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1. Title page
2. Abstract (Structured)
3. Introduction
4. Materials and Methods
5. Results (With tables and figures)
6. Discussion
7. Acknowledgement if any
8. Conflict of interest
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Editorial

Fibromyalgia-Chronic Medical Syndrome

***Tajkia T**

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Fibromyalgia, was first recognized in the 1950s[1] and defined in 1990. The term 'fibromyalgia' was derived from Neo-Latin fibro-, meaning "fibrous tissues"[2], Greek myo-, 'muscle'[3] and Greek algos, 'pain'[4]. thus, the term literally means "muscle and fibrous connective tissue pain"[5]. A 1987 article in the Journal of the American Medical Association used the term "fibromyalgia syndrome", while saying it was a "controversial condition"[6]. Fibromyalgia is a long-term adverse health condition[9]. It is characterized by widespread musculoskeletal pain/stiffness accompanied by morning fatigue or an overwhelming feeling of being tired, sleep, memory and mood issues. People with fibromyalgia may be more sensitive to pain than people without fibromyalgia. They can also experience tension headaches, lower abdominal pain or cramps, symptoms of irritable bowel syndrome (IBS), pain in response to tactile pressure (allodynia), hypervigilance, sexual dysfunction, visual symptoms and a general hypersensitivity. Some people with fibromyalgia experience post-exertional malaise,in which symptoms flare up a day or longer after physical exercise. Certain events or changes in your life can trigger a fibromyalgia flare-up. Everyone is different and what triggers symptoms for some people might not for you. In general, anything that increases your stress can trigger a flare-up, including:

Emotional stress caused by your job, financial situation or social life.

1. Changes in your daily routine.
2. Changes in your diet or not getting enough nutrition.
3. Hormone changes.
4. Not getting enough sleep or changing when you sleep.
5. Weather or temperature changes.
6. Getting sick.
7. Starting new medication or treatments, or changing something in your usual fibromyalgia treatment routine[7].

Some people find mental fogginess from fibromyalgia more upsetting than the physical pain. Signs of fibro fog include: memory lapses, difficulty concentrating, trouble staying alert. Anyone can get fibromyalgia, but more women get it than men, at least 80 to 90 percent of fibromyalgia cases are diagnosed in women. It can affect people of any age, even children, but it usually starts in middle age and the chance of having it increases as you get older. Around 4 million people or around 2.0%, in the U.S. are living with fibromyalgia[7]. The cause of fibromyalgia is unknown[8], but is believed to involve a combination of genetic and environmental factors. Environmental factors (nongenetic) may include psychological stress, trauma and certain infections such as rheumatoid arthritis. Since the pain appears to result from processes in the central nervous system, the condition is referred to as a "central sensitization syndrome". Certain genes we inherit from our biological parents might make us more likely to develop fibromyalgia. Studies have found a link between biological parents who have fibromyalgia and their children- this might mean it's passed down through families. Experts haven't found the direct link yet, but they think genetic mutations in the genes responsible for forming the neuro-transmitters in our brain that broadcast and receive pain signals to our body might cause fibromyalgia[7]. One theory is that the brain lowers the pain threshold. Sensations that were not painful before become very painful overtime. Another theory is that the brain and nerves may misinterpret or overreact to normal pain signals. They become more sensitive, to the point where they cause unnecessary or exaggerated pain. This may be due to a chemical imbalance in the brain or an abnormality in the dorsal rootganglion, which is a cluster of neurons in the spine. Many researchers believe that repeated nerve stimulation causes the brain and spinal cord of people with fibromyalgia to change. This change involves an abnormal increase in levels of certain chemicals in the brain that signal pain. In addition, the brain's pain receptors seem to develop a sort of memory of the pain and become sensitized, meaning they can overreact to painful and nonpainful signals. Health care providers

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usually diagnose fibromyalgia using the patient's history, physical examination, X-rays and blood work. In 2016, the provisional criteria of the American College of Rheumatology from 2010 were revised. The new diagnosis required all of the following criteria: "Generalized pain, defined as pain in at least 4 of 5 regions, is present".

1. Symptoms have been present at a similar level for at least 3 months.
2. "Widespread pain index (WPI) ≥7 and symptom severity scale (SSS) score ≥5 OR WPI of 4-6 and SSS score ≥9".
3."A diagnosis of fibromyalgia is valid irrespective of other diagnoses. A diagnosis of fibromyalgia does not exclude the presence of other clinically important illnesses" [9].

The pain, fatigue and poor sleep quality associated with fibromyalgia can interfere with our ability to function at home or on the job. The frustration of dealing with an often-misunderstood condition also can result in depression and health-related anxiety. If we have been diagnosed with fibromyalgia, try to eat a balanced diet overall. Nutritious foods provide us with a constant energy supply and help to keep our body healthy. They may also help prevent symptoms from getting worse.

1. Some dietary strategies to keep in mind:
2. Eat fruits and vegetables, along with whole grains, low-fat dairy and lean protein.
3. Eat more plants than meat.
4. Drink plenty of water.
5. Reduce the amount of sugar in our diet.

Try to incorporate regular exercise, too and work toward achieving and maintaining a moderate weight.There is no cure for fibromyalgia, but doctors and other health care providers can help manage and treat the symptoms. Treatment typically involves a combination of exercise or other movement therapies, psychological and behavioral therapy and medications[8]. The use of medication in the treatment of fibromyalgia is debated although antidepressants can improve quality of life. Common helpful medications include other serotonin- norepinephrine reuptake inhibitors, nonsteroidal anti-inflammatory drugs and muscle relaxants. Q10 coenzyme and vitamin D supplements may reduce pain and improve quality of life. Although in itself fibromyalgia is neither degenerative nor fatal, the chronic pain of fibromyalgia is pervasive and persistent. Most people with fibromyalgia report that their symptoms do not improve over time. However, most patients learn to adapt to thesymptoms over time. As of 2022, neurologists and pain specialists tended to view fibromyalgia as a real pathology[10]. It was mostly seen as due to dysfunction of muscles and connective tissue as well as functional abnormalities in the central nervous system. Rheumatologists defined the syndrome in the context of "central sensitization"-heightened brain response to normal stimuli in the absence of disorders of the muscles, joints, or connective tissues. Because of this symptomatic overlap, some researchers proposed that fibromyalgia and other analogous syndromes be classified together as central sensitivity syndromes[11,12].

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Original Article

Patterns of Antibiotic Resistance Bacteria from Community-Acquired Urinary Tract Infections in Mymensingh, Bangladesh

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Abstract

Background*: Urinary tract infection (UTI) is a significant cause of morbidity and mortality in both developing and developed countries, representing a leading reason for antibiotic prescriptions, particularly in developing regions like Bangladesh.*

Objective*: This study aimed to identify the etiologyand antibiotic resistance patterns of community-acquired urinary tract infections (CAUTIs) in a district-level community clinic in Bangladesh.*

Methods*: We conducted a cross-sectional study at Shodesh Hospital in Mymensingh, prospectively collecting urine samples from 341 patients between January 2022 and December 2022. The collected samples were cultured and isolated bacteria were tested for antibiotic susceptibility using the disc diffusion method.*

Results*: The study revealed a culture growth rate of 26.98% (92 out of 341 samples), with a higher prevalence among female patients (68.47%). The most common pathogen identified was Escherichia coli, accounting for 54.0% of the positive cultures. Cefuroxime exhibited the highest resistance rate at 55.43%, followed by Ciprofloxacin at 13.50%.*

Conclusion*: These findings underscore the necessity for clinicians to make more informed and selective antibiotic choices in the treatment of CAUTIs, thereby potentially reducing patient morbidity and mortality.*

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Keywords: *Serum ferritin, Pre-eclampsia, Indicator, Pregnancy*

Introduction

Urinary tract infections (UTIs) pose a significant health concern, affecting approximately 405 million people globally and resulting in around 0.23 million deaths annually. In 2019 alone, UTIs contributed to 5.2 million morbidity cases[1]. Treatment for UTIs typically begins with antibiotics, but the rise of multidrug-resistant uropathogens has become a pressing issue worldwide. The most common pathogens responsible for community-acquired urinary tract infections (CAUTIs) include Escherichia coli, Klebsiellaspp. Proteus spp. Pseudomonas spp. and Enterococci spp[2]. The incidence of UTIs caused by multidrug-resistant uropathogens is increase-ing at an alarming rate[3]. The frequency, spectrum and antibiotic resistance of these pathogens vary according to geography and over time, highlighting the need for continuous epidemiological studies on CAUTIs[4]. Notably, multidrug-resistant Escherichia coli and Klebsiella pneumonia are increasingly implicated in both CAUTIs and hospital-acquired UTIs[5]. Commonly used antibiotics for these infections, such as third-generation cephalosporins, are becoming less effective due to widespread antibiotic resistance[6]. The irrational use of antibiotics, often prescribed by non-physician practitioners, exacerbates the problem of antibiotic resistance[7]. While UTIs can affect individuals of any age and sex, women of reproductive age and older women are particularly vulnerable[8]. suspected UTI patients had significant growth of uropathogens[9]. Another recent study, indicate that

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over hospital in Bangladesh found that 43.0% of the 443(75.0%) of Escherichia coli strains causing UTIs are resistant to third-generation cephalosporins[10]. A study conducted in 2012, at a regional medical college microscopy and microbial culture, with dipstick tests Diagnostic methods for UTIs include urine screening tools[11]. However, culture remains the gold standard for definitive diagnosis[12]. Studies from Bangladesh, India and Nepal report increasing resistance of urinary pathogens to commonly used antibiotics[13,14]. Therefore, understanding the common pathogens and their antibiotic susceptibility is crucial for the empirical treatment of UTIs.

Methods

This was a cross-sectional survey conducted at a private hospital in Mymensingh, Bangladesh, from January 2022 to December 2022. The study included approximately 341 patients from the community who visited the hospital. Physicians approached patients at diagnostic centers who had ordered urine cultures and sensitivity analyses. Patients were requested to allow the study team to use their culture sensitivity results. Exclusion criteria included patients with urinary tract complications such as the presence of medical or surgical devices, renal stones, or those admitted to the hospital. Urine samples were prospectively collected from the 341 patients meeting the inclusion criteria. The samples were analyzed using standard culture methods and the isolated bacteria were tested for antibiotic susceptibility using the disc diffusion method. Urine samples were cultured using standard procedures to isolate bacterial pathogens. The isolated bacteria underwent antibiotic susceptibility testing via the disc diffusion method. This method involved placing antibiotic-impregnated discs on a culture plate inoculated with the isolated bacteria and measuring the inhibition zones to determine resistance patterns. The data collected included the frequency of positive cultures, the distribution of bacterial pathogens and their antibiotic resistance patterns. The most common pathogens and their resistance to specific antibiotics were identified and analyzed to provide insights for better Clean-catch midstream urine samples were collected after receiving patients' consent and samples were labeled with a blue color sticker for identification. The urine cultures were performed in the clinical microbiology laboratory at Shodesh Hospital in Mymensingh. Samples were inoculated on Hi-Chrome UTI agar, blood agar and MacConkey agar media using a calibrated wire loop and incubated overnight at 37°C. The plates were examined for bacterial growth and isolates were identified based on colony morphology, Gram-stain characteristics and biochemical tests. Culture results were interpreted according to standard criteria, with a growth threshold of $>10^5$ colony-forming units (CFU) per milliliter considered significant bacteriuria. Antibiotic susceptibility testing was conducted using the Kirby-Bauermethod, with interpretations following the criteria recommended by the National Committee for Clinical Laboratory Standards (NCCLS). Quality control strains used to validate the antimicrobial disk results included Escherichia coli ATCC 25922, Pseudomonas aeruginosa ATCC 27853 and Staphylococcus aureus ATCC 25923. All participants provided written informed consent before taking part in the study. In cases of minors under the age of 18, written informed consent was obtained from patients and their guardians. Participation in the study was voluntary. Participants were allowed to withdraw their consent from the study at any point which did not affect their regular treatment.

Results

During the one-year study period, a total of 341 urine samples were cultured, of which 92(26.98%) showed bacterial growth (Table I). Among the positive cultures, 63(68.47%) (Table II) were from female patients, with the most common age group being 51 to60 years, accounting for 18.47% of the cases (Figure 1). The predominant bacterium identified was Escherichia coli, present in 54.0% of the positive cultures (Table: III). Cefuroxime was the most commonly resistant antibiotic, with a resistance rate of 55.43% (Table IV).

Table I: Bacterial growth in total samples

Type	Number (n)	Percentage (%)
Growth	092	26.98
No-growth	249	73.02
Total	341	100.0

Table II: Gender distribution in culture positive samples

Type	Number (n)	Percentage (%)
Male	29	31.53
Female	63	68.47
Total	92	100.0

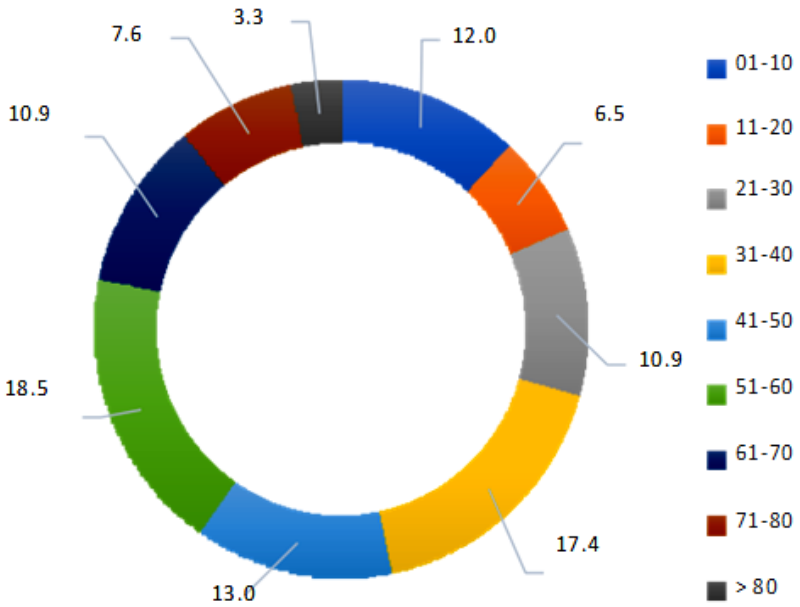

Figure 1: Pie chart showing age group-wise distribution of culture positive samples

Table III: Pattern of pathogens in CAUTIs in culture positive samples

Type	Number (n)	Percentage (%)
Escherichia coli	50	54.00
Klebsiella spp.	05	05.50
Enterococci spp.	15	16.20
Proteus spp.	04	04.30
Pseudomonas aeruginosa	10	10.86
Others	08	08.69
Total	92	100.00

Table IV: Antibiotic resistance pattern of the identified pathogens

Name of antibiotics	Number (n)	Percentage (%)
Amikacin	03	03.26
Ceftriaxone	09	09.78
Cefuroxime	51	55.43
Cefixime	05	05.43
Ceftazidime	06	06.52
Ciprofloxacin	12	13.07
Gentamicin	02	02.17
Nitrofurantion	03	03.26
Imipenem	01	01.08
Total	92	100.0

Discussion

Urinary tract infections (UTIs) represent a significant public health challenge globally, including in Bangladesh, largely due to the ongoing emergence of multidrug-resistant uropathogens. The prevalence of such resistant strains complicates the effectivetreatment of UTIs and underscores the urgent need for localized diagnostic and treatment strategies. Given the regional variations in urinary pathogens, it is crucial for physicians and microbiologists to collaborate closely in diagnosing UTIs and profiling the antibiotic susceptibility of uropathogens[15]. This cooperation is essential to effectively address the threat of multidrug-resistant bacteria and ensure that treatment protocols are tailored to the specific resistance patterns prevalent in different geographic areas. It is well-established that urinary tract infections (UTIs) are more prevalent in females compared to males, a disparity often attributed to factors such as the anatomical position of the female urethra, vaginal colonization with pathogens, sexual activity, pregnancy and potential urinary tract obstruction[15]. Our investigation corroborates this finding, as the highest frequency of infection was observed among female patients. This result aligns with the findings of Haque et al., reinforcing the understanding that female anatomical and physiological factors contribute significantly to the increased incidence of UTIs in women[16,17]. In this study, the highest significant growth was in the age group 51 to 60 years which was 17(18.47%); however, Sanjee et al. found the highest significant growth among the age groups 21-40 years (33%)[15]. Conversely, a study conducted in 2014, UTIs were more prevalent in the age group of 30 to 45 years[18]. In another study Bangladesh, more common UTI was found in 21to 30-year-old age groups, followed by 41-50 years[19]. It may be due to variations in time and place. However, variations in the occurrence of UTIs within different age groups may be due to hormonal changes affecting the mucosal adherence of bacteria, frequent sexual activity, use of spermicidal agents, menopause and prostatic enlargement[20]. In our study, the most common bacteria in CAUTI was E. coli, which was 50(54.0%) followed by Enterococci spp. Fifteen (16.20%), which was similar to Sanjee et al., who found E. coli 57.38% and Enterococci spp. 36.06%[15]. The same prevalence of uropathogens was found in our study as well as in a few studies conducted in India, Pakistan and Korea[21,22,23]. E. coli is more common in other studies in Bangladesh[24,25]. It maybe due to the fact that they are the normal fecal flora and also have some virulence factors like adhesion, pili, fimbriae and the P1-blood group phenotype receptor responsible for their attachment to uroepithelial cells[26]. We found the highest resistance to cefuroxime (55.43%), followed by ciprofloxacin (13.7%), which is similar to Sanjee at EL[15]. Another study from Bangladesh found increased resistance of the uropathogens to Ciprofloxacin[27]. According to other studies in Bangladesh, imipenem was considered the most effective drug against UTI, followed by amikacin, which correlates with our study[27]. It is very alarming that all the third-generation cephalosporins are found to be ineffective against all uropathies. From our study, it was found that the uropathogens are becoming increasingly resistant to the most common antibiotics in cases of uncomplicated UTI. Given that drug resistance can be either inherited or developed over time and is primarily driven by antibiotic overuse, we can potentially mitigatethis issue by carefully selecting prescribed antibiotics. The present study did not include nosocomial UTIs, limiting the ability to compare community-acquired research should incorporate both types to provide a more comprehensive understanding of UTI patterns and resistance.

Conclusion

The study reveals a high rate of CAUTIs caused by multidrug - resistant pathogens among the participants. The significant prevalence of antibiotic resistance, particularly to commonly used antibiotics like cefuroxime, underscores the urgent need for updated treatment guidelines and antibiotic stewardship in the region. These findings provide critical evidence for healthcare providers and policymakers to improve the management of CAUTIs, ensuring more effective and targeted use of antibiotics. Furthermore, thestudy highlights the necessity for continued research in this field, not only within Mymensingh but also across other districts in Bangladesh. Expanding this research can facilitate a broader understanding of resistance patterns and guide the development of comprehensive, region-specific treatment protocols. Collaborative efforts among researchers can contribute to a more robust epidemiological database, ultimately aiding in the fight against the growing threat of antimicrobial resistance in community settings.

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Original Article

Alteration of Thyroid Hormone Levels in Children with Epilepsy, Treated with Sodium Valproate Monotherapy

***Ali MA[1], Akter AHMM[2], Bari MA[3], Dipu MR[4], Rabeya T[5], Ahammad AN[6], Waliullah AKM[7], Arafat M[8]**

Abstract

Background*: Epilepsy represents the most frequent neurological condition in the pediatric population, frequently necessitating extended, and occasionally permanent, medical management. Valproicacid (VPA), also known as sodium valproate, is a widely used, broad-spectrum antiepileptic medication for children.*

Objective*: This investigation aimed to assess alterations in thyroid hormone concentrations in epileptic children following six months of VPA treatment.*

Methods*: A prospective observational study was conducted in the pediatrics department, utilizing both outpatient and inpatient services at Mymensingh Medical College Hospital, Mymensingh. Following comprehensive history-taking and clinical assessment, 80 children with epilepsy, treated exclusively with VPA, were enrolled. Thyroid function tests were performed before initiating VPA and again six months later. Serum levels of FT_3, FT_4, and TSH were measured on the same day using radioimmunoassay kits. Sociodemographic data were collected and analyzed using SPSS software, version 23.0.*

Results*: Among the 80 participants, 49(61.3%) were male and 31(38.8%) female. The average age was 4.81 years (SD±2.06), with 65 children aged between 2 and 5 years. Baseline thyroid function (TSH, FT_3, FT_4) was normal in all (100%) subjects. At the six-month follow-up, 19 out of 80 children (23.8%) exhibited subclinical hypothyroidism (TSH >6.63IU/ml), a statistically significant finding ($p<0.001$). Only 7.5% of children had FT_3 levels below the normal range (<2.8 pg/ml) after six months of therapy.*

Conclusion*: Therefore, this study concludes that treatment with VPA carries a risk of inducing subclinical hypothyroidism.*

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Keywords: *Epilepsy, Valproic Acid, Subclinical Hypothyroidism,Antiepileptic drug, Growth retardation*

Introduction

Epilepsy is diagnosed following at least two unprovoked seizures occurring more than 24 hours apart, a single unprovoked seizure with a high likelihood of recurrence within a decade, or confirmation of a specific epilepsy syndrome[1]. While controllable withmedication based on seizure type and severity, it is generally not curable[2]. This disorder is particularly prevalent in populations with increased prenatal risks, higher rates of central nervous system infections, and other childhood neurological conditions. The global lifetime prevalence is approximately 7.60 per 1000 people, with estimates of 9.2 and 7.7 per 1000 in low-and middle-income countries, respectively. Prevalence in children under 18 is 8.2 per 1000, similar to the adult rate of 8.5 per 1000[3]. A large majority (96.0%) in one survival study believed epilepsy is a medical condition treatable with antiepileptic drugs[4]. The mainstay of management is antiepileptic drug (AED) therapy, often required long-term or for life[5]. Valproate is extensively prescribed for both partial and generalized epilepsy in children and adolescents[6,7]. As the sodium salt of valproic acid, this branched-

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chain carboxylic acid anticonvulsant is also used for bipolar disorder, migraines, and anxiety disorders. It is primarily administered orally, has excellent oral bioavailability, is highly protein-bound (>90.0%), undergoes complete hepatic metabolism via glucuronidation and oxidation, and is renaly excreted. The potential interaction between AEDs and thyroid hormone levels is a significant clinical concern, as even slight disruptions in thyroid metabolism during childhood can impair growth, development, cognition, and neuromuscular function[8]. The influence of both epilepsy and its treatment on thyroid function has garnered increasing interest. Most pediatric studies on drugs like carbamazepine, oxcarbazepine, and phenobarbital report reduced thyroxine and free triiodothyronine levels with normal or elevated TSH[9,10,11,12,13]. The relationship between valproic acid (VPA) and thyroid dysfunction, however, remains inconsistent. Some research indicates VPA can induce subclinical hypothyroidism, characterized by elevated TSH (5-25 mIU/mL or higher) with stable or decreased FT3 levels[14,15,16,17,18]. while otherstudies show no significant hormonal changes[19,20,21]. Debated risk factors for VPA-induced thyroid issues include patient age, treatment duration, dosage, and drug serum levels. This study was designed to examine the short-term impact of VPA monotherapy on thyroid function in children with newly diagnosed epilepsy.

Methods

This prospective observational research was carried out in the pediatrics unit of Mymensingh Medical College Hospital, Mymensingh, from July 2018 to January 2020. Participants included children aged 2–12 years with a new diagnosis of epilepsy and prescribed valproic acid (VPA) as sole therapy. Individuals taking other medications known to affect thyroid, hepatic, or renal function were excluded. Written informed consent was acquired from guardians after explaining the study's purpose, methods, potential risks, benefits, and consequences. Ethical approval was granted by the institutional review board of Mymensingh Medical College. Newly diagnosed epileptic patients visiting the pediatric outpatient clinic or admitted to the ward at MMCH were enrolled. Epilepsy diagnosis was based on detailed history and thorough clinical evaluation. Seizure types were classified following the International League Against Epilepsy criteria. Thyroid function was assessed before initiating VPA and again after six months of treatment. Hormone levels were measured using radioimmunoassay kits: FT_3 and FT_4 with Amalex kits (Amerston International) and serum TSH with a kit manufactured in Shanghai, China. Statistical analysis was performed using SPSS version 23.0 for Windows, with data verified twice before analysis Means were computed, and quantitative findings were expressed as frequencies and percentages. A paired t-test was used to compare patient data at baseline and the six-month follow-up. A p-value below 0.05 was regarded as statistically significant.

Results

A total of 80 children with newly diagnosed epilepsy were included in this study. The majority of participants were aged 2-8 years (65%), followed by 5-7 years (22.5%) and >7 years (12.5%) (Table 1). The mean age was 4.81±2.06 years (range: 2-12 years). Regarding sex, males outnumbered females with a ratio of 1.6:1, comprising 49(61.0%) and 31(38.8%) participants, respectively (Table II). The mean weight of the patients was 15.82±3.84 kilograms (range: 7.5-30 kilograms).

Table I: Age distribution of the study patients

Age group (years)	Number of case (n)	Percentage (%)
2-5	52	65.0
5-7	18	22.5
>7	10	12.5
Total	80	100.0

Table II: Sex distribution of the study patients

Sex	Number of casee (n)	Percentage (%)
Male	49	61.3
Female	31	38.8

Among the patients, generalized epilepsy was the most prevalent type, accounting for 58(72.5%) of cases, followed by partial epilepsy 16(20.0%) and unclassified 06(7.5%) (Table III). Before initiating valproate therapy, all patients exhibited normal thyroid function as measured by TSH, FT_3, and FT_4 levels. However, after six months of treatment, significant changes were observed. Serum TSH levels increased significantly, while FT_3 and FT_4

levels decreased. Consequently, 19(23.8%) of patients developed elevated TSH levels exceeding the normal range (0.6-6.3 µIU/ml), indicating potential hypothyroidism. Additionally, 08(10.0%) and 06(7.5%) of patients experienced decreased FT_4 and FT_3 levels, respectively, suggesting subclinical hypothyroidism (Table IV, V, and Figure 1)

Table III: Type of epilepsy in the study patients

Types of epilepsy	Frequency (n)	Percentage (%)
Generalized epilepsy	58	72.5
Partial epilepsy	16	20.0
Unclassified	06	07.5

Table IV: Comparison of FT_3, FT_4, and TSH levels before and 6 months after VPA therapy

Thyroid function test	Duration of therapy		p value
	0 months Mean±SD	6th months Mean±SD	0 months vs. 6 months
FT_3	3.88±0.651	3.290±1.790	<0.006*
FT_4	1.375±0.334	1.109±0.451	<0.001*
TSH	2.723±2.502	5.861±2.367	<0.001*

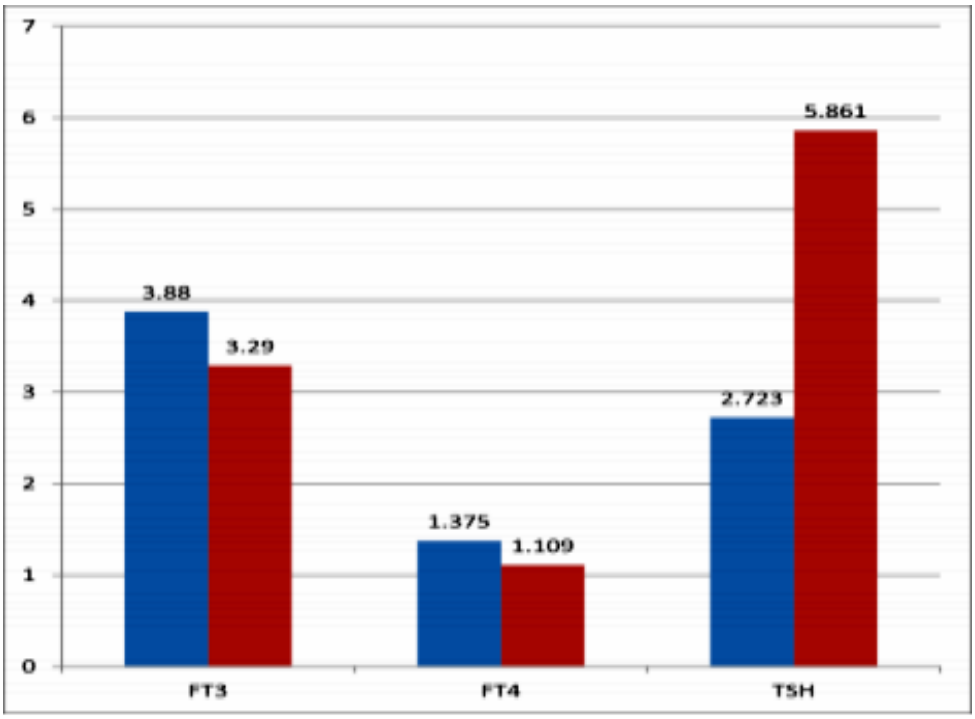

Figure 1: Comparison of thyroid function status of the patients before and 6 months after VPA therapy

Discussion

Antiepileptic medications influence thyroid hormone concentrations through multiple pathways. Several induce hepatic microsomal enzymes, thereby increasing thyroid hormone metabolism; others disrupt hypothalamic-pituitary-thyroid axis regulation. This prospective investigation aimed to evaluate changes in thyroid hormones in pediatric epilepsy patients receiving sodium valproate as single-agent therapy. Eighty newly diagnosed children aged 2-12 years, attending Mymensingh Medical College Hospital,

were enrolled. Baseline thyroid function (FT_3, FT_4, TSH) was measured before starting valproate. Participants were monitored regularly, with thyroid profiles reassessed after six months of monotherapy. Multiple reports indicate a higher prevalence of epilepsy in younger children[22,23]. Our results align, showing that most cases (65.0%) occurred in the 2-5-year age group. Males were more frequently affected than females (ratio 1.6:1), consistent with prior research. Generalized seizures were also more common than focal seizures in this pediatric cohort, matching earlier findings. Our analysis detected a statistically significant rise in TSH levels after six months of valproate monotherapy ($p<0.05$). Serum TSH is regarded as the most dependable indicator of thyroid status in patients on antiepileptic drugs. Elevated TSH was observed in 17 of 80 subjects (23.8%) after six months. The rate of subclinical hypothyroidism here (23.8%) appears lower than that reported in a previous study (52.4%)[25]. The mean TSH level at follow-up increased significantly from baseline (2.723±2.50 mIU/ml vs. 5.86±2.35 mIU/ml; $p<0.01$). This finding concurs with research by Rajak et al., who also reported a significant increase in mean serum TSH after six months of valproate treatment (2.723±2.502 mIU/ml vs. 5.005±1.790 mIU/ml; $p<0.05$)[23]. FT_4 levels also declined significantly after six months of valproate monotherapy, with 10.0% of patients falling below the normal range- a trend consistent with related studies. FT_3 decreased in 7.5% of subjects, a result supported by Attilakos et al.[17]. These outcomes indicate that valproate monotherapy in children can induce early thyroid function changes, underscoring the importance of regular thyroid monitoring in this population. Research by Doneray et al. in children on valproate monotherapy for up to six months similarly found significantly increased TSH and decreased FT_4, aligning with our results. That study also noted significantly reduced serum copper (Cu) levels after six months of therapycompared to controls[27]. This suggests that thyroid alterations during valproate treatment might be linked to lower serum copper, though copper levels were not measured in our study and warrant further investigation.

Limitations

We acknowledge that in this study, the sample size was small and the duration of follow-up was short; thus, the results cannot be generalizable.

Conclusion

This research concludes that pediatric epilepsy patients undergoing valproic acid (VPA) treatment for six months or more are at risk for developing subclinical hypothyroidism. Therefore, performing regular serum thyroid hormone tests in children receivingVPA therapy is recommended.

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Original Article

A Study on the Etiology and Outcome of Acute Kidney Injury Patients in the Nephrology Center of the Community Based Medical College

***Hasan MJ[1], Ray NC[2], Bari MA[3], Islam MA[4], Ahmed S[5], Islam MS[6]**

Abstract

Background*: Acute kidney injury (AKI) is a rising health issue that claims the lives of millions of people across the globe each year. Furthermore, understanding the incidence, causes, signs, symptoms and outcome of AKI in a developing nation such as Bangladesh iscritical to provide appropriate care and directing resources.*

Aim*: The aim of the study is to determine the etiology, clinicopathological characteristics and prognosis of AKI patients in the Nephrology Center at the Community-Based Medical College in Bangladesh.*

Methods*: This was an analytical cross-sectional study done from January to December 2023 and involved 65 AKI patients. Patient demographic data, clinical details, biochemistry profile details, treatment regimens and outcomes were obtained using structuredquestionnaires and medical records.*

Results*: The mean age of the patients was fifty-six years, with a male preponderance (61.5%). Pre-renal azotemia caused by prerenal factors was identified in 38.5% of the cases and renal azotemia caused by renal factors was identified in 30.8%. Years of experience was another factor that reached significance with an odds ratio of 1.05 (95% CI: 1). The odds of a poor outcome were found to be 5% higher per year of age (OR = 1.01–1.09). Hypovolemic pre-renal etiology was associated with more favorable outcomes compared to other etiologies (OR: 2. 00, 95% CI: 1.00-4.00).*

Conclusion*: The findings of this study will help identify the demographic characteristics and clinical outcome of AKI patients in a tertiary care teaching hospital in Bangladesh. Interestingly, the authors focus on the early recognition and treatment of pre-renal factors, especially in elderly patients. The high recovery rate indicates that a better result can be realized if management strategies adapted suit a center unfavorably endowed.*

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Keywords: *AKI, Nephrology, Etiology, Renal azotemia*

Introduction

Acute kidney injury (AKI) is becoming a global health problem affecting millions of people annually[1]. It is a condition that occurs when the kidneys suddenly lose their ability to maintain the required fluid, electrolyte and acid-base balance. This condition has replaced acute renal failure as the term in use in the current medical parlance since the terminology represents a significant shift in how the disorder of the kidneys is viewed in the modern world[2]. AKI is more common worldwide and it also has significant impacts on the AKI is rooted in a range of factors comprehensively termed pre-renal, A Study on the Etiology and Outcome of Acute Kidney Injury Patients in the Nephrology Center of the Community Based Medical Collegeintrinsic renal and post-renal causes[3]. Pre-renal AKI, which is usually the most frequent, occurs when reduced blood flow acts on the kidneys without harming them. This can be because of volume depletion, reduced cardiac output, or a change in renal blood flow and filtration pressure[4]. Intrinsicrenal AKI refers to the

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direct kidney or parenchyma damage that results from structural changes that are not related to the renal vasculature and that can be triggered by conditions such as ischemia,nephrotoxin, sepsis or glomerular or vasculardiseases. The second type of AKIis known as post-renal AKI; it is less frequent in development but results from urinary outflow obstruction that can occur at any level of the renal pelvis, urethra, bladder or urethra[5]. The study on the epidemiology of AKI in the context of a developing country like Bangladesh already gives a notion of this peculiar setting. Analysis of previous studies from the region reveals that the infectious causes leading to acute kidney injury include diarrheal diseases that cause volume depletion[6]. Moreover, an increase in the usage of nephrotoxic drugs, such as non-steroidal anti-inflammatory drugs (NSAIDS), in the population has also been established as an increasing concern in the development of AKI[7]. AKI can manifest at various severity levels, from abnormal biochemical parameters to severe forms that require intervention. Predictable manifestations include reduced urine output or anuria, fluid retention resulting in the development of oedema and, in the worst-case scenario, uremic intolerances like nausea, vomiting and confusion due to acute kidney injury[8]. In AKI, diagnosis involves clinical evaluation, measurements of urine output and biochemical indexes such as serum creatinine. Treatment of AKI is mainly conservative; it aims at treating the underlying cause, maintaining fluid and electrolyte balance and preventing further renal injury. In extreme cases, renal replacement therapy may be required[9]. The modalities of renal replacement therapy include intermittent hemolytic, peritoneal dialysis and continuous renal replacement therapy and the decision on which mode to employ depends on some factors such as the patient's hemodynamic status, the acuity of the AKI and the availability of equipment[10]. In fact, patients with AKI can experience various outcomes, from the complete return of kidney function to the development of chronic kidney disease or death. These variables include the etiology of AKI, the stage and duration of renal involvement, additional diseases and interventions' effectiveness and timing. Other challenges are delay in attending to the medical facilities and low use of complex renal replacement modalitiesin healthcare settings of low-and middle-income countries (LMICs), such as Bangladesh[11]. To begin with, understanding the factors that contribute to AKI, the nature of its clinical presentation, as well as the prognosis of the condition in the context of Bangladesh, is important for several reasons. First, it makes it possible to build up specific measures of prevention focusing on the key modifiable risk factors present in the population of the region. Secondly, it assists in the quick identification ofthose patients who are most likely to develop complications, thereby optimizing outcomes. Thirdly, it helps in deciding how resources should be budgeted and what policies should be set up in the healthcare sector so that funds are well utilized in managing the needs arising from AKI[12]. Few studies have been carried out on AKI in Bangladesh and most of the studies done were cross-sectional and subgroup or etiology-specific[13]. The study of AKI patients in a specific tertiary care center can offer some broader insights into the disease in the locale. This study will work towards filling this knowledge gap by exploring the etiology, clinic pathological profile and treatment approaches of AKI patients. Consequently, the outcomes of this study can make a varietyof contributions to clinical practice. The ability to define the exact causes of AKI in this population helps clinicians be more careful about recognizing and preventing these contributing factors. This study can help in the identification of patients withcertain demographic and clinical characteristics that are associated with poor outcomes and thus ensure closer monitoring and management of high-risk patients. Also, evaluating management strategies and outcomes can help form local guidelines and protocols on how to manage AKI, which may result in better patient care[14]. The study will provide possibility and potential to improve prevention, early identification and management of this important health condition by offering details about local epidemiology, clinical characteristics and outcomes of AKI. The implications of this study are promising, as it could help with clinical practice for the treatment of AKI in Bangladesh and similar settings, as well as help with resource mobilization and patient care.

Methods

This is an analytical cross-sectional survey, which was carried out in the nephrology center of the Community Based Medical College in Bangladesh, between January 2023 and December 2023. The Community Based Medical College in Bangladesh, offers a good prospect for studying AKI. This institution has a broad scope for in depth analysis of AKI etiologies and manifestations. Additionally, it could potentially have more morbid and severe cases of AKI given that it is a referral center, which could add useful information regarding the management and outcome of patients in such a scenario. A purposive sampling technique was used to ensure that all patients diagnosed with AKI were included in the study. The cases were categorized with regard to etiology, demographic data, clinical manifestation, laboratory data, treatment and disposition and overall outcome. Inclusion criteria included patients who got admitted to the Nephrology Center in Community Based Medical College during the study period with AKI using the Risk, Injury and Failure; and Loss; and End-stage (RIFLE) classification's criteria. The patients in the study had the following characteristics: AKI with no comorbidity conditions, diabetes mellitus, hypertension, left ventricular failure, liver cirrhosis, chronic kidney diseases and positive hepatitis B surface antigen. Information was administered through self-completed questionnaires and medical records. The data obtained included demographic etails, clinical presentation, biochemistry results, treatment strategies and an evaluation of the overall outcome. The statistical test was done on the software called IBM SPSS Statistics version 23.0. aseline demographic and clinical data were presented using frequencies, percentages and means where appropriate. Multivariate logistic regression was used to assess the risk factors for AKI Table I outcomes. The study was approved by the hospital and institutional ethical committee and written informed consent was collected from all the participants before data collection.

Results

This study involved 65 patients with AKI who received care at the nephrology center at the Community Based Medical College in Bangladesh. This consideration gives essential information related to the demographic data, risk factors and prognosis connectedwith AKI in the given setting of healthcare. Demographic details of the study participants have been described in detail in Table I below.

Table I: Age distribution of the study patients

Age group (years)	Number (n)	Percentage (%)
18-30	05	07.7
31-40	10	15.4
41-50	20	30.8
51-60	15	23.1
61-70	10	15.4
71-80	05	07.7
Marital status		
Married	45	69.2
Unmarried	10	15.4
Divorced	05	07.7
Widow	05	07.7
Occupation		
Housewife	20	30.0
Unemployed	15	23.1
Service holder	10	15.4
Other	20	30.8

The mean age of the patients was 50.2± 12.2. A significant percentage of the patients 20(30.8%) were within the agerange of 41-50 years. This ascertain indicates that AKI in this group primarily

impacts people in their most productive years, which may have broader socioeconomic impacts. The istribution of the genders of the participants also indicated a male dominance, where males constituted 40(61.0%) of the sample size (Figure 1). This gender difference in AKI incidence also echoes what has been reported in other similar studies and could be a result of differences in risk factors or, by chance, differences in the way they access health care services within that population. When it came to the patient's marital status, it was found that 45(69.2%) of them were married. Socioeconomic characteristics proved more revealing with housewives and persons in the 'other' employment category comprising 20(30.0%) each. While this was similar to other occupations other than housewives, it may be due to variations in the patients hospitalized and the potential factors related to the development of AKI in a hospital setting.

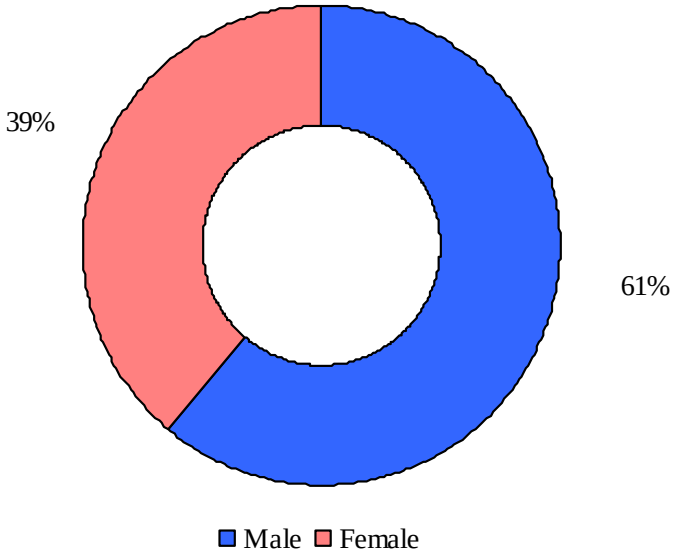

Figure 1: Distribution of the patients by gender

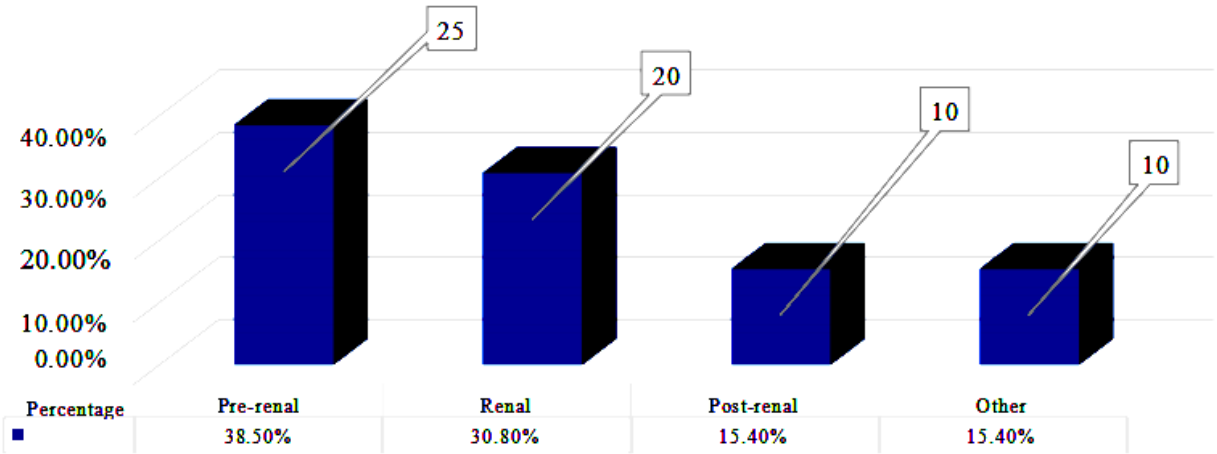

Figure 2: Distribution of the patients by etiology

Etiological breakdown of AKI patients (Figure 3) provides useful data for identifying the primary etiology of AKI within this cohort. As the results have shown, pre-renal azotemia was the most frequent cause identified, occurring in 25(38.5%) patients. Such observations further emphasize other factors impacting renal blood flow in the development of AKI in this context. Renal causes ranked second, 20(30.8%). Post-renal causes were less often diagnosed with 10(15.4%) patients. Other etiologies constituted 10(15.4%) of the cases, which includes HIV/AIDS 3(4.0%). The

outcomes of AKI patients (Figure 3) provided a positive insight for the management of AKI in this population. A greater percentage of patients got well 45(69.2%), which can be attributed to the care received at the facility. However, till the end of the study 10(15.4%) were in non-recovery stage and another 10 (15.4%) cases died from the disease. These figures highlight the importance of better detection methods and improved intervention approaches that can further enhance the prognosis.

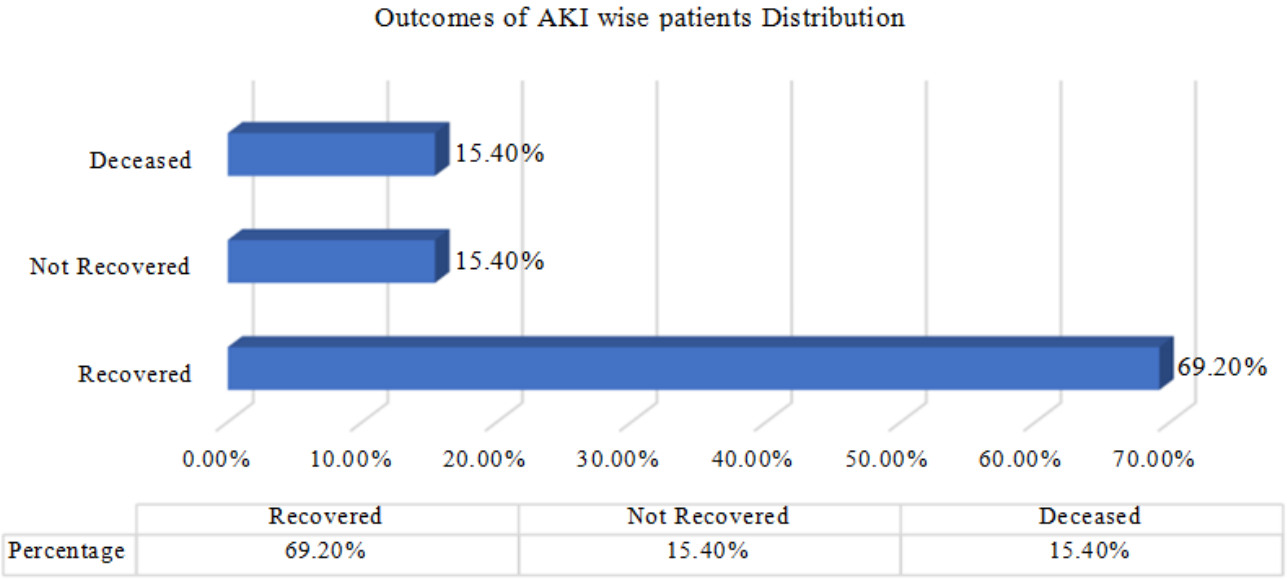

Figure 3: Distribution of the patients by outcomes

The results of the logistic regression analysis presented in Table II indicated that certain variables were important predictors of outcomes among patients with AKI. The only demographic factor that was significant was age, reporting an odds ratio of 1.05 (95% CI: 1.01-1.10)). Between groups 1a and 2: The results show there was a major difference between the two groups in terms of their bowel frequency (X2 = 8). This means that for every extra year ofage, the risk of a poor outcome rose by 5%, suggesting that older patients are more vulnerable to bad outcomes in AKI. Another factor found to be significantly associated with outcomes includes the etiology of AKI. Hypovolemic pre-renal was considered significantly more favorable compared to other etiologies by an odds ratio of 2.00 (95% CI:1.00–4.00, t =-4.747), p = 0.05. These results indicated that patients with pre-renal AKI had a two-fold increased probability of improved outcomes compared to patients with other underlying acute kidney injury etiologies, the possible explanation of which might be due to the fact that when pre-renal AKI is diagnosed and treated early, it may not be as detrimental as other types of AKI.

Table II: Predicting Outcomes in AKI Patients

Predictor variable	Odds Ratio (95% CI)	p value
Age (Continuous)	1.05 (1.01-1.10)	0.02
Gender (Male vs. Female)	1.50 (0.70-3.20)	0.30
Marital status (Married vs. Others)	0.80 (0.35-1.80)	0.60
Occupation (Housewife vs. Others)	0.90 (0.40-2.00)	0.80
Etiology (Pre-renal vs. Others)	2.00 (1.00-4.00)	0.05

Discussion

This study serves as a useful source of knowledge on the descriptive epidemiology, risk factors and prognosis of AKI in an Asian tertiary hospital in Bangladesh. The demographic analysis of our study subjects shows that the mean age of the participants was 50 years. At a mean of two years, the results are in concordance with other similar studies done in other health care facilities. For example, Prakash et al. cited a study conducted in eastern India among AKI patients, where the mean age was 42 years, further confirming the fact that AKI prefers the middle-aged in developing countries[15]. The gender split in the presented study, where males constituted a majority (61.5%), likewise corresponds with data from multiple other investigations. This reduced incidence of AKI in female patients hasbeen observedin other studies and could be due to different risk factors, including occupational risks, utilization of care services and the presence or absence of co-morbidities[16]. However, it is also crucial to highlight those other comparative studies conducted on patients with similar demographics identified no significant difference in AKI rates in relation to gender, meaning that this aspect may depend on certain population and context factors[17]. The etiologic distribution of AKI in our study shows pre-renal causes to be the most dominant, with a percentage of 38.5% and renal causes following closely with a percentage of 30.8%, which is similar to that observed in developing nations[18]. This distribution is different from that observed in Australia and other developed nations, where intrinsic renal causes are more frequently seen as a cause of CKD. The increased prevalence of pre- renal AKI in the present study may relate to factors such as diabetic gastro paresis causing volume loss, a prevalent problem in the area[19]. This observation also corroborates the study conducted by Rashid et al. where volume depletion was identified as one of the biggest precursors to AKI[20]. The outcome for AKI patients was reasonably promising in this study, with 69.0% surviving at 90 days. This recovery rate is higher than what has been reported in other studies from different developing nations, such as, one research from India by Eswarappa et al. found a recovery rate of 54 percent[21]. This might be due to earlier presentation, better management, a different degree of AKI in the studies conducted and a higher overall recovery rate. However, the mortality rate is still high (15.0%), among those who were infected. Our finding of 4 percent is quite consistent with other studies conducted in various parts of the world, therefore supporting the high risk of AKI and further calling for more research to enhance favorable outcomes[22]. The study further applied a logistic regression model whereby age showed a significant relationship between the occurrence of AKI and poor outcomes. This is a common theme in several studies done in different countries, where older individuals are flaggedas having a poor prognosis for AKI[23]. Thus, an increased risk of AKI may be linked to age-related physiological changes such as decreased renal reserve as well as a predisposition to nephrotoxins. Notably, they performed an analysis that showed pre-renal AKI had a favorable prognosis as against other causes. This observation is consistent with the fact that pre-renal AKI is usually prevalent and reversible, especially when promptly diagnosed and treated[24]. However, it is crucial to highlight the fact that if pre-renal academia is severe or persists for a long time, it begins to cause intrinsic renal damage, which should not be Rules of Thumb Rule 1: Stress states are associated with pre-renal azotemia; Rule 2: Do not allow severe or prolonged pre-renal academia to cause intrinsic renal disease; Rule 3: Hemorrhage and sepsis need different. The absence of any substantial difference between male and female AKI outcomes in our research is, however, dissimilar to some prior studies that have linked akikritis with adverse outcomes among male patients[25]. Such differences suggest that various factors affect the outcomes of AKI and that intervention effects might vary depending on the patient population and healthcare systems. Based on our observations, there are a number of implications for the clinical management of AKI in Bangladesh and similar low-and middle-income countries. The fact that more patients in the current study presented with pre-renal AKI shows the need to promptly identify and address any potential factors that might cause decreased renal blood flow[26]. Preventative measures and timely care of common diseases that potentially result in volume depletion, like diarrheal diseases, may also prove helpful in reducing the frequency of AKI. These results underscore that AKI is related to older age and worse outcomes, suggesting that older patients may require more careful monitoring and possibly

more intense management. This may have entailed ordering a nephrology consult sooner, more vigilant monitoring and prudent use of potentially renally toxic medications[1]. In this study, we observed a comparatively higher reoperation rate and it is still noteworthy that with proper care and management, patients can experience satisfactory outcomes even in developing countries. But they showed the everlasting mortality risk, which stresses the necessity for further enhancements in AKI treatment, such as early identification of disease, timely useof adequate treatments and an optimal care support plan. The strengths of our data and study include the evaluation of large numbers of AKI patients and the consideration of a broad spectrum of AKI etiologies in a tertiary care center. However, it also has some limitations that can be useful as guidelines while interpreting the results.

Limitations

It is a single-center, cross-sectional study with a small sample size and although further research is recommended to verify the study's findings, the aforementioned shortcomings might affect generalizability, statistical power and deducing causality. Other issues include selection bias, such as the inclusion of patients from teaching hospitals, no long-term outcome assessment, insufficient co morbidity data, confounding factors not controlled and insufficient information on strategy management. Still, it has contributed to understanding the AKI in Bangladesh.

Conclusion

This research is useful in understanding the occurrence of AKI and the role of pre-renal factors at a tertiary care hospital in Bangladesh. Prompt identification and correction of volume deficits and potentially reversible renal hypo perfusion should be the priority. The high recovery rates in our patients were encouraging; they postulate that better results could be achieved if adequate management principles are applied even in low-resource settings. Organ failure and the cause of acute renal failure are also strong predictors of outcomes, with non-perenal being associated with a poor prognosis in the elderly. Stressing early identification of the problem, timely treatment and interventions and practice according to specific age groups can improve the AKIand its relevant results in similar situations.

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Original Article

Distance Between Cricothyroid Articulation in Relation to Age & Sex: A Cadaveric Study in Bangladeshi Population

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Abstract

Background*: The cricothyroid joint is an important anatomical structure of the larynx and its morphometric variation with age and sex has clinical relevance.*

Methods*: A descriptive cross-sectional investigation was carried out to evaluate the interval between the cricothyroid joints relative to age and gender in cadaveric samples from Bangladesh. A total of sixty human larynges were collected postmortem over a period of six months. Amongthem, forty-five samples were obtained from autopsied individuals aged between 9 and 60 years and fifteen samples were collected from stillborn fetuses with a gestational age ranging from 28 to 40 weeks. The distance between the right and left cricothyroid joints was measured in millimeters using slide calipers and variations were analyzed according to age category and sex.*

Results*: The mean distance between the cricothyroid joints was 9.40 mm in the fetal group, 20.44 mm in the pediatric group and 24.07 mm in the adult group. The highest mean distance was observed in the adult group, where as the lowest was found in the fetal larynges. The differences in mean measurements among all age groups were statistically highly significant.*

Conclusion*: The distance between the cricothyroid joints increases progressively with age, showing significant variation among fetal, pediatric and adult larynges.*

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Keywords: *Larynx, Laryngeal cartilages, Joints, Cricothyroid articulation, Morphometry, Distance*

Introduction

The larynx functions primarily as an organ for breathing and sound production, situated within the airway between the pharynx and the trachea. Although phonation is important, its main role is to serve as a protective valve at the entrance of the lower airways, preventing the inhalation of foreign materials[1,2,3]. Highly developed in humans, the voice box is central to language, a key indicator of intellect[4]. Its structure comprises a framework of cartilages connected by synovial joints, ligaments and fibrous membranes, all lined with mucous membrane and operated by intrinsic muscles[2,3,5]. It consists of nine cartilages: three single (thyroid, cricoid and epiglottic) and three paired (arytenoid, corniculate and cuneiform)[3,6]. The cricothyroid joint (CTJ) is a synovial joint linking the inferior cornu of the thyroid cartilage to a facet on the cricoid arch, located at the junction of the cricoid lamina and arch. Each joint is surrounded by a capsular ligament, reinforced posteriorly and contains abundant elastin fibers. This joint permits a rocking motion where the cricoid rotates on the thyroid cornu around a transverse axis, along with limited gliding. The recurrent laryngeal nerve is positioned directly behind this joint[1,3,4]. The cricoarytenoid joint, another synovial joint between the arytenoid base and the cricoid lamina, has a lax capsule allowing both rotation and gliding. Movements at the CTJ enable the arytenoids to rotate, swinging the vocal processes to widen or narrow the glottis. A combined gliding motion opens the vocal folds into a V - shape in humans.

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Medial gliding occurs with medial rotation and lateral gliding with lateral rotation. The posterior cricoarytenoid ligaments limit forward movement and their resting position may determine the placement of a denervated vocal cord[1,4,5]. The CTJ, critical for adjusting vocal pitch, is often described as a diarthrodial hinge joint. Since Isshiki's 1974 description of laryngeal framework surgery[6], phonosurgical procedures like cricothyroid approximation to raise pitch have become a growing specialty[7,8]. Altering pitch involves changing vocal cord length and tension, with studies showing pitch elevation correlates with a 2-5 mm lengthening of the vocal fold[9,10,11]. Understanding the CTJ's anatomy aids surgeons, as its rotary action changes the distance between the cricoid and thyroid cartilages[12]. Detailed descriptions of these joints are often absent from standard anatomy and otolaryngology texts[13] and few studies focus on their functional morphology[6,11,14,15,16]. Precise anatomical knowledge is essential for diagnosing abnormalities and planning surgeries like intubation, thyroplasty, or laryngectomy. While MRI is useful, it can yield measurements smaller than actual anatomical dimensions[17]. Therefore,cadaveric study remains a fundamental prerequisite for gaining the detailed surgical insight required. This study was designed to provide a detailed anatomy of the CTJ to assist surgeons performing laryngeal framework surgery.

Methods

Laryngeal specimens were obtained from cadavers autopsied at the Forensic Medicine Department and from deceased neonates in the Obstetrics and Gynecology Department at Mymensingh Medical College, Mymensingh, collected intermittently between October 2008 and March 2009. All cadaveric samples originated from medico-legal cases involving unnatural death, with an additional group from stillborn infants. Selection criteria included only fresh specimens from individuals deceased within the prior 12 to 24 hours and stillborn infants immediately after delivery. The age of individuals from whom larynges were collected ranged from newborn to 60 years. For stillborn infants, the gestational age was between 28 and 40 weeks. During routine postmortem examination, a "Block Dissection" was performed on each cadaver. The excised tissue block was then gently rinsed under running tap water to remove blood and clots as thoroughly as possible. Each specimen was labeled with a waxed cloth tag bearing a unique identification number before being fixed and stored in a 10.0% formalin-saline solution. To assess the distance between the cricothyroid articulations in relation to age and sex, the specimens were categorized into three groups: Group A (stillborn infants at 28 to 40 weeks gestation)[18]. Group B (ages 9 to 16 years) and Group C (ages 17 to 60 years)[19]. Through careful dissection, the surrounding muscles, ligaments and mucous membrane were removed to fully expose the cricothyroid articulation. The distance between the articulations was measured using vernier calipers and recorded in millimeters (Figure 1)[20].

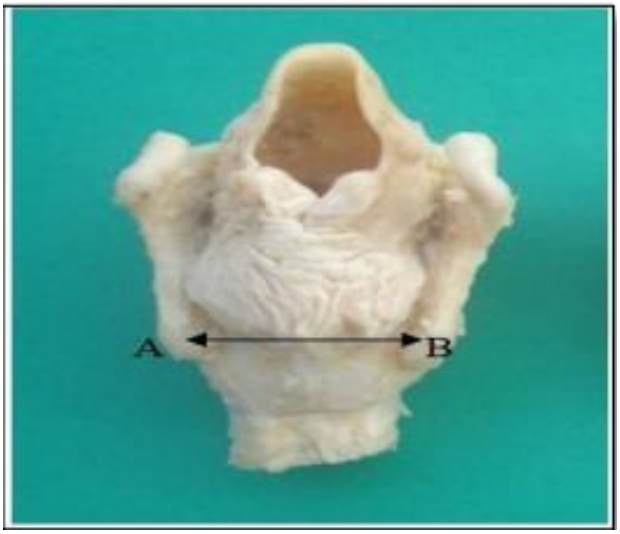

Figure 1: Cartilage model of larynx (posterior view) taken from age groups C(17 to 60 years), showing the distance between cricothyroid articulation All collected information was organized, compiled and subjected to statistical analysis using the Statistical Package for the Social Sciences (SPSS), version 11.0. Comparisons across the different groups were conducted using a one-way ANOVA test, while differences between sexes were evaluated with an unpaired Student's t-test. A probability (P) value of less than 0.05 was deemed statistically significant. The research protocol received approval from the Ethical Review Committee of Mymensingh Medical College Hospital, Mymensingh, Bangladesh.

Results

This research was conducted on sixty human larynges at the Anatomy Department of

Mymensingh Medical College, Mymensingh. The sample comprised forty-five specimens obtained from cadavers of both sexes and fifteen from stillborn infants at a viable gestational age of twenty-eight to forty weeks. As indicated in Table 2 and Figure 2, the analysis revealed that the mean distance between the cricothyroid articulations was 9.40 mm in Group A (stillborn infants at 28-40 weeksgestation), 20.44 mm in Group B (ages 9-16 years) and 24.07 mm in Group C (ages 17-60 years). The measurements ranged from 8 to 11 mm in Group A, 18 to 24 mm in Group B and 20 to 29 mm in Group C.

Table I: Age group of the study subjects

Age group	Total numbe of specimens	Male	Female
Group A: Stillborn infants betwee 28 and 40 weeks of gestation	15	06	09
Group B: 9 to 16 years old	16	06	10
Group C: 17 to 60 years old	16	17	12

Table II: Distance between Cricothyroid Articulations in Different Age Groups

Age group	Total numbe of specimens	Mean distance±SD (mm) (Range)
Group A: stillborn infants between 28 and 40 weeks of gestation	15	9.40±1.06 (8-11)
Group B: 9 to 16 years old	16	20.44±1.86 (18-24)
Group C: 17 to 60 years old	29	27.07±2.59 (20-29)

The greatest average span between the cricothyroid joints was observed in Group C (24.07 mm), while the smallest was in Group A (9.40 mm). The differences in mean distance between each paired Group A and B, A and C and B and C- were all determined to be highly significant.

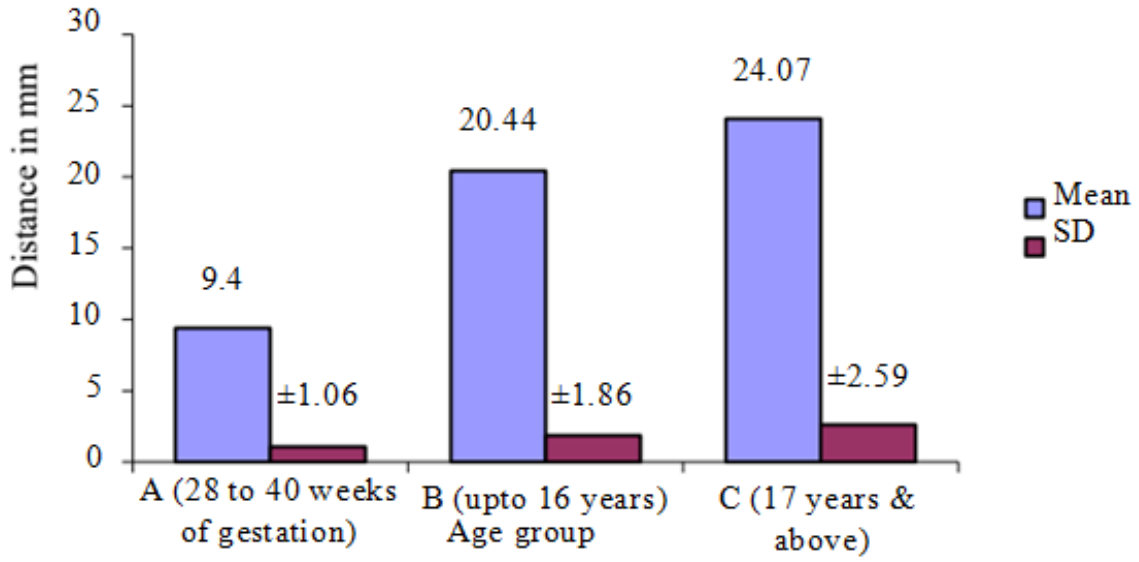

Figure 2: Bar diagram showing the mean distance between cricothyroid articulations in different age groups

Table III: Comparison of distance between cricothyroid articulations among the age groups

Comparison Groups	Level of Significance
A vs. B	P = 0.000 (p<0.001)
A vs. C	P = 0.000 (p<0.001)
B vs. C	P = 0.000 (p<0.001)

Table IV: Comparison of mean distance between cricothyroid articulations in different sex of different age groups

Age group	Sex of the person	Number	Mean distance in mm	±SD	t-value	p value
Group A: Stillborn infants between 28 and 40 weeks of gestation	Male	06	10.00	0.89	1.975	0.070
	Female	09	9.00	1.00		
Group B: 9 to 16 years old	Male	06	20.67	2.34	0.370	0.717
	Female	10	20.30	1.64		
Group C: 17 to 60 years old	Male	17	24.71	2.78	1.621	0.117
	Female	12	23.17	2.08		

Discussion

This investigation determined that the average span between the cricothyroid joints was 9.40 mm in Group A (stillborn infants at 28-40 weeks of gestation), 20.44 mm in Group B (ages 9-16 years) and 24.07 mm in Group C (ages 17-60 years). Ximenes et al. suggested that the thyroid cartilage's longer lamina and the more posterior placement of the cricothyroid articulation in males could increase the difficulty of exposing the arytenoid cartilage during laryngeal framework procedures. The measured distance between these articulations showed a statistically significant variation across age groups but not between sexes[20]. Numerous studies have examined the mechanics of the cricothyroid joint through laryngeal observation during phonation and by testing the mobility of excised cartilages. Employing X-ray photography, Sonninen noted an antero-posterior translation of approximately 3 mm for a three-octave shift in fundamental frequency. Research on laryngeal specimens, however, has yielded conflicting conclusions. Mayet et al. concluded that translation does not occur, as the joint's connecting ligaments restrict such movement[22]. Conversely, Fink observed a 1-2 mm translation when manually applying force to an excised larynx[23]. Furthermore, Vilkman et al., through their analysis of joint obility, demonstrated that translational movement is greater when rotational movement is less pronounced[14,15,21,22,23].

Conclusion

A review of existing literature from standard textbooks and journals on the morphology and histology of the human larynx reveals an absence of specific research on the Bangladeshi population. Consequently, scientific and clinical practice in this area mustrely on foreign data derived from subjects of different ethnicities and geographic environments. This study was therefore conceived to conduct a comprehensive evaluation of the gross and microscopic anatomy of the larynx in Bangladeshi individuals, aimingto contribute to the establishment of national anatomical standards. In this investigation, the mean distance between the cricothyroid articulations was measured at 9.40 mm in Group A (gestational age 28-40 weeks), 20.44 mm in Group B (ages 9-16 years) and 24.07 mm in Group C (age 17 years and above). These findings demonstrate a direct correlation with age, showing an increase in this anatomical dimension

as individuals grow older. The results are also compared with prior observations from Western populations to identify potential racial variations.It is anticipated that these observations will assist clinicians and surgeons in understanding the typical laryngeal anatomy specific to Bangladeshi patients, informing their diagnostic and therapeutic approaches.

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Case Report

Bilateral Extreme Microphthalmia in a Newborn: A Rare Case Report from Bangladesh

*Siddiqi MH

Abstract

Extreme microphthalmia and anophthalmia are rare congenital ocular anomalies that may occur as isolated defects or in association with systemic abnormalities. We report a rare case of bilateral extreme microphthalmia in a full-term male newborn delivered at President Abdul Hamid Medical College Hospital, Kishoreganj, Bangladesh. The baby presented with sunken, deep-seated orbits and absent palpable globes since birth. There was no history of maternal infection, teratogenic exposure, or familial congenital anomalies. Systemic evaluation including TORCH screening, chest X-ray, abdominal ultrasonography and echocardiography revealed no abnormalities. Computed tomography confirmed poor development of the globes and orbits with a normally developed brain. The patient was referred for further management. This case highlights the importance of early neonatal ocular examination, advanced imaging and the need for improved antenatal diagnostic facilities in resource-limited settings. To our knowledge, this is one of the few documented cases of bilateral extreme microphthalmia reported from Bangladesh.

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Keywords: *Bilateral extreme microphthalmia, Anophthalmia, Congenital ocular anomaly, SOX2 mutation*

Introduction

Extreme microphthalmia or anophthalmia are rare congenital anomalies that may present isolated or with systemic manifestations like central nervous system and musculoskeletal or cardiac abnormalities[1]. It can be classified as true, extreme microphthalmos and clinical anophthalmia. Classification based on causes is primary, where there is no development of the eye; secondary, where development of the eye starts but does not progress later on. It arises from a genetic mutation in the sox[2] gene on either a single gene or an entire chromosome. An entire chromosome may be absent or duplicated or undergo translocation, transferring a chromosome segment to a different chromosome. These may be associated with corneal sclerosis, cataracts, optic disc anomalies, mental retardations, facial dysmorphisms, etc. Anophthalmia diagnosis is primarily clinical, using universal ocular examination and imaging, such as a three-dimensional ultrasonogram and computed tomography (CT)/ magnetic resonance imaging (MRI)[2]. Genetic study is also helpful for diagnosis. The prevalence of anophthalmia is about 3-14 per 100,000 population[3,4]. In the United Kingdom, the prevalence is 1 per 100,000 live births[5].

Case Report

Amale full-term newborn was delivered by normal vaginal delivery at the Department of Obstetrics and Gynecology, President Abdul Hamid Medical College Hospital, Kishoreganj, on 1st December 2021. The baby was referred for ophthalmic evaluation immediately after birth due to the presence of abnormally sunken eyes that had not opened. The mother was a 29-year-old multipara with an otherwise uneventful antenatal period. This was her third pregnancy. She had regular antenatal checkups at a local union sub-center located approximately 20 kilometers from the Upazila health complex. There was no history of maternal fever, rash, teratogenic drug intake, radiation exposure, tobacco use, or alcohol consumption during pregnancy. She received only iron and calcium supplementation. There was no family history of congenital ocular anomalies, neurological disorders, or genetic syndromes. Her first living child was healthy. She had a history of spontaneous abortion six months prior to the index pregnancy following a fall. On examination, the newborn weighed 2600 grams. Both orbits appeared sunken and deep seated. The palpebral fissures

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were extremely small and a tiny cystic mass was observed on the inner surface of both lower eyelids. The eyeballs could not be palpated. No facial dysmorphism, neurological deficit, or motor abnormality was detected.

Investigations

Serological screening for intrauterine infections including rubella, toxoplasmosis and cytomegalovirus were negative. Chest X-ray and whole abdominal ultrasonography revealed no abnormalities. Echocardiography showed a structurally normal heart.scan of the orbitand brain revealed grosslywhile intracranial structures were normal.Magnetic resonance imaging (MRI)could not be performed as the parents declined further investigations.

Management and Referral

After confirmation of the diagnosis of bilateral extreme microphthalmia, the parents were counseled regarding the nature of the disease, prognosis,andlong-term management options.The patient wasreferredto theNational Instituteof Ophthalmologyand Hospital, Dhaka, for further evaluation, visual rehabilitation planning, socket development and possible future prosthetic rehabilitation.

Discussion

Bilateral extreme microphthalmia is a rare congenital ocular anomaly characterized by severely underdeveloped globes in both orbits and is often considered within the anophthalmia-microphthalmia spectrum. The reported global prevalence ranges from 3 to 14 per 100,000 population, while in the United Kingdom it is approximately 1 per 100,000 live birth[3,4,5]. The bilateral form is more frequently associated with systemic abnormalities and genetic mutations compared to unilateral cases. In our case, the newbornpresented with bilateral extreme microphthalmia without any detectable systemic, neurological, or cardiac anomalies. This is noteworthy because bilateral cases commonly show associations with central nervous system defects, facial dysmorphism and chromosomal abnormalities[1]. The absence of systemic involvement in this patient suggests a sporadic isolated presentation, which is less commonly reported in the literature. Genetic mutations, particularly involving the SOX2 gene, have been identified as one of the major etiological factors in bilateral anophthalmia and severe microphthalmia1. However, due to the unavailability of genetic testing in our setting and refusal of further investigations by the parents, genetic confirmation could not be performed. Additionally, the mother had no history of teratogenic drug intake, TORCH infections, irradiation exposure, or significant systemic illness during pregnancy. TORCH screening was also negative, which excludes common infectious causes associated with congenital ocular malformations. Early antenatal diagnosis of microphthalmia is possible with high-resolution ultrasonography and three-dimensional imaging techniques[2]. In resource-limited settings like rural Bangladesh, such advanced diagnostic facilities are often inaccessible, leading to delayed or missed antenatal detection, as seen in this case. Postnatal imaging with CT scan confirmed poor development of the globesand orbits, while the brain was normally developed. Although MRI provides better soft-tissue detail, it could not be performed due to parental refusal. This case highlights the importance of routine neonatal ocular examination by trained ophthalmologists, especially in peripheral hospitals, for early diagnosis of rare congenital anomalies. Early identification allows timely referral, visual rehabilitation, socket reconstruction planning and parental counseling, which are crucial for long-term functional and cosmetic outcomes. To the best of our knowledge, this appears to be one of the very few documented cases of bilateral extreme microphthalmia reported from Bangladesh. Reporting such rare presentations is important to improve local epidemiological data, raise clinical awareness and emphasize the need for strengthening antenatal screening and postnatal ophthalmic evaluation services in low-resource settings.

Conclusion

Bilateral extreme microphthalmia is a rare congenital condition that may present either as an isolated anomaly or in association with systemic defects. Early diagnosis is essential for timely intervention, visual rehabilitation planning and parental counseling. Advanced imaging such as ultrasound, CT and MRI plays a crucial role in confirming the diagnosis. Strengthening antenatal screening programs and ensuring routine

postnatalocular examinations, especially in peripheralhealthcare settings, can significantly improve early detection and management outcomes. Reporting such rare cases contributes to national epidemiological data and increases clinical awareness among healthcare professionals.

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Review Article

Important Part of Integrated Teaching-Learning Activity

***Alam MS**

Abstract

Journal club is an important way of learning activity of educational institutions and thus improving upgrade knowledge of medical education. It is directly related to improving patient's outcome of one's own department or institution. There is increasing demands to evidence based practice effectively medical science at highest stakes. A formal journal club facilitates discussing and evaluating research and its application to practice and improving patient care and evidence-based practice. However, many a times, journal club fails to achieve its role and a superficial discussion on clinical aspects distracts its aims and objectives. The advantages of using a journal club are that you and your peers can keep current with new transplant knowledge, learn to facilitate the strength of the evidence, promote implementation of new knowledge into practice, and improve Patient outcomes. A journal club has been defined an educational meeting in which a group of individuals discuss current articles. providing a form fora collective effort to keep up with the literatures.

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Introduction

Journal clubs are a well-recognized quality improvement strategy used by health practitioners to critique and keep up-to-date with relevant health literature. A number of authors reported that sir William Osier started the first recorded journal club in Britain in 1875 as a way of sharing educational resource[1,2]. He encouraged journal club attendees to apply their updated knowledge from participation of journal club. From its inception, goal was to share current knowledge and translate it into evidence- based patient care. There are many advantages of participatingin a journal club, including keeping abreast of new knowledge, promoting awarenessof current research findings, hearing to critique and appraise research becoming familiar with the best current clinical research and encouraging research utilization[3]. It is therefore an ongoing challenge for clinicians to design and maintain a stimulating, educational and sustainable journal club format that assists the participants to date with the literature and to translate journal. The outcomes of the research may be presented by the individual student or by the group as a report, a poster, a videotape in a journal club or in a written material[4].

Objectives of journal club Presentation

The general purpose of a journal club is to facilitate the review of a specific research study and to discus, implications of the study for clinical practice. This is an important way in which success can be measured as a clinical teacher and may choose to specialize in any of a number of paths to progression. Journals are naturally biased towards research[4]. Education The main educational goals are to teach the trainee about research activity presentation skills, computer and Internet literacy, critical analysis of literature.The trainee and trainers can alsodevelop patient management skill through modern and up to date concepts of medical science. They can also find a way out for self-directed learning approach. Evaluation of trainee-In many countries, now a day's residency program is used as a mean to evaluate the trainee as their competency. Still many centers following the earlier systems. Running a well-planned Journal club can be used as a useful tool to evaluate residentspresentation skills, attitudes, punctuality, quality of care and ultimately the progress in clinical medicine. Though overall progress of the trainee can be assessed by other means, still journal club can be added to those[5]. Faculty development-Through journal club presentation faculty development program can be strengthen and individual faculty can get benefit from others. Participation of each faculty in journal club will motivate their involvement in research.

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Moreover, good number of teacher will get benefit from each other through discussion[6].

Structure of journal club presentation

The following organization are commonly observed in journal club.

a) Arrangement Usually done once in aweek but can be complemented more than hat. Better, if it resume early in the morning as a first incident of the day so that fresh mind will contribute more. In Bangladesh, most center it runs once in a week and very early in the morning.Usually, the presentation part take about 15-20 minutes followed by 30 minutes discussion time. It should be remembers that open and free discussion is the heart of the journal club. Many a times it has been observed that discussion runs among the most senior faculty mem bers while trainee fails to contribute their.

b) Sitting arrangement This is a neglected issue in journal club presentation session. Set your arrangement in a circular manner or semicircular manner so that every body sees each other fro many corner[7].

c) Record keeping Record keeping done for different purposes. For educational purposes, as well as for research activities also.

Formats of Journal club

Journal club in every institute does its own structure. Despite that there should be some common things that overlap the individuality. Moreover, the objectives of journal club should be keep in mind while planning a journal club session. It's better to form a committee for journal club for smooth running of such. The article selection is an important component of journal club and it should be done well ahead of time. The article can be circulated among the participants and displayed in a front place so that everybody gets an opportunity to prepare themselves by studying relevant sources.

Select a provocative article

Too good choices that you pulled as a result of an encounter with a particular patient and articles that have been published recently dealing with a clinical problem we commonly encounter. It should report a Original research paper which contains all the components of a scientific paper. Review articles are not suitable many a times. And those article which does have a methods section. Meta-analyses, decision analyses and cost-effectiveness analyses are well, but they are harder to assess critically becausethe results often depend on whether you can trust the authors and underly ing assumptions[10].

Outline of the content of the article

The same sort of learning that allows one to get better at obtaining relevant information from a patient, organizing it, and presenting it to others applies to reading journal articles as well. After using the structure below to review the article yourself, lead the journal club participants through it. Write the main headings once at a time on the board, explain what they mean, and get the participants to fill in the data from the paper. The elements of a study, analogous to the presenting complaints, presenting illness, past illness and so on are:

a) Authors and funding source: This is analogous analogous to the "identifying information and source ol history". It's a good idea to start with these items so you don't forget them later. Anyone can search their previous works and able to be mention here.

b) Research question: What is the question this study was designed to answer? Sometimes it helps to picture a clinical situation you'll be better able to handle if the study is valid. Often the last line of the abstract gives the authors answer to the research question.

c) Study design: What type of study is this? Randomized blinded trial? Cohort study? Case control study? Cross-sectional study? Case series? The presenter must know this and will be able to mention whenever asked in the presentation.

d) Study subjects: Who were in the study included? What are the selection criteria? How were they had been selected? Is there any process of blinding?

e) Study period and place: Study place and period is usually clearly mentioned in any article. But if not mentioned you have to find out it and mention clearly in separate headings.

f) Data collection, editing, processing etc: After formation of questioners does any pretesting done or not? What are the process of data collection, interpretation, editing andformulation performed. Data can be retrieved by various means and they can be calculated thereafter.

g) Variables: The variables used in the paper and also their interpretation can be plotted and should be correlated with those of objectives.

h) Results: What did they find? Don't just mention about each and every table and figure. Also, you

have to mention the lesson behind main findings of those. Make sure you consider not just statistical significance, but the effect size, relative size and odds ratio of each.

i) Conclusion and recommendation: This part not only include the authors write up but also the presenter's recommendations and how the presenting department will utilize those findings in near future[0].

Discussion

after the total presentation should be structured and well controlled. The facilitator should take the whole control of this part and he has to conduct, motivate for participation and engage each participant. That's why it is called "Club" not a seminar. It's a easy task to distribute some of the copy of the article 10 days before, among 10 similar members of the club and ask them to get prepare for contribution in the discussion. You can raise opinion pole or voting on particular issue like a meeting in acricket or debate club. The co-ordinator can also place a copy of the article in a board in front of club room day before scheduled time so that any interested person can come forward and join. You can use Internet for easy access to all of them. Remember, no scientific study is absolutely perfect. When someone suggests possible problem, you need to discuss whether this is something that is really important, and how it would affect the results[9].

Wrapping Up

The most important part is of course the ‘bottom line’ if you don’t utilize the findings of any result, it is futile to run a journal club. Sometimes it is seen that, the delivery of speech from senior persons or dignitary get preference than the actual message of the journal club[10] this should be avoided.

Importance of Journal club as a teaching-learning process

Question may arise or may not arise as well: Why we should run an effective journal club? Is it just only to fulfill the desire of faculty members or completion of requisition of the pertinent authority? Or someone may think I will do research work and publish it accordingly, I have to go through that and learn the necessary things through courses or books! First thing we can consider that it's a teaching-learning process not only for trainee, students or staff but also as a part of faculty development program. Whenever we called it's a faculty development, it means not only a certificate based "one time show" or it is an achievement. Staff development or faculty development activities have been designed to improve teacher effectiveness at all levels of the educational continuum (e,g. undergraduate, postuaduate and continuing medical education and diverse programmes have been offered to healthcare professional in many settings. For running a good journal club, it is important that faculty members are clear aboutgoals and objectives of this program. They have to participate in it actively and provide feed back regularly[11]. Second things we have to consider that it's a good option for developing team building. In journal club we can organize a group, make a team and can provide feedback regarding effective team building. A article can be presented by many student and every part can be distributed among them to discuss, to develop, to collect from other resources and even to answer the question during presentation. Teams are collections of people who must rely on group collaboration if each member is to experience the optimum of success and goal achievement[12]. Each person in a team will be the focal person and should have a chance to read his or her answers to preparatory questions. Each person should have ample time to think, answer and participate in a team. Journal club presentation can be used as monitoring and evaluation of training of the trainee. Educational evaluation is the systemic appraisal of the quality of teaching and learning. Maintaining log book and time to time evaluation is a good way of appraisal. Journal club presentation and reporting on journal article is' a strong tool for such program. One thing that has to be keep in mind is that critical analysis by the faculty members and adequate effective feedback is not an optional things but it's a must do process[13]. Management has been defined as the purposeful and efficient use of resources. so, management of journal club session is an important opportunity to learn how to run a course, module, center or instituition[14]. Presentation is an art which must be learnt to a competent degree by all persons who are involved in the process of imparting knowledge and also the ability to communicate[15]. In addition, lends credence to the saying ‘what I hear I forget, what I see I remember and what I do I learn’. Presentation in public places is the ultimate way of learning and it’s a real reflective

learning. presentation skill can be best tested in sucha way and this opportunity should not misuse by any means[16]. National Goal and Objectives of MBBS course has been designed in every country in such a way that to produce competent, compassionate, reflective and dedicated healthcare professional who but at the same time acquire firma basis for future training, service and research at both national and international level. Also they have a commitment to keep their knowledge and skill up-to-date through "Continuous Professional Development (CPD), all through their professional life[17].

Conclusion

Journal club is an important integrated teaching-learning activity for the trainee & trainer. It's also useful to rememorize the research aspects of the faculty and an option for boost up for future researcher. But it should be done in a scientific way and the research aspects should be highlighted in every session.

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