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Editorial

Original Articles

Review Articles

Case Reports

Instruction to the Authors

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Editorial

Global Health: Important Issues

Mohammed Shadrul Alam

"Global health" (GH) are terms that have been used interchangeably to define the health of people all over the globe. Global health emphasizes worldwide health issues, causes, and solutions; includes numerous corrections within and beyond the health sciences and indorses interdisciplinary association.[1] Global health focuses on people around the world rather than on the concerns of particular groups. Interesting debates are ongoing on how to develop practical implementation science competencies that can bridge the gap in global health.[2] The reason for my interest in global health is moral responsibility. Global health issues are important because the health and well-being of people everywhere has an impact on global security and freedom.

The four key themes that emerged from the current systematic review are that GH is: (1) a multiplex approach to worldwide health improvement taught and researched through academic institutions; (2) an ethos that is guided by justice principles; (3) a mode of governance that yields influence through political decision-making, problem identification, the allocation and exchange of resources across borders and (4) a polysemous concept with historical antecedents and an emergent future. [3]

Global health is significant because our worlds are interconnected. The increase in global trade and travel in recent decades has not only provided benefits, but also related to the creation of health problems. These lead to the form of infectious diseases and pandemics, such as Covid-19. Besides, the Covid-19 pandemics has created challenges in all sectors of government and all countries of world. Current global health problems include infectious diseases and pandemics, non-communicable diseases, food insecurity, inequality, environmental factors, and so on.

Infectious disease and pandemics:

On 30 January 2020 COVID-19 was declared a Public Health Emergency of International Concern (PHEIC) with an official death toll of 171.[4] On March 11, 2020, the World Health Organization (WHO) declared COVID-19 as a pandemic. It has caused severe illness and death. It features sustained person-to-person spread worldwide. People with pre-existing co-morbidities conditions are having the greatest impact. Not much is known about Covid-19. What is known today is changing rapidly. The COVID-19 pandemic is one of the major global health challenges and economic crisis in the 21st century.[5] When the pandemic struck, major regional and global gaps in pre-positioned emergency supplies, surge workforce capacities, and coordination structures exacerbated national vulnerabilities. The Covid-19 Pandemics has shown people the gaps in the preparation and containment. Infectious diseases generally do not respect native boundaries. Still, politics, development policies, and damage to the environment also play an important role.

Health workers must be trained to perform preventive decontamination procedures. Information about Covid-19 is rapidly changing, it is essential to stay in touch with rapidly changing knowledge and experience to the situation with Covid-19. It is important to rely on real sources of information and not primarily on social media sites. There is no specific drug or treatment for Covid-19. Supportive treatment is the only management. Infection prevention and control programs are followed. If prevention is the only option, then why not accept it more and more? Most people have a tendency to invest less in prevention and this is also true in poor countries. On the other hand, the incidence of COVID-19 will decrease with the application of the vaccine. Thus, large-scale vaccine campaigns have been shown to be an example of a macro-level health intervention that has been shown to get rid of Covid-19.

Simultaneously many other infectious diseases have been deadly and global health challenges for decades, such as diarrhea, tuberculosis, HIV / AIDS, malaria, Ebola and influenza. Almost all of which can be treated with modern medicine and / or prevented through sanitation and public health-based infection prevention programs.

Noncommunicable diseases:

Non-communicable diseases (NCDs) represent a growing health threat in global health. In many parts of the world, cardiovascular disease, stroke, cancer, diabetes and chronic lung disease are the leading causes of death and illness. NCDs place a huge burden on human health worldwide.[6] Modifiable risk factors refer to characteristics that societies or individuals can change to improve health outcomes. WHO typically refers to four major causes for NCDs are poor diet, physical inactivity, tobacco use, and harmful alcohol use. [7] Lifestyle changes and health problems related to the aging population have created this type of NCD. Healthcare burden are more relevant for healthcare systems than pandemics. Thus, we should focus on resources on non-communicable, chronic diseases such as diabetes and cardiovascular conditions. Conditions related to cancer, heart disease and obesity have proven to be difficult challenges even for the best health care system. Meanwhile, high levels of pollution and cancer have become a major cause of death in relatively long life expectancy countries.

In addition to the various human costs, developing countries have a significant economic cost for NCDs. Although many of the risks of NCDs are preventable, research and coverage of interventions to reduce the burden of NCDs on LMICs is still limited. However, interventions to reduce the risk of NCDs, improving healthy behaviors and strengthening the health system through NCD screening, and treatment.

Food security:

Food security occurs when people continuously have physical and economic access to adequate, safe, and nutritious food to meet their dietary requirements and food preferences for a functional and healthy life.[8] In the COVID-19 crisis, like public health problem; food security, workers' health and safety, and employment and labour issues are important. COVID-19 inflated the effects of poverty. Border closures, and confinement measures have been preventing peoples from entering the markets, disrupting domestic and international food supply chains, and reducing access to healthy diets.

In 2021, the effects of the global pandemic, political unrest, and climate changes are steadily increasing food insecurity for families and children. In fact, a large portion of healthcare services in poorer countries are purchased directly by households with 'out-of-pocket' resources. Millions of people are at risk of falling into extreme poverty. Special attention should therefore be paid to saving lives, including child allowances and healthy school meals, cash transfers, shelter and food relief initiatives, and assistance in retaining employment.

Inequality:

Health inequalities refers to the differences in health status or in the distribution of health resources between different population groups.[9] The "Burden of disease", which associates mortality with disability and disease prevalence data. People in poor countries have much worse health than people in rich countries. In less affluent countries, there are underdeveloped healthcare systems and millions of people struggle to access cared for. Lack of access to healthcare, due to financial or other reasons, is responsible for millions of premature deaths every year. Low-income countries have higher infant mortality rates.

Covid-19 has created a crisis for girls and children around the world, such as gender inequality, child marriage, child labor and trafficking. Since vulnerable families lose their incomes, girls are being sold into child marriage, children are being forced to beg on the streets, or being sent to work (child labor) instead of going to school. From the standpoint of health sciences and policy, the increasing political importance of Global Health and Inequality is long unsettled.

Environmental factors:

All the living beings residing on the planet earth need a healthy, clean and better environment for increased adaptability and enhanced survival chances. The relationships between humans and the global ecosystem are complex. Current Environmental Issues are 1) Contaminated Soil, 2, Air Pollution, 3) Water Pollution, 4) Waste Disposal, 5) Climate Change, 6) Deforestation, 7) Urban Extension, 8) Toxins, 9) Loss of Biodiversity, 10) Reduction of Ozone Layer, 11) Radioactive Pollution, 12) Mine Pollution, 13) Invasive species, 14) Ocean Acidification, 15) Nano pollution/Nanotoxicology etc.

The environment affects the definition of global health in many ways.[10] Some scientists believe the virus that causes COVID-19 originally crossed over from a wild animal, partly because of human encroachment on what was once wilderness. As Ebola and HIV crossover infections also originated from animals.

Thus, protecting forests from development can also protect people. Polluted air causes illness and millions of early deaths each year. Polluted water can poison people and animal life alike. Many healthcare providers use incineration to dispose of medical waste such as dressings. However, this disperses unacceptable amounts of chemical waste such as dioxins, heavy metals and other toxic chemicals into the atmosphere.

As temperatures grow warmer, tropical diseases are reaching new areas. Global warming should be addressed on priority. Reduced carbon emission from vehicles and factories need to be ensured across different countries. As climate change and natural resource management move up the scientific and political agendas, the concept of sustainability has become a key issue.

Why should everyone be concerned about global health problems?

Global health emphasizes prevention at the population level and is vital to helping maintain global security. Global health is important because its goal is to improve worldwide health, access to healthcare services and the quality of healthcare for all.[11]

What can be done to achieve good global health outcomes for all?

1) Healthy public policy integrated in multiple sectors, requires "health in all policies".
2) Prioritize health equity in development policies, plans and programs.
3) Make health promotion a key issue in government and civil society activities.
4) Introduce universal approaches and processes for social protection in the field of health.
5) Gender, ethnic and intercultural approaches must be equal in all interventions.
6) Strengthen health sector leadership to manage inter-sectoral processes.
7) Success requires the support of both political and resource partners.

Finally, the 2030 Agenda for Sustainable Development recognizes NCDs as a major challenge for sustainable development. As part of the agenda, government committed to develop ambitious national responses, by 2030, to reduce by one third premature mortality from NCDs through prevention and treatment (SDG target 3.4). Only Health workforces can play a key leadership role in the coordination and promotion of the global health issues and the achievement of the Sustainable Development Goals. We must not forget that all these efforts must take into account the fact that the ultimate beneficiaries should be people, families and communities so that health can be made real for all.

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Original Article

Histopathological Spectrum of Prostatic Lesions in a Tertiary Care Hospital

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ABSTRACT

Background: *Prostatic lesions like nodular hyperplasia, inflammation and carcinoma are common causes of morbidity and mortality in males. The incidence of these lesions increases with advancing age. Prostatic diseases show varying incidence in different geographical locations worldwide.*

Objectives: *To evaluate the histopathological spectrum of various prostatic lesions in biopsy specimen.*

Methods: *This was a retrospective study comprising 220 cases, carried out at the Department of Pathology, Enam Medical College and Hospital from January 2014 to December 2020. The histopathological slides were analyzed according to type of specimen, age of the patient, and histopathological pattern. Adenocarcinomas were graded according to Gleason score.*

Results: *Of the total 220 specimens, 202 (91.8%) were of nodular hyperplasia, 14 (6.4%) were carcinoma and 4 (1.8%) cases were high grade prostatic intraepithelial neoplasia (HGPIN). All the cases of prostatic malignancies were adenocarcinoma and majority were belonged to Gleason's score 7. Maximum numbers of cases of nodular hyperplasia were seen in the 61-70 years age group and carcinomas were peak in the 71-80 years age group.*

Conclusion: *Non-neoplastic lesions of the prostate are more common than neoplastic ones. Histopathological diagnosis and grading plays a definitive role in the management of prostatic carcinoma.*

Keywords: *Nodular hyperplasia, Adenocarcinoma, High grade prostatic intraepithelial neoplasia (HGPIN), Gleason score*

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INTRODUCTION

The prostate is a retroperitoneal organ encircling the neck of the bladder and urethra. It is histologically composed of glands and fibromuscular stroma. Prostate is one of the most commonly affected organs in males with increasing age, accounting for significant morbidity and mortality. Most of the patients present with complaints related to micturition and incontinence. The most important categories of prostatic diseases are inflammatory lesions (prostatitis), nodular hyperplasia, and carcinoma. Most hyperplasia arises in the transitional zone of the prostate whereas carcinoma originates in the peripheral zone. Nodular hyperplasia is the most common benign prostatic disease in men older than age 50 years. Approximately 30% of white American men in that age group have moderate to severe symptoms, and histological evidence of nodular hyperplasia is found in up to 90% of men by age 80.[1] It is not a premalignant lesion. Prostatitis may be divided into several categories, depending on cause,

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patterns of tissue reaction, and clinical course. These are acute bacterial prostatitis, chronic bacterial prostatitis, chronic abacterial prostatitis and granulomatous prostatitis.[1]

Prostate cancer is the second most common cause of cancer-related death in men older than 50 years, surpassed only by lung cancer. Almost 75% of the men diagnosed with prostatic cancer are age 65 or older. The age-adjusted incidence is on the increase in most countries. There are some national and racial differences in the incidence of the disease. Among the prostatic malignancies, adenocarcinoma is the most common.[2]

Screening of prostatic lesions constitutes estimation of serum prostate specific antigen (PSA), digital rectal examination, and transrectal ultrasound, but histopathology remains the gold standard tool for final diagnosis. Transurethral resection of prostate (TURP) is most frequently performed surgical procedure in the clinical practice and it aids in early identification of premalignant lesions and incidental prostate cancer which can improve the treatment outcome of patients.[3] The aim of this study was to review the spectrum of prostate lesions diagnosed on histopathology.

MATERIALS AND METHODS

This was a retrospective study comprising 220 cases, carried out at the Department of Pathology, Enam Medical College and Hospital from January 2014 to December 2020. The data were collected retrospectively from histopathology register. The gross specimens received were transurethral resections of prostate (TURP), tru cut biopsies and prostatectomies. Inadequate biopsy, poorly preserved specimens and patients previously diagnosed to have malignancy on histology were excluded from the study. All relevant clinical details were obtained from the respective requisition forms submitted in the pathology department. The histopathological slides were analyzed according to type of specimen, age of the patient, and histopathological pattern. Adenocarcinomas were classified according to the Gleason grading system. Data were analyzed using tables and percentage.

RESULTS

A total of 220 prostate specimens were received from January 2014 to December 2020. The specimens included 197 (89.5%) TURP chips, 17 (7.7%) TRUS guided needle biopsies and 6 (2.8%) prostatectomy specimens (Table-I). Grossly, the TURP specimens were in the form of multiple pieces ranging from 3 to 12 cc in volume, gray tan in color and soft to firm in consistency. The needle biopsy specimens were in the form of elongated pieces of gray tan tissues ranging from 0.4-1.2 cm in size. The prostatectomy specimens were nodular and varied from 3-10 cm in size. The consistency varied from soft to firm to hard.

In the present study, most of the prostatic lesions were benign (202, 91.8%), followed by malignant (14, 6.4%) and HGPIN (4, 1.8%); ratio of benign and malignant lesions 14.4:1.The age of the patients ranged from 45 to 100 years (Table-II). Majority of the benign lesions were common in the age group of 61-70 years (43.6%), followed by 71-80 age group (21.8%). Mean age for benign lesions was 67.3 years (Age range 47-100 years). Malignant lesions were common in the age group 71-80 years (42.9%), followed by 61-70 age group (28.4%). The mean age for malignant lesions was 68.6 years (Age range 45-87 years).

Nodular hyperplasia of prostate was the most frequent histopathological diagnosis seen in 202 (91.8%) patients (Table-III and Figure 1).Nodular hyperplasia had associated prostatitis were in 42 (19.1%) cases, out of which 38 cases were chronic non-specific prostatitis and four cases were acute prostatitis. Granulomatous prostatitis was not found. Microscopic findings associated with nodular hyperplasia of the prostate comprised hyperplasia of both epithelial and stromal cells with cystically dilated glands and corpora amylacea. Nodular hyperplasia was associated with squamous metaplasia in 4 (1.8%) cases and basal cell hyperplasia in 2 (0.9%) cases.

Table-I: *Distribution of histopathological lesions & nature of specimens*

Nature of specimen	Nodular hyperplasia	HGPIN	Malignant	Total (%)
TURP	193	2	2	197 (89.5)
Needle biopsy	4	1	12	17 (7.7)
Prostatectomy	5	1		6 (2.8)
Total	202	4	14	220 (100)

Table-II: *Distribution of cases according to age*

Age (Years)	Nodular hyperplasia (%)	HGPIN (%)	Malignant (%)	Total (%)
<50	11 (5.4)		1 (7.1)	12 (%)
51-60	43 (21.3)	1 (25)	2 (14.2)	46(%)
61-70	88 (43.6)	2 (50)	4 (28.4)	94(%)
71-80	44 (21.8)	1 (25)	6 (42.9)	51(%)
>81	16 (7.9)		1 (7.1)	17(%)
Total	202 (91.8%)	4 (1.8%)	14 (6.4%)	220 (100)

Table-III: *Histopathological profile of prostatic lesions*

Prostate pathology		Subtypes	Frequency	Total (%)
Nodular hyperplasia	Without prostatitis	160	72.7	
(n=202)	With prostatitis (n=42)	Chronic prostatitis	38	17.3
		Acute prostatitis	4	1.8
HGPIN			4	1.8
Carcinoma of prostate			14	6.4
Total			220	100

Table-IV: *Pattern of Gleason score in adenocarcinoma*

Prostate Cancer Gleason Grade Groups	Gleason score	Primary+ Secondary	Total (%)
Grade group 1(≤6)	Score 5	3+2	1
	Score 6	3+3	2
Grade group 2 (3+4)	Score 7	3+4	6
Grade group 3 (4+3)		4+3	
Grade group 4 (4+4/ 3+5/5+3)	Score 8	4+4	4
		5+3	
Grade group 5 (4+5/5+4/5+5)	Score 9	5+4	1

All the malignant lesions were adenocarcinomas. Moderately differentiated carcinomas (Gleason score 5-7) comprised the largest group with 9 cases (64.3%), and remaining cases are poorly differentiated carcinomas (Gleason score 8-10) with 5 cases (35.7%). The most common predominant tumor pattern i.e. primary pattern score was 3 and the most common secondary pattern score was 4 (Table-IV and Figure 2).

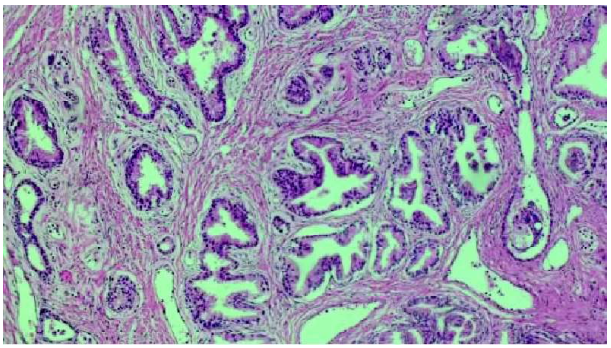

Figure 1: *Nodular hyperplasia: glandular and stromal proliferation. (H&E; X100)*

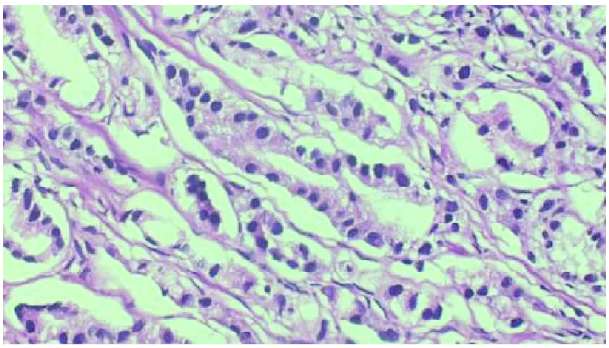

Figure 2: *Adenocarcinoma of prostate. (H&E; X400*)

DISCUSSION

Prostate diseases are common in the elderly age group. Prostate hyperplasia and malignancy are increasingly frequent with advancing age. In our study, most of the specimens received were TURP (89.5%), which was similar to other studies.[4,5] Nowadays, TURP is a preferred surgery for nodular hyperplasia of prostate as it is a simple procedure with fewer complications. However, a study conducted by Deshmukh et al had a higher percentage of prostatectomy specimens (94.7%).[6] This may be due to the different protocols used for the diagnosis and treatment of patients with lesions of the prostate.

In the present study, most of the prostatic lesions were nodular hyperplasia (91.8%) followed by malignant (6.4%) and HGPIN (1.8%). These are comparable with other findings in the literature.[3-11] Ratio of benign and malignant lesions was 14.4:1 which is comparable with other findings,[3,4,6,10] but sharply contrasts with reports from different regions of Nigeria where the ratio is 3:1.[12,13] Nodular hyperplasia as the dominant histological inference is similar to reports from various parts of the world. In Nepal, nodular hyperplasia was 89.58%[4], 91% in India[7], 87.5% in Pakistan[8], 80.3% in Saudi Arabia[9], 75.9% in Nigeria[12] and from Bangladesh 89.32%[10] and 77.4% [11].

Nodular hyperplasia without prostatitis was seen in 160 cases (72.7%) and prostatitis with nodular hyperplasia was seen in 42 cases (19.1%). Chronic non-specific inflammation was seen in the majority of the cases of nodular hyperplasia with prostatitis (17.3%). Acute inflammation was seen in 1.8% cases. No case of granulomatous prostatitis was found in our study. Abubakar et al[12], Sultana et al[10] and Deshmukh et al[6] have reported chronic prostatitis associated with nodular hyperplasia in 6.9%, 16.3% and 25% cases respectively. Sharma et al[7] found prostatitis in 33.06% cases of Nodular hyperplasia of prostate out of which 86.42% cases were chronic non-specific prostatitis, 9.88% were acute prostatitis and 3.7% were granulomatous prostatitis. These variations could be due to varied conclusion criteria used by assessors and can be in up to 98% of prostate specimens.[13] In the present study, nodular hyperplasia was associated with squamous metaplasia in 4 (1.8%) cases and basal cell hyperplasia in 2 (0.9%) cases. Metaplasia in nodular hyperplasia of the prostate is usually secondary to inflammation or injury. Garg et al[3] and Bhatta et al[4] observed squamous metaplasia in 0.8% and 1.04% cases respectively in their studies. These figures are little when matched with reports by Puttaswamy et al[5], which reported that metaplasia accounted for 22% of cases with nodular hyperplasia. This could be because a smaller number of cases (total 62) were studied by these authors.

HGPIN is a precursor lesion of prostate cancer. In our study, 4 cases (1.8%) of HGPIN were encountered. Similar studies of Sultana et al[10] and Bhatta et al[4] found HGPIN in 1.12% and 2.08% respectively. The incidence of HGPIN is relatively low in cases of prostatic carcinoma because most of the specimens were TURP which does not have enough material compared to radical prostatectomy which was studied in other studies.[14]

Prostate cancer is one of the most common malignancies in the world. More than 75% cases of all prostate cancers occur in males more than 60 years of age.[2] In present study, prostate cancer was found to be affecting 14 (6.4%) cases of all prostatic specimens. With similar studies, Sharma et al[7] found prostate cancer in 3.26% cases, Sultana et al[10] 9%, Puttaswamy et al[5] 17% and Abubakar et al[12] in 23.5% cases. Thus, there is significant variation as to the reported frequency of malignancies. In the current study, all the malignant lesions were adenocarcinoma. Different studies also found adenocarcinoma as the principal variant of prostate cancer, constituting more than 90% of all prostate cancer cases.[5,7,12] No other subtype of prostatic carcinoma was identified in our study. However, a study by Abubakar et al[12] reported

adenocarcinoma in 93.7% and incidence of urothelial carcinoma, squamous cell carcinoma and metastatic tumor in less than 7%. The prevalence of prostate cancer was highest in specimens from 71-80 year age group in agreement with other studies.[4-6,9,10] However, studies from African countries recorded peak age of prostate cancer in 7th decade of life.[12,16] A consideration of the life expectancy of these populations may explain the variations observed, since only a small proportion of Africans live beyond the seventh decade in contrast to the developed countries and other parts of the world where a longer life expectancy is observed.[12]

Adenocarcinomas were graded according to the Gleason system. It is based on the degree of glandular architectural differentiation and the growth pattern of the tumor in relation to the stroma as evaluated on low-power examination.[2] Gleason grading showed that moderately differentiated carcinomas (Gleason score 5-7) comprised the largest group (64.3%) which was also found by other studies.[9,10,17] Abubakar et al[12] (47.9%), Bhatta et al[4] (62.5%) and Deshmukh et al[6] (66.7%) found most of the prostate cancer specimens were poorly differentiated tumors. A predominance of well-differentiated tumors was noted by Mohammed et al[16] (86.8%) and Elem and Patil[18]. In the present study, no case of low-grade adenocarcinoma was detected probably as these lesions were asymptomatic. We found a maximum number of cases (50%) showing predominant pattern 3, which was comparable with other study.[6] Gleason score 7 was the commonest combined pattern seen in 42.9% cases similar to Puttaswamy et al[5] and Sultana et al[10]. Talukder et al[11] identified the majority of cases (52.6%) with a Gleason score 6. According to studies of Bhatta et al[4] (37.5%), and Deshmukh et al[6] (33.3%), most prevalent Gleason score was 9. Abubakar et al[12] found 48% of adenocarcinomas with Gleason score 8-10. This discrepancy may be dependent on the total number of cases of adenocarcinoma observed or delayed presentation of the patients.

CONCLUSION

The most common pathology encountered in prostate specimens is nodular hyperplasia. All cases of prostate carcinoma were adenocarcinomas. Most of the nodular hyperplasia occurs in the age group 61-70 years and carcinomas in 71-80 years. Majority of the prostate malignancies are moderately differentiated carcinomas.

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Original Article

Morphological Changes in the Endothelium of Cornea after Cataract Surgery: A Comparison between Phacoemulsification and Manual Small Incision Cataract Surgery

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ABSTRACT

Background: *Endothelial cell loss and corneal decompensation after cataract surgery is well-documented. After endothelial cell loss, the adjacent cells enlarge and slide over to maintain endothelial cell continuity, which is observed as a change in the endothelial cell density and morphology of the cornea.*

Objective: *The study aims to assess and compare morphological changes (i.e., endothelial cell loss) in cornea after phacoemulsification with posterior chamber intraocular lens (PCIOL) implantation and manual small incision cataract surgery (MSICS) with PCIOL implantation.*

Methods: *This observational study was conducted in the Department of Ophthalmology of Combined Military Hospital (CMH), Dhaka Cantonment, Dhaka, Bangladesh, between January and July of 2016. A total of 80 patients of age-related cataract were randomly selected based on inclusion and exclusion criteria. All patients underwent complete ophthalmic evaluation pre- and post-operatively (at day 1, after 1 week and 3 months) specifically for observation of the endothelial changes in cornea. Specular microscopy was done to assess corneal endothelial change.*

Results: *The mean endothelial cell count was found decreased at day 1 (2585.07±355.65/mm^2 vs. 2598.07±385.76/mm^2), after 1 week (2564.72±347.23/mm^2 vs. 2388.77±326.46/mm^2) and after 3 months (2476.72±346.69/mm^2 vs. 2248.77±354.47/mm^2) following phacoemulsification and MSICS from their preoperative values (2745.35±395.27/mm^2 vs. 2673.04±388.28/mm^2) respectively. However, no significant difference was observed in mean endothelial cell count of both groups (P>0.05). The mean percentage of endothelial cell loss were observed 5.84±10.02% and 2.80±0.65% at day 1, 6.58±12.15% and 10.63±15.92% at 1 week, 9.78±12.29% and 15.87±8.71% at 3 months after phacoemulsification and MSICS. However, the difference observed in amount of endothelial cell loss between the groups was not statistically significant (P>0.05).*

Conclusion: *To summarize, a decreased endothelial cell count was observed after cataract surgery in both phacoemulsification and MSICS procedures from their preoperative values respectively. However, the difference was not significant between two procedures.*

Keywords: *Endothelial cell count, endothelial cell loss, phacoemulsification, small incision cataract surgery*

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INTRODUCTION

The cornea is the anterior transparent part of the eye that refracts light and helps us to see.[1] Corneal endothelial layer is a simple squamous or low cuboidal monolayer, which is 5ìm thick on an average having about 5,00,000 cells.[2] These cells are responsible for regulating fluid and solute transport and maintenance of corneal optical transparency.[2,3] Morphological stability of the corneal endothelium is necessary to maintain long-term corneal

transparency.[4] Endothelial cell loss and corneal decompensation after cataract surgery is well-documented.[4,5] After endothelial cell loss, the adjacent cells enlarge and slide over to maintain endothelial cell continuity, which is observed as a change in the endothelial cell density and morphology.[4-7]

Several studies have shown that changes occur in endothelial cell density due to cataract surgery which signifies a morphological change of cornea,[4-7] whereas other studies did not find any statistical differences.[8,9] Hence, controversies prevail, and no definite conclusions have been drawn to date. Phacoemulsification is considered the gold-standard procedure for cataract.[10] However, manual small incision cataract surgery (MSICS) has appeared as a popular procedure of choice in the surgical treatment of cataracts as it is less expensive and is as effective as phacoemulsification.[10] Both techniques are advantageous for being suture less procedure and required small incision.[10,11] After surgical trauma, the endothelium shows practically no proliferative activity, and the damaged area is covered by means of cell migration.[12,13]

Nonetheless, no such study reports are available in our country. Therefore, the present study aims to assess and compare morphological changes (amount of endothelial cell loss) in cornea after phacoemulsification with posterior chamber intraocular lens (PCIOL) implantation and manual small incision cataract surgery (MSICS) with PCIOL implantation in a Bangladeshi population.

METHODS

This observational study was conducted in Department of Ophthalmology of Combined Military Hospital (CMH), Dhaka Cantonment, Dhaka, Bangladesh, between January and July of 2016. After taking written informed consent, a total of 80 cataract patients with age ranging from 40 to 70 years were selected. They were randomly allocated into two groups. One group consists of 40 cataract patients who underwent phacoemulsification with PCIOL implantation, while the other group consists of 40 cataract patients underwent manual small incision cataract surgery (MSICS) with PCIOL implantation. Patients with pre-operative astigmatism more than ±1.00 D and post-operative more than ±1.5 D with K1-K2 in keratometric reading, intra-operative use of sutures, corneal diseases like any pre-existing scar, any interstitial keratitis, peripheral corneal degeneration, dry eye, limited visual potential after cataract surgery like amblyopia, maculopathy, glaucoma, diabetic retinopathy, previous retinal detachment surgery, optic atrophy were excluded from the study. Detail history and physical examination of each patient was performed and recorded. Anterior segment was examined by torch and slit lamp biomicroscope to evaluate lids, conjunctiva, cornea, anterior chamber, pupil, iris, lens and anterior vitreous (where possible). Visual acuity and extra- ocular muscle balance were tested. Posterior segment was examined by direct and indirect ophthalmoscope. Retinal and macular functions were tested by projection of rays in different quadrants, two-points discrimination, Maddox rod and colour perceptions test. Intra-ocular pressure was measured by applanation tonometer and sac patency test was done to exclude the possible source of infection. All patients were examined pre-operatively and post operatively after day 1, after 1 week and 3 months following surgery for evaluation of corneal endothelial change. Keratometric cylinder was measured by using an Autorefractometer (Nidek AR-1, Tokyo, Japan) and Autokeratometer (Grand Seiko; GR-3100K, Shigiya Machinery Works Ltd, Japan) to find out the K1 and K2 reading for flat and steep meridian. Astigmatism was calculated from keratometric data using vector analysis. Specular microscopy was done to analyze corneal endothelial cell count. Uncorrected and best corrected visual acuity for all patients were measured in all examination visits. Subjective refraction was done for all patients with Snellen chart, trial frame and trial lens. Most of the operation was done under local anesthesia and few with topical anesthesia. Standard operative procedure was followed in the phacoemulsification and PCIOL implantation and manual small incision cataract surgery and PCIOL implantation.

All the data were compiled, sorted properly, and analyzed statistically using Statistical Package for Social Science (SPSS) version 20.0. Chi-square tests, unpaired and paired Student's 't' test were performed to compare between the groups. P value <0.05 was considered as significant. Ethical clearance was obtained from the Institutional Review Board (IRB) of Combined Military Hospital, Dhaka Cantonment, Dhaka, Bangladesh.

RESULTS

Most of the patients belonged to age group of e"50 years. The mean age was 52±9.1 years in phacoemulsification group and 55±8.9 years in manual small incision cataract surgery (SICS) group. Men (62.50%; 70%) had a higher incidence rate than women (37.5%; 30%) in both groups. Male female ratio was 1:1.7 in Phacoemulsification group and 1:2.3 in SICS group. Statistically no significant (P>0.05) difference was observed in age and sex between the groups (Table-I). The mean endothelial cell count was found decreased at day 1 (2585.07±355.65/mm^2 vs. 2598.07±385.76/mm^2), after 1 week (2564.72±347.23/mm^2 vs. 2388.77±326.46/mm^2) and after 3 months (2476.72±346.69/mm^2 vs. 2248.77±354.47/mm^2) following phacoemulsification and MSICS from their preoperative values (2745.35±395.27/mm^2 vs. 2673.04±388.28/mm^2) respectively. However, no significant difference was observed in mean endothelial cell count of both groups (P>0.05) (Table-II). We observed mean endothelial cell loss at day 1, after 1 week and after 3 months through follow-up. After 3 months, endothelial cell loss was significantly (P<0.05) more than preoperative value in case of phacoemulsification surgery, while in MSICS, endothelial cell loss was significantly more both after 1 week (P<0.05) and 3 months (P<0.001) as compared with preoperative values (Table-III). Mean percentage of endothelial cell loss were observed 5.84±10.02% and 2.80±0.65% at day 1, 6.58±12.15% and 10.63±15.92% at 1 week, 9.78±12.29% and 15.87±8.71% at 3 months after phacoemulsification and MSICS. Statistically no significant (P>0.05) difference was observed in percentage of endothelial cell loss of both groups.

Table-I: Distribution of study subjects according to age and gender (N=80)

	Phacoemulsification (n=40)	MSICS (n=40)	P value
Age (Years)			
<50	17 (42.5%)	13 (32.5%)	0.356^{NS}
≥50	23 (57.5%)	27 (67.5%)	
Mean±SD	52± 9.1	55± 8.9	
Sex			
Male	25 (62.50%)	28 (70%)	0.478^{NS}
Female	15 (37.50%)	12 (30 %)	
Ratio	1:1.7	1:2.3	

Data were expressed as frequency, percentage and Mean±SD. Chi-Square test was performed to compare between the groups. NS=not significant.

Table-II: Mean endothelial cell count of the study subjects at different follow-up (N=80)

Follow-up	Phacoemulsification (n=40) (Cells/mm^2)	MSICS (n=40) (Cells/mm^2)	P value
Pre-operative	2745.35±395.27	2673.04±388.28	0.988^{NS}
Post-operative			
Day 1	2585.07±355.65	2598.07±385.76	1.000^{NS}
After 1 week	2564.72±347.23	2388.77±326.46	0.375^{NS}
After 3 months	2476.72±346.69	2248.77±354.47	0.097^{NS}

Data were expressed as Mean±SD. Unpaired student's t test was performed to compare between the groups. NS=not significant.

Table-III: Mean endothelial cell loss after surgery at different follow-up (N=80)

Follow-up	Phacoemulsification (n=40)		MSICS (n=40)	
	Cell loss (Cells/mm^2)	P value	Cell loss (Cells/mm^2)	P value
Day 1	160.28±39.62	0.502^{NS}	74.97±2.52	0.984^{NS}
After 1week	180.63±48.04	0.340^{NS}	284.27±61.82	<0.05^{S}
After 3 months	268.63±48.58	<0.05^{S}	424.27±33.81	<0.001^{S}

Data were expressed as Mean±SD. Paired student's t test was performed to compare pre and postoperative values of each group. NS=not significant, S=significant.

Table-IV: Postoperative mean percentage of endothelial cell loss (N=80)

Follow-up	Phacoemulsification (n=40)(%)	MSICS (n=40) (%)	P value
Day 1	5.84±10.02	2.80±0.65	0.820^{NS}
After 1 week	6.58±12.15	10.63±15.92	0.570^{NS}
After 3 months	9.78±12.29	15.87±8.71	0.137^{NS}

Data were expressed as Mean±SD. Unpaired student's t test was performed to compare between the groups. NS=not significant.

DISCUSSION

In the present study, most of the patients belonged to age group of e"50 years. Mean±SD age was 52±9.1 years in phacoemulsification group and 55±8.9 years in manual small incision cataract surgery (MSICS) group. Men (62.50%; 70%) had a higher incidence rate than women (37.5%; 30%) and male female ratio was 1:1.7 in Phacoemulsification group and 1:2.3 in MSICS group. Participants were matched by age and gender. Almost similar findings were observed by various researchers of different countries.[11,12]

Our study showed that the mean endothelial cell count was decreased at day 1, after 1 week and 3 months after Phacoemulsification and SICS from preoperative value. Statistically no significant (P>0.05) difference was observed in mean endothelial cell count between the groups. However, at final follow-up of 3 months endothelial cell loss was found significantly more after phacoemulsification and 1st week and 3 months after MSICS than their preoperative values respectively. Mean percentage of endothelial cell loss was observed as increased after both Phacoemulsification and MSICS from preoperative value. Our results were concomitant with study conducted by various researchers of different countries.[13-19]

There are two possible explanations for the discrepancy between the results. First, the design of the study, which included multiple surgeons performing cataract surgeries, could be pointed out as a weakness of this research. Nevertheless, it might also be considered one of the strengths, because the inclusion of the results from different cataract surgeons can provide information helps in generalizability to a larger group of patients.

CONCLUSION

To summarize, a significant change was observed in corneal endothelial cell counts after both phacoemulsification with PCIOL and MSICS with PCIOL. A postoperative decrease in endothelial cell count from its preoperative value was observed in both procedures. However, the difference was not statistically significant between the procedures. A large-scale study is recommended to reproduce the findings of this study and make those generalizable to the reference population.

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Original Article

Semen Pattern of Infertile - Male Partners Attending for Infertility Treatment, Sylhet, Bangladesh

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Abstracts

Background*: Infertility has major public health, economic, and psychosocial consequences, affecting approximately 15% - 20% of couples of reproductive ages. Male infertility can be caused by low sperm production, abnormal sperm function or blockages that prevent the delivery of sperm . Illness, injuries, chronic health problems, life style may contribute to male infertility.*

Objective*: the aim of the study was to find the semen profile of infertile couples who attended the OPD of a tertiary hospital in Sylhet city.*

Methodology: *This prospective longitudinal study was carried out in OPD of SOMCH, from June 2004 to December 2004. The study population was included with the criteria of the 100 male partners of the infertile couples who had tried for at least one year. The Exclusion criteria were men who had undergone a vasectomy.*

Each of the male partner of the infertile couples were provided-with detailed *instructions regarding the method of collection of the semen. After three days of abstinence, the subjects were instructed to collect semen by masturbation in a clean, dry, wide-mouthed container provided by the laboratory. In most of the cases, semen was collected in the semen collection room within the premises of the laboratory, but those were unable to produce semen by masturbation were advised to bring the specimen to the laboratory as soon as possible after collection by coitusinteruptus. It was strictly suggested that the semen was to be brought within 2 hours at the test, sample which was brought after 2 hours was rejected. The sperm concentration was estimated by using the Makler counting chamber. Sperm morphology was assessed under light microscope by making **a** semen smear. The semen parameters were interpreted as normal or abnormal according to WHO (1999) semen analysis reference values. In patients with absence of sperm, semen analysis was repeated three times at four weeks interval before declaring azoospermia. Those patients with azoospermia and oligospermia also had a hormonal assay.*

Result: *In this study, most (87%) of the semen specimens were between 2-3ml.In this study, 66% of the semen samples had a sperm count of more than 20 million/ml, 20% had 6-20 million/ I, 5% had < 5 million/nil & 9 % had no sperm in their semen specimen (azoospermia). Out of 100 cases, 66% of semen specimens showed normal sperm concentration (>20 million/ml) . 34% showed low or no sperm concentration. Statistically, the proportion is highly significant (P=<0.001) In this study, the majority (74%) of male partners had pus cell in their semen specimen. In this study, most of the semen specimens (96%) liquefied within 30 minutes and 95% cases, pH of the semen specimen was between 7.2-7.4. In this study, out of 100 sample, sperm concentrations were found 0 in 9 samples (9%). Out of this 91 samples, 20.86% had 10-50% actively motile sperm, 2.18% had <10% motile sperm in their semen specimen. Out of 91 samples 21(23.04%) showed low sperm motility. The proportion is highly significant (P=<0.005). 2.18% semen specimen had <10% normal sperm morphology. The distribution of male partners according to normal sperm morphology & their sperm count is highly significant (P value<0.001)*

Conclusion*: In conclusion, azoospermia and asthenozoospermia and infection in semen are found to be important factors associated with male infertility in our country*

Keywords: *Infertility, Semen profile. Semen concentration. Sperm morphology, azoospermia, and asthenozoospermia*

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INTRODUCTION

A male-related factor is solely responsible in about 15% - 20% of cases of infertility and is a contributory factor in another 30%–40%[1]. Infertility evaluation plays a major role in identifying the underlying cause, and directing treatment of reversible conditions to allow natural conception[2]. The current basis for - the diagnosis of male infertility, in men who have erections and who can ejaculate, is semen analysis[3]. In a study carried out by Omoriah[4] on male partner of infertile couple in Nigeria in 1985, 74% of these men were normozoospermile, while 6.19., 5.57 & 4.09 =% were azoospermic, necrozoospermic & asthenozo ospermic, respectively. Another study by Thonneau in France in 1991, oligoteratoasthenozoospermia was found in 21%, asthenozoospermia in 17%, teratozoospermia in 10% & azoospermia in 9% of cases[5].Study in infertility is getting importance day by day. Now more couples are seeking services as there are increased awareness of the available services & options for resolving infertility today. But any infertility workup is incomplete without evaluating the male partner.Semen analysis is a relatively inexpensive and simple laboratory test, and can provide valuable information regarding male fertility status if correctly performed[6]. Besides that, the introduction of new assisted reproductive techniques has moved. The interest of many infertility clinics from the man as a whole to his semen and its usefulness for assisted fertilization.

Therefore, the aims and objectives of this study were to find out the semen profile of male partners in infertile couples who attend infertility clinics and to get some baseline data from which it would be possible to find out the probable factors associated with male infertility in the Sylhet region.

METHODS

Study Settings and Population:

This prospective longitudinal study was carried out in OPD of SOMCH from June 2004 to December 2004. All data were collected in the performed questionnaire. Male partners of the 100 infertile couples attending the above-mentioned places at Sylhet. The study population was included with the criteria of the male partners of the infertile couples who had tried for at least one year. The Exclusion criteria were men who had undergone a vasectomy and also who had the history of hernia operation, radiation, chemotherapy where evaluated.

Study Procedure: Each of the male partner of the infertile couples were provided-with *detailed* instructions regarding the method of collection of the semen. The subjects were instructed to collect semen by masturbation, in a clean dry wide mouthed container provided by the laboratory, after three days of abstinence. In most of the cases, semen was collected in the semen collection room within the premises of the laboratory, but those were unable to produce semen by masturbation were advised to bring the specimen to the laboratory as soon as possible after collection by coitusinteruptus. It was strictly suggested that the semen was to be brought within 2 hours at the test, sample which was brought after 2 hours was rejected. The sperm concentration was estimated by using the Makler counting chamber. Sperm morphology was assessed under light microscope by making **a** semen smear. The semen parameters were interpreted as normal or abnormal according to WHO (1999) semen analysis reference values.

In patients with absence of sperm, semen analysis was repeated three times at four weeks interval before declaring azoospermia. Those patients with azoospermia and oligospermia also had a hormonal assay. The assay included estimation of FSH, LH, TSH, prolactin and testosterone in the serum of the male partners.

Statistical Analysis: Data collected for each individual subject were compiled and analyzed using computer-based software, statistical package for social science (SPSS) for Windows. A, P value <0,05 was considered a minimum level of significance.

RESULTS

This study was done to determine male infertility in infertile couples coming for treatment. It was a prospective longitudinal study where the factors associated with male infertility were sought out. The study population was the male partners of 100 infertile couples attending outdoor Sylhet Osmani Medical College Hospital. The data was collected from gynae outdoors of SOMCH, during the period of July 2004 to December 2004.

Table I: Semen profile of the male partners, (n-100)

Volume (ml).	No of male partners	Percentage	
<2ml	13	13%	
2-3ml	87	87%	
>3ml	0	0	
Sperm conc. (million/ml)	No. of male partners	Percentage	P value
0	9	9%	<0.001
< 5	5	5%	
6-20	20	20%	
> 20	66	66%	
Constituents of semen	Number of male partners	Percentage (%)	
RBC	1	1	
Pus cell	74	74	
Epithelial cell	2	2	
None	**23**	**23**	
Liquefaction time	No of male partners	Percentage (%)	
30 minutes	96	96%	
>30 minutes	4	4%	
pH	No of male partners	Percentage (%)	
<7	3	3%	
7.2-7.4	95	95%	
>7.4	2	2%	

In this study, most (87%) of the semen specimens were between 2-3ml.In this study, 66% of the semen samples had a sperm count of more than 20 million/ml, 20% had 6-20 million/I, 5% had < 5 million/nil & 9 % had no sperm in their semen specimen (azoospermia). Out of 100 cases, 66% of semen specimens showed normal sperm concentration (>20 million/ml) compared to 34% showed low or no sperm concentration. Statistically, the proportion is highly significant (P=<0.001) In this study, the majority (74%) of male partners had pus cell in their semen specimen. In this study, most of the semen specimens (96%) liquefied within 30 minutes and 95% cases, pH of the semen specimen was between 7.2-7.4.

In this study, out of 100 sample, sperm concentrations were found in 91% semen samples (91%) & none in 9 samples (9%). Out of this 91 samples, majority 70(76.91%) had >50% actively motile sperm, 20.86% had 10-50% actively motile sperm, 2.18% had <*10%* motile sperm in their semen specimen. Again, out of the 91 semen samples, 70(76.91%) showed normal sperm motility (>50%) & rest 21(23.04%) showed low sperm motility. The proportion is highly significant (P=<0.005)

In this study, 94.48% semen specimen had >30% normal sperm morphology, 3.28% semen specimen had between 10-30% normal sperm morphology & 2.18% semen specimen had <10% normal sperm morphology. The distribution of male partners according to normal sperm morphology & their sperm count is highly significant (P value<0.001)

Table II : *Sperm status of semen of male partners (n=91)*

Sperm count (Million/ml)	No. Activity motile	<10% Activity motile	10-50% Activity motile	>50% Activity motile	P value
<5	5	1(1.09%)	3(3.29%)	1(1.09%).	<0.005
6-20	20	1(1.09%)	5(5.49%)	1.4 (1.5.38%)	
>20	66	0	11(12.08%)	55 (60.44%)	
Semen count (million/ml)	Male partnerNo.	<10% normal morphology	10.30%normal morphology	>30%normal morphology	P value
<5	5	0	2(2.19)	3(3.29%)	= <0.001
6-20	20	1(1.09%)	0	19(20.87%)	
<20	66	1(1.09%)	1(1.09%)	64(70.32%)	

X^2=16.35, df=4,

DISCUSSION

Data were obtained from selected male partners of 100 infertile couples attending the outpatient department of Sylhet MAG Osmani Medical College. hospital, and private chambers of gynecologists and obstetricians.

Regarding volume of semen, the majority (87%) of the collected semen was between 2--3 ml, 13% was below 2 ml & none was above 3 ml in amount. Among them 66% of the semen sample had sperm count of more than 20 million/ml, which is considered normal according to WHO guidelines. Among those with sperm count less than 20 million/ml, 21%had sperm count between 6-20 million /ml (moderate oligospermia), 5% had sperm count less than 5 million/ml (severe oligospermia) & 9% had azoospermia. This differs from the study by Chowdhury & fatema[7] who observed azoospermia in only 7.6% cases. In their study, only 8% had severe & 4.5% had moderate oligospermia. In another study by Omoriah[8] in Nigeria found 35.88% mild, 23.22% severe, 40.9% very severe oligospermia 16.9% azoospenmia. Thonneau[9] - in Franc revealed 9% cases azoospermle. the result vary may be due to variation of tine prevalence of sexually transmitted disease in different population. After carrying sperm count motility of the sperm was noted. In this study, 12.08% of the semen had 10-50% actively motile sperm (moderate asthenozoospermia) and 60.44% had normal motility (>50%) (Table-II). Acacio et a1[10] observed 51% cases with an abnormality in sperm motility. Thonneau[9] observed 17% and Omoriah[4] observed only 4.09% cases astheno-zoospermia. Regarding the abnormal constituents in the semen, 23% had no abnormal constituents. Though 76% had pus cell in their semen. Only 1% had RBC in their semen smear. On the morphology of the sperm, 71.43% semen samples had normal morphology as they had more than 30% -normal sperm. Study by Chowdhury & Fatema[7] also revealed 61% morphologically normal sperm. Acacio et a1[10]observed abnormality in 14% cases of sperm morphology. Besides that, Thonneau[9] observed oligoterato asthenozoospermia in 21% & teratoasthenozoospcrmia it l0% cases. Liquefaction time was also noted in which majority (96%) was the semen liquefied within 30 minutes, pH of the semen was also noted. Most of the samples (95%) had pH between 7.2--7.4 which is in within parameter.

CONCLUSION

In conclusion, this study gives an insight into male partners in the Sylhet region's infertile couples

The study revealed a large proportion of the patients to be suffering from azoospermia and less sperm motility found to be an important factor associated with male infertility in our country.

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Original Article

Serum Prolactin Concentration in Patients with Pemphigus Vulgaris

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Abstract

Background: *Pemphigus vulgaris (PV) is an autoimmune bullous disorder characterized clinically by blisters and erosions of the skin and/or mucous membranes. Serum prolactin plays a role in the pathogenesis of pemphigus vulgaris.*

Objective: *The study aims to observe the serum prolactin concentration in patients with pemphigus vulgaris.*

Methods: *This cross-sectional study was conducted at the Department of Dermatology & Venereology of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, between May 2017 and April 2018. A total of 35 patients were included in the study. A consecutive type of sampling technique was used. The dermatological examination was done to ascertain the extent of involvement of the disease.*

Results: *Among 35 patients, 31.4% belonged to 30-50 years age group, while 62.9% belonged to >50 years and 5.7% patients belonged to <30 years ae group. The mean age was found 42.7±11.8 years with ranged from 19-65 years. The majority of the patients (57.1%) were male, and 42.9% patients were female. It was observed that 30(85.7%) had vesicles, 25(71.4%) had bulla, 35(100%) had erosions and 6(17.1%) had other types of lesions. 28 patients (80.0%) had scalp, 32(91.4%) had extremity, 35(100.0%) had trunk and 31(88.6%) had mucous membrane as the sites of involvement. The mean duration of disease was 9.0±12.7 months with a range from 0.5 to 36 months. It was observed that 9 patients (25.7%) had hyperprolactinemia, while 26 patients (74.3%) had normal levels of prolactin. The mean serum prolactin level was found 28.7±16.7 ng/ml with a range from 1.64 to 51.04 ng/ml.*

Conclusion: *Since serum prolactin plays a role in the pathogenesis of pemphigus vulgaris, it may offer a novel therapeutic target for treatment of PV. Thus, we may reduce morbidity and mortality rate in PV patients by modifying their serum prolactin levels.*

Keywords: *Serum prolactin, pemphigus vulgaris, autoimmune disease*

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INTRODUCTION

Pemphigus vulgaris is an autoimmune bullous disorder characterized clinically by blisters and erosions of the skin and/or mucous membranes.[1] Thin walled, easily ruptured bullae appear on apparently normal skin and mucous membranes or on erythematous bases. The bullae rupture to form erosions, the denuded areas increase in size and have little/no tendency to heal.[2] Both mucous membrane and skin are affected by pemphigus vulgaris.[2] A study done in Bangladesh among the patients with pemphigus diseases reported that the majority of the patients had mucocutaneous involvement (76.50%), while in 56.8% patients, there was only mucosal involvement and 43.2% patients had only skin involvement.[3] The primary lesion on the skin is a flaccid blister. These blisters are fragile, rupture easily and, therefore, are not often seen. More likely to be noticed are the painful erosions that are the result of broken blisters. These erosions bleed easily and often become crusted. The lesions are round to oval in shape and range from skin-colored to erythematous. Nikolsky's sign, in which the epidermis is easily detached from the skin, is elicited by applying lateral pressure to a bulla, leading to lateral extension of the blister, and is usually positive.[2] Sites of predilection include the scalp, face, chest, axillae, groin, and umbilicus.[2,4] In pemphigus vulgaris inhibition of desmoglein (Dsg) l and 3 by autoantibodies results in loss of cell adhesion, binding of pemphigus vulgaris antibody results in activation of a variety of intracellular signaling pathways with phosphorylation of keratinocyte proteins, including activation of EGF receptors and phosphorylation of its downstream substrates [p38 mitogen activated protein kinase (MAPK), Fas apoptotic cascade].[5] Hence, proper clinical examination and skin biopsy for histopathology and DIF both are important for proper diagnosis. Prolactin (PRL) is a 199 amino acid long polypeptide (23kDa) that acts systemically as a hormone, and locally as a cytokine.[6] PRL is generated and secreted by the lactotroph cells of the anterior pituitary gland under the inhibition of dopamine. In addition to production by immune cells, prolactin has receptors on monocytes, macrophages, natural killer cells and T and mainly B lymphocytes. Thus, PRL is involved in the activation and differentiation of thymic epithelial cells, thymocytes, lymphocytes, and macrophages. It also operates as part of a neuroendocrine-immune network by stimulating the release of specific cytokines. This complex network is postulated to link a diverse repertoire of responses to homeostasis disrupting inputs such as stress, infection, metabolic demands, and tumor growth.[7] The highest serum PRL level was detected in patients with mucocutaneous involvement, followed by those with mucosal involvement, and was the least in those with cutaneous involvement. Though several clinical tools for assessing the severity of pemphigus vulgaris are available, no relevant biochemical marker was commonly recommended for patients with pemphigus vulgaris. Therefore, we proposed this study to observe the serum prolactin concentration in patients with pemphigus vulgaris.

METHODS

This cross-sectional study was conducted at the Department of Dermatology & Venereology of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, between May 2017 and April 2018. A total of 35 patients were included for the study according to following inclusion and exclusion criteria:

Inclusion Criteria

1. Diagnosed cases of pemphigus vulgaris patients by expert clinician and /or histopathological and DIF findings of any age and sex; and
2. Patients willing to give informed written consent for the study.

Exclusion Criteria

1. Patients having acute illness (fever, joint pain, abdominal complaints, history of chest pain);
2. Patients having renal, hepatic, endocrinopathies (prolactinoma, hypothyroidism, hyperthyroidism), connective tissue disease (systemic lupus erythematosus, rheumatoid arthritis);
3. Use of drugs that are known to affect level of PRL (i.e., psychotropic drugs, thyroid hormones, glucocorticoids, and estrogens or contraceptives);
4. Pregnant and lactating females and having menstrual abnormalities were also not included in the study; and
5. Patients refused to be included in the study.

A consecutive type of sampling technique was used. Dermatological examination was done to ascertain the extent of involvement of the disease. The data collection sheet was filled accordingly. It took around 20-30 minutes to complete the whole procedure. 5ml blood sample was collected in morning between 8:00

to 10:00 AM in regard to circadian variation, it was preserved under -200C in duplicates until assay for prolactin is done. The serum prolactin (PRL) level was measured routinely by a radioimmunoassay (RIA) technique. Data was collected in pre-designed data collection sheet and data was compiled and analyzed. Data were then presented through tables expressed in frequencies with percentage. Statistical analysis was carried out by using the Statistical Package for the Social Sciences (SPSS) software version 23.0 for windows (SPSS Inc, Chicago, Illinois, USA). Ethical clearance for this study was obtained from the Institutional Review Board (IRB) of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh.

RESULTS

Among 35 patients, 31.4% belonged to 30-50 years age group, while 62.9% belonged to >50 years and 5.7% patients belonged to <30 years ae group (Fig. 1). The mean age was found 42.7±11.8 years with ranged from 19-65 years. The majority of the patients (57.1%) were male, and 42.9% patients were female (Fig. 2). Table-I shows distribution of the study patients by pemphigus vulgaris. It was observed that 30(85.7%) had vesicles, 25(71.4%) had bulla, 35(100%) had erosions and 6(17.1%) had other types of lesions. 28 patients (80.0%) had scalp, 32(91.4%) had extremity, 35(100.0%) had trunk and 31(88.6%) had mucous membrane as the sites of involvement. The mean duration of disease was 9.0±12.7 months with a range from 0.5 to 36 months. Table-II shows serum prolactin level of the study patients. It was observed that 9 patients (25.7%) had hyperprolactinemia, while 26 patients (74.3%) had normal levels of prolactin. The mean serum prolactin level was found 28.7±16.7 ng/ml with a range from 1.64 to 51.04 ng/ml.

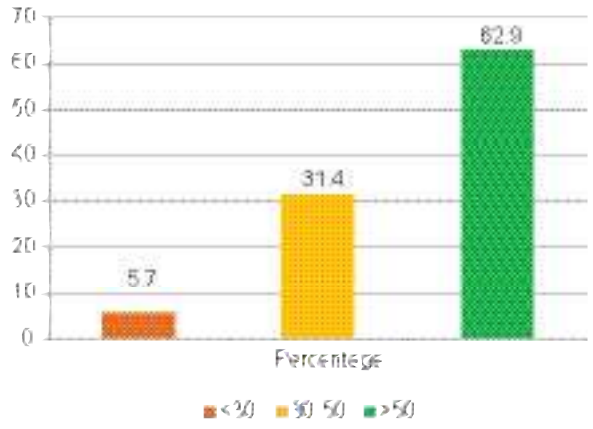

Fig. 1: *Bar diagram shows age distribution of the study patients (n=35)*

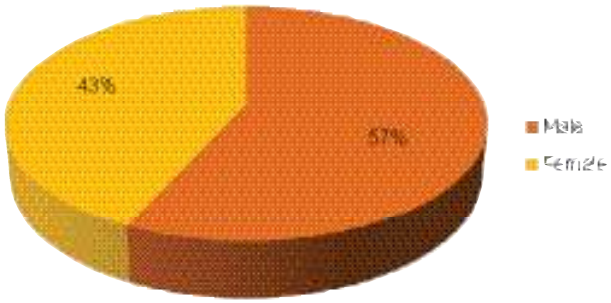

Fig. 2: *Pie chart shows sex distribution of the study participants (n=35)*

Table-I: *Distribution of the study patients by pemphigus Vulgaris (n=35)*

Pemphigus vulgaris	Number of patients	Percentage
Types of lesions		
Vesicles	30	85.7
Bulla	25	71.4
Erosion	35	100.0
Other	6	17.1
Site of involvement		
Scalp	28	80.0
Extremity	32	91.4
Trunk	35	100.0
Other (Mucosa)	31	88.6
Duration of disease (month)		
≤12	27	77.1
≥12	8	22.9
Mean ±SDRange(min-max)	9.0±12.70.5-36	

Table-II: *Distribution of the study patients by serum prolactin level (n=35)*

Serum Prolaction level (ng/ml)	Number of patients	Percentage
Normal	26	74.3
Hyperprolatinemia	9	25.7
Mean±SD	28.7±16.71.64-51.0	
Range (min-max)		

DISCUSSION

Pemphigus is a life-threatening autoimmune bullous disease, characterized by blister formation and erosions on the skin and mucous membranes caused by loss of cell-cell adhesion of keratinocytes. In this study the mean age of PV patients was 42.7±11.8 years ranging from 19-65 years. Though it is thought that PV is a disease of 5th and 6th decades of life, this study found a number of PV patients of younger age group also. Fallahzadeh et al.[8] found mean age of PV patients was 45.91±3.35 years with a range from 20-83 years. Pitoia et al.[9] also found mean age PV patients was 48.3±11.3 years with a range from 25-65 years. Aghmiyuni et al.[10] found among 116 patients, the mean age of pemphigus vulgaris patients was 42.5±17.53 years with a range from 6 to 88 years. Xiaoling et al.[11] found mean age of PV patients was 44.19±21.45 years with a range from 8 to 65 years and the peak age of PV patients was 31-50 years. This suggests that in Asia the onset of the disease is in younger age groups. Men and women aged 31-50 years are under huge work and life stresses, which may lead to high incidence rate in this age group. .Regarding gender, male: female ratio was 1.3:1. William et al.[12] showed a male predominance in this study, though usually pemphigus vulgaris is equal between male and female. In Bangladesh, women seek less medical attention for their illness due to cultural, social, religious aspects and may be that is way our study observed a male predominance. Fagheei Aghmiyuni et al.[10] also found male predominance in their study with 54.4% male and 45.6% female. Chmurova et al.[13] found female: male ratio was 1.4:1. Zhu et al.[11] found that ratio of female and male was 1.40:1 in Northeast China. The reason for this difference was not clear. The difference in sex may result from the fact that estrogen exerts different influences on the development and function of the immune system in males and females, in which females may have a greater immune responsiveness to exogenic insults as well as to autoimmunity.[14] In our study, 30(85.7%) had vesicles, 25(71.4%) had bulla, 35(100%) had erosions and 6(17.1%) had other types of lesions. 28(80.0%) patients had scalp, 32(91.4%) had extremity, 35(100.0%) had trunk and 31(88.6%) had mucous membrane as the sites of involvement. The mean duration of disease was 9.0±12.7 months with a range from 0.5 to 36 months. Esmaili et al.[15] found among 155 patients, the mean age of pemphigus vulgaris patients was 41.66±13.29 years with a range from 14 to 70 years. In the present study, 9 patients (25.7%) had hyperprolactinemia. The mean serum prolactin level of PV patients was found 28.7±16.7ng/ml with a range from 1.64-51.04 ng/ml. Helmy et al.[16] found mean serum PRL level of PV patients was 14.5±12.5 ng/ml with a range from 2.7 to 45.9 ng/ml. In another study, Jacobi et al[17] found mean prolactin level 17.4±15.1 ng/ml. Lajevardi et al.[18] also found that mean prolactin (PRL) level was 15.60±11.72ng/ml. Ghandi et al.[19] found mean serum PRL level 15.9±14.1 ng/ml. In this study, mean serum prolactin level was higher than that of previous studies.. Study findings showed that five male patients (55.6%) had hyperprolactinemia and four female patients (44.4%) had hyperprolactinemia. No statistical difference was noted in between two groups (P>0.05). Yousefi et al.[20] found mean serum prolactin level in male patient was 185.4mIU/L and in female patient was 197.5mIU/L. There was no statistical difference between the two groups. Helmy et al.[16] found mean serum prolactin level in male patient was 12.1±9.3ng/ml and in female patient was 15.5±13.8ng/ml. There was no statistical difference between the two groups.

In the present study, a limited number of pemphigus vulgaris patients were included. The cross-sectional design of the study did not allow us to draw any conclusion regarding the cause and effect relationship between pemphigus vulgaris and hyperprolactinemia. The patients enrolled were biased toward having higher disease severity, since the study population was based on a tertiary medical center. It was a single center study, which may not be able to demonstrate the true population of pemphigus vulgaris of the whole country.

CONCLUSION

There is no therapy that would give hope for a complete cure of pemphigus vulgaris. Different worldwide studies suggested that serum prolactin (PRL) level may serve as a useful biological marker for PV disease activity. No such study has been conducted in Bangladeshi population till date to evaluate serum prolactin level in PV patients. Thus, this study will be of great help in treating pemphigus vulgaris patients in urban as well as in rural areas where the vast majority of our people reside. Therefore, serum prolactin plays a role in pathogenesis of pemphigus vulgaris and this will in turn offer a novel therapeutic target for treatment of PV and thus may

reduce morbidity and mortality rate in the PV patients. A prospective multicenter evaluation should be approached. Further studies could be undertaken by including a large number of patients. Case control study should be a better option to find out actual increase in serum prolactin level.

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Original Article

Outcome of Transvaginal Local Repair of Vesicovaginal Fistula

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Abstract

Background: *Vesicovaginal fistula (VVF) is a significant cause of physical & psychological disability with social stigmatization especially in low- and middle-income countries. Over 80% of such cases result from neglected prolonged and obstructed labour.*

Objective: *The purpose of the study was to observe the outcome of transvaginal local repair of vesicovaginal fistula (VVF).*

Methods: *This descriptive study was carried out at the Department of Obstetrics & Gynaecology, Sylhet M.A.G. Osmani Medical College Hospital, Bangladesh, from July 2007 to June 2008, on 50 patients of vesicovaginal fistula. We included women who were suffering from VVF and who were operated before and diagnosed as a failed repair of VVF. We excluded those patients who had VVF with associated problem like rectovaginal fistula (RVF), any repair through transabdominal route and unwilling to take part in this study. Before surgery, each woman was assessed by medical and surgical history, examination and necessary investigations. Typically, regional anesthesia was utilized for the fistula surgery. However, general anesthesia was given when required. During surgery, transvaginal approach was taken for repair. The vagina was packed for haemostasis. Vaginal pack was removed after 1-2 days depending on instruction of the surgeon. Repacking of vagina was also done sometimes when there was some leaking during post-operative period. Few patients developed severe constipation post operatively.*

Results: *The participants aged between 16 and 70 years. Among them, majority of the patient belongs to the age 31-35 years (26%) followed by 2nd common group 26-30 years of age (20%) and 3rd one in between 21-25 years of age (16%). Among them 44% patients were primipara and 22% patients were grand multipara. The mobilization during operation was excellent in 30%, satisfactory 64% cases and not enough in 6% cases. After mobilization fistula closed in double layer in 10% and in single layer 90% cases, labial fat graft was given 38% and peritoneal graft was given in 2% cases. During operation bleeding was minimum in 92% cases and in 34% cases catheter was block, urine leakage occurred in 30% cases. Among all patients 14% suffered from fever postoperatively. There was vaginal discharge in 10% cases and UTI in 12%cases which was evidenced by urine culture. Operation was fully successful in 60 percent cases, urethral incontinence in 22% cases & failed in 18% women.*

Conclusion: *In this study, majority of the transvaginal local repair of VVF operations were successful; however, few difficult cases were observed.*

Keywords: *Vesicovaginal fistula, transvaginal repair, outcome.*

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INTRODUCTION

Genitourinary fistula is a devastating condition affecting the physical and psychological health of women. With advanced obstetric care, these fistulas are rare in industrialized world, but they continue to plague women in the third world. In low- and middle-income countries, including India, 90% of these fistulas are a consequence of neglected and obstructed labour as opposed to developed countries, where they are a complication of surgery or radiation therapy for cancer. Vesicovaginal fistula is an abnormal opening between the urinary bladder and vagina that result in continuous, involuntary dribbling (incontinence) of urine from the vagina.[1] The foremost cause of vesicovaginal fistula is difficult and unattended deliveries. Prolonged, obstructed and neglected labour is the primary factor associated with fistula formation. Woman with cephalopelvic disproportion or malpresentation develops prolonged obstructed labour which leads to the development of a genitourinary fistula in the puerperium. The fistula usually involves the trigone of the bladder which is nipped between the presenting part and the back of the symphysis pubis.[2] Major contributing factors associated with obstetric fistula include poverty, illiteracy, low status of women, sex inequality, malnutrition, social and cultural issues to family planning and the lack of emergency obstetric care.[1] Victim of obstructed labour who develops fistula remain childless which adversely affects the woman's future. If the fistula is not repaired and the woman remains incontinent and childless, she is likely to be abandoned by her husband, on whom she is economically dependent. Fistula leaves such women physically, emotionally, and socially traumatized.[3] Genitourinary fistulas are not life threatening but are socially debilitating condition.[3,4] Surgical repair is the definitive cure. The best chance of successful repair is at the first attempt. A surgeon with adequate training and experience can optimize outcome of surgery by modifying techniques according to the site, size, and complexity of the fistula. Repair of vesicovaginal fistula remains a major challenge to surgeon worldwide with many acceptable surgical techniques. It can be repaired vaginally, abdominally, transvesical or transperitoneally.[3-5] Gynaecologists mostly familiar with vaginal route. Hence, they usually repair it transvaginally. Transvaginal approach is preferred because it is easier, safer with less bleeding and surgical time and also comfortable for the patient.[3] Considering advantage and disadvantage of different techniques, we have decided to do this study to observe the outcome of transvaginal local repair of vesicovaginal fistula in a tertiary level hospital in Sylhet, Bangladesh.

METHODS

This cross-sectional, descriptive study was conducted at the Department of Obstetrics & Gynaecology, Sylhet M.A.G. Osmani Medical College Hospital, Bangladesh, from July 2007 to June 2008. A total of 65 patients were admitted during our study period; among them 50 patients were selected for this study. We included women who were suffering from vesicovaginal fistula (VVF) and who were operated before and diagnosed as a failed repair of VVF. We excluded those patients who had VVF with associated problem like rectovaginal fistula (RVF), any repair through transabdominal route and unwilling to take part in this study.

At first, the purpose of study was explained to the patient with easy language. When the women understood the purpose and agreed to take part in this study they were taken as sample population. The detail history and thorough examination was done in each case. All patients had their fistula confirmed by vaginal examination using Sim's speculum. Fistula was visualized noting its number, size, anatomical location, and surrounding tissue. When there was difficulty, examination was done under anesthesia in dorsal position. Cystoscopy and intravenous urography were done whenever indicated. Before surgery, each woman was assessed by medical and surgical history, physical examination and necessary investigations. She was counseled about the procedure and signed a consent form. During surgical procedure typically regional anesthesia was utilized for the fistula surgery. However, general anesthesia was given when required. During surgery, a speculum was inserted into the vagina to assess the fistula, scarring, and vaginal caliber. When there was vaginal scarring or band (usually on the posterior vaginal wall) preventing insertion of the speculum, the scar/band was released by an incision with a scalpel at 4 o'clock and 8 o'clock position. An Auvard vaginal speculum was placed over the posterior vaginal wall. When the fistula was large and in the mid to upper vagina then the ureteric orifices were identified first. Incision was made through the full thickness of the vagina and care was taken as too

deep an incision would involve the bladder. Dye test done to see whether there was leakage, additional suture was required over the defect and dye test performed again. When a labial fat-graft was used, stay-sutures (anchor sutures) were placed in the vagina prior to mobilization of the graft. Omental graft was used where indicated. Vagina was closed with absorbable sutures to avoid suture removal, and this was more comfortable and more compatible for women participated in the study. The vaginal pack was removed after 1 or 2 days depending on instruction of the surgeon. Repacking of vagina was also done sometimes when there was some leaking during post-operative period. Patient was also advised to bring discharge certificate during follow up. During follow up enquiry was made regarding her continence, bladder, or urethral problems, vaginal or coital problems, urinary tract infection and menstrual history.

Data was collected in pre-designed data collection sheet and data was compiled and analyzed manually. Data were then presented through tables expressed in frequencies with percentage. This study was approved by the Ethical Review Committee of Sylhet M.A.G. Osmani Medical College Medical College, Sylhet, Bangladesh

RESULTS

A total of 50 patients participated in this study. Their age varied from 16 to 70 years. Among them, majority of the patient belongs to the age 31-35 years (26%) followed by 2nd common group 26-30 years of age (20%) and 3rd one in between 21-25 years of age (16%) (Table-I). Among them, 44% patients were primipara and 22% patients were grand multipara (Table-II). Table-III shows that mobilization during operation was excellent in 30%, satisfactory 64% cases & not enough in 6% cases. After mobilization fistula closed in double layer in 10% and in single layer 90% cases, labial fat graft was given 38% and peritoneal graft was given in 2% cases. During operation bleeding was minimum in 92% cases and bleeding was more than average where blood transfusion needed in 8% cases. Table-IV shows that in 34% cases catheter was blocked, urine leakage occurred in 30% cases. Among all patients 14% suffered from fever postoperatively. There was vaginal discharge in 10% cases and UTI in 12% cases which was confirmed by urine culture test. Transvaginal repair operation was fully successful in 60% cases, while urethral incontinence was observed in 22% cases and unfortunately repair process failed in 18% of women (Table-V).

Table-I: *Distribution of the patients by age (n=50)*

Age group	Frequency	Percentage
16-20 years	6	12
21-25 years	8	16
26-30 years	10	20
31-35 years	13	26
36-40 years	6	12
41-45 years	7	14
Total	50	100

Table-II: *Parity distribution of the patients (n=50)*

Parity	Frequency	Percentage
1	22	44
2	8	16
3	5	10
4	4	8
≥5	11	22

Table-III: *Preoperative and perioperative variables (n=50)*

Parameters	Frequency	Percentage
Mobilization		
Not enough	3	6
Satisfactory	32	6
Excellent	15	30
Fistula closure		
Single layer	45	90
Double layer	5	10
Graft given		
Labial fat graft	19	38
Not given	30	60
Peritoneal graft	1	2
Per operative bleeding		
Average or minimum	46	92
Needed blood transfusion	4	8
Operation		
Very difficult	9	18
Difficult	21	42
Easy	20	40

Table-IV: *Postoperative complications (n=50)*

Parameters	Frequency	Percentage
Catheter blockage	17	34
Urine leakage	15	30
Fever	7	14
Vaginal discharge	5	10
Evidence of UTI confirmed by urine culture	6	12

Table-V: *Final outcome of the operation (n=50)*

Outcome	Frequency	Percentage
Fully cured	30	60
Urethral incontinence	11	22
Failed repair	9	18

DISCUSSION

During the study period, prevalence of vesicovaginal fistula at VVF corner of the hospital was reported to be 5.6% which was higher in comparison to study of Engender health (1.69%). This high prevalence is due to referral from different districts of greater Sylhet region as this is the only tertiary care center of the region. Considering the age of the patients with fistula, a study from Nigeria showed that fistula arising out of obstructed labour in the underdeveloped country where younger age group is more vulnerable.[4] A study done in Dhaka, Bangladesh showed that majority of the patient belongs to 16-20 years in age group.[5] In our study, majority of the fistulous patients belonged to 31-35 years age group (26%) followed by 26-30 years age group (20%). Since most of the patients live in remote area and they hardly have the information that there are available treatments in medical college hospitals to solve their problems. Hence, they come to the hospital as delayed cases.

Another study done in Bangladesh showed that 54% patient developed fistula at their first child birth[6]; similar observations were reported by Elkins et al.[7] Our study also showed that vesicovaginal fistula is most common in primipara (44%). Hence, our findings are similar to those previous studies. Evidence showed that primipara are more vulnerable to develop fistula due to prolonged obstructed labour,[8] which is also in congruence with our study.

Successful repair of fistula depends on many factors. Patients presenting with vesicovaginal fistula may present with other associated problem which complicate the fistula and interfere with successful repair. Though rectovaginal fistula was excluded in this study even then 18% patients presented with associated vaginal stenosis and 18% with urethral avulsion. 6% patients had associated bladder mucosa prolapse and 4% had urethral avulsion with urethral stricture in 2% patients. This associated problem adversely affected successful repair which is similar to the findings of the previous studies[8-10] All patients in our study underwent local repair through vaginal approach. The transvaginal approach seems to be faster, less morbid with relatively minimum blood loss and also had advantage in terms of patients' comfort.[3,9]

Among 50 patients, repair was successful completely in 60%, and partially cured in 22% patients. The remaining 18% patients' health condition and symptoms did not improve. Our success rate is comparable to McFadden et al.[10] and also with the results reported by Akhtarunnessa.[6] Interpretation of peroperative and postoperative data with outcome of repair revealed causes of failure of operation. It was due to extensive scarring, large size of fistula, impairment of drainage of urine due to postoperative catheter problem and due to infection. During repair of the fistula, labial fat graft was given in 38% patient and peritoneal graft in 2% cases. Data observation revealed that grafts increased the success rate in comparison to the directly closed fistulas. The grafts were given to cover and seal off the repair. It brings new blood supply and prevent cross union between bladder and vaginal mucosa. It also fills dead space and elevates the urethra against the symphysis and it functions as a bolster in subsequent deliveries. These advantages reduce the failure rate associated with attempted closure of complicated fistula.[11-14] In the present study, it has been proved that grafts increase the success rate which is in congruence with other evidence from low- and middle-income countries.[8-10,13,14]

CONCLUSION

In our study, most of the patients cured completely; however, few cases developed urethral incontinence and some cases failed totally. The facts of failure by

transvaginal approach were blockade of catheter, infection, leakage of urine and failure to maintain perineal hygiene of the patient. This means to some extent that there was inadequate postoperative care. Hence, it can be concluded that along with some important factors for success e.g., site, size, number, fibrosis, training of surgeon, technique of operation and severity of lesion, postoperative care is very crucial one for increasing success rate in transvaginal repair of VVF.

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Review Article

Oncocytoma: A Mystifying Parotid Gland Tumour

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ABSTRACT

Oncocytoma is a rare salivary gland tumor consisting of oncocytes with many hyperplastic mitochondria. It usually occurs in the parotid gland. Very few cases of parotid oncocytoma have been reported in literature. Because of its rarity (<1-2% of salivary gland tumors) and clinical presentation of the tumor. Clinical diagnosis is often challenging due to the likeness of oncocytoma to other benign and low-grade malignant salivary gland tumors there is a tendency among the clinicians to misdiagnose it as pleomorphic adenoma, hemangioma, or other forms of oncocytosis. Previously published articles had all agreed on the reality of this lesion occurring over the parotid gland. The paper aims to review previously published cases of oncoytoma to provide a better insight regarding demographic, clinicopathological, radiological and histological features of this rare tumor of parotid gland. A systemic review of English literature was performed after using a sensitive search strategy involving two different databases: google scholar and PubMed. A total number of 9 cases were included. The tumour is mostly presented in old age as a slowly growing tumour (mean duration 3.17 years) and showed a slightly higher female predominance (Female:Male=1.25:1). They were mostly located over superficial lobe,100%. Conventional histological variant has only been reported. Complete surgical excision was performed for all the cases without any reports of recurrence or malignant transformation. Imaging studies diagnosed the lesion as a benign tumor. Only histopathological examination can confirm it. Definitive histology examination concludes to oncocytoma. Furthermore, our aim is to bring to the forefront how these lesions require a comprehensive workup and how to choose the best treatment strategy.

Keywords: *Oncocytoma, parotid, hemangioma, pleomorphic adenoma, superficial parotidectomy*

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INTRODUCTION

Salivary gland neoplasm represents the most complex and diverse group of tumors encountered by head and neck surgeons. Their diagnosis and management are complicated by their relative infrequency (1% of head and neck tumors), the limited amount of pretreatment information available, and wide range of biological behavior seen[1]. The parotid gland is the most frequent site (80%) for all salivary gland tumours. Oncocytoma are rare tumors. Most oncocytomas arise in the parotid gland. Oncocytomas are benign epithelial tumors that most commonly occur between

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the sixth through the eighth decades of life with a slightly higher incidence in women. They often present as solitary slow growing painless masses, which are firm, multilobulated and mobile entities upon clinical examination and may rarely be bilateral[2]. It is important to note that even though oncocytoma of the parotid is the most common of salivary gland tumours, is only 1-2% of head and neck tumours[3] and with the associated vague complaints by patients and ambiguous fine needle aspiration cytology (FNAC), there is a tendency to either entirely miss it or diagnose it wrongly. Diagnosis is suggested by imaging. Computed tomography (CT) and magnetic resonance imaging (MRI) are the image modalities of choice and on CT, the most common finding is a well-defined homogeneous parotid mass.[4-6] On MRI, these tumors appear hypodense on T1 and T2 sequences. The preferred treatment is complete surgical excision and total parotidectomy Diagnostic confirmation is histological after parotidectomy[3,4]. In addition, a follow-up MRI at 12 and 24 months are recommended to assess patient progression.

CASE SUMMARY

A 67-year-old male reported to the Ear, Nose and Throat (ENT) outpatient department of Mugda Medical College Hospital, Dhaka, with a mass at the right parotid region which had an insidious onset but not increasing in size for the last 4 years. The patient had no other significant complaints. On examination, a solitary 4 cm × 3 cm sized right parotid mass. It was a non-tender, non-fluctuant, non-pulsatile swelling with regular margins. It was not adherent to overlying skin or underlying structures. There were no palpable cervical lymph nodes, and no signs of facial palsy were seen. The Stensen's canal orifice was free at the intraoral exam. Ultrasound exam showed a well circumscribed 4x3 cm a lobulated mass of superficial lobe of the right parotid gland. This lesion was hypoechoic and vascularized (Fig. 1). FNAC report was suggestive of pleomorphic adenoma. On contrast enhanced computerized tomography (CECT), A T2W1 hetregenously rounded hyperdense lesion of 4x3x3 cm in the superficial lobe of the right parotid was seen with moderate enhancement observed after intravenous contrast media injection. A fairly large T1W1 hypodense multiple internal necrotic areas were present which according to radiologist could be benign parotid

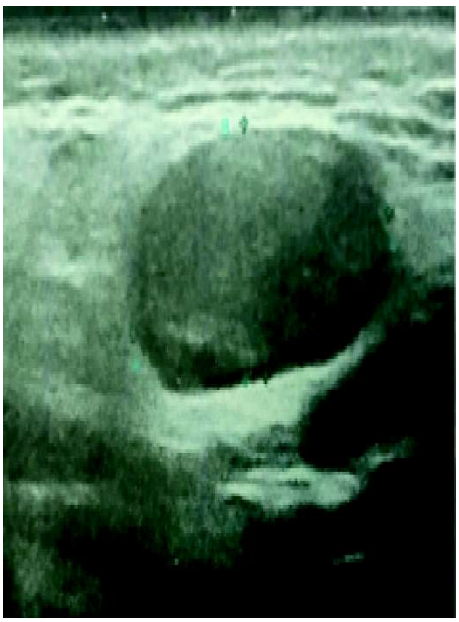

Fig. 1: *Parotid ultrasonography shows a 4 cm × 3 cm well-circumscribed mass of the superficial lobe of the right parotid gland. The mass is hypoechoic.*

neoplasm, hemangioma, or enlarged lymph node. The morphology of the left parotid gland, bilateral submaxillary glands, jugulodigastric and left periparotid nonspecific lymph nodes were also intact (Fig. 2). Magnetic resonance imaging (MRI) showed a hyposignal lesion on T1-weighted imaging of the superficial portion of the right parotid gland with

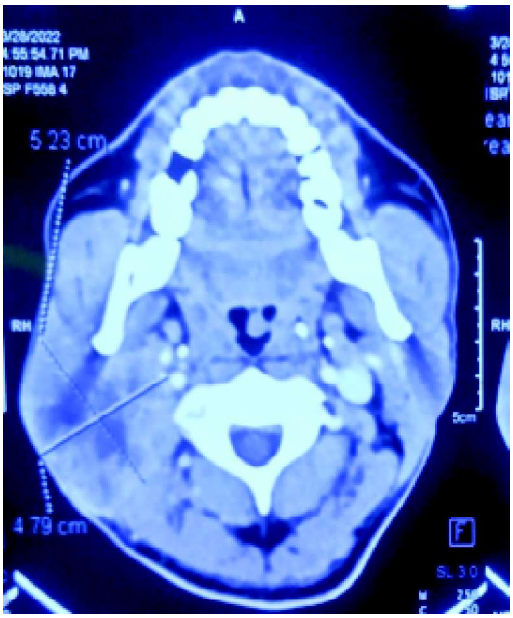

Fig. 2: *Contrast enhanced computerized tomography of the head and neck showing a rounded hyperdense lesion in the superficial lobe of the right parotid.*

homogenous enhancement after gadolinium. The mass was slight hypersignal on T2-weighted imaging. (Fig. 3) Based on the above-mentioned findings, a provisional diagnosis of oncocytoma in the right parotid was made with benign parotid tumour. The patient underwent superficial parotidectomy with complete tumor excision and facial nerve preservation. Frozen section examination was not

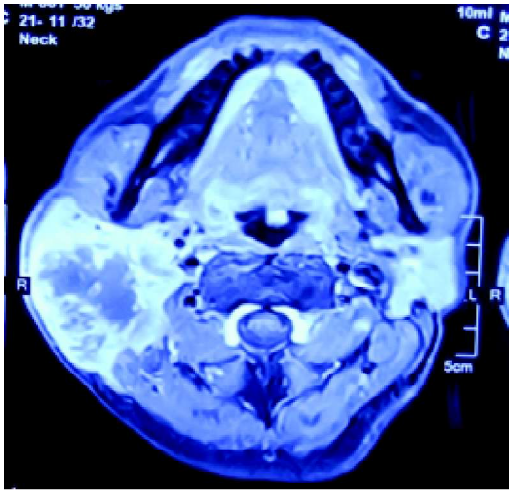

Fig. 3: *MRI in T1-weighted sequences shows mass of the superficial lobe of the right parotid gland; with homogenous enhancement after gadolinium injection.*

contributive. We decided not to complete parotid excision and waited for definitive histology. complications were observed after surgery, particularly no facial nerve palsy. (Fig.-4) (identification and preservation of the facial nerve). Excised mass was sent for histopathological examination, which confirmed it as oncocytoma

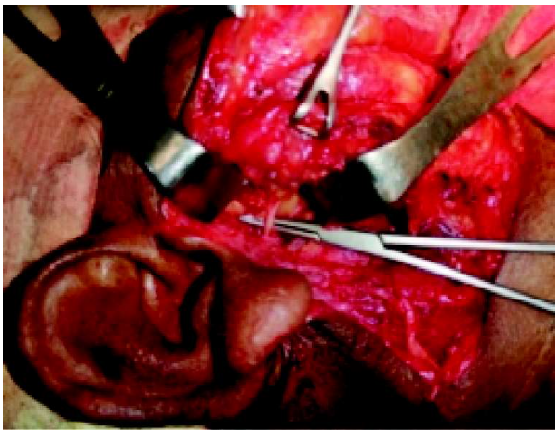

Fig. 4: *Identification and preservation of the facial nerve and its terminal branches.*

(oxyphilic adenoma). Grossly, the resected specimen measured 4 cm×3 cm×2 cm in size (Fig. 5). Macroscopically, the tumor was a nodular, circumscribed lesion measuring 2 cm × 2 cm × 1.5 cm in size and irregular nodular grayish white tissue with fibrofatty tissue in color. Microscopic findings

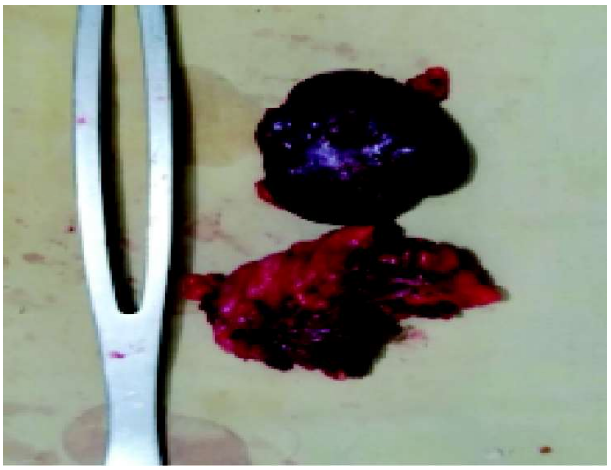

Fig. 5: *Resected right parotid region tumour.*

show capsulated tumor composed of lobules of oncocytic cells are arranged in sheets and trabecular form (Fig.-6). The cells were large and round with abundant granular eosinophilic cytoplasm (Fig.-7). No mitotic figures were noted. These features are confirmed the diagnosis consistent with salivary gland tissue oncocytoma. The patient has been on follow up and has remained disease free with no local or remote recurrence of the disease at present.

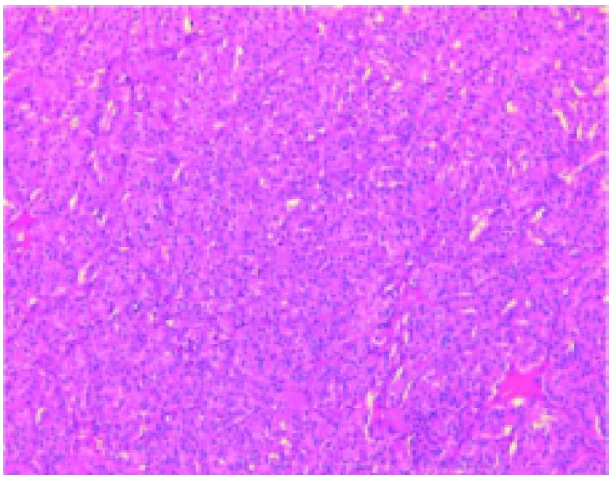

Fig. 6: *Sheets or trabeculae, patterns of monotonous large polygonal cells with well-defined cell borders, deeply eosinophilic and granular cytoplasm (H&E, ×100).*

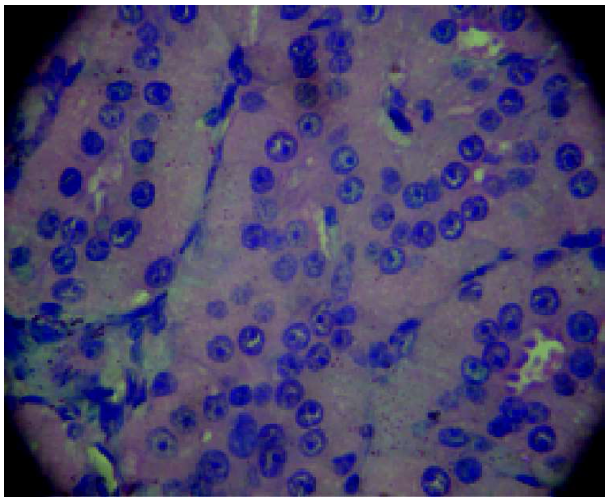

Fig. 7: *Large round oncocytes with abundant granular eosinophilic cytoplasm.*

METHODS

An extensive search of two medical databases (Google Scholar and PubMed) was performed between October and December 2022. The databases were searched for full length articles and abstracts published in the English language and confined to human subjects, using the following Medical Subject Headings (MeSH): ''Oncocytoma'' AND/ OR ''Oncocytosis'' AND/OR ''Parotid tumour''. Included articles were either an isolated case report or a single case report with review of literature and only reported a lesion confined to the parotid. Case reports with a lesion extending to surrounding structures such as the facial nerve, neck lymph node, neck great vessels, skin were excluded. No age, race or demographic filters were applied. Information from the included articles were collected on the basis of general outline of oncocytoma parotid, age, sex, other organ involvement, pathology and pathogenesis, clinical presentation, FNAC findings, ultrasonographs and radiological findings, operative surgical procedure, postoperative adjuvant therapy and recurrence of tumour and reflected in our discussion.

RESULTS

A total of nine cases were included in the current review. From the included article general outline of oncocytoma, age, sex, clinical presentation, pathogenesis, cytological, histopathological and treatment findings were documented. The cases were reported from eight different countries: India, UK, USA, German, Cyprus, Taiwan, Japan, Korea Out of nine included cases five were female (55.56%) and 4(44.44%) were male. The ages range was 35-70 years (52.22 mean) The mean duration of lesion was 3.17 years (6 months to 10 years, SD 2.87).The mean largest dimension of the lesion was 29.63 mm(17-39 mm, SD 8.7). The tumour was involved in one gland, either right (5 cases) or left parotid gland (4 cases).[4] Among the nine lesion 3 involved upper quadrant, 6 involved mid and lower quadrant of parotid gland of superficial lobe.[6,7] All cases with the exception of one presented symptomatically with a painless lump. Hamada et al. reported intermittent pain over the lump. There were reports of neurological symptoms such as facial palsy of one case.[3] A majority of the lesions were firm, nontender and or mobile. Tenderness over the tumor site was reported from one case and a soft/soft firm lesion on palpation was reported twice[8-10]. Overlying skin ulceration was not noted it in any tumor. The observations imply a good encapsulation of the tumor in all cases. Various preoperative differentials were considered by the authors these included pleomorphic adenoma, Warthin tumour, low grade adenocarcinoma[9,10]. For diagnostic purpose FNAC is the procedure of choice. For its overlapping morphological features diagnosis by cytology alone often become difficult[11-14]. All cases FNAC diagnosis were parotid gland origin tumor like pleomorphic adenoma, oncocytosis or oncocytoma[15-17]. Histopathology remains the gold standard to clinch the precise diagnosis. In our review of literature of nine cases by histopathological diagnosis all cases were final diagnosis as oncocytoma of parotid gland. In case of treatment complete surgical excision was employed in all nine cases of review literature with superficial parotidectomy or total conservative parotidectomy. No adjuvant treatment like chemotherapy or radiotherapy was employed because of benign nature of this disease. No recurrence or malignant transformations were reported in nine cases of review of literature.

DISCUSSION

Salivary gland tumors account for 3% of head and neck lesions and approximately 80% of these occur in the parotid gland[5,6]. The majority of parotid gland tumors are located in the superficial lobe and some investigations have reported that 2–4% of parotid tumors originate from the deep lobe. A total of 80-90% of these are benign, mixed tumors and the others

are adenoid cystic, mucoepidermoid, acinic cell carcinomas and lipomas[7].

The word "oncocyte" was first introduced in 1931 by Hamperl[3]. Oncocytomas are rare tumors that account for 0.1-1.5% of salivary gland tumors and 2.3% of benign epithelial salivary gland neoplasms[3,4,8]. Oncocytomas were first described by Jaffe in 1932[4]. The parotid is the most commonly involved gland accounting for 78-84% of salivary gland oncocytomas[4]. Oncocytomas are benign epithelial tumors characterized by oncocytes with eosinophilic granular cytoplasm that contains mitochondria. Oncocytic cells are thought to originate from the transformation of epithelial cells of salivary gland ducts or acini[9]. They occur most commonly in the sixth to eighth decades and are slightly predominant in female gender[4].

Although malignant transformation of this tumor is unusual, clinical follow-up is important because malignant oncocytoma may not be correctly diagnosed owing to histological similarities with benign oncocytoma[10]. The correlation of certain viruses, such as Epstein–Barr virus, HIV, human herpesvirus 8, human T lymphotropic virus 1, and human papillomavirus with parotid neoplasia has been documented. Vlachaki et al. described the case of a 74-year-old female patient with left parotid oncocytoma and a previous history of immune thrombocytopenia and chronic HBV infection[6]. In our case, there was no history of viral infection or thrombocytopenia in the patient.

Oncocytes are seen in various organs such as salivary glands, thyroid, parathyroid, pituitary, nasal cavity, sinuses, ocular carbuncle, lacrimal glands, buccal mucosa, eustachian tube, larynx, esophagus, liver, pancreas, and kidney[11].

Clinical presentation of oncocytomas is similar to other benign salivary tumors with no specificity. They present as lobulated and mobile mass.[8] Bilateralism is observed in 7% of cases[12]. The newest World Health Organization (WHO) classification describes three entities: nodular oncocytic hyperplasia, oncocytoma and oncocytic carcinoma[13]. In previous cases, as revealed by electron microscopy, the oncocytes contained unusually large number of mitochondria[13-15]. Oncocytic cells are thought of as metaplastic cells formed in response to adverse changes, with the normal cells losing their original specialization. Aging is also thought to cause a functional exhaustion of mitochondrial enzymes, and a compensatory hyperplasia of mitochondria can occur, which, in turn, is responsible for the oncocytic change. Indeed, solitary oncocytes appear most often as incidental findings in aging salivary tissue, with studies showing up to 80% presence in persons older than 70 years of age[11]. In our case, the age of patient was 67 years which points toward the progressive degeneration of salivary epithelial cells which lead to oncocytic changes[16].

Areas of oncocytic metaplasia can be seen in a host of salivary gland tumors such as basal cell adenoma, pleomorphic adenoma, myoepithelioma, cystadenoma, canalicular adenoma, polymorphous low-grade adenocarcinoma, Warthin's tumor, acinic cell carcinoma and mucoepidermoid carcinoma[16,17]. However, oncocytes also give rise to neoplasms such as oncocytoma and its malignant counterpart, the oncocytic carcinoma[18]. Histopathological findings in our case are typical of a benign oncocytic neoplasm which points toward the fact that prolonged follow up may not be necessary.

Fine needle aspiration is the procedure of choice for making a diagnosis in the majority of cases although its sensitivity is reported to be only 29%[16]. FNAC has increasingly been used as a primary screening tool for salivary gland lesions with high levels of sensitivity and specificity. However, as salivary glands are notorious for having overlapped morphological features, diagnosis by cytology alone often becomes difficult[2]. The situation may slightly improve using multiple passes from the swelling.

Diouf et al. reported a case of oncocytoma of the left parotid gland in a 69-year-old woman in whom FNAC was for a pleomorphic adenoma. Through this case, they highlighted the importance of histopathology in the positive diagnosis of parotid oncocytoma as well as in its differential diagnosis and also the place of FNAC[17].

Histopathology remains the gold standard to clinch the precise diagnosis. Chakrabarti et al. presented a case of a cytologically diagnosed oncocytic lesion with a possibility of oncocytoma. However, on subsequent histopathology, the lesion was diagnosed as diffuse hyperplastic oncocytosis. In our case, the FNAC was clearly suggestive of pleomorphic adenoma and after histopathological examination, oncocytoma was confirmed[18]. The ultrasound features of parotid oncocytomas are not specific and

include a hypoechoic mass with well-defined margins, like other benign parotid tumors such as pleomorphic adenomas[19].

CT and conventional MRI are presently the image modalities of choice used in the evaluation of both palpable and non-palpable neck lesions[20]. It is important to decide whether a mass is superficial or deep and if it affects the facial nerve. A frequently used landmark is the retromandibular vein. The facial nerve lies laterally and obliquely to this vein and can be seen on CT and MRI studies. Other considerations for the selection of additional imaging studies include involvement of adjacent tissues, perineural involvement and lymphadenopathy[1].

Technetium-99m pertechnetate scintigraphy (salivary scintigraphy) is useful to evaluate parotid gland masses. There are two ways to explain the mechanism of increasing the uptake of technetium-99m pertechnetate by oncocytoma. There is accumulation in cystic spaces due to the absence of intralobular duct. Another theory is that technetiun-99m pertechnatate can concentrate inside the tumor because the cells cannot excrete so much, meaning that the uptake is prolonged [9].

CT has been established as the first-line image modality in the assessment of major salivary gland tumors [8]. Oncocytomas and Warthin's tumors have very similar imaging features; thus, they are indistinguishable in standard CT and MR images[21]. The common CT finding of the parotid oncocytomas described in the literature is a well-defined parotid mass showing homogeneous enhancement. The reports on MRI imaging of parotid oncocytomas describe these tumors as appearing hypodense on both T1 and T2 sequences. This has been attributed to the high cellularity and low water content displaying homogeneous contrast enhancement[4,7-9]. Due to their low prevalence, only few case reports on the MRI features of parotid oncocytomas are available in the published literature[8,10]. In the literature, MRI characteristic of parotid oncocytoma is well-defined parotid mass with homogeneous enhancement. The important differential diagnoses for well-defined enhancing parotid tumors seen on MRI include the Warthin's tumor and basal cell adenomas[9].

Complete surgical excision with radical or superficial parotidectomy are the treatments of choice[6,8,9]. The extent of the excision is dictated by preoperative clinical and radiological (CT, MR) examinations and intraoperative findings[9]. In addition, radiotherapy may play an important role in the management of locally advanced, unresectable, or recurrent salivary gland cancers when surgery is not feasible. Although radiotherapy can be very effective in achieving tumor shrinkage and providing symptomatic relief, curative non-operative approaches have been challenging[22]. There is no need for adjuvant treatment such us chemotherapy and/or radiotherapy because of benign nature and slow growth rate of the tumour[23].

The use of systemic chemotherapy in advanced salivary gland cancer has in general been confined to those patients with advanced and incurable disease. Literature has reported results from clinical trials using a number of different chemotherapeutic agents often found in mixed populations, including patients with different histologic subtypes. Cisplatin based regimens have been the most frequently explored, but the response rates have been modest, and the impact on survival rate has been impossible to discern[9,24].

Perhaps of greater interest in recent years has been the attempt to use our increasing understanding of the biology of these tumors to identify specific molecular targets that might be amenable to molecularly targeted therapies. Although potential molecular targets have been identified, the results using this approach have been disappointing[24-27]. The recurrence rate has been reported to be 20–30%[6,9] or less than 20%[10] in incomplete excision or multinodularity cases. Interestingly, malignant differentiation and metastasis are rare[6,9].

CONCLUSION

Parotid oncocytoma is benign epithelial tumor that frequently occurs between the sixth and the eighth decades of life. Clinical presentation is not specific with a parotid gland swelling and solid solitary mass on palpation. Oncocytoma should be assessed using MRI studies to evaluate the extending of the tumor. Upon histological verification, a surgical approach should be considered to eradicate the tumor and remove the parotid gland. Follow-up MRI studies are recommended at 12 and 24 months after treatment since most head and neck tumors recur within the first 2 years.

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REVIEW ARTICLE

'Authentic' Assessment of Clinical Competence: Where We Are and Where We Want to Go in Future

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ABSTRACT

The assessment of clinical competence is one of the most difficult tasks facing medical education. Teaching and assessment need to be meaningful for the students and their relevance in real life context and challenges should be apparent. Ideally, assessment tasks should require students to use the same competencies, or combinations of knowledge, skills, and attitudes that they need to apply in their future professional life. However, for the medical teachers of our country the term "authentic assessment" is very new, as most of them are very stick to traditional assessment while running a course or training students in different medical colleges. Clinical competence is an extremely complex construct and one that requires multiple, mixed, and higher order methods of assessment. As we have experienced a recent pandemic situation, it seems that plenty of questions remain in relation to clinical competence assessment in medical colleges for now and near future. In authentic assessment, students will go beyond the textual reproduction of fragmented and low order content and move towards understanding, establishing relationships between new ideas and previous knowledge, linking theoretical concepts with everyday experience, deriving conclusions from the analysis of data, allowing them to examine both the logic of the arguments present in the theory, as well as its practical scope. That is why we are moving away from traditional, limited test formats to new, more complex, yet innovative, mixed methods of 'authentic' assessment – from faculty observation ratings and paper-and-pencil examinations to online MCQ tests, SBA questions, experimentation with advanced OSPE and OSCE, and project-based assessment supplemented with clinical reasoning. These moves are expected to bring not only several challenges but also great educational rewards for the measurement and advancement of clinical competence among students. We would like to continue to work on those progressions.

Keywords: *Authentic assessment, traditional assessment, clinical competence, medical education*

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INTRODUCTION

The assessment of clinical competence is one of the most difficult tasks facing medical education.[1,2] Teaching and assessment need to be meaningful for the students and their relevance in real life context and challenges should be apparent.[3] Ideally, assessment tasks should require students to use the same competencies, or combinations of knowledge, skills, and attitudes that they need to apply in their future professional life.[3-6] However, for the medical teachers of our country the term "authentic assessment" is very new, as most of them are very stick to traditional assessment while running a course or training students in different medical colleges.[1,5] There are different international and national traditions in assessment practices in medical education;[1] however, medical education is witnessing a paradigm change involving a transformation from a culture of objective and standardised tests that are focused on measuring portions of knowledge, towards a more complex and comprehensive assessment of knowledge and higher-order skills.[4,7,8]

There are many established definitions of authentic assessment in higher education arena. Wiggins stated that in "authentic assessment", "(there should be some) engaging and worthy problems or questions of importance, in which students must use knowledge to fashion performances effectively and creatively. The tasks are either replicas of or analogous to the kinds of problems faced by adult citizens and consumers or professionals in the field."[6] Earlier, Stiggins highlighted performance assessments in a similar tone and defined as "(they) call upon the examinee to demonstrate specific skills and competencies, that is, to apply the skills and knowledge they have mastered."[9] Therefore, authenticity is understood as "realism, contextualisation and problematisation" when teaching and assessing curricular content.[3,4,6] In short, realism involves linking knowledge with everyday life and work, contextualization characterises situations where knowledge can be applied in an analytical and thoughtful way, and problematisation invokes a sense that what is learned can be used to solve a problem or meet a need.[3-6] Therefore, authentic assessment aims to integrate what happens in the classroom/hospital ward/ outpatient department (OPD) with the world of work outside, replicating the tasks and performance standards typically faced by professionals in real life in their day-to-day practice.[1,6] This paper aims to highlight some of the issues with our current assessment system in medical education and further improvement strategies to make it more authentic.

LITERATURE REVIEW

Authenticity has been identified as a key characteristic of assessment design which promotes learning; it aims to replicate the tasks and performance standards typically found in the world of work and has been found to have a positive impact on student learning, solve problems skills, autonomy, motivation, self-regulation, and metacognition; abilities highly related with employability.[3-6] There is a strong culture in medical education of testing as the principal form of summative assessment, particularly in most of the courses. This is also common in many systems worldwide, where a focus on testing risks encouraging superficial approaches to learning[1,4,5] and measuring decontextualised memorization and understanding of content, and not the integration or application of knowledge.[1,8,10] Such learning is unlikely to be useful beyond the classroom.[5,10] Some researchers showed that teachers may use multiple-choice tests with adequate validity and reliability indexes, but most of them do not question the relevance and significance of the assessment.[8,11,12] In such a culture, there is a lack of initiatives to use methods that evaluate the construction of knowledge, critical thinking or problem solving.[3,4,13] Some research also indicates that teachers hardly want to change formal assessments, such as exams, because changing these practices makes great demands on time, energy, and intellectual resources.[1,10,13] Sometimes, changes are also perceived as risky.[5,13]

Behind traditional and authentic assessments is a belief that the primary mission of our medical colleges is to help develop professional and productive physicians.[8] That is the essence of most mission statements we have read to date. From this common beginning, the two perspectives on assessment diverge. Essentially, traditional assessment (TA) is grounded in educational philosophy that adopts the following reasoning and practice:[14]

1. A medical college's mission is to develop professional and productive physicians.
2. To be a professional and productive physician, an individual must possess a certain body of knowledge, skills and attitude.

3. Therefore, our medical colleges must teach this body of knowledge, skills and attitude.
4. To determine if it is successful, medical colleges must then test students to see if they acquired the knowledge, skills, and attitude.

In the TA model, the curriculum drives assessment. The body of knowledge is determined first. That knowledge becomes the curriculum that is delivered. Subsequently, the assessments are developed and administered to determine if acquisition of the curriculum occurred in our traditional medical education arena, which has been following over decades.

In contrast, authentic assessment (AA) springs from the following reasoning and practice:[14]

1. A medical college's mission is to develop professional and productive physicians.
2. To be a professional and productive physician, an individual must be capable of performing meaningful tasks in the real world.
3. Therefore, medical colleges must help students become proficient at performing the tasks they will encounter when they graduate.
4. To determine if it is successful, medical colleges must then ask students to perform meaningful tasks that replicate real world challenges to see if students are capable of doing so.

Thus, in the AA model, assessment drives the curriculum. That is, teachers first determine the tasks that students will perform to demonstrate their mastery, and then a curriculum is developed that will enable students to perform those tasks well, which would include the acquisition of essential knowledge and skills. This has been referred to as planning backwards by McDonald.[15]

Authentic assessment is sometimes referred to as 'performance assessment' (or performance-based), 'alternative assessment' or 'direct assessment'. It is called performance assessment or performance-based assessment as students are asked to perform some meaningful tasks. However, some educators distinguish performance assessment from AA by defining performance assessment as performance-based e.g., Stiggins[9] and Meyer[16], but with no reference to the authentic nature of the task. For these educators, authentic assessments are performance assessments using real-world or authentic tasks or contexts.[1,5,6] Since we should not typically ask students to perform work that is not authentic in nature, we have chosen to treat these two terms interchangeably. Authentic assessment is also known as alternative assessment because it is an alternative to our traditional assessment system. It also characterises direct assessment because it provides more direct evidence of meaningful application of knowledge and skills. If a student does well on a multiple-choice test, we might infer indirectly that the student could apply that knowledge in real-world contexts, but we would be more comfortable making that inference from a direct demonstration of that application such as putting them to bedside history taking and examination and asking them to perform methodically. Thus, we may now imagine that in authentic assessment, the context is realistic when information about the described situation-problem comes from real and/or professional life, involving pertinent and relevant questions to solve, applicable to realistic situations.[4,5,17] This transfer is possible when ideas relate to facts and skills to experiences, applying previous knowledge to new situations and tasks. This realistic context can be present in examinations and written tasks when items are prepared such as case analyses, problem solving, and short or extensive essay questions, which act as a proxy of the real world.[1,6,17] The other way to create realism is through performance-based tasks, where students produce work or demonstrate knowledge, understanding and skills in activities that are close to their future professional practice.[1,18] Moreover, in authentic assessment, the task involves building knowledge, and using higher-order cognitive skills, such as those proposed in Bloom's taxonomy.[5,6] This type of assessment intends that students will go beyond the textual reproduction of fragmented and low order content and move towards understanding, establishing relationships between new ideas and previous knowledge, linking theoretical concepts with everyday experience, deriving conclusions from the analysis of data, allowing them to examine both the logic of the arguments present in the theory, as well as its practical scope.[1,4-6,17,19] One of the aims of authentic assessment is for students to develop criteria and standards about what a good performance means in order that they can judge their own performance and regulate their own learning; referred as 'evaluative judgement'.[5,18]

HOW TO MAKE AN ASSESSMENT 'AUTHENTIC'

A sound assessment modality must include a clear statement of purpose, a detailed description of what is to be measured, a set of instructions for feasible administration and scoring, and guidelines for data interpretation.[2,8] If intended to measure complex cognitive skills, it is reality based and taps into the high-level skills of application, analysis, synthesis, and evaluation. Finally, it also includes sufficient evidence that the scores derived from the modality are reliable and valid indicators of students' clinical competencies.[2,20,21] An essential component of developing evaluative judgement in medical education is formative assessment.[1,8,20,21] Students need to be exposed to a variety of tasks with diverse performance requirements, and have the experience of learning about quality, judging quality and seeking and receiving feedback.[7,20,22] Studies emphasised the use of feedback dialogues to engage students with disciplinary problems and to develop their self-regulation and the direction of learning should be the development of skills that have employability and must be part of the subjects that make up the curriculum. [3,4,7,21,22] In this way, it can be ensured that once graduated, professionals can successfully face the typical problems of the workplace.[3,6] Another important part is designing authentic assessment. To accomplish the process, teachers' pedagogical decisions regarding the assessment process must reflect the challenges that professionals of this discipline face in work. For example, decisions about the conditions in which the assessment is taken (i.e., individual or group, access to reading and information, time available),[5,23] about the assessment formats (i.e., online or in the classroom, open or closed construction answer, OSPE, OSCE, development of disciplinary knowledge or deployment of professional performance),[8,13,21,23-25] and about the kind of problem to which students will apply knowledge (i.e., derived from employers, former students or students' experience in professional placements).[5,6,17,23] Besides, professional problems derived from contemporary workplace assist courses in keeping their assessment problems up to date with the demands of the working world for that profession, as we have witnessed during COVID-19 pandemics.[7,19,23-26] There are also propositions that virtual role-playing and multiplayer games provide authentic, engaging activities for students to develop problem-solving, decision-making, and collaboration skills without the barriers and risks of the real world, especially in online learning while medical education has a shift from face-to-face to an online format.[26-28] Educators also contends that authentic assessments must be judged by the same kinds of criteria (standards) which are used to judge adult performance on similar tasks.[5,9,16] Besides, some stressed the value of self-assessment in helping students identify criteria to use in judging their own assignments and found explicit benefits of peer observation and feedback in developing students' evaluative judgement.[10,12,18]

PROSPECTS

Learners' agency is promoted within such assessment procedure as students can demonstrate (to themselves and their assessors) how successfully they have mastered their acquisition of knowledge and skill,[4] which is applicable even in the current medical education context in Bangladesh. However, the content of an 'authentic' assessment is not always discipline specific and it can be applied to various instructional settings like classroom teaching, bedside teaching, and even distance/online teaching.[11,12] Authentic assessment has an impact on the quality and depth of learning achieved by the student,[6,9] and the development of higher-order cognitive skills.[1,6,9] Moreover, it improves autonomy, commitment, and motivation for learning,[3,6] self-regulation capacity, and self-reflection.[1,6] Furthermore, authentic assessment is a response to criticisms of higher education, as students have difficulty applying the knowledge acquired in different academic contexts.[3,6] Sometimes, our students feel unprepared for employment and insecure when they begin working in the professional field.[3,5] This type of assessment procedure is seen as a way to overcome such barriers.

CHALLENGES

There are significant barriers to the introduction of authentic assessment, particularly where there is a tradition of 'testing' decontextualised subject knowledge.[3,17] One barrier may be the lack of conceptualisation of the term authentic assessment sufficient to inform assessment design at the individual course level.[3,17] Another barrier is lack of support from the medical education administration and medical educators; the greatest challenge for them in their efforts are to prepare and later implemented authentic assessment in the classroom.[1,6] Another challenge in preparing authentic assessment is the

burdening teaching hours and preparation.[1-3] Overwhelming documentation appears to be another hindrance for medical teachers in implementing authentic assessment.[5] Moreover, in many countries, medical educators lack special training on various approaches in assessment, in particular authentic assessment.[1,11,26]

MEDICAL EDUCATION DURING THE COVID-19 PANDEMIC

One more topic of discussion in recent medical education system – what is going to happen if situation like COVID-19 arises again in near future. We know that medical colleges in Bangladesh, like many other countries, cancelled clinical placements, formal teaching, and examinations. However, medical schools tried to adapt online methods of teaching and assessment to accommodate the nationwide lockdown, which was in effect in many countries.[7,19,21,23-26] Meanwhile, it was seen as drastic change in medical education by most of the faculties, as the mode of instruction was transferred to online/ distance learning from our traditional face-to-face one.[19,26] Moreover, there were a lot of challenges like technical expertise in designing online curriculum, assessment technique, internet issues, providing students with devices etc. However, this led to the implementation of novel online PBL that became really very effective and successful, and it was subsequently integrated into the curriculum.[26,29-32] This rapid restructuring procedure opens opportunities to strengthen student engagement by involving them in the planning and execution of learning resources.[33,34] Several researchers have argued that involving students as stakeholders in their education adds value and fosters intrinsic motivation, which strongly correlates with self-efficacy and academic performance.[4,19,26,33,34] Moreover, transfer of knowledge is promoted by such assessments, since they stimulate skills that can be used in contexts other than academic ones that are required and valued in the world beyond the classroom.[2,3,22]

RECOMMENDATIONS

Based on our literature review and personal experience, we would like to put some recommendations for future teaching and learning in medical education. Those are stated below:

1. Medical colleges in our country need to actively engage with students to call on their ingenuity and to develop the resources, which may benefit medical education in the long term and motivate future educators.
2. Innovation in teaching and assessment driven by the medical educators and medical students during this pandemic should continue to progress, as because it may accelerate the continuing transformation away from traditional teaching and assessment methods in medical education.
3. Research is needed to investigate the nature and value of assessment feedback and its impact on remediation.
4. Phobia among students related to assessment/ examination needs to be addressed and mental health counselling should be in place.

CONCLUSION

Clinical competence is an extremely complex construct and one that requires multiple, mixed, and higher order methods of assessment. As we have experienced a recent pandemic situation, it seems that plenty of questions remain in relation to clinical competence assessment in medical colleges for now and near future. However, we are moving away from traditional, limited test formats to new, more complex, innovative, mixed methods of 'authentic' assessment – from faculty observation ratings and paper-and-pencil examinations to online MCQ tests, SBA questions, experimentation with advanced OSPE and OSCE, and project-based assessment supplemented with clinical reasoning. These moves are expected to bring not only several challenges but also great educational rewards for the measurement and advancement of clinical competence among students in our current settings. We would like to continue to work on those progressions.

ABBREVIATIONS

AA: Authentic Assessment
MCQ: Multiple Choice Questions
OSCE: Objective Structured Clinical Examination
OSPE: Objective Structured Practical Examination
PBL: Problem Based Learning
SBA: Single Best Answer
TA: Traditional Assessment

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CASE REPORT

Cardiomyopathy Following Biventricular Noncompaction

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ABSTRACT

Myocardial noncompaction (NC) is usually seen isolated; however, sometimes other congenital heart abnormalities may accompany the myocardial noncompaction. Left ventricular noncompaction (LVNC) is a genetic anomaly where the ventricular wall is replaced by thick ventricular trabeculations with deep intertrabecular recesses held together by a thin compacted layer. The most common site of involvement is the left ventricle, with right ventricular involvement being reported in a few cases. Isolated right ventricular noncompaction (RVNC) is rare yet life-threatening if left untreated. Genetic testing may identify possible mutation of gene. Early diagnosis of NC is very important for disease management. The management of associated other cardiac pathologies simultaneously will help improve the symptoms and prognosis in patients with noncompaction. Here we report a case of 60-year-old male patient presenting with heart failure due to cardiomyopathy with biventricular noncompaction. The case is being presented as an academic interest.

Keywords: *Biventricular noncompaction, cardiomyopathy, biventricular cardiac failure, congenital anomaly of heart*

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INTRODUCTION

Myocardial noncompaction (NC) is usually seen isolated; however, sometimes other congenital heart abnormalities may accompany the myocardial noncompaction.[1] Left ventricular noncompaction (LVNC) is a genetic anomaly where the ventricular wall is replaced by thick ventricular trabeculations with deep intertrabecular recesses held together by a thin compacted layer.[2] The most common site of involvement is the left ventricle, with right ventricular involvement being reported in a few cases.[3] Isolated right ventricular noncompaction (RVNC) is rare yet may become life-threatening if left untreated. During embryogenesis, portions of myocardium fail to compact correctly. This leaves areas of the wall of the ventricles with a loosely compacted network that does not pump blood effectively.[1] Clinical manifestations are highly variable, ranging from no symptoms to disabling congestive heart failure, arrhythmias, and systemic thromboemboli.[4,5] Echocardiography has been the diagnostic procedure of choice, but the correct diagnosis is often missed or delayed because of lack of knowledge about this uncommon disease and its similarity to other diseases of the myocardium and endocardium.[5] Here, we present the case of a 60-year-old male patient who was admitted with heart failure and later diagnosed with cardiomyopathy with biventricular

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noncompaction. The case is being presented as an academic interest. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

CASE SUMMARY

A 60-year-old male patient was admitted into the Department of Cardiology, Mymensingh Medical College Hospital, Bangladesh, with the complaints of shortness of breathing for two months along with generalized swelling and palpitations. He did not complain of any chest pain or syncope. Physical examination releveled bilateral pitting oedema with pulmonary crackles and a 2/6 systolic murmur heard loudest at the left lower parasternal border during auscultation. The laboratory results were within normal limits. Electrocardiogram (ECG) showed ST-T changes and LBBB pattern with occasional premature ventricular complexes (Fig. 1). Chest x-ray P/A view showed gross cardiomegaly (Fig. 2). Cardiac evaluation with echocardiogram (Fig.3-7) showed depressed left ventricular systolic function (ejection fraction 30-35%) and impaired right ventricular function (TAPSE-10mm), biatrial enlargement, and increased left ventricular (LV) and right ventricular (RV) wall thickness. The left and right ventricular wall showed marked trabeculation within the inner layer of myocardium consistent with LV and RV noncompaction cardiomyopathy. Contrast study showed blood flow through the trabeculated noncompact inner layer to the outer compact layer. Moderate mitral and tricuspid regurgitation and mild pulmonary hypertension were noted (PASP 35 mmHg). After admission, he was treated with oral and injectable form of diuretics and ACE inhibitor. The patient was symptomatically improved within three days. Then he was discharged with further advice to do a cardiac MRI and genetic study (e.g., *TTN* mutation) in a specialized centre.

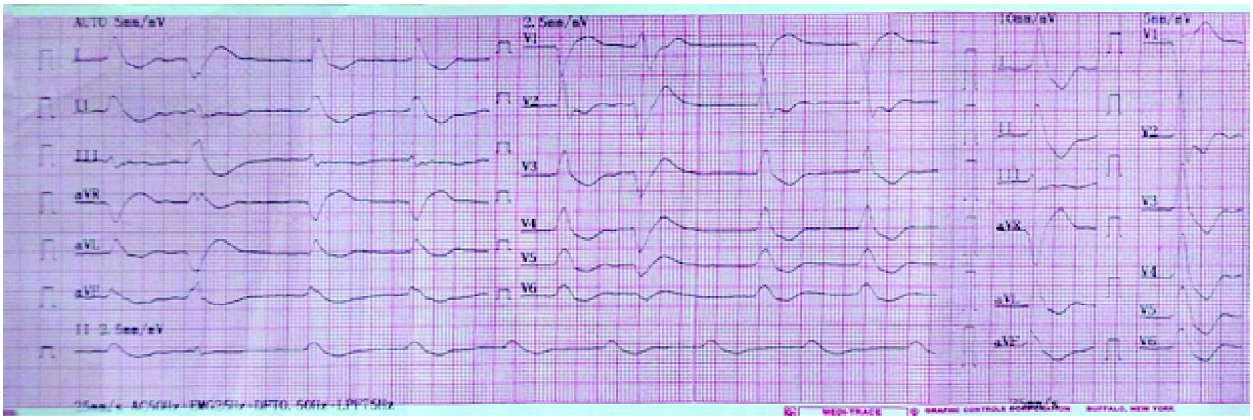

Fig. 1: *ECG on admission, showing LBBB pattern, and multiple premature ventricular complexes.*

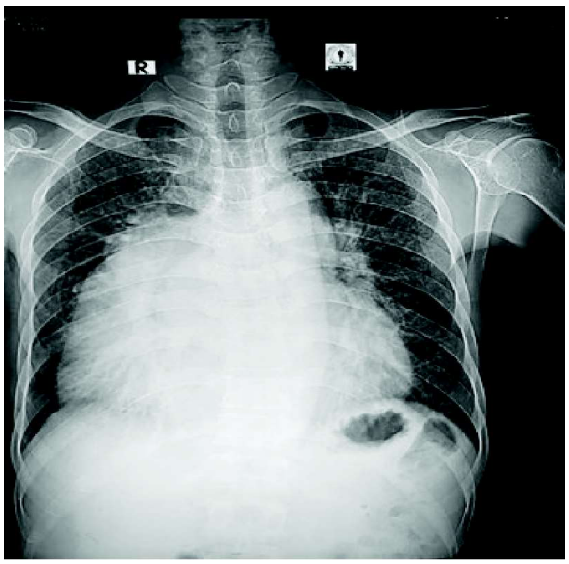

Fig. 2: *Chest x-ray P/A view shows gross cardiomegaly.*

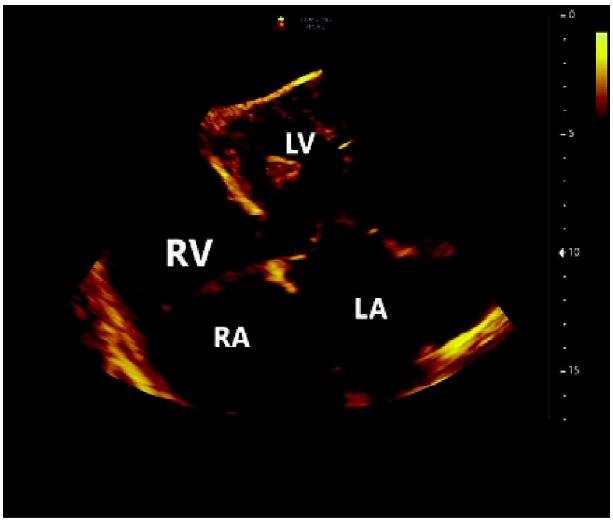

Fig. 3: *Echocardiography showing noncompacted LV and RV.*

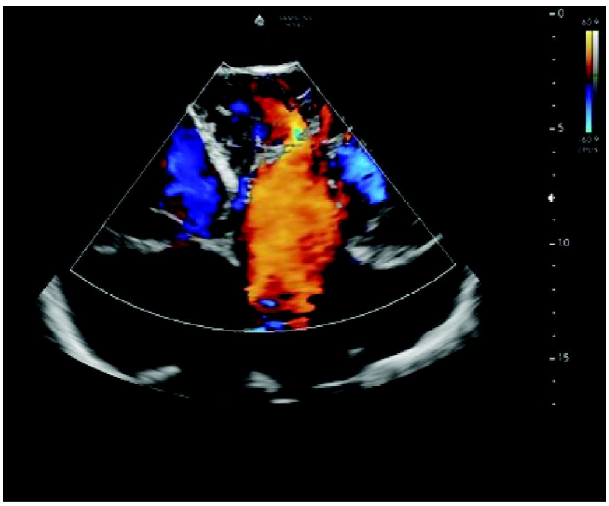

Fig. 4: *Echocardiography showing blood flow into intertrabecular recesses.*

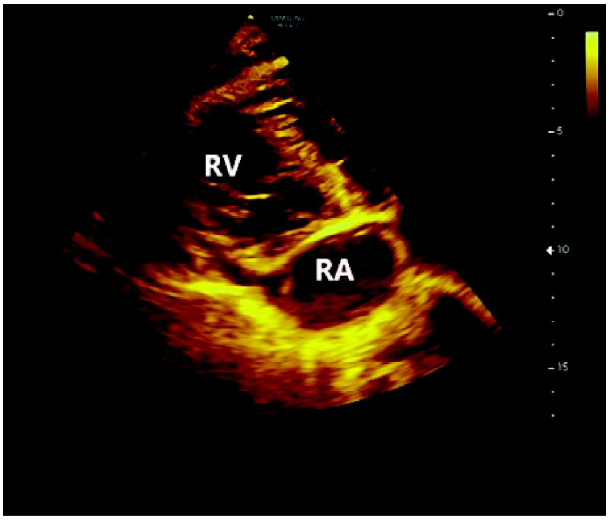

Fig. 5: *Echocardiography showing noncompacted RV.*

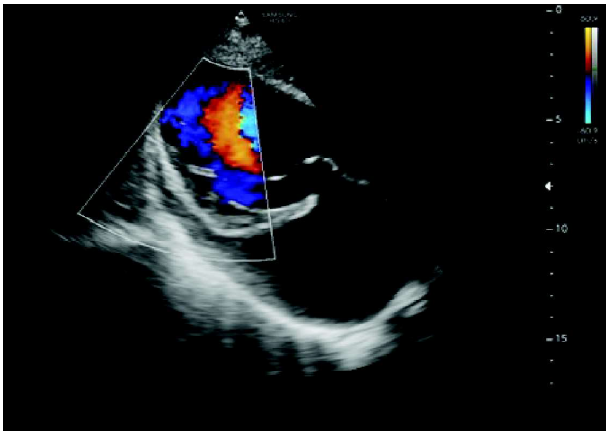

Fig. 6: *Echocardiography showing blood flow into intertrabecular recesses of RV.*

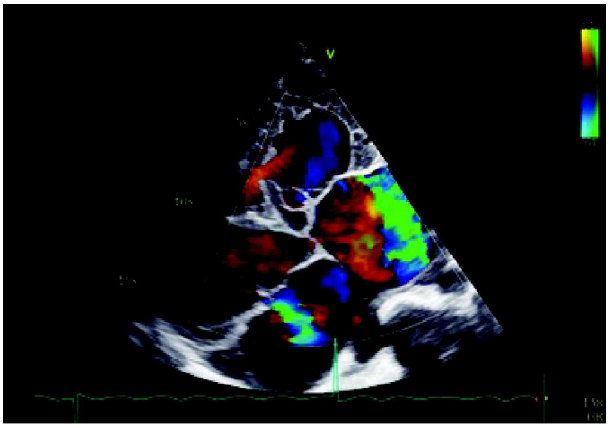

Fig. 7: *Echocardiography showing MR and TR.*

DISCUSSION

Noncompaction of the ventricular myocardium is a cardiomyopathy caused by the arrest of normal embryogenesis of the ventricles. It is classified in isolated noncompaction of the ventricles (most frequently of the left one) and in ventricular noncompaction associated with other congenital anomalies of the endocardium and myocardium.[6] It is characterized by an altered myocardial wall with prominent trabeculae and deep intertrabecular recesses. This results in a thickened bilayer of compacted and noncompacted myocardium following the arrest of the normal process of endomyocardial morphogenesis.[7] Both familial and sporadic forms of non-compaction have been described. Although genes responsible for the sporadic forms have not yet been identified, genes responsible for some familial cases of VNC have been described and have been linked to a mutation in the G4.5 gene of Xq28 chromosome region.[4] Males appear to be affected more often than females, with males accounting for 56%-82% of cases.[5,8] VNC can be present at any age.[8,9] Three major clinical manifestations of VNC are congestive cardiac failure (CCF), arrhythmias (atrial arrhythmias, ventricular tachycardia and sudden cardiac arrest) and thromboembolic events; however, findings vary among patients, ranging from asymptomatic left ventricular dysfunction to severe disabling CCF.[5-9]

There are three proposed diagnostic criteria that are most utilized in the literature. Chin et al.[10] are given credit for their first attempt to define specific criteria for the diagnosis of LVNC. The evaluation includes left ventricular (LV) free-wall thickness at end-diastole, prominent trabeculations, and a progressive

decrease in the ratio of myocardial thickness from the epicardial surface to the trough (*X*) and the epicardial surface to the peak (*Y*) of the trabeculations in the PSAX and apical views.[10] Stöllberger et al.[11] refined the definition as >3 trabeculations protruding from the LV wall apical to the papillary muscles, perfused intertrabecular spaces, and a two-layered myocardium with the noncompacted layer usually thicker than the compacted myocardium in end-systole. However, many recent studies followed criteria set by Jenni et al.[12] to evaluate the presence of LVNC. These criteria include a bilayered myocardium, a noncompacted to compacted ratio >2:1, communication with the intertrabecular space demonstrated by Doppler, absence of coexisting cardiac abnormalities, and presence of multiple prominent trabeculations in end-systole.[12] The echocardiographic criteria proposed by Jenni et al.[12] are also frequently followed. Those include:

(1) the absence of coexisting cardiac anomalies;

(2) the presence of a two-layered structure of the Left Ventricle wall, with the end-systolic ratio of the non-compacted to compacted myocardial layer greater than two, measured in parasternal short axis view;

(3) finding this structure predominantly in the apical and mid-ventricular areas; and

(4) blood flow directly from the ventricular cavity into deep intertrabecular recesses as assessed by Doppler echocardiography or intravenous contrast.[12]

CONCLUSION

Noncompaction is a rare congenital cardiomyopathy which has a poor prognosis. The diagnosis of NC can be made with echocardiogram once the clinician has elicited a thorough family history coupled with a high degree of clinical suspicion. Early diagnosis of NC is very important for disease management. The management of associated other cardiac pathologies simultaneously will help improve the symptoms and prognosis in patients with noncompaction.

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