antiviral to treat COVID-19, though some antiviral drugs were given emergency permission to be used. Only supportive management is the main way of treatment. Majority of patients recovers but as the large number of patients are affected worldwide over all absolute mortality is very high. As of 3rd March 2021 WHO estimated globally about 3.4% of reported COVID-19 cases died. By comparison seasonal flue generally kills fewer than 1% but we don't know how many people were infected. Mortality rate also vary country to country[10].

Transmission of SARS-Cov-2:

It can occur through direct, indirect or close contact with infected people though infected secretion such as saliva and respiratory secretion or their respiratory droplet which are expelled when an infected person cough, sneeze, talk & sing. Respiratory droplet transmission occurs when a person is within one meter of infected person. Airborne transmission can occur during medical procedure that generate aerosols and also without it, in the indoor setting with poor ventilation.

Both symptomatic (during & before symptoms) and asymptomatic infected person can transmit infection. So isolating infected cases and quarantining all close contact, use of fabric mask by general population, continuous using of a medical mask by health workers and care giver at all clinical areas, social distancing, practicing hand hygiene, respiratory etiquette and good health practice, avoiding overcrowding ensuring good environmental ventilation, applying lockdown all this are tried to prevent transmission. Despite all these, there are no sign of the end of this pandemic[11].

What is the way?

Despite of above mention practices (Though not follow by majority of population worldwide or probably it is not possible). With the rising of cases worldwide health officials continue to work to find the best way to protect the public from this disease. Probably it is herd immunity may help to solve the spread of new corona virus. Herd immunity or community immunity is when a large part of population of an area is immune to a specific disease. If enough people are resistant to the cause of disease such a bacteria or a virus, it is nowhere to go. While not every single individual may be immune, the infection rate drop and the disease peters-out[12]. For example if 80% of a population immune to a virus, four out of every five people who encounter someone with disease won't get sick and wont spread the disease further. Depending on how contagious an infection is, usually 50%-90% of a population need immunity before infection rates start to decline[13].

How to reach?

How do we achieve herd immunity agaist this virus is the question of the time. This can happen in two ways: one by natural infection and another by vaccination? When a person is exposed to a virus or a bacteria, antibodies to fight against the infection are produced. After recovery, the body keeps these antibodies to defend another infection by same agent. This is what stopped Zika virus outbreak in Brazil[12]. But we can't allow COVID-19 to spread to achieve herd immunity at the expense millions of human lives. We cannot allow it to destroy our economy and social life. So we will have to accept the alternative way-vaccination of most of human population. Vaccies can build resistance. These make the body to think a virus or a bacteria has invaded him or her[13].

When it reaches?

The person don't get sick but the immune system still makes protective antibodies and produces cell mediated immunity to fight against future invasion by the same agent[12]. Measles mums polio and chicken pox are example of infectious diseases that were once very common but now rare, because vaccine helped to established immunity[12].

When does a community reach a herd immunity, it depends on the reproduction number (Ro). The Ro determined by the average number of people infected by a single infected person with COVID-19. Higher the Ro greater the number of people to be vaccinated to reach herd immunity. It was thought by the researcher that Ro for COVID-19 is between 2 or 3. It indicates that 50%-67% of the population needs to be resistant before herd immunity kicks in and the infection rates start to go down. However researchers estimate that 75%-80% of the population would need to be vaccinated to reach the herd immunity[12].

About vaccines?

As of April 2021, 16 vaccines are authorized by at least one national regulatory authority for public use: three RNA vaccine (Pfizer-BioNTack and Moderna), seven conventional inactivated vaccines (BBIBP-CorV, CoronaVac, Covaxin, WIBPCor V, CoVIVAC, Minhai-Kangtai and Qoz), five viral vector vaccines (Sputnik Light, Sputnik V, Oxford-Astra Zeneca, Convidecia and Johnson & Johnson) and two protein sub unit vaccine (EpiVac Corona and RBD-DIMER).

In total, as of March 2021, 308 vaccines candidates are in various stages of development, with 73 in clinical research, including 24 in phase (I), 33 in phase (II), trials and 16 in phase (III) development. But there is a great problem that the vaccine distribution and vaccination is not uniform worldwide[14].

Up to 3rd June 2021, out of total COVID vaccine administered 37.8% & 48.04% received by high & upper middle class income countries respectively and only 14.38% and 0.30% by lower middle and less income countries[15]. How great the inequity is?

Conclusion:

We have now multiple effective vaccinations but the distribution is not uniform. It is global concern to make it uniform. We have to revemboer that the world is a global villege As long as there are unvaccinated population in the world, SARS-CoV-2 will continue to spread and mutate and additional variant will emerge to make the vaccine ineffective, at least partially. Regular update of vaccine is necessary and booster doses should be provided regularly. Other preventive measures should be followed until this pandemic end and pople should be motivated by all means to follow health advices and to take vaccine in time.

References:

1. World Health Organization. Corona Virus Disease (COVID-19) Outbreak. Available from: https://www.euro.who.int (Accessed 6th June 2021).

2. Chouhan G, Madou MJ, Karlas S, Chopra Vianni, Gosh D, Martinez-Chopra SO. Nanotechnology for covid-19, Therapeutic and Vaccine Research. Acs Nano. 2020: 14: 7760-7782.

3. Worldometer. COVID Live Update. Available from: https://www. worlometer.info (Accessed 6th June 2021).

4. Zhou P, Yang X L, Wang XG, Hu B, Zhang L, Zhang W, et al. A Pneumonia Outbreak Associated with a New Coronavirus of Probable Bat Origin. Nature 2020, 579, 270−273.

5. Song Z, Xu Y, Bao L, Zhang L, Yu P, Qu Y, et al. Available from: SARS to MERS, Thrusting Coronaviruses into the Spotlight. *Viruses.* 2019: 11:59.

6. Cui J, Li F, Shi ZL. Origin and Evolution of Pathogenic Coronaviruses. Nat. Rev. Microbiol. 2019; 17:181−192.

7. Zheng YY, Ma YT, Zhang JY, Xie X, COVID-19 and the Cardiovascular System. Nat. Rev. Cardiol. 2020; 17:259−260.

8. Bangash MN, Patel J, Parekh D. COVID-19 and the Liver: Little Cause for Concern. Lancet Gastroenterol. Hepatol. 2020; 5:529−530.

9. Hayman DL, Shindo N. COVID-19: What is next for public health? Lancet. 2020; 395:545.

10. Worldometer. COVID Live Update. Available from: https:// www. worldometer.info.com (Accessed 6th June 2021).

11. World Health Organization. TRANSMISSION of SARS-COV-2: Implication of infection prevention precaution. https://www.who.int.com (Accessed 6th June 2021).

12. WebMD. What is herd immunity? Available from: https://www.webmd.com/lungs/what-is-herd-immunity?

13. D` Souza G, Dowdy D. What is Herd Immunity and How Can We Achieve It with Covid-19. Available from: http://www.jhsph.edu (Accessed 6th June 2021).

14. COVID-19 vaccine development pipeline. Vaccine Center, London School of Hygiene & Tropical Medicine. Available from https://ww.medbox.org.document.

15. Our World in Data. COVID-19 vaccine doses administered by country income group. Available from: https://ourworldindata. org (Accessed 6th June 2021)

DCIMCJ

Original Article

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The Relationship between Vitamin D, HbA1C and Their Association with Chronic Complications of Diabetes in Patients with Type-2 Diabetes Mellitus with Low Vitamin D Level

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Abstract:

Background:Vitamin D deficiency is considered to be a potential risk factor for developing diabetes and associated vascular complications in several studies. We studied diabetic patients with low vitamin D level and assessed the correlation between HbA1C and microvascular and macrovascular complication. Methods:In this cross-sectional study, we evaluated data of 57 patients from medical records who were admitted to the Endocrinology department of BIRDEM. All of them were Type 2 diabetic patients with either vitamin D insufficiency or deficiency. The correlation between 25(OH) vitamin D level, HbA1c and both microvascular and macrovascular complications were explored. Results: In this study, the highest number of patients were found in the age group 41-60 years, and it was 24(41.2%). Among the study population, 40 patients (70%) were found to be Vitamin D deficient(<20ng/ml), and they were mostly female(72%). Nephropathy was the most frequent microvascular complications found in 22(38.6%) patients, and 21(36.8%) patients had Ischaemic heart disease, which was the most common macrovascular complications. A significant negative correlation was found between Vitamin D level and HbA1c(P=0.045,r = -0.267). In multivariate analysis, low vitamin D level was significantly associated with the development of neuropathy(P=0.011). Conclusion: The study's findings indicate that low Vitamin D level is inversely related to glycaemic status and also associated with the development of neuropathy.

Keywords: Chronic complications, Diabetes Mellitus, HbA1C, Vitamin D deficiency

Introduction:

Vitamin D deficiency is considered a highly prevalent condition worldwide.It is estimated that around 1 billion people globally suffer from vitamin D deficiency or insufficiency[1,2]. Hypovitaminosis D has been thought to play an important role in the pathogenesis of both communicable and non-communicable diseases[3]. Diabetes Mellitus, one of the important non-communicable diseases, is expected to be the 7th leading cause of death by 2030, according to The Diabetes Mellitus, one of the important non- communicable diseases, is expected to be the 7th leading cause of death by 2030, according to The World Health Organaization[4].

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It is well established that the development of both microvascular and macrovascular complications play a crucial role in the mortality and morbidity of diabetic patients. So early detection and prevention of complications is the ultimate target of glycaemic control. There is some evidence that Vitamin D deficiency is associated with the progression of Diabetic Kidney Disease (DKD), and the rate of hypovitaminosis D is significantly higher in this group of patients[5]. In a study, the severity of retinopathy is dependent on the degree of vitamin D deficiency[6].

According to several studies, there is an association between congestive heart failure and vitamin D deficiency[7] and reduction of blood pressure was also observed after Vitamin D supplementation[8]. It is being established that the development of both microvascular and microvascular complications has been associated with hypovitaminosis D.

So, herein, we tried to explore the association between vitamin D deficiency, glycaemic status and development of both microvascular and macrovascular complications in type 2 diabetic patients.

Materials and methods:

Design of the study

A cross-sectional study was done with the medical records of 57 patients of Endocrinology inpatient of BIRDEM General Hospital between January-June 2018. The central database for patient's medical records was used for data collection. After fulfilling the selection criteria, type 2 diabetic patients with newly detected vitamin D deficiency or insufficiency not on a supplement were enrolled in this study by convenience sampling. Patients previously diagnosed as having Vitamin D deficiency or insufficiency receiving supplements, active infection, acute kidney injury, liver disease, primary hyperparathyroidism, osteoporosis were excluded from the study.

From medical records history, physical examination and laboratory findings were obtained (age, sex, blood pressure, BMI, fasting and 2hrs postprandial blood glucose, HbA1C, S. creatinine, urine for microalbumin, eGFR, fasting lipid profile, 25(OH) vitamin D level, ECG and Echocardiography, Duplex imaging). Nephropathy was diagnosed in patients having microalbuminuria 30-300mg/day. For a diagnosis of retinopathy, all patients underwent an ophthalmologic examination by an experienced ophthalmologist. Diabetic retinopathy was categorized as Non-proliferative diabetic retinopathy (NPDR) or Proliferative diabetic retinopathy (PDR) according to the presence of retinal neovascularization. Peripheral neuropathy was diagnosed clinically by abnormalities in monofilament (Semmes-Weinstein monofilament of 5.07/10 g) testing and vibrating tuning fork (128 HZ).

Ischemic heart disease (IHD) was considered in a patient with a history of classic symptoms of Ischaemia evident by ECG, Echocardiography in appropriate cases or on treatment. Peripheral vascular disease (PVD) was diagnosed by suggestive history and diminished peripheral pulses clinically and duplex Imaging in selected cases. The patients having a history of TIA, cerebrovascular insufficiency or previously diagnosed and on treatment were considered in the category of Cerebrovascular disease(CVD).25(OH) vitamin D level was assessed using ELISA technique and <20 ng/ml was considered as deficiency, 21-30 ng/ml was considered as insufficiency and >30 ng/ml is considered as sufficient state[2].

Statistical analysis:

Statistical Packages for Social Sciences(SPSS) Windows software was used for data analysis after proper verification, editing and coding. The nominal variables were presented as number and percentage. The relationships between nominal variables were done by the Chi-square test. The correlation between Vitamin D and HbA1C was evaluated by Pearson's correlation test. Two-tailed P value ≤0.05 was considered statistically significant.

Results:

In this study, the highest number of patients were found in the age group 41-60 years, and it was 24(41.2%). 22(38.60%) patients were from 60-80 years group, and 9(15.8%) patients from age group 20-40. Only 2(3.5%) patients were found to be aged > 80 years. There were 41(71.9%) female and 16(28.1%) male patients. The mean 25(OH) vitamin D level was 18.20 ng /ml, and 40(70.2%) patients were found to be vitamin D deficient, and 17(29.8%) patients were vitamin D insufficient. Regarding the distribution of the study population according to HbA1C level, it was evident that around 46% of patients were in the category of HbA1C between 7-10%.About 38% of patients had HbA1C >10% and only 16% of patients achieved the glycaemic target of HbA1c <7%.This result, as a whole, reflects a poor glycaemic status among the study populations.

In our study, a significant negative correlation was found between HbA1c and 25(OH) vitamin D level (P-value = 0.045, r = -0.267), indicating that vitamin D deficiency is associated with poor glycaemic status.

Table 1: Distribution of subjects by age, gender and vitamin D level (n=57).

Variable	Frequency	Percentage
Age (Years)		
20-40	9	15.8
41-60	24	41.2
61-80	22	38.6
>80	2	3.5
Gender		
Male	16	28.1
Female	41	71.9
25(OH) vitamin D status		
Deficent	40	70.2
Insufficient	17	29.8

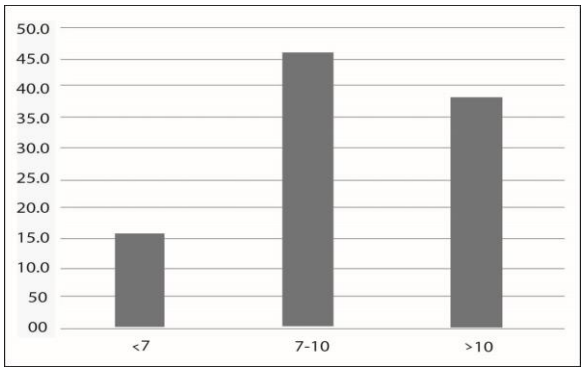


Figure 1: Distribution of study population according to HbA1c level.

Among the patients, 47% of patients presented with a single complication, either macrovascular or microvascular,25% of patients presented with multiple(>1) complications and no complications were found in 28% of patients

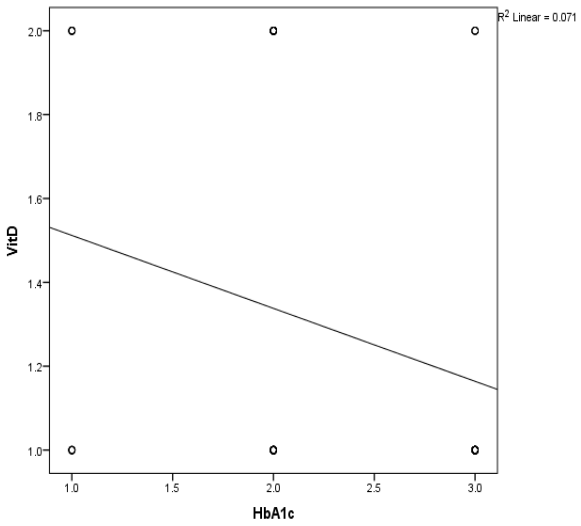


Figure 2: Correlation between HbA1c and vitamin D deficiency.

Nephropathy was found to be the most frequent microvascular complications (31.6%), and Ischaemic heart disease was found to be the most frequent (22.8%) macrovascular complications among the patients.

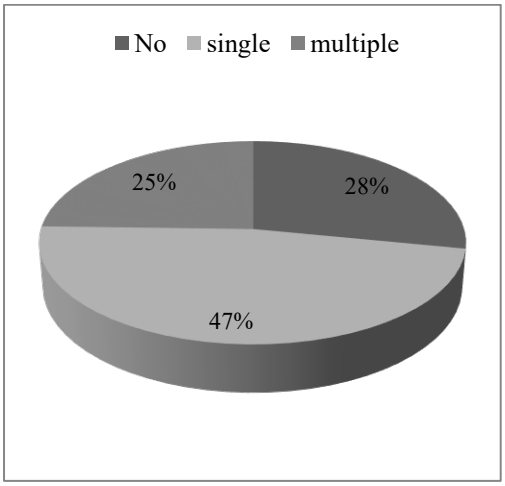


Figure 3: Distribution of patients according to number of complications

Table 2: Association between vitamin D deficiency and chronic complications of diabetes

Complications	Presence	Vitamin D deficiency (N=40)	Vitamin D insufficiency (N=17)	Total (N=57)	P value
Retinopathy	Yes	6(10.5)	0(0)	6(10.5)	0.091
	No	34(59.6)	17(29.8)	51(89.5)	
Nephropathy	Yes	18(31.6)	4(7.0)	22(38.6)	0.128
	No	22(24.6)	13(22.8)	35(61.4)	
Neuropathy	Yes	12(21.1)	0(0)	12(21.1)	0.011**
	No	28(49.1)	17(29.8)	45(78.9)	
Ischaemic heart disease	Yes	13(22.8)	8(14.0)	21(36.8)	0.297
	No	27(47.4)	9(15.8)	36(63.2)	
Cerebrovascular disease	Yes	3(5.3)	1(1.8)	4(7.0)	0.827
	No	37(64.9)	16(28.1)	53(93.0)	
Peripheral vascular disease	Yes	1(1.8)	0(0)	1(1.8)	0.511
	No	39(68.4)	17(29.8)	56(98.2)	

In our study, a significant positive association was found between vitamin D deficiency and peripheral neuropathy by the Chi square test (P value= 0.011).

Discussion:

Among our study population, 41.2% of patients with low vitamin D level was found in the age group 41-60 years which shows that the possibility of vitamin D insufficiency or deficiency increases with aging . A cross-sectional study also found that the mean value of vitamin D declines with increasing age[9]. But another study showed that vitamin D deficiency was more prevalent in younger adult patients (30-40 yrs)[10]. In this study, among 57 enrolled patients, the mean vitamin D level was 18.20 ng/ml. Around 70% of patients were vitamin D deficient, and 30% of patients were vitamin D insufficient. In a study conducted among newly diagnosed type 2 diabetic patients, where 30% of patients were found to be vitamin D deficient, indicating better vitamin D status than our study population[11]. Women were predominantly found to be vitamin D deficient in our study, and it was 72% (41). This finding corresponds with a study where the female gender was associated with lower vitamin D levels (14.5±10.9 vs15.9±9.5,p=0.007) and independently associated with severe vitamin D deficiency(41.9% vs 30.4%,p<0.001)[12].

In our study, a significant negative correlation was found between HbA1c and 25(OH) vitamin D level (P-value = 0.045,r = -.267). A study done in South Asians in UK showed that HbA1c was higher (8.11±1.11%) in women with vitamin D deficiency (<12.5 nmol/l), which also indicates a negative correlation between HbA1c and hypovitaminosis D.[13]. Another study done in diabetic patients of Jazan city, Saudia Arabia, showed a significant negative correlation between 25 hydroxyvitamin D and HbA1C[14].

Nephropathy was found to be the most frequent microvascular complication (31.6%), and Ischaemic heart disease was found to be the most frequent (22.8%) macrovascular complications in our study.

According to several studies, the high prevalence (58.6%) of micro or macroalbuminuria observed in diabetic patients is alarming and indicates an impending pandemic of diabetic renal diseases[15-17]. In another study, there was a high prevalence of vitamin D deficiency and insufficiency in individuals with diabetes, and there was an independent association between vitamin D deficiency and the presence of nephropathy[18]. Evidence from the Heart and Soul study showed that 25 hydroxyvitamin D level under 20ng/ml were independently associated with adverse cardiovascular events (hazard ratio =1.30, 95% confidence interval:1.01, 1.67)[19]. But our study failed to prove any significant association between hypovitaminosis D and nephropathy or ischaemic heart disease.

Regarding association between vitamin D deficiency with presence of chronic complications of diabetes, a significant positive association was found between vitamin D deficiency and the development of neuropathy (P value= 0.011). Similar findings were supported by a meta-analysis that showed that vitamin D deficiency was significantly associated with diabetic peripheral neuropathy in patients with type 2 diabetes mellitus.[20]. Several other studies also supported this fact[21,22]. A separate study showed that treatment with vitamin D could delay the onset of neuropathy[23]. The limitations of our study were the small sample size which was not representative of the Bangladeshi population, and it was a single-centre study.

Conclusion:

Vitamin D deficiency is inversely related to glycaemic status and significantly associated with the development of diabetic peripheral neuropathy. So, a large scale prospective study should be conducted to find out the association between vitamin D deficiency and the development of microvascular or macrovascular complications in diabetic patients.

Referrences:

1. Khadgawat R, Brar KS, Gahlot M, Yadav CS, Malhotra R, Gupta et al. High prevalence of vitamin D deficiency in Asian-indian patients with fragility hip fracture: a pilot study.J Assoc Physicians India.2010 Sep;58:539-42.

2. Dawson-Hughes B, Heaney RP, Holick MF, Lips P, Meunier PJ, Vieth R. Estimates of optimal vitamin D status. Osteoporos Int 2005;16:713-6

3. Wimalawansa SJ. Vitamin D deficiency: effects on oxidative stress, epigenetics, gene regulation, and aging. Biology. 2019 ;8(2):30.

4. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. Diabetes care. 2004;27(5):1047-53.

5. González EA, Sachdeva A, Oliver DA, Martin KJ. Vitamin D insufficiency and deficiency in chronic kidney disease. American journal of nephrology. 2004;24(5):503-10.

6. Alcubierre N, Valls J, Rubinat E, Cao G, Esquerda A, Traveset A, Granado-Casas M, Jurjo C, Mauricio D. Vitamin D deficiency is associated with the presence and severity of diabetic retinopathy in type 2 diabetes mellitus. Journal of diabetes research. 2015;2015.

7. Brunvand L, Haga P, Tangsrud SE, Haug E. Congestive heart failure caused by vitamin D deficiency?. Acta Paediatrica. 1995; 84(1):106-8.

8. Pilz S, Tomaschitz A, Ritz E, Pieber TR. Vitamin D status and arterial hypertension: a systematic review. Nature reviews cardiology. 2009;6(10):621-30.

9. MR Baker, M Peacock, BEC Nordin. The decline in vitamin D status with age. Age and Ageing 1980; 9(4):249-252.

10. Al Quaiz AM, Kazi A, Fouda M, Alyousefi N. Age and gender differences in the prevalence and correlates of vitamin D deficiency. Arch Osteoporos 2018;13: 49.

11. Alam MS, Kamrul -Hasan M, Kalam ST, Selim S, Akhter F, Saifuddin M. Vitamin D status in Newly diagnosed Type 2 Diabetes patients attending in Tertiaty Hospital of Bangladesh. Mymensingh Med J 2018;27(2):362-68.

12. M Verdoia, A Schaffer, L Barbieri, D Di Giovine,P Marino, H Suryapranata, G De luca, Novara Atherosclerosis Study Group.Impact of gender differences on vitamin D Status and its relationship with the extent of coronary artery disease. 2015; 25(5): 464-470.

13. Tahrani AA, Bali A, Shepherd L, Rahim A, Jones AF, Bates A. The prevalence of vitamin D abnormalities in South Asians with Type 2 diabetes Mellitus in UK.

14. Darraj H, Bededi M, Poore KR, Hummadi A, Khawaji A.Vitamin D deficiency and glycaemic control among patients with type 2 diabetes mellitus in Jazan city, Saudia Arabia. Diabetes, metabolic syndrome and obesity:targets and therapy. 2019;12:85.

15. Wu AY, Kong NC, De Leon FA, Pan CY, Tai TY, Yeung VT, et al. An alarmingly high prevalence of diabetic nephropathy in Asian type 2 diabetic patients: the MicroAlbuminuria Prevalence (MAP) Study. Diabetologia. 2005 ;48(1):17-26.

16. Aldukhayel A. Prevalence of diabetic nephropathy among Type 2 diabetic patients in some of the Arab countries. International journal of health sciences. 2017;11(1):1.

17. Tomino Y, Gohda T. The prevalence and management of diabetic nephropathy in Asia. Kidney Diseases. 2015;1(1):52-60.

18. VA Diaz, AG Mainous III, PJ Carek, A Wassell, CJ Everett. The association of vitamin D deficiency and insufficiency with diabetic nephropathy: implications for health disparities. AM Board Family Med 2009;22(5): 521-527.

19. CC Welles, MA Whooley, SA Karumanchi, T Hod, R thadani, AH Berg, JH Ix, KJ Mukmal. Vitamin D deficiency and cardiovascular events in patients with coronary artery disease. American J of epidemiology 2014;179(11): 1279-1284.

20. Lv WS, Zhao WJ, Gong SL, Fang DD, Wang B, Fu ZJ, et al. Serum 25-hydroxyvitamin D levels and peripheral neuropathy in patients with type 2 diabetes: a systematic review and meta-analysis. J Endocrinol Invest 2014, Dec 21.

21. Soderstorm LH, Jhonson SP, Diaz VA, Mainous lii AG. Association between vitamin D and diabetic neuropathy in a nationally representative sample: results from 2001-2004 NHANES.

22. Skalli S, Muller M, Prandines S, Halimi S, Wion-Barbot N. Vitamin D deficiency and peripheral neuropathy. European journal of internal medicine.2012; 23(2): e67-e68.

23. Hehab D, Al-Jarallah K, Mojiminiyi OA, Al Mohamedy H, Abdella NA. Does Vitamin D deficiency play a role in peripheral neuropathy in Type 2 diabetes? Diabetic Med. 2012;29:43–9.

DCIMCJ

Original Article

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Cranial CT Scan for Prediction of Short-Term Outcome in Primary Intracerebral Haemorrhage

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Abstract:

Primary intracerebral haemorrhage remains the deadliest and most disabling form of stroke worldwide with high early mortality. The aim of this study was to establish the importance of CT scan as a reliable predictor of short term mordity and mortality in patients with primary intracerebral haemorrhage. This was a hospital based follow-up study conducted on 96 patients with primary intracerebral haemorrhage. Mean age of the patients was 67.4 ± 12.8 years. Headache and hemiparesis/plegia were the most frequent presenting features. Three-fourths of the study participants were hypertensive haemorrhages. Putamen was the most frequent location. Ventricular extension, midline shift and haematoma volume ≥60 cc observed in cranial CT scan were associated with higher short-term morbidity & mortality.

Keywords: Primary intracerebral haemorrhage, ventricular extension, haematoma volume

Introduction:

Stroke ranks first among all the neurologic diseases of adult, both in frequency and importance. At least half of the patients with a neurologic disorder attending general hospitals suffer from stroke[1].

Haemorrhagic stroke constitute approximately 20 percent of total stroke patients[2], majority being spontaneous intracerebral haemorrhage (ICH)[3]. Most of the spontaneous ICH cases are primary ICH, defined as spontaneous ICH not arising from vascular malformations, neoplasms, haemorrhagic disorders or anticoagulant or fibrinolytic drugs[4].

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It presents with sudden focal neurological deficit or reduced level of consciousness[6]. Primary ICH accounts for approximately 10 to 15 percent of all strokes[5].

Overall incidence of primary ICH is approximately 0.25 per 1000 person-years, higher among Asians, 0.5 per 1000 person-year[7]. Prevalence of stroke in Bangladesh is approximately 3 per 1000 person-year overall and 10 per 1000 person-year in people aged ≥70 years[8]. No documented data on incidence of primary ICH in Bangladesh is available. ICH comprised 31 and 28 percent of all stroke patients in studies conducted in Bangladesh[9] and Pakistan[10], respectively.

CT scan occupies the foremost position for rapid diagnosis of ICH. It is more sensitive for acute haemorrhage than routine magnetic resonance imaging (MRI)[11]. It can detect acute haemorrhage of ≥1cm diameter[12]. CT scan is widely available, even at district level, in Bangladesh. The cost is far cheaper than that of MRI as well.

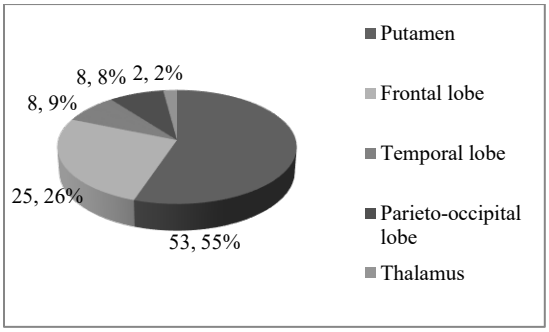


Figure-1: Location of primary ICH in study subjects (n=96)

Immediate prognosis of primary ICH is grave, 30-35% die within 1 month, most of them within the first week[1]. Despite the high mortality, greater degree of functional restoration is observed among the survivors. This is largely because of the fact that haemorrhage pushes the brain tissue aside, rather destroying it, as happens in infarction. So short term mortality and morbidity can be considered as a reliable parameter of the overall outcome in primary ICH.

Certain features found in CT scan of head: ventricular extension[10], midline shift[13] and ICH volume ≥60 cc[14] in primary ICH were found to be associated with poor outcome in a number of studies. There is no comprehensive study on Bangladeshi population taking all three of these parameters in account. Hence, this study was conducted to establish the importance of CT scan as a reliable predictor of short-term outcome (morbidity and mortality) within the first week in primary ICH.

Materials and methods:

This was a hospital-based prospective study conducted on 96 primary ICH patients admitted in a tertiary level teaching hospital in Dhaka, Bangladesh. Brainstem[15] and cerebellar[16] ICH were excluded from the study as infratentorial ICH bears grave prognosis irrespective of the CT scan features of interest in this study. Hemorrhagic infarcts and ICH patients undergoing neurosurgical interventions were also excluded. Informed consent was taken from every participant before enrollment.

CT scan features: ventricular extension, midline shift and haematoma volume ≥60 cc were taken as independent variables. Mildine shift was defined as Displacement of the midline brain structures (septum pellucidum, pineal gland and/or third ventricle) towards the opposite cerebral hemisphere. It is measured by the maximum distance between displaced midline structures and an imaginary straight line from frontal eminence to occiput and considered significant if ≥3 mm[17]. Haematoma volume was calculated with ABC formula[18].

Clinical outcomes during the first week: Mortality, Glasgow coma scale score at the end of first week and neurological deterioration were taken as dependent variables. Neurological deterioration was defined as deterioration of GCS score by ≥ 2, development of new focal neurological deficits or deterioration of the existing neurological deficits during the first week[19]. Association between the CT scan features and the clinical outcomes were assessed.

The data analysis was done manually using standard statistical procedures. Statistical Products and Service Solutions (SPSS) version 20 was used whenever required and also to crosscheck the results. Associations were expressed in terms of risk ratio and considered statistically significant if p-value was < 0.05 in chi-square test.

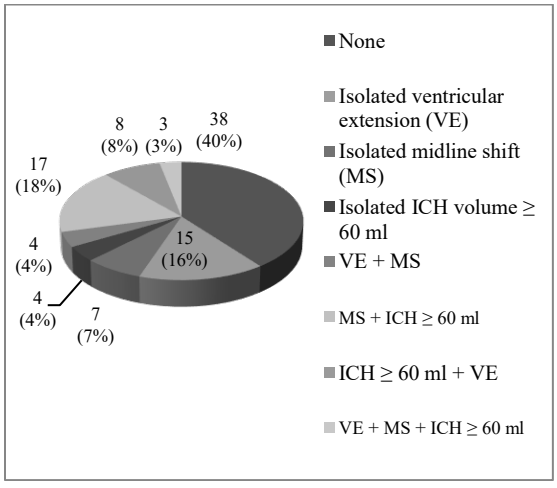


Figure-2: Distribution of CT scan features of interest

Results:

96 primary ICH patients were included in the study. Fifty four (56%) were males and 42 (44%) were females. Majority of cases aged more than 60 years (75%). Hypertension was found in 75% of patients.

Smoking was a major risk factor in males (59%). Family history of stroke and previous stroke were other risk factors found in both sexes.

Headache is the most frequent complaint (80%). Hemiparesis/plegia was the next common presenting feature and most frequent focal neurological deficit (73%). Vomiting was common also (58%). Other presenting features included impaired consciousness (26%),dysphasia/aphasia (16%) and convulsion (7%).

Putamen was the most favoured site of primary ICH among the study participants (55%), followed by frontal lobe (26%) [Figure-1].

CT scan of 40% patients did not have any of ventricular extension, midline shift or haematoma volume ≥60 cc. Percentages of participants having ventricular extension, midline shift and haematoma volume ≥ 60 cc were 31, 32 and 33, respectively. 26 (27%) had one of these features, while 29 (30%) showed combination of two. All of these features were found in 3 (3%) participants [Figure-2].

A GCS score <9 at the end of first week was found in 28 (29%) subjects. Thirty participants (30%) deteriorated neurologically during the first week. Overall mortality within that period was 23 (24%).

Table I: Outcome in patients with ventricular extension, midline shift and haematoma volume ≥ 60 cc

CT scan features	Number of cases	GCS < 9	Neurol deter.	Mortality
None	38 (40)	3 (11)	3 (10)	2 (9)
VE	30 (31)	14 (50)	14 (47)	11 (48)
MS	31 (32)	14 (50)	15 (50)	14 (61)
ICH ≥ 60 cc	32 (33)	14 (50)	16 (53)	12 (52)
Total	96	28	30	23

(Percentages are given within parenthesis)

Each of ventricular extension, midline shift and haematoma volume ≥60 cc was present in 50% in participants with GCS score <9 at the end of first week. Among study subjects who deteriorated neurologically during that period, percentages of these features were 47, 50 and 53 respectively. These features were detected in 48%, 61% and 52%, respectively, who died within 7 days [Table-I].

Ventricular extension was associated with higher proportion of GCS score <9 on day 7. Neurological deterioration was also found more in these patients. A higher mortality was observed in these patients [Table-II].

A higher proportion of GCS score <9 at day 7 was observed in patients with midline shift. Neurological deterioration was also found to be more in these patients. Mortality was higher in these study subjects. [Table-III].

GCS score <9 on day 7 was found at higher proportion among the study subjects with ICH volume ≥60 cc. Neurological deterioration was also found more among them. Mortality was higher in these participants. [Table-IV].

Table II: Association of ventricular extension with outcome (n=96)

Outcome		Vent Ext		Risk ratio	95% CI	p-value
		Yes	No			
GCS	< 9	14	14	2.2	1.2–4.0	0.01
	≥ 9	16	52			
Neurodete	Yes	14	16	1.9	1.1–3.4	0.03
	No	16	50			
Mortality	Yes	11	12	2.0	1.0–4.0	0.05
	No	19	54			

Discussion:

Mean age of the primary ICH patients in this study was 67.4 ± 12.8 years, 75% being ≥60 years. Number of males was more than that of females. The age & gender distribution was similar to that of most of the previous studies conducted in Bangladesh[2,20] and India[21].

Majority of the cases were hypertensive ICH (75%). This finding is consistent with that of Kase[22] and Ropper[1].

Headache was the most frequent presenting feature followed by hemiparesis/plegia, vomiting and impaired consciousness. Siddique[2] and Al-Dahhan[23] found similar results in primary ICH, though proportion of patients presenting with deteriorated consciousness was lower in this study. Exclusion of brainstem and cerebellar ICH might explain this discrepancy.

Putamen was the most favoured site for hypertensive ICH (71%), like described by Lindsay[24] and Ropper[1]. But it was higher than that found in a study in Pakistan[25]. On the other hand, most of the non-hypertensive ICH (92%) were found to be lobar. This distribution was higher than found in studies in India[26] and United States[27]. Most of the patients in this study were of ≥70 years age. So amyloid angiopathy could be responsible for majority of the non-hypertensive ICH in this study. This explains the high incidence of lobar haemorrhages in non-hypertensive cases.

Ventricular extension was found in 31 percent patients, which is consistent with most other studies[28,29]. The percentage of patients having midline shift and those having hamatoma volume ≥60 cc were 32 and 33 respectively, similar to the study by Flemming[19] and Chiewvit[13].

Regarding overall outcome, GCS score <9 at the end of the first week was found in 29 % study participants. 30% patients deteriorated neurologically over the first week. Overall mortality was 24%. Similar outcome regarding morbidity was observed in studies on primary ICH patients conducted by Mayo Clinic[30], but mortality was lower in our study. Exclusion of cerebellar and brainstem ICH explains the lower mortality in these study.

Table III: Association of midline shift with outcome (n=96)

Outcome		Midline shift		Risk ratio	95% CI	p-value
		Yes	No			
GCS	< 9	14	14	2.0	1.2–3.8	0.02
	≥ 9	17	51			
Neuro dete	Yes	15	15	2.1	1.1–3.4	0.03
	No	16	50			
Morta lity	Yes	13	10	2.7	1.4–5.5	0.05
	No	18	55			

Ventricular extension was associated with higher proportion of GCS score <9 at the end of first week and neurological deterioration and mortality during this period. This finding was consistent with that of numbers of previous studies[10,14,30]

Midline shift also had statistically significant higher proportion of GCS score <9 on day 7 as well as neurological deterioration and mortality within the first week**.** Similar results came out in studies in West Bengal[21] and in Spain[31].

GCS score <9 was found in higher proportion of patients with haematoma volume ≥60 cc, which is consistent with the results of studies by Flemming[19] and Hemphill[32].

Table IV: Association of haematoma volume ≥ 60 cc with outcome (n=96)

Outcome		ICH vol ≥60 cc		Risk ratio	95% CI	p-value
		Yes	No			
GCS	< 9	14	14	2.0	1.1–3.7	0.02
	≥ 9	18	50			
Neurodete	Yes	16	14	2.3	1.3–4.1	<0.01
	No	16	50			
Mortality	Yes	12	11	2.2	1.1–4.4	0.03
	No	20	53			

Percentage of neurological deterioration and mortality were also significantly higher in these patients. Franke found similar results regarding neurological deterioration and mortality[13]. Two different studies in Siriraj Hospital in Thailand[13] and in University of California in USA[32] revealed similar results.

Conclusion:

Ventricular extension, midline shift and haematoma volume ≥60 cc are associated with higher proportions of GCS score <9 at the end of the first week after onset, and neurological deterioration and mortality within this period in the patients with primary intracerebral haemorrhage. Findings of cranial CT scan on admission can be used as a reliable predictor of short term morbidity and mortality in patients with primary intracerebral haemorrhage. Further research on this topic with a larger sample and longer follow-up is recommended.

Limitations:

A relatively small sample size was a limitation of this study. Besides, the assessment period was short also. Moreover, Confounders like metabolic disturbances, especially hyperglycaemia and electrolyte imbalance, those had the potential to influence the clinical outcome, were not matched or excluded in this study.

References:

1. Ropper AH, Samuels MA. Adams and Victors's principles of neurology. 9th ed. New York: McGraw-Hill Medical Publishing Division; 2009.

2. Siddique MAN, Nur Z, Mahbub MS, Alam MB, Miah MT. Clinical presentation and epidemiology of stroke – a study of 100 cases. Journal of Medicine. 2009;10(2),86-9.

3. Pendelbury ST, Matthew FG, Rothwell PM. Epidemiology, risk factors, pathophysiology and causes of transient ischemic attacks and stroke. In: Transient ischemic attack and stroke. Cambridge: Cambridge University Press, 2009;1-10.

4. Hill MD, Silver F., Austi, PC, Tu JVRate of stroke recurrence in patients with primary intracerebral haemorrhage. Stroke. 2000; 31(1)123-7.

5. Dennis MS, Burn JP, Sandercock PA, Bamford JM, Wade DT, Warlow CP. Long term survival after first week of stroke. Stroke. 2003;24(6):796-800.

6. Salman RA, Lobovitz D, Stapf C. Spontaneous intracerebral hemorrhage, British Medical Journal . 2009;39:284-9.

7. vanAsch CJ, Luitse MJ, Rinkel GJ, vanderTweel I, Algra A, Klijn CJ. Incidence, case fatality, and functional outcome of intracerebral haemorrhage over time, according to age, sex, and ethnic origin: a systematic review and meta-analysis. Lancet Neurology. 2009;9(2):167-76.

8. Mohammad QD, Habib M, Hoque A, Alam B, Haque B, Hossain S, Rahman KM, Khan SU. Prevalence of stroke above forty years. Mymensingh Medical Journal.2011;20(4):640-4.

9. Hannan MA, Rahman MM, Haque A, Ahmed HU. Stroke: seasonal variation and association with hypertension. Bangladesh Med Research Counc Bull. 2001;27(2),69-78.

10. Almutawa E, Shahda A, Albalooshi M. Spontaneous intracerebral haemorrhage (SICH): factors associated with in-hospital mortality. Bahrain Medical Bulletin. 2012;34(2):1-6.

11. Van Beijnum J, Lovelock CE, Cordonnier C, Rothwell PL, Clijin CI, Salman A. Outcome after spontaneous and arteriovenous malformation-related intracerebral hemorrhage: population based studies. Brain. 2009;132 (2):537-43.

12. Wardlaw JM, Keir SL, Dennis MS. The impact of delay in computed tomography of brain on the accuracy of diagnosis and subsequent management in patients with minor stroke. Journal of Neurology, Neurosurgery and Psychiatry. 2009;74(1):77-81.

13. Chiewvit P, Danchaivijitr N, Nilanont Y, Ponguvarin M. Computed tomographic findings in non-traumatic haemorrhagic stroke. Journal of the Medical Association of Thailand. 2009;92(1): 73-86.

14. Castellanos M, Leira R, Tajeda J, Gilperalta A, Davlos A, Castillo J. Predictors of good outcomes in medium to large spontaneous supratentorial hemorrhages, Journal of Neurology, Neurosurgery and Psychiatry. 2005;76:691-5.

15. Wang SS, Yang Y, Velz J, Keller E, Luft AR, Regli L. Management of brainstem haemorrhages. Swiss Med Weekly.2019;149:1-9.

16. Han J, Lee H, Cho TG, Moon JG, Kim CH. Management and Outcome of Spontaneous Cerebellar Hemorrhage. J Cerebrovasc Endovasc Neurosurg. 2015;17(3):185-93.

17. Zazulia AR, Diringer MN, Derdeyn CP, Powers WJ. Progression of mass effect after intracerebral hemorrhage. Stroke. 1999;30(6):1167-73.

18. Kothari RU, Brott T, Broderick JP, Barsan WG, Sauerbeck LR, Zuccarello M, et al. The ABCs of measuring intracerebral hemorrhage volumes. Stroke. 1996;27(8),1304-5.

19. Flemming KD, Wijdick, EF, StLouis EK, Li H. Predicting deterioration in patients with lobar haemorrhages. J Neurol Neurosur Psych. 1999;66(5):600-5.

20. Mollah AS, Rahman SW, Das KK, Hassanuzzaman M. Characteristics of patients admitted with stroke. Mymensingh Medical Journal. 2007;16(1),20-4.

21. Nag C, Das K, Ghosh M, Khandakar MR. Prediction of clinical outcome in acute haemorrhagic stroke from a single CT scan on admission. North Ame J Med Sci. 2012;4(10): 463-7.

22. Kase CS. Intracerebral hemorrhage: non hypertensive causes, Stroke. 1986;17(4):590-5.

23. Al-Dahhan MH. The outcome of management of spontaneous intracerebral hemorrhage. Medical Journal of Babylon. 2010;7(4):499-504.

24. Lindsay KW, Bone I. Neurology and Neurosurgery Illustrated. 4th ed. London: Churchill Livingstone; 2004.

25. Zafar A, Khan FS. Clinical and radiological features of intracerebral haemorrhage in hypertensive patients. Journal of Pakistan Medical Association. 2008;58(7):356-8.

26. Jha S, Jose M. Non-hypertensive intracerebral haemorrhage: some interesting facts. Neurology India. 2003;51(3):428.

27. Kase CS, Mohr JP. General features of intracerebral hemorrhage. In: Barnett HJM, Stein BM, Mohr JP, Yatsu, editors. Stroke Pathophysiology, diagnosis and Management. New York: Churchill Livingstone, 1986: 497-523.

28. Tuhrim S, Horowitz DR, Sacher M, Godbold JH. Volume of ventricular blood is an important determinant of outcome in supratentorial intracerebral hemorrhage. Critical Care Medicine. 1999;27(3):617-21.

29. Qureshi AI, Safdar K, Weil J, Barch C, Bliwise DL, Colohan AR, Mackay B, Frankel MR. Predictors of early deterioration and mortality in black Americans with primary intracerebral hemorrhage. Stroke. 1995;26(10):1764-7.

30. Safatli DA, Gunther A, Schlattmann P, Schwarz F, Kalff R, Ewald C. Predictors of 30-day mortality in patients with spontaneous primary intracerebral hemorrhage. Surg Neurol Int. 2016; 7(S5):10-7.

31. Leira, R, Davalos A, Silva Y, Gil-Peralta A, Tejada J, Garcia M, Castillo J. Early neurologic deterioration in intracerebral hemorrhage: predictors and associated factors. Neuroloygy. 2004;63(3):461-7.

32. Hemphill 3rd JC, Bonovich DC, Besmertis L, Manley GT, Johnston, SC. The ICH score: a simple, reliable grading scale for intracerebral hemorrhage. Stroke. 2001;32(4):891-7.

DCIMCJ

Original Article

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Strain Elastography Ultrasound: It's Potential Role in Assessment of Malignant Breast Lesions with Histopathological Correlation

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Abstract:

Background: Breast cancer remains a worldwide public health problem & considered to be the primary women's cancer that causes high morbidity & mortality. So efficient evaluation and prompt diagnosis are necessary to rule out malignancy. Knowledge of the specific ultrasonogram elastographic characteristics of malignant breast lumps can be offered as a viable alteration to biopsy and imperative for optimal patient management. Objective: To determine the validity of ultrasound elastography strain ratio in diagnosis of malignant breast lesions by detecting the sensitivity, specificity, positive predictive value, negative predictive value and accuracy of ultrasound elastography in assessment of malignant breast lesions. Materials and methods: This cross sectional study was done in the department of Radiology and Imaging. A total number of 104 patients who were included in this study. Data on clinical presentation, ultrasonographic, sonoelastographic findings including histopathological report were collected and documented in structured forms.. Results: The study was done in 104women of 19-60 years of age with the mean age of 34.65±5.5 years. Sonographically 24 lesions were diagnosed as malignant also having higher elastography strain ratio(8.1 ±1.38), out of these 20(83%) cases were proven malignant histopathalogically with sensitivity of 80%, specificity 94.9%, positive predictive value 83.3%, negative predictive value 93.7% and accuracy 91.3%.case. Out of Sonographically diagnosed 80 other than malignant lesions also having lower elastography strain ratio (2.73 ±0.87), 75(94%) were proved histopathalogically. With these criteria for diagnosis of other than malignant lesion, sensitivity was 94.9%, specificity 80%, positive predictive value 93.7%, negative predictive value 83.3% and accuracy 91.3%. Conclusion: Strain elastography ultrasound findings of malignant breast lesions correlated well in most of the cases with the histopathological results. So it can be suggested that ultrasound strain elastography is a promising new approach for diagnosis of breast malignancy.

Keywords: Ultrasound, elastography, malignant breast lesion.

Introduction:

Breast cancer is by far the most common cancer in females of both developed and developing countries. The most common breast lump by age fibroadenoma in young women, cyst or fibrocystic changes in middle-aged women and cancer in older women[1]. Breast cancer is one of the most common cancer in women, accounting for 21% of cancer diagnosed[2] and causes high morbidity and second most common cause of cancer-related mortality[3]. Recent research on service screening programs suggests that participation in modern, organized service screening may reduce the risk of breast cancer by 40% or more[4].

That is early and sensitive diagnosis represents a better prognosis. But noninvasive diagnosis of breast cancer remains a major clinical problem and a large number of biopsies performed for benign breast abnormalities.

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There are many imaging modalities for detecting breast lump. But mammography and sonography are currently the most sensitive modalities. For early detection of breast cancer, mammography is currently the most widely used screening modality, but it has a low negative predictive value. In patient with palpable abnormalities of the breast, false-negative rate for mammography has been reported to be 18%[5]. Therefore, many masses referred for breast biopsy on the basis of mammography findings are actually benign.

In the absence of a lesion, biopsy is still performed for clinically questionable palpable abnormalities because of the reported false-negative rate of mammography .Because clinical breast examination is not absolute, many surgeons liberally performed biopsies. But the biopsies result for cancer is only 10% to 30%[6]. This means that 70% to 90% of breast biopsies are performed for benign diseases which induce unnecessary patient discomfort and anxiety in addition to increase cost to the patient. Moreover, increase in breast tissue density reduces the diagnostic accuracy of breast cancer in mammography, especially in younger females[7]. Thus, as the proportion of glandular breast tissue rises, other imaging methods are required[8]. Gray-scale ultrasonography is a valuable adjunct to mammography and other breast imaging methods, affording highly sensitive assessment of breast masses[9-11]. However, ultrasonography is strongly subjective and poorly specific[12-14]. Therefore, there is a great need for development of additional reliable, noninvasive, cost effective method helping to diagnose malignant breast lesions, thus reducing the number of unnecessary interventional diagnostic procedures.

Recently, sonoelastography, which estimates tissue strain has been used as an adjunct to the conventional ultrasound B- mode examination for diagnosis of breast lesions which improves the diagnostic reliability of sonography, increases specificity and allows better assessment malignant focal lesions. Therefore, the number of false-positive findings in breast lesion diagnosis was able to be reduced by using ultrasound elastography[15-18].

Elastography is the technique of imaging the hardness of soft tissue. Strain images display the relative stiffness of lesions compared with the stiffness of surrounding tissue. Stiffer areas deform less easily than do their surroundings and whereas softer areas deform more easily than do their surroundings. Malignant masses are typically less compressible and benign masses deform easily[19]. The interpretation criteria in elastography consist of the qualitative parameter elasticity score (ES) and the quantitative parameter strain ratio (SR). Calculation of the SR value is based on determining the average strain measured in a lesion and comparing it to the average strain of a similar area of fatty tissue in the adjacent breast tissue. The strain ratio (SR) reflects the relative stiffness of the lesion. Probability of malignancy increases as the strain ratio (SR) value increases[20]. Tissue elasticity imaging is performed with a conventional ultrasound probe and does not require additional equipment.

The current prospective study aimed to evaluate the diagnostic yield of ultrasound elastography using strain ratio (SR) for diagnosis of malignant breast lesions in comparison with histopathological examination.

Materials and methods:

This cross-sectional study was carried out in the department of radiology and imaging department of Enam Medical College and Hospital during July 2016 to June 2017. This study was carried out on consecutively selected 104 patients ranging from 19-60 years having breast lump with the mean age of 34.65±5.5 years.

After consent taken from all, patients underwent radiological workup included B-mode ultrasonography and ultrasound elastography. Using B-mode imaging, morphological characteristics of lesions were determined.

All elasticity images were obtained with a system that consisted of a digital US scanner. The US probe was a 7.5-MHz linear electronic probe. The top of the region of interest (ROI) included subcutaneous fat and the bottom included the pectoral muscles and lateral borders were set >5 mm from the lesion's boundary. The strain index, defined as the fat to mass strain ratio (SR) that indicated mass stiffness, was evaluated. One ROI was placed in the focal lesion and the reference ROI was placed in the surrounding normal tissue, preferably in the same depth as the lesion. The strain ratio (SR) was automatically calculated by the elastography software. The likelihood of malignancy was established based on Ultrasound Elastographic criteria was higher strain ratio. Finally ultrasound elastographic finding the strain ratio of breast lesions were correlated with histopathological reports.

The results were statistically analyzed using SPSS software statistical computer package version 20 for quantitative data. For the validity of the study outcome sensitivity, specificity, positive and negative predictive values and accuracy were calculated out after confirmation of the diagnosis histopathalogically.

Observation and results:

A total 104 consecutive cases were selected who were clinically suspected of having breast lump. Mean age of the patient was 34.65±5.5 years ranging from 19 to 60 years. 100% cases were presented with the complain of lump in the breast, 67% cases complained for mastalgia, 12% presented with nipple discharge, 14% cases with nipple retraction,11% presented with skin changes, and 24% presented with palpable axillary lymph node. (Table I)

Table I: Distribution of respondents according to clinical features. (n= 104)

Clinical features	No of respondents	Percentage
lump	104	100
Mastalgia	70	67
Nipple discharge	13	12
Nipple retraction	15	14
Skin change	12	11
Palpable lymph node	25	24

Sonographically malignant masses were diagnosed in 24 cases having following common criteria – Ill-defined margin in 20(83%) cases, irregular shape in 19(79%) cases. 21(88%) cases having more hypo to anechoic echogenicity. Heterogeneous internal echoes were seen in 18(75%) cases. Bilateral edge shadow and compressibility were seen only in 22 (92%) cases. 23(96%) cases showed architectural disruption. (Table II & figure 1)

Table II: Distribution of respondents according to morphological sonographic features of malignant masses. (n=24)

Morphological sonographic criteria	No of respondents	Percentage
Margin		
Well defined	4	17
Ill defined	20	83
Echogenicity		
Hypoechoic	3	12
More hypoechoic to anechoic	21	88
Shape		
oval and round	5	21
irregular	19	79
Internal echoes		
heterogeneous	18	75
homogeneous	6	25
Bilateral edge shadow		
Present	2	8
Absent	22	92
Architectural disruption		
Absent	1	4
Present	23	96
Compressibility		
Present	2	8
Absent	22	92

Sonographically, other than malignant lesions were diagnosed in 80 cases. Common sonological criterias were – well defined margin in 65(81%) cases, 50(63%) cases were hypoechoic in echotexture. Oval and round shape was present in 66(83%) cases and homogeneous internal echo was seen in 60(75%) cases. 67(84%) cases showed bilateral edge shadow where 70(88%) cases showed compressibility. 65(81%) cases showed no architectural disruption. (Table III & Figure2)

Table III: Distribution of respondents according to morphological sonographic features of other than malignant masses (n= 80)

Morphological sonographic criteria	No of respondents	Percentage
Margin		
Well defined	65	81
Ill defined	15	19
Echogenicity		
Hypoechoic	50	63
Isoechoic	5	6
Hyperechoic	20	25
more hypoechoic to anechoic	5	6
Shape		
oval and round	66	83
irregular	14	17
Internal echoes		
homogeneous	60	75
heterogeneous	20	25
Architectural disruption		
Present	15	19
Absent	65	81
Bilateral edge shadow		
Present	67	84
Absent	13	16
Compressibility		
Absent	10	12
Present	70	88

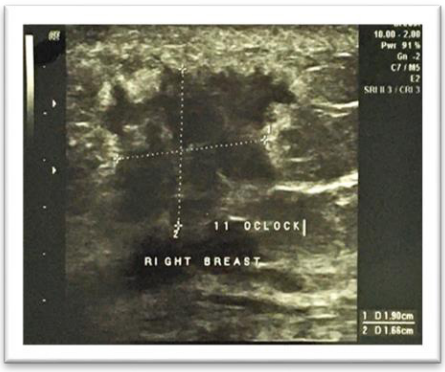


Fig:1 USG of malignant breast lesion

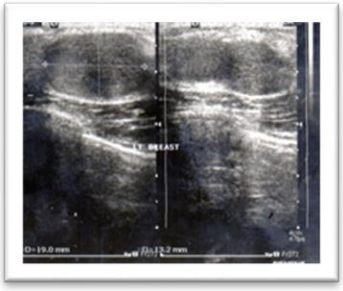


Fig:2 USG of other than malignant breast lesion

80 cases were diagnosed as other than malignant masses with morphological sonographic criteria also shown lower strain ratio (Mean SR 2.73±0.87) in ultrasound elastography where as Sonographically diagnosed 24 cases of malignant masses shown higher strain ratio (Mean SR0.8.1±1.38). Strain ratio of malignant lesions was significantly (P<0.0001) higher than that of other than malignant lesion when cut off value 4.4 was used (Table IV & figure 3 & 4)

Table IV: Strain elastographic ultrasound Findings (strain ratio -SR):

Data	Findings	P value (<0.05)
Strain ratio of Sonographically other than malignant lesions (n- 80)	Mean SR 2.73±0.87 (Lower SR)	<0.0001
Strain ratio of Sonographically malignant lesions (n -24)	Mean SR 0.8.1±1.38 (Higher SR)	

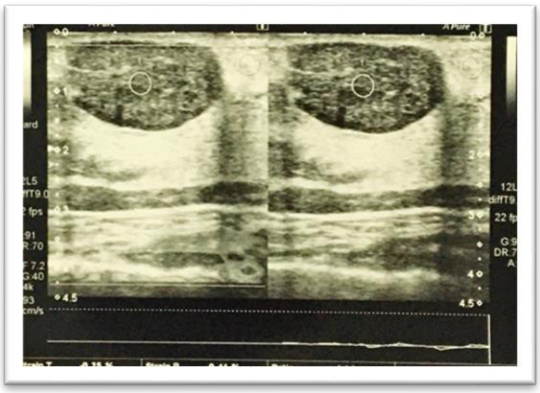


Fig: 3 Lower Strain ratio of other than malignant breast lesion

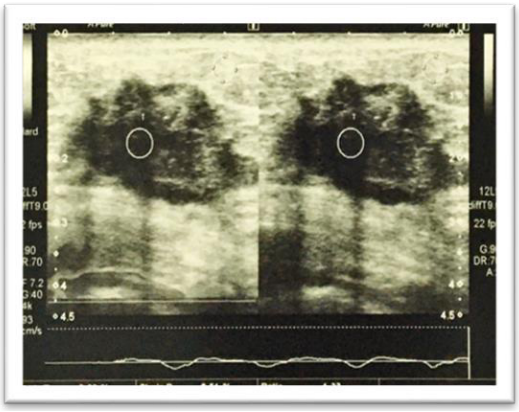


Fig: 4 Higher Strain ratio of malignant breast lesion

The sonoelastographic criteria used for diagnosing malignant masses was higher strain ratio (Mean SR 8.1±1.38). After histopathological correlation with this criteria it was found to be true positive in 20 cases, true negative in 75cases, false positive in 4 cases and false negative in 5 cases giving a sensitivity of 80%, specificity of 94.9%, positive predictive value of 83.3% and negative predictive value of 93.7%. Overall diagnostic accuracy of the test was 91.3%. (Table V)

Table V: Accuracy of higher sonoelastographic strain ratio (SR) in diagnosis of malignant breast lesions.

No of respondents	TP	TN	FP	FN	SS	SP	PPV	NPV	Accuracy
24	20	75	4	5	80%	94.9%	83.3%	93.7%	91.3%

Discussion:

Breast cancer is one of the most common malignancies in female population. So early detection & differentiation from other than malignant lesion is mandatory to manage breast cancer. Benign breast lesion are vastly more common than malignant lesions and often require accurate diagnosis to rule out cancer. Breast sonography has become an indispensable tool in the evaluation of breast lesions. However, ultrasonography is strongly subjective and there is an overlap between the sonographic appearances of benign and malignant lesions. So for diagnosis of suspicious breast lesions, a large proportion of biopsy are done in benign lesion. Therefore, a noninvasive and reliable method identifying low-risk lesions, and reducing unnecessary interventional diagnostic procedures, would be valuable. Ultrasound elastography with measuring the mass/fat ratio (strain ratio) can be used to differentiate benign from malignant solid breast lesions.

The current study was performed to explore the accuracy of strain ultrasound elastography using strain ratio in detection of malignant breast lesions with histopathological correlation. 104 women attended in department of Radiology & Imaging, EMCH, presented with breast lump were enrolled in the study. Strain ratio of breast lesions were measured with Ultrasound elastography and correlated with histopathological findings.

In our study sonological criterias for diagnosis of malignant & other than malignant lesions were also comparable to those of others studies. Rahbar et al.[21] found that the features most likely to predict a benign diagnosis in solid masses were round or oval shape, had a circumscribed margin, and had a width-to-anteroposterior ratio greater than 1.4. These results were also conformity to the results obtained by Kailash et al[22], Stavros et al[11] and other studies[23, 24]. The typical features of malignancy include irregular shape, irregular contour, hypoechogenicity, a surrounding echogenic rim and posterior acoustic shadowing[11,25]. According to Pande et al[26] shape, margins, vascularity, surrounding tissue character, sound transmission through the lump are more significant in the diagnosis of benign vs. malignant lumps.

We had shown that the mass/fat ratio using ultrasound elastography (strain ratio), can be used to detect malignant solid breast lesions and the most useful and reproducible measure was the mass/fat elasticity ratio. Breast fat tissue shows minimal elastographic variability, and the elasticity values are very low, supporting the use of fat tissue stiffness as a comparator [27,28]. The mass/fat elasticity ratio(strain ratio) is not influenced by compression because breast fat tissue and the lesion are subjected to the same pressure.

In this study the quantitative ultrasound elastographic criteria strain ratio (SR) was used for diagnosis of malignant lesion and the study shown Strain ratio of malignant lesions was significantly ($P<0.0001$) higher than that of other than malignant lesion when cut off value 4.4 was.

The sonoelastographic criteria used for diagnosing malignant masses was higher strain ratio (Mean SR 8.1±1.38). After histopathological correlation with this criteria it was found to be true positive in 20 cases, true negative in 75cases, false positive in 4 cases and false negative in 5 cases giving a sensitivity of 80%, specificity of 94.9%, positive predictive value of 83.3% and negative predictive value of 93.7%. Overall diagnostic accuracy of the test was 91.3%.

Our study was also comparable to other similar studies. In support of the obtained results Mansour and Omar[29] found UE, using both qualitative and quantitative methods can improve the specificity and accuracy in the diagnosis of breast lesions. Fischer et al.[30] documented that strain ratio calculation contributes to the sonoelastography with high sensitivity and allows significant differentiation between benign and malignant breast lesions.

Alhabshi et al.[31] found the sensitivity and specificity of combined UE and conventional US were significantly higher and the assessment with strain ratio in UE were the most useful parameters in differentiating between benign and malignant breast lesions.

Zhang et al.[32] evaluated ultrasound elastography (UE) in differentiating breast tumors, found UE can improve the specificity and accuracy of breast cancer.

Zhao et al.[33] and Sayed et al.[34] found the mean strain ratios were significantly higher of malignant than benign lesions and concluded that the strain ratio could be more objective to differentiate the masses when those masses were difficult to be judged by using 5-point scoring system in sonoelastographic images. Others studies were also shown that compression strain elastography could be improved characterization of breast lesions as benign or malignant[35-40].

Conclusion:

Real time breast elastography is a fast, simple method which can improve the sensitivity & positive predictive value of conventional USG findings for diagnosis of malignant breast lesion. So we can conclude that ultrasound elastographic strain ratio of breast lesions provides quantitative elasticity information that can facilitate characterization of malignant breast lesions and decreased unnecessary invasive diagnostic procedures. Therefore, strain ratio in Ultrasound Elastography can be used as an improved complementary method along with other imaging modalities for diagnosis of malignant breast lesions.

References:

1. Goehring and Morabia A. Epidemiology of Benign Breast Disease, with Special Attention to Histologic Types. Epidemiol Rev 1997; 19 (2): 310-327.

2. Hakinson S, Hunter D. Breast cancer. In: Adam HO, Hunter D, Trichopoulos D (eds). Textbook of Cancer Epidemiology. New York, NY: Oxford University Press; 2002:301–339.

3. Ferlay J, Shin HR, Bray F, Forman D, Mathers CD, Parkin D. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. Int J Cancer. 2010;127:2893–2917.

4. Tabar L, Yen MF, Vitak B, Chen HH, Smith RA, Duffy SW. Mammography service screening and mortality in breast cancer patients: 20-year follow-up before and after introduction of screening, Lancet 2003;361: 1405–1410.

5. Donegan WL. Evaluation of a palpable breast mass. N Engl J Med 1992; 327:937–942.

6. Duncan JL III, Cederbom GJ, Champaign JL. Benign diagnosis by image-guided core-needle breast biopsy, Am Surg. 2000; vol. 66, pp.5–10.

7. Checka CM, Chun JE, Schnabel FR, Lee J, Toth H. The relationship of mammographic density and age: implications for breast cancer screening. AJR Am J Roentgenol. 2012;198:W292–295.

8. Kaplan SS. Clinical utility of bilateral whole-breast US in the evaluation of women with dense breast tissue. Radiology. 2001;221:641–649.

9. Zonderland HM, Coerkamp EG, Hermans J, van de Vijver MJ, van Voorthuisen AE. Diagnosis of breast cancer: contribution of US as an adjunct to mammography. Radiology. 1999;213:413–422.

10. Lister D, Evans AJ, Burrell HC, Blamey RW, Wilson AR, Pinder SE, et al. The accuracy of breast ultrasound in the evaluation of clinically benign discrete, symptomatic breast lumps. Clin Radiol. 1998;53:490–492.

11. Stavros AT, Thickman D, Rapp CL, Dennis MA, Parker SH, Sisney GA. Solid breast nodules: use of sonography to distinguish between benign and malignant lesions. Radiology. 1995;196:123–134.

12. Berg WA. Supplemental screening sonography in dense breasts. Radiol Clin North Am. 2004;42:845–851.

13. Corsetti V, Ferrari A, Ghirardi M, Bergonzini R, Bellarosa S, Angelini O, et al. Role of ultrasonography in detecting mammographically occult breast carcinoma in women with dense breasts. Radiol Med. 2006;111:440–448.

14. Houssami N, Irwig L, Simpson JM, McKessar M, Blome S, Noakes J. Sydney Breast Imaging Accuracy Study: comparative sensitivity and specificity of mammography and sonography in young women with symptoms. AJR Am J Roentgenol. 2003;180:935–940.

15. Frey H. Real time elastography. A new ultrasound procedure for the reconstruction of tissue elasticity Radiologe 2003 ;43 (10), pp. 850–855.

16. Thomas A, Kümmel S, Fritzsche F, Warm M , Ebert B, Hamm B, et al. Real-time sonoelastography performed in addition to B-mode ultrasound and mammography: improved differentiation of breast lesions? Acad Radiol, 2006;13 (12):1496–1504.

17. Thomas A, Degenhardt F, Farrokh A, Wojcinski S, Slowinski T, Fischer T. Significant differentiation of focal breast lesions: calculation of strain ratio in breast sonoelastography Acad Radiol, 2010;17:558–563.

18. Wojcinski S, Farrokh A, Weber S, Thomas A, Fischer T, Slowinski T, et al. Multicenter study of ultrasound real-time tissue elastography in 779 cases for the assessment of breast lesions: improved diagnostic performance by combining the BI-RADS®-US classification system with sonoelastography Ultraschall Med, 2010 ;31: 484–491.

19. Hall TJ, Zhu Y, Spalding CS. In vivo real-time freehand palpation imaging Ultrasound Med Biol, 2003;29:427–435.

20. Kumm TR, Szabunio MM. Elastography for the characterization of breast lesions: initial clinical experience Cancer Control, 2010;17 (3):156–162.

21. Rahbar G, Sie AC, Hansen GC. Benign versus malignant solid breast masses: US differentiation. Radiology. 1999;213:889-94.

22. Kailash .S, Tariuq A, Ghanshyam DG, The Accuracy of Ultrasound in Diagnosis of Palpable Breast Lumps.Journal of Medical Education & Research.2008;10:4:186-88.

23. Dennis MA, parker SH, Klaus AJ, Stavros AT, Kaske TI. Breast biopsy Avoidance; the value of normal mammograms and normal sonograms in the setting of a palpable lump. Radiology 2001;219:86-191.

24. Weinstein SP, Conant EF Orel SG, Zuckerman JA, Czerniecki B . Lawton TJ. Retrospective review of palpable breast lesions after negative mammography and sonography. J Women's Imaging 2000;2;15-18.

25. Vlaisavljevic V. Differentiation of solid breast tumours on the basis of their primary echographic characteristics as revealed by real time scanning of the uncompressed breast', Ultrasound Med Biol. 1988; 14 [suppl]: 75-80.

26. Pande AR, Lohani B, Sayami P, Pradhan S. Predictive value of ultrasonography in the diagnosis of palpable breast lump. Kathmandu Univ Med J. 2003; 1(2): 78-84.

27. Evans A, Whelehan P, Thomson K, Mclean D, Brauer K, Purdie C, et al. Quantitative shear wave ultrasound elastography: initial experience in solid breast masses. Breast Cancer Res. 2010;12:R104.

28. Lee SH, Chang JM, Kim WH, Bae MS, Cho N, Yi A, et al. Differentiation of benign from malignant solid breast masses: comparison of two-dimensional and three-dimensional shear-wave elastography. Eur Radiol. 2013;23:1015–1026.

29. Mansour SM, Omar OS. Elastography ultrasound and questionable breast lesions: does it count? Eur J Radiol, 81 (11) (2012): 3234–3244.

30. Fischer T, Peisker U, Fiedor S, Slowinski T, Wedemeyer P, Diekmann F, et al. Significant differentiation of focal breast lesions: raw data-based calculation of strain ratio Ultraschall Med, 2012; 33 (4):372–379.

31. Alhabshi SM, Rahmat K, Abdul Halim N, Aziz S, Radhika S, Gan GC, et al. Semi-quantitative and qualitative assessment of breast ultrasound elastography in differentiating between malignant and benign lesions Ultrasound Med Biol, 2013;39 (4):568–578.

32. Zhang H, Qin D, Yang Z, Wang K, Sun F, Li B, et al. Comparison of diffuse optical tomography, ultrasound elastography and mammography in the diagnosis of breast tumors Ultrasound Med Biol, 2013;S0301–5629 (13):01016–1018.

33. Zhao QL, Ruan LT, Zhang H, Yin YM,. Duan SX, Diagnosis of solid breast lesions by elastography 5-point score and strain ratio method Eur J Radiol, 2012, 81 (11):3245–3249.

34. Sayed A, Layne G, Abraham J, Mukdadi O. Nonlinear characterization of breast cancer using multi-compression 3D ultrasound elastography in vivo Ultrasonics, 2013;53 (5):979–991.

35. Sadigh G, Carlos R, Neal C, Dwamena B. Accuracy of quantitative ultrasound elastography for differtiation of malignant and benign breast abnormalities: A meta-analysis. Breast Cancer Res.Treat. 2012:923-931.

36. Barr RG. Real-time ultrasound elasticity of the breast: Initial clinical results. Ultrasound Quarterly. 2010;26:61-66.

37. Barr RG, Destounis S, Lackey, LB II, Svensson WE, Ballyguier C, Smith C. Evaluation of breast lesions using ultrasound elasticity imaging: A multicenter trial. J Ultrasound Med. 2012; 31:281–287.

38. Barr RG, Lackey AE. Predictive value of the "bull's eye" artifact on breast elasticity imaging to characterize cysts. Ultrasound Quarterly. 2011;27:151-155.

39. Tanter M, Bercoff J, Athanasiou A. Quantitative assessment of breast lesion viscoelasticity: Initial clinical results using supersonic shear imaging. Ultrasound in Med. & Biol. 2008;34:1373-1386.

40. Berg WA, Cosgrove DO, Dore CJ, Schafer FKW, Svensson WE, Hooley RJ, et al. Shear-wave elastography improves the specificity of breast US: The BE1 multinational study of 939 masses. Radiology. 2012;262:435-449.

DCIMCJ

Original Article

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Post Mortem Evaluation of Sudden Infant Death Syndrome (SIDS) in Medical College

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Abstract:

Infant mortality is always a major miserable event in every family. The event will be most unacceptable when the cause of death could not be understandable, which is also called sudden infant death syndrome (SIDS). Such event is more common in the development world. Data among the developing countries, like Bangladesh is insufficient. Hence this retrospective, observational, cross-sectional study was conducted in MAG Osmani Medical College, Sylhet. 32 cases were included in this study from the Registry of the Department of Forensic Medicine. Among 32, 28 cases were found to be SIDS compatible. A maximum number of cases (12) appeared to be healthy or presented mild signs of a common cold, and unexpectedly died while sleeping; 11 cases had a history of infection (5 cases had a respiratory infection and 6 had gastrointestinal history); 3 cases showed cardiomyopathy with signs of pulmonary hypertension, and rest 2 cases were compatible with suffocation. However, the data presented herein provide a brief survey rather than a conclusion. The authors suggest that infants' unexplained death cases should undergo an in-depth autopsy routinely to evaluate the cause and thus helps to make policy against SIDS.

Keywords: Infant, Death, SIDS

Introduction:

Sudden infant death syndrome (SIDS) is defined as the sudden unexpected death of an infant, 1 year of age with the onset of the fatal episode occurring during sleep that remains unexplained after a thorough investigation, including the performance of a complete autopsy and review of the circumstances of death and the clinical history[1]. It is an important cause of infant mortality which in 2013 accounted for 15,000 infant deaths worldwide[1].Itcontinues to be one of the most common causes of post - neonatal infantdeath. SIDS is a complex, multifactorial disorder, the cause of which is still not fully understood. However, it is known that interactions between environmental and genetic risk factors may be of critical importance in determining an infant's actual risk of SIDS[2].

These may be due to naturally occurring diseases, accidents, or homicides. The neonatal period is the time when both neonates and their parents are distressed because neonates try to adjust to their new environment. Deaths in this period are of importance all over the world[3]. SIDS was the primary cause of infant death in developed nations such as Europe and America where infectious diseases and malnutrition have diminished, but it has been reported that the SIDS incidence rate had decreased since the latter half of the 1980s, as a result of the campaign to prevent SIDS, which was run to advise people to stop laying infants facedown, and to stop smoking and bottle-feeding, which are considered as risk factors[4]. Research on its etiology has focused, at one end of the spectrum, on causal mechanisms-forexample, inherited metabolic diseases and, at the other end,

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on infant care practices that may be potentially protective or harmful, such as sleeping position[5].

However, child deaths rarely come for autopsy except those deaths raised the question of the cause of death in hospital and also in the home through legal procedure. Hence, publications regarding SIDS are uncommon and time demanding.

Subjects and method:

This study was conducted from July 2014 to June 2016 at the Department of Forensic Medicine in Sylhet M.A.G Osmani Medical College, Sylhet, Bangladesh. This was a retrospective, observational & cross-sectional study, that included the child below the age of 12 months who died elsewhere and investigated in the department to evaluate the cause of death.

Data was collected from the departmental registry and autopsy report from the departmental autopsy registry book. The manner of death refers to the circumstances that caused the decease which can be either natural death (caused by an illness), accidental (non-intentional caused by the forces of nature or human beings), homicide (caused intentionally or non-intentionally by a third party), understudy (if it requires further investigation) or undetermined (it's not precise to establish the manner of death).

Result:

Among these 32post neonatal infants deaths, 18 (56.25%) were male and 14 (43.75%) were female. All of the children were younger than 1 year old, with a peak incidence of death between the second and the fourth month of life. The place of death was home in 16 cases (50%), 10 cases in the hospital (31.25%), and other location in 1 case (3.125%) and without information in 5 cases (15.625%).The reports of the infant's activity at the time of death show that 26 children died during sleep, 4 were without any information, and 2 cases were reported as "other". The manner of death results was natural deathin 20 cases (62.5%), in study 2 cases (6.25%), indeterminate 4 cases (12.5%), violent accidental 2 cases (6.25%), violent homicide 2 cases (6.25%) and violent indeterminate 2 cases (6.25%).

Table 1: Characterization of the 32 post neonatal deaths:

Variables	N (32)	%
Sex		
Male	18	56.25
Female	14	43.75
Place of death		
Home	16	50
Hospital	10	31.25
Other location	1	3.125
Without information	5	15.625
Activity at the time of death		
Sleep or rest	26	81.25
Activity in home	0	0
Other	2	6.25
Without information	4	12.5
Manner of death		
Natural	20	62.5
Under study	2	6.25
Indeterminate	4	12.5
Violent-accidental	2	6.25
Violent-homicide	2	6.25
Violent-indeterminate	2	6.25

The summarized facts collected in the autopsy protocols of 32 cases were revised for uniformity. The causes of death, defined as disease or event that triggers the sequence leading to death, were not always found in the results of the autopsy. Comparative results before and after an autopsy showed in Table no. 2. The leading cause of death was trauma in 10 cases before autopsy. The 2 cases of suffocation caused by airway obstruction were also noted under trauma in the autopsy report. Other diagnoses were pneumonia (5 cases), congenital malformations (7 cases), and 4 cases of intestinal infection or disease, 2 cases of hepatic causes, 2 cases of meningitis, and 1 case of influenza.

There were 2 cases reported as “death in the study”, which meant to be needed of further investigation to find out the cause of death.

After the autopsy, the 4 cases with visible causes were then disregarded, and with this information, a first classification was done to see which cases were compatible with SIDS. 28 cases in which the parents have said they put the baby to sleep and later they found the baby cold and cyanotic were selected; some of these cases had a record with the baby having an acute respiratory infection.

The 4 cases diagnosed had a probable cause of death: 1 trauma case confirmed to be nonrelated with sleeping, 3 cases of infants severely sick that was hospitalized with the diagnosis of sepsis and infection (pneumonia). Among 28 SIDS compatible cases, 11 were deaths following an illness or symptoms of. concern like respiratory (5 cases) or gastrointestinal (6 cases) related, which had received medical assistance in previous days.

There was also a case in which the child had a history of heart disease and a cardiopathy was found in the autopsy of an asymptomatic boy. Two cases were compatible with suffocation. In onecase, a boy was in treatment with antihistamines because he had an acute respiratory infection. 3 cases showed cardiomyopathy with signs of pulmonary hypertension. Two cases were compatible with suffocation. In one case, a boy was in treatment with antihistamines because he had an acute respiratory infection. Another case showed cardiomyopathy with signs of pulmonary hypertension. The remaining 12 cases showed similar characteristics: the infant appeared to be healthy or presented mild signs of a common cold, and unexpectedly died while sleeping.

Table 2: Cause of death before and after autopsy report and SIDS compatible cases.

Causes of death before autopsy (n=32)	Number of cases	Cause of death in autopsy (n=32)	Number of cases	SIDS compatible cases and relevant history (n=28)	Number of cases
Trauma	10	Trauma	1	SIDS, no history	2
Suffocation	2	Sepsis	2	SIDS with respiratory history	5
Pneumonia	5	Infection	1	SIDS with gastrointestinal history	6
Congenital malformations	4	Compatible with SIDS	28	SIDS with heart defect	3
Intestinal infection disease	4			SIDS with a former acute life threatening event (ALTE)	12
Hepatic causes	2				
Meningitis	2				
Influenza	1				
Death in study	2				
Total	**32**	**Total**	**32**	**Total**	**28**

Discussion:

Death is attributed to SIDS when each of the following is present: a complete autopsy is performed and the findings are compatible with SIDS. No gross or microscopic evidence of trauma or significant disease is present. No trauma is found on the skeletal survey. Other causes of death are ruled out. No evidence of alcohol, drug, or toxic exposure is found. A thorough death scene investigation and review of clinical history is negative. Once the following has been performed and other causes ruled out, it is then that the death can be ruled as SIDS. Biological factors include (i) Premature and low birth weight, (ii) infection, (iii) pregnancy complications, (iv) gender (male predominance), (v) age of infants; Familial factors include (i) infants that are not breastfed, (ii) maternal history of hospitalization for psychiatric illness, (iii) maternal smoking, (iv) risk among siblings, (v) maternal age, (vi) paternal recreational drug usage, (vii) maternal recreational drug usage, (viii) parity, and (ix) maternal education; Epidemiological factors include (i) sleeping position, (ii) bed environment like soft surface, loose bedding, (iii) prenatal care, (iv) overheating, (v) race and ethnicity, (vi) bed-sharing, (vii) altitude, and (viii) over bundling[6].

Adult Bangladeshis are children of large families and thus have extensive networks of cousins. Each of these is regarded as part of the family. Rural Bangladeshis are used to having large numbers of children, compared with other developed countries. The relatively large number of babies provides the opportunity for more general familiarity with infants, and the arrival of a baby involves fairly small changes to family life. Thus very few preparations are made before birth. Most Bangladeshi mothers breastfeed their babies. It is very rare for Bangladeshi women to smoke. Oil is used to massage Bangladeshi babies after bathing, increasing their tactile stimulation; this task is often undertaken by grandmothers[5].

In Bangladesh, the dead child is rarely brought for autopsy. Only when certain violation (or possible homicide) and/or malpractice/insufficient/improper treatment givenby any physician or quack to the child was thinking the cause of death has come for autopsy through the Court. In most of the cases, the body was partially to fully decomposed. Those data were not included in this study. The data presented herein provide a brief survey tending to open, rather than conclude a far-reaching subject and motivate medico-legal specialists toward the more in-depth study. We suggest that perinatal and infant unexplaineddeath cases undergo an in-depth histopathologic post-mortem examination focusing particularly on the structures of the central and peripheral nervous systems that regulate the nervous system activities and on the cardiac conduction system. Such structures lamentably would be lost in routine post-mortem examinations.

Conclusion:

An infant's unexplained death cases should undergo an in-depth autopsy routinely to evaluate the cause and thus helps to make policy against SIDS.

References:

1. Ndu IK. Sudden infant death syndrome: an unrecognized killer in developing countries. Pediatric Health Med Ther. 2016 Feb 3;7:1-4.

2. Goutas N, Konstantinidou MK, Vlachodimitropoulos D, Konstantinidou A, Kontogiannis T, Papadodima S, et al. Trends in infant and child mortality. The Open Forensic Science Journal. 2011; 4:1-11.

3. Ozkara E, Canturk G, Canturk N, Ozata AB, Yavuz MF. Evaluation of forensic perinatal and neonatal autopsies in Istanbul. Indian J Pediatr. 2009 Feb;76(2):167-70.

4. Sawaguchi T, Namiki M. Recent trend of the incidence of sudden infant death syndrome in Japan. Early Hum Dev. 2003 Dec;75 Suppl:S175-9.

5. Gantley M, Davies DP, Murcott A. Sudden infant death syndrome: links with infant care practices. BMJ. 1993 Jan 2;306(6869):16-20.

6. Dagur G, Warren K, Imhof R, Imhof N, Wasnick R, Khan SA. Current concepts of sudden infant death syndrome: A review of literature. Translational Biomedicine.2015;6:4.

DCIMCJ

Original Article

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Evaluation the Prognosis of the Patients with Carpal Tunnel Syndrome after Six Weeks Ultrasound Therapy.

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Abstract:

Background: Carpal tunnel syndrome is one of the most common entrapment neuropathies of the upper limb in medical practice. Ultrasound therapy is a common non surgical treatment of carpal tunnel including other modalities like the use of anti inflammatory agents and exercise syndrome.This comparative study was design to evaluate the prognosis of patients with carpal tunnel syndrome with and without ultrasound therapy. Methods: This was a randomized controlled trial study. This study was conducted in Department of Physical Medicine and Rehabilitation of Bangabandhu Sheikh Mujib Medical University to evaluate the effect of ultrasound therapy on patients of carpal tunnel syndrome. A total included of 110 subjects were participated in this study selected randomly. The patients were divided in two groups by lottery. For group A patients treatment schedule (Ultrasound therapy+ Exercise+ Wrist splint +NSAIDs) and group B (Exercise+ Wrist splint+ NSAIDs) were applied for a period of 6 weeks. Group A will be compared to group B by Levine Symptom severity scale after 3weeks and 6weeks of treatment. Statistical analysis of the finding was done with the help of SPSS (statistical package for social science) version -19. The student t test will be used to analyze the significance level p<0.05. Results: This study showed mean summation score of Functional status scale at pretreatment (W0) in group-A was 37.37(±1.83) and in group-B was 37.2(±1.31), p value was >0.05 that was not statistically significant. Mean summation score of Functional status scale in group-A 1st follow up after 3 weeks (W 3) was 14.32(±2.42) and in group-B was18.62(±0.82) p value was <0.001 that was highly statistically significant. Mean summation score of Functional status scale in group-A 2nd follow up (W 6) after 6 weeks was 14.12(±1.21)and in group-B was 18.30(±0.46)p value was <0.001 that was statistically highly significant. That means group-A is significantly better than group-B in first follow up and 2nd follow up. Conclusion: In this study both group (A and B) were treated with exercise, wrist splint and NSAIDs. In group A with above treatment they were also treated with continuous mode US therapy and got better result.

Keywords: Carpal tunnel syndrome, mean summation score of Functional status scale

Introduction:

Carpal tunnel syndrome (CTS) is a condition where one of two main nerves in the wrist is compressed, which can lead to pain in the hand, wrist and sometimes forearm, and numbness and tingling in the thumb, index and long finger. In advanced cases some of the muscles of the hand can become weak[1]. The carpal tunnel is an anatomic passageway bounded dorsally and laterally by the hemicircular carpal bones and on the palmer surface by the transverse carpal ligament. CTS is due to compression of the median nerve as it passes from the forearm to the palm, beneath the transverse carpal ligament[2].

Following treatment approaches commonly used in CTS have remained essentially the same for years: (1) immobilization of the hand by splinting in the neutral position; (2) injection of steroids just proximal to and into the carpal tunnel; and (3) decompression of the median nerve by release of the transverse carpal ligament. Other conservative treatments include adjusting the work environment,

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non- steroidal anti-inflammatory drugs (NSAIDs), therapeutic ultrasound, manipulation, nerve and tendon glides, serial night splinting, stretching and strengthening exercise of right hand[2]. Ultrasound is the most widely used treatment modality in physical medicine in management of CTS. There are satisfactory short to medium term effects due to ultrasound treatment in patients with mild to moderate CTS[4]. Ultrasound is a physical therapy agent commonly used to increase temperature in deep tissue. The biologic effects observed when mammalian tissues are exposed to ultrasound include changes in blood flow rates, tissue metabolism, nerve function, the extensibility of connective tissue, and the permeability of biologic membranes[5]. The effects of ultrasound on nervous tissue as follows: it selectively heats peripheral nerves, may alter or block impulse conduction and may increase membrane permeability and tissue metabolism. The thermal effect of ultrasound may cause pain relief[4,6,7]. Ultrasound at therapeutic intensities ranging from 0.1 to 2.5 w/cm^2 (continuous) is used for its effects on soft tissue healing[8,9].

CTS is one of the common problem encountered in industrialized populations. The risk of disability is so great that it is none a costly burden to society but also loss of productivity. Among the treatment option in CTS ultrasound therapy is safe, simple and cheaper. The effect of ultrasound therapy in case of carpal tunnel syndrome has not been evaluated in Bangladeshi population. So, this systemic study evaluates the effect of ultrasound therapy for the CTS for relieving symptoms thereby prevention of surgical treatment. The result may have implications for early detection, selecting appropriate treatment modalities and management plan for patients suffering from complications of carpal tunnel syndrome in Bangladesh.

Methods:

This Randomized controlled trial study was carried out from March '2014 to August' 2014 in the department of Physical Medicine and Rehabilitation of Bangabandhu Sheikh Mujib Medical University, Dhaka.

Total 110 present subjects were selected by immediately after the examination; the patients were randomized by drawing lottery from outdoor referral patient irrespective of sexes in between 20 to 60 years of age and BMI<25 having carpal tunnel syndrome. History and clinical examination without complication was included by appropriate investigation.

History taken from all the patients and clinically diagnosed as a case of CTS on the basis of pain, tingling and numbness of lateral $3^{1/2}$ fingers, Tinel's sign +ve, Phalen sign +ve. subject were selected consecutively according to the availability of the patients who were fulfill the inclusion criteria i) Pain at palmer aspect of wrist more than 3 months, Tingling and numbness of lateral $3^1/_2$ fingers Clinically and electro physiologically diagnosed as a case of carpal tunnel syndrome. In this study, all participants were divided into 2 groups – group A (n= 55) and group B (n= 55). Group A participants were treated with US therapy, Exercise, Wrist splint, NSAIDs and group B participants were treated with Exercise, Wrist splint, NSAIDs. All medication was checked strictly & intervention was done aseptically. Date was collected by using a structured questionnaire. The participants were assessed at pretreatment, at 1st follow up after 3 weeks and 2nd follow up after 6 weeks. They are assessed by using Functional status scale:

The functional status scale is developed by considering eight functional activities which are commonly affected by carpal tunnel syndrome. There are Writing, Buttoning of clothes, holding a book while reading, Gripping of a telephone handle, Opening of jars, Household chores, Carrying of grocery bags, Bathing and dressing. The answers were rated from 0 point (No difficulty with the activity) to 4 points (cannot perform the activity at all). The overall score for functional status was calculated as the mean of all eight items. The answers were rated from 0 point (No difficulty with the activity) to 4 points (cannot perform the activity at all). The overall score for functional status was calculated as the mean of all eight items.

This study protocol was approved by two institutional review committee, of Bongobondhu Sekh Mujib Medical University and Bangladesh College of Physician and Surgeon). Data were analyzed by SPSS 19.0 version.

The student t test of association was applied in order to establish the objectives and also to answer the research questions. In descriptive statistics, the frequency, percentage, mean and standard deviation was included.

Results:

Table 1: Age group distribution of the study population

Age in years	Study group		Total
	Group –A (n %)	Group-B (n %)	
20-30 years	06(10.9)	05(9.1)	11
31-40 years	20(36.4)	10(18.2)	30
41-50 years	27(49.1)	32(58.2)	59
51-60 years	02(3.6)	08(14.5)	10
Total	55(100)	55(100)	110
Mean SD	49.87(±6.4)	51.72(±6.3)	

Table 1shows age distribution of the study subjects

Table 2: Sex distribution of the study population

Sex	Study group		Total
	Group –A (n %)	Group-B (n %)	
Male	25 (45.5)	24 (43.6)	49
Female	30 (54.5)	31(56.4)	61

Table 2 shows sex distribution of the study subjects

Table 3: Severity of Pain

Severity of Pain	Study group		Total
	Group –A (n %)	Group-B (n %)	
Mild to Moderate	44(80.0)	33(60.0)	49
Severe	11(20.0)	22(40.0)	21
Total	55(100)	55(100)	70

Table 3 shows severity of pain in study population were determine by functional status scale in group-A majority of the study population 80.0% presented with mild to moderate pain & another 20% presented with severe pain. In group-B 60% presented with moderate pain & another 40.0% presented with severe pain.

Table 4: Mean summation score of Functional status scale at pretreatment and after 3 wks and 6 wks follow up (n=110)

Summation Score	Study group		95% CI		P- value
	Group A Mean (±SD)	Group B Mean (±SD)	Lower	Upper	
Per treatment (W0)	37.37(±1.83)	37.2(±1.31)	-.50	1.03	0.48
At 1st follow up (W3)	14.32(±2.42)	18.62(±0.82)	-6.33	-4.46	<0.001
At 2nd follow up (W6)	14.12(±1.21)	18.30(±0.46)	-5.59	-4.60	<0.001

Table 4 shows mean summation score of Functional status scale at pretreatment (W0) in group-A was 37.37(±1.83) and in group-B was 37.2(±1.31), p value was (p>0.05) that was not statistically significant. Mean Summation score of Functional status scale in group-A 1st follow up after 3 weeks (W3) was 14.32(±2.42) and in group-B was 18.62(±0.82). p value was (p<0.05) that was statistically significant. Mean summation of Functional status scale in group-A 2nd follow after 6 weeks (W6) was 14.12(±1.21) and in group-B was 18.30(±0.46) p value was (p<0.05) that was statistically significant. That means group-A is significantly better than group-B in first follow up and 2nd follow up.

In this study Functional status scale was not statistically significant (p>0.05) at pretreatment (W0) when compared between group-A and group-B. But after 3 weeks during 1st follow up (W3) and after 6weeks in 2nd follow up (W6) when visual analogue scale was compared between these two group then p value was (p<0.001) highly significant. That means group-A is significantly better than group-B in first follow up and 2nd follow up.

Discussion:

In this study, US therapy + Exercise +Wrist splint+ NSAIDs tends to be more effective than Exercise+ Wrist splint+ NSAIDs in treating CTS patients. Patients who underwent US therapy and a wrist splint not only experienced improvements in their functional status scores compared to those receiving NSAIDs and a wrist splint but also showed statistically significant improvements in their symptom severity scores and palmer pinch power. Different modes, frequencies and intensities have been used in US therapy for CTS patients[9,15-18]. Generally, in US therapy, continuous mode is chosen when the thermal effect is desired, while pulsed mode is applied when the nonthermal effect is preferred[19]. Although a study reveals symptom improvements after continuous mode US therapy in CTS patients[20]. another study reports prolong distal motor latency and a decrease in motor nerve conduction velocity after treatment with continuous mode US therapy[9]. These findings implied that though continuous mode US therapy was able to improve the symptoms in CTS patients, selective heating of the median nerve might lead to temporal conduction block[9]. On the contrary, pulsed mode US therapy effectively enhanced peripheral nerve regeneration in an animal study, possibly through the mechanisms of local blood vessel dilatation, nerve sprouting stimulation, Schwann cell activation and chemotactic stimulator release. This study utilized pulsed mode US therapy on CTS patients and observed improvements in subjective symptoms and palmer pinch power, similar to previous studies[17,21].

The findings of the present study confirm that ultrasound treatment is more effective treatment in patients with carpal tunnel syndrome. They have claimed that these physical agents may facilitate the recovery from carpal tunnel syndrome[22,23]. The rate of improvement from ultrasound treatment was similar to that reported in other studies such as Chang et al., (2014), Viera et al.,(2001). Piazzini et al.(2007)[22-24]. Although there are some contradictory results from other study done by Oztas (1998). Several clinical trials have revealed US therapy has a positive effect on patients with CTS[8,20]. But in the study of Dincer et al., (2009) showed that the combinations of US or LLL Low-level laser therapies with splinting were more effective than splinting alone in treating CTS. However, LLL therapy plus splinting was more advantageous than US therapy plus splinting, especially for the outcomes of lessening of symptom severity, pain alleviation, and increased patient satisfaction[20]. However, Cochrane's 2013 review concluded that there is still insufficient evidence to support that US therapy is more effective than placebo or other nonsurgical interventions for CTS[1].

Conclusion:

This Comparative study among CTS patients who were attending in a tertiary care hospital reveled that Ultrasound therapy with the combination of exercise, wrist splint, NSAIDs were more effective

combination treatment rather than only exercise, wrist splint and NSAIDs . Since this is an exploratory trial, further confirmatory testing is suggested to justify the efficacy of these two treatments.

References:

1. Wilson JK, Sevier TL. A review of treatment for carpal tunnelsyndrome. Disabil Rehabil 2003;25: 113–119.

2. Kao SY. Carpal tunnel syndrome as an occupational disease. J Am Board Fam Pract. 2003;16(6): 533–42.

3. Wilson JK, Sevier TL. A review of treatment for carpal tunnelsyndrome. Disabil Rehabil 2003;25: 113–119.

4. Rempel D, Evanoff B, Amadio PC, de Krom M, Franklin G, Franzblau A et al. Consensus criteria for the classification of carpal tunnel syndrome in epidemiologic studies. Am J Public Health 1998; 88(10):1147-1451.

5. Graham R, Regehr G, Naglie G, Wright JG. Development and validation of diagnostic criteria for carpal tunnel syndrome. J Hand Surg Am. 2006; 31(6): 919-924.

6. Lanz, U. Anatomical variations of the median nerve in the carpal tunnel. Journal of Hand Surgery Am.1977;2(1): 44-53.

7. Kamaraddi SV, Latti R, Kodliwadmath M, Gowdar S. Determination of the prevalence of carpal tunnel syndrome in the laboratory workers of Jwaharlal Nehru medical college, Belgaum-A crosses sectional study. Asian J Exp Biol Sci. 2010; 1(4):740–746.

8. Ebenchler GR, Rech K, Halim A, Wiesinger GE, Uhl F, Fialka V. Ultrasound treatment for treating the carpal tunnel syndrome: randomized “sham” controll trial, BMJ 1998; 316(7133): 731–735.

9. Oztas O, Turan B, Bora I, Karakaya MK. Ultrasound therapy effect in carpal tunnel syndrome. Arch Phys Med Rehabil 1998, 79: 1540–1544.

10. Hong DZ, Liu HH, Yu J. Ultrasound thermotherapy effect on sensory nerve conduction. Arch Phys Med Rehabil 1988; 69:410-4.

11. Madsen PW, Gersten JW. Effect of ultrasound on conduction velocity of peripheral nerves. Arch Phys Med Rehabil 1960; 42: 645-9.

12. Michlovitz SL, Nolan TP (eds). Modalities for Therapeutic Intervention, 4th ed. Philadelphia, PA: F.A. Davis Company, 2005.

13. Sparrow KJ. Therapeutic ultrasound. 4th ed. Philadelphia, PA: F.A. Davis Company, 2005.

14. Dale AM, Descatha A, Coomes J, Franzblau A, Evanoff B. Physical examination has a low yield in screening for carpal tunnel syndrome. Am J Ind Med. 2011;54:1–9.

15. Gerritsen AAM, de Krom MCTFM, Struijs MA, Scholten RJPM, de Vet HCW, Bouter LM. Conservative treatment options for carpal tunnel syndrome: a systematic review of randomised controlled trials. J Neurol. 2002; 249: 272–280.

16. Pinar L, Enhos A, Ada S, Gungor N. Can we use nerve gliding exercises in women with carpal tunnel syndrome? Adv Ther. 2005;22(5):467-75.

17. Bakhtiary AH, Rashidy-Pour A: Ultrasound and laser therapy in the treatment of carpal tunnel syndrome. Aust J Physiother 2004,50: 147–151.

18. Horng YS, Hsieh SF, Tu YK, Lin MC, Horng YS, Wang JD. The comparative effectiveness of tendon and nerve gliding exercises in patients with carpal tunnel syndrome: a randomized trial. Am J Phys Med Rehabil 2011; 90: 435–442.

19. Jacobs MA, Austin NM. Splinting the hand & upper extremity: principle and process. 1st ed. Lippincott Williams & Wilkins Ltd; 2002:280-81.

20. Dincer U, Cakar E, Kiralp MZ, Kilac H, Dursun H: The effectiveness of conservative treatments of carpal tunnel syndrome: splinting, ultrasound, and low-level laser therapies. Photomed Laser Surg 2009, 27: 119–125.

21. Levine DW, Simmons BP, Koris MJ, Daltroy LH, Hohl GG, Fossel AH et al. A self–Administered questionnaire for the assessment of severity of symptoms and functional status in carpal tunnel syndrome. J Bone and Joint Surgery. 1993; 75(11): 1585-92.

22. Chang Y , Hsieh S , Horng Y, Chen H , Lee K, Horng Y. Comparative effectiveness of ultrasound and paraffin therapy in patients with carpal tunnel syndrome: a randomized trial. BMC Musculoskeletal Disord. 2014;15:399:2-7.

23. Viera Aleman C, Puron E, Hamilton ML, Santos Anzorandia C, Navarro A and Pineda Ortiz I. Evaluation of motor and sensory neuroconduction of the median nerve in patients with carpal tunnel syndrome treated with non-coherent light emitted by gallium arsenic diodes. Revue Neurologique 2001; 32: 717–720.

24. Piazzini DB, Aprile I, Ferrara PE, Bertolini C, Tonali P, Maggi L et al. A systematic review of conservative treatment of carpal tunnel syndrome. Clin Rehabil. 2007; 21(4): 299-314.

DCIMCJ

Case Report

DCIMCJ 2021 January;8(1):50-52

Role of Radiology in the Diagnosis and Follow up of Urethrorectal Fistula – A Case Report

Parvin A[1], Naser MF[2]

Abstract:

Background: Urethrorectal fistula is a rare and debilitating condition. Spontaneous closure is rarely effective and appropriate management regarding timing of repair and surgical approach remains controversial. Radiology plays a very important role in the diagnosis and follow up. Case Presentation: A 65 year-old male came to the Radiology and Imaging department of Dhaka Central International Medical College with narrow stream of urine, frequency, urgency and acute urinary retention. He had a medical history of adenocarcinoma of prostate for which he underwent Radical prostatectomy in April 2019. During the dissection of prostate rectal injury occurred as it was adherent to posterior rectal wall. The rectal injury was repaired by monofilament suture interruptedly. The fistula was managed with bladder catheterization and medical treatment. Postoperatively 03 weeks later the catheter was removed and he was voiding per rectum. An urethrocystoscopy was done after 03 months which revealed urethrorectal fistula. The fistulas opening in the rectum was about 2.5 inch from anal verge. The patient developed a recurrence with this approach and finally underwent laparoscopic sigmoid loop colostomy and suprapubic (SPC) on 18.12.2019. MRI of pelvis was done elsewhere on 16.11.2020 which revealed urethrorectal fistula. Then on 28.01.2021 a CT Urogram was done here which revealed a fistulas communication between the prostatic part of urethra and anterior lower rectal wall. Conclusion: Although rare, rectourethral fistulas are an important disease whose main aetiology is related to prostate cancer, either after surgical treatment or secondary to radiotherapy. Performing contrast enemas, CT, MRI and endorectal ultrasound may provide essential data in selected cases.

Keywords: Urethrorectal fistula, radiology, endorectal ultrasound

Introduction:

Urethrorectal fistula is a rare yet potentially debilitating condition, which can affect both males and females in all age groups. A rectourethral fistula is mostly iatrogenic in origin, but can also be caused by a neoplasm, infection, inflammation or trauma. Iatrogenic RUF are often the results of surgery or irradiation for prostate cancer, and less commonly are the result of rectal cancer. Congenital rectourethral fistula are also very rare. Urethrorectal fistulas may be suspected when classical symptoms, such as fecaluria, pneumaturia, abnormal urethral discharge, or leakage of urine from the rectum during micturition, are present.

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Case Presentation:

Clinical history

A 64-year-old male was evaluated in the Radiology and Imaging centre of our hospital complaining of narrow stream of urine, frequency, urgency and acute urinary retention. From his medical history, it was noted that he had adenocarcinoma of prostate for which he underwent Radical prostatectomy in April 2019. During the dissection of prostate rectal injury occurred as it was adherent to posterior rectal wall. The rectal injury was repaired by monofilament suture interruptedly. The fistula was managed with bladder catheterization and medical treatment. Postoperatively 03 weeks later the catheter was removed and he was voiding per rectum.

An urethrocystoscopy was done after 03 months which revealed urethrorectal fistula. The fistulas opening in the rectum was about 2.5 inch from anal verge. The patient developed a recurrence with this approach and finally underwent laparoscopic sigmoid loop colostomy and SPC on 18.12.2019. At that time no obvious fistulous tract was found so he was discharged with antibiotic treatments. Follow up MRI of pelvis was done elsewhere on 16.11.2020 which revealed urethrorectal fistula. Then on 28.01.2021 a CT Urogram was done in our hospital which revealed a fistulas communication between the prostatic part of urethra and anterior lower rectal wall.

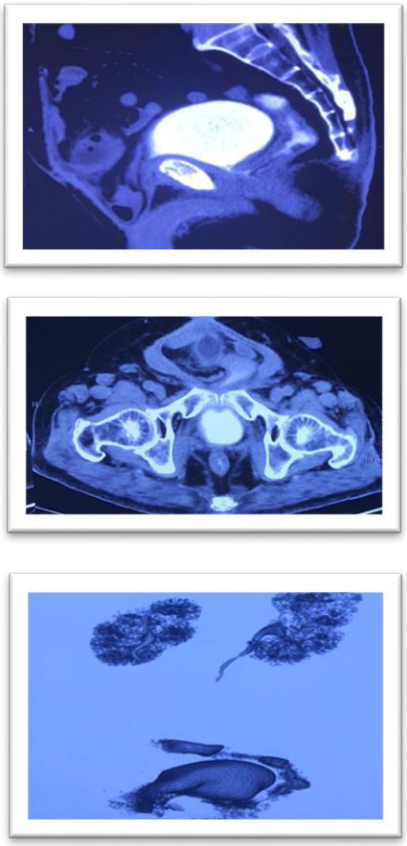


Fig: A) Sagittal CT image showing a fistulas communication between the prostatic part of urethra and anterior lower rectal wall.

B) Sigmoid colostomy with stomal hernia containing fat, bowel loops and mesenteric vessels.
C) CT 3D reconstruction showing the urethrorectal fistula.

Diagnosis:

The diagnosis is made based on symptoms and appropriate diagnostic tests. The primary symptoms are the presence of pneumaturia and/or faecaluria and the passage of urine through the anus. The possibility of urinary infection is permanent. In variable proportions, haematuria and perianal or perirectal pain may be added; occasionally, a rectal examination may allow the location or suspicion of the existence of the fistulous orifice[5]. Diagnostic tests are intended to confirm the presence of the rectourethral communication and its location and to rule out the presence of a superimposed disease. The most often proposed studies are rectoscopy, cystoscopy, urethroscopy and cystourethrography, with different authors recommending them[6]. Performing a contrast enema, CT, MRI and endorectal ultrasound may provide essential data in selected cases, especially to rule out abscesses or tumour infiltration. All these diagnostic tests provide the most complete evaluation of the fistula and allow choosing the most adequate treatment.

Follow-up recommendations:

Monthly change of SPC was recommended in this case. The patient was advised with review after 6 months for elective rectourethral fistula repair with gracilis flap interposition.

Discussion:

Urethrorectal fistula is a rare and unpleasant complication that is managed with reconstructive procedures, because spontaneous closure is rare[2]. In addition, appropriate management regarding timing of repair and surgical approach remains controversial[3]. The etiology varies, but can be classified as congenital, iatrogenic, traumatic, neoplastic, and inflammatory. As much as 60% of cases are thought to be iatrogenic[4]. Congenital fistulas are rare and are most commonly associated with anorectal malformation disorders. In these patients, fistulas either coexist with the malformation of the anus and rectum or can be the results of the surgical correction of the malformation.

There is a wide spectrum of symptoms that can be associated with urethrorectal fistulas. The usual presentation is frequent and recurrent UTIs, combined with fecal discharge during urination and urinary discharge during defecation. A recent systematic review, including data from all patients reported by various case series and case reports, showed that the failure rate of the transanal approach (Latsko procedure) was 41% in a total of 22 patients. Closure of urethrorectal fistula with conservative treatment was rare. The laterosacral or posterior approach (Kraske procedure) can also be useful, but is more practical for surgical treatment of presacral tumors. The trans-sphincteric approach (York-Mason) is a posterior approach, in which all layers of the anorectal sphincter are divided for direct access to the fistula, located at the anterior rectal wall. Failure was reported in 12% of the patients treated with this approach. Although this method has good results for the treatment of the fistula, it involves section of the anal sphincter[1].

Conclusion:

Although rare, rectourethral fistulas are an important disease whose main aetiology is related to prostate cancer, either after surgical treatment or secondary to radiotherapy or other therapeutic options. Clinically, they are easy to identify by the presence of pneumaturia and/or faecaluria and by the passage of urine through the anus. However, diagnostic tests should be performed for confirmation, notably rectoscopy, cystoscopy, urethroscopy and cystourethrography. Performing contrast enemas, CT, MRI and endorectal ultrasound may provide data in selected cases. Treatment should be selected on a case-by-case basis. Although certain favourable cases may be solved with conservative treatment, surgical treatment is usually required, with or without urinary and/or faecal diversion. Options are abundant and the choice should be adapted primarily to the surgical team's experience and to the fistula type, location and aetiology. With that approach, healing rates range from 80% to 100% after one or several interventions.

The goal of the present case report is to demonstrate unusual presentation of urethrorectal fistula after surgical management of prostate cancer and the precise role of diagnostic procedures for initial diagnosis, treatment plan and follow up.

References:

1. Theodorescu D, Gillenwater JY, Koutrouvelis PG. Prostatourethral-rectal fistula after prostate brachitherapy. Cancer. 2000; 89(10):2085-2091.

2. Chrouser KL, Leibovich BC, Sweat SD, Larson DW, Davis BJ, Tran NV, et al. Urinary fistulas following external radiation or permanent brachytherapy for the treatment of prostate cancer. J Urol.2005;173(6):1953-57.

3. Muñoz M, Nelson H, Harrington J, Tsiotos G, Devive R, Engen D. Management of acquired rectourinary fistulas. Outcome according to cause. Dis Colon Rectum. 41 1998;41(10):1230-38.

4. Pera M, Alonso S, Pares D, Lorente JA, Bielsa O, Pascual M, et al. Treatment of a rectourethral fistula after radical prostatectomy by York Mason posterior trans-sphincter exposure. Cir Esp. 2008;84:323–327.

5. Hechenbleikner EM, Buckley JC, Wick EC. Acquired rectouretrhal fistulas in adults: a systemic review of surgical repair techniques and outcomes. Dis colon Rectum. 2013;56(3): 374-83.

6. Bukowski TP, Chakrabarty A, Powell IJ, Frontera R, Perlmutter AD, Montie JE. Acquired rectourethral fistula: methods of repair. J Urol. 1995;153(3 Pt 1):730–33.

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Medical Quiz: Images

Mamun KAA[1]

A 50 years old male patient presented with irritable, aggressive and delusional behaviour. He was diagnosed as a case of bipolar disorder. He has been treated with antipsychotic drugs for last 3 months without significant improvement. On query he complained of headache of recent onset. He was suggested CT head.

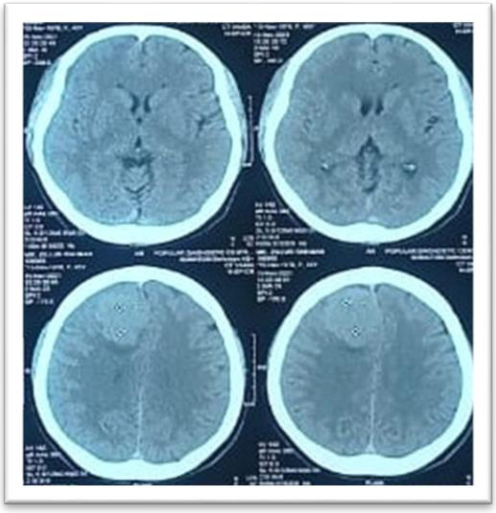


Figure 1: CT Head Axial View(non contrast)

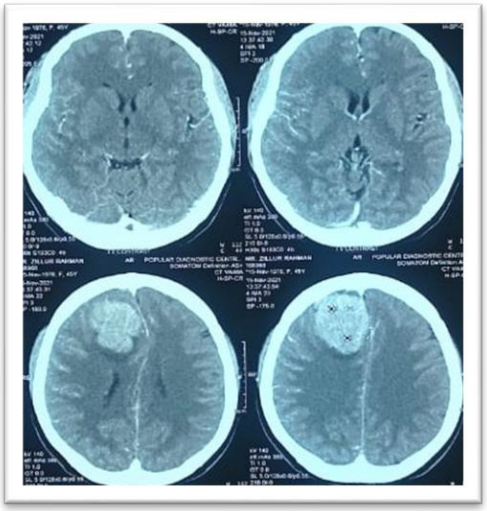


Figure 2: Contrast CT Head Axial View

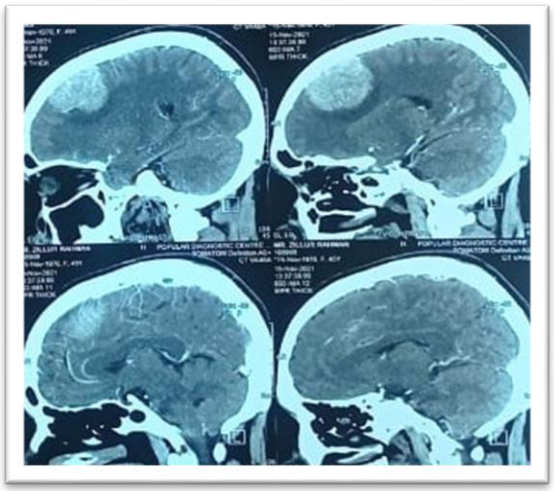


Figure 3: Contrast CT Head Sagittal View

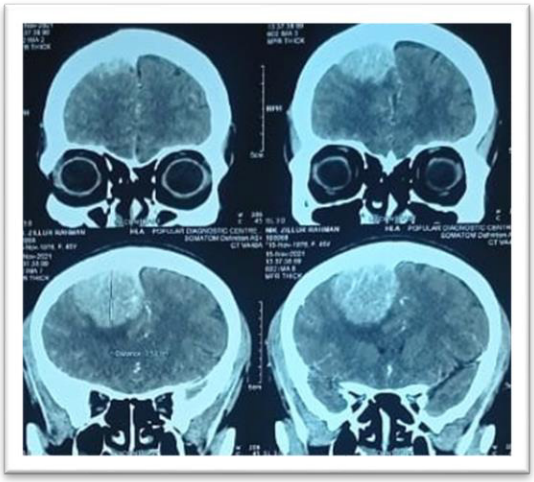


Figure 4: Contrast CT Head Coronal View.

1. Dr. Kazi Abdullah Al Mamun, Associate Professor, Department of Neuromedicine, Dhaka Central International Medical Colleg.

- **Q1**. Mention abnormal findings in CT head.
- **Q2**. What are the treatment options?

Answer to Medical Quiz: Images

- ✓ A large rounded hyperdense mass lesion is seen over the right frontal convexity surrounded by moderate perilesional oedema with midline shift to left. After contrast administration there is strong homogenous enhancement of the lesion
- ✓ 1. Steroid to reduce perifocal oedema
- ✓ 2. Surgery

Discussion:

Brain tumors, either primary or metastatic, generally cause the development of focal neurologic deficits, such as hemiparesis, sensory deficit and aphasia. However, benign tumors, such as meningioma, that externally compress the frontal lobes may not produce any symptoms other than progressive changes in personality and intellect until they have enlarged significantly, leading to its renowned designation as a "silent tumor[1]". Meningioma is the most common benign tumor, accounting for 13%–26% of intracranial tumors; most of them are slow growing, and many are found incidentally[2]. The clinical symptoms are usually dependent on the anatomical site involved[3]. We report a case with symptoms of depression and changes in personality, which, on further investigation, showed frontal meningioma. Patient with no previous medical and psychiatric history may be referred to a psychiatric clinic for abnormal behaviour. Patient may have symptoms of depression, including social withdrawal, fatigue, hypersomnia. Aggressive and delusional behaviour[4]. Surgery is the treatment of choice.

References:

1. Gaddamanugu P, Alladi S, Purohit AK, Chadalawadi SK. Pre-operative and post-operative psychiatric manifestations in patients with supratentorial meningiomas. Clin Neurol Neurosurg. 2016;147:24–9.

2. Yakhmi S, Sidhu BS, Kaur J, Kaur A. Diagnosis of frontal meningioma presenting with psychiatric symptoms. Indian J Psychiatry. 2015; 57: 91–3.

3. Gupta RK, Kumar R. Benign brain tumours and psychiatric morbidity: A 5-years retrospective data analysis. Aust N Z J Psychiatry. 2004;38: 316–9.

4. Pulera F, Vitale J, Camaiti A. Frontal lobe syndrome caused by a giant meningioma presenting as depression and bipolar disorder. Singapore Med J. 2013; 54:158–9.