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Content **Page**

INFORMED CONSENT IN SURGERY

Ranjit Kumar Mallick

Informed consent for elective surgery is often obtained by junior medical staff, during pre-assessment clinics, or on the day of surgery. This may include pre-registration House Officers (PRHOs) (F1 grade-Modernizing Medical Careers) or Senior House Officers (SHOs). Current guidance states that the person obtaining consent must either (1) be capable of performing the procedure themselves; or (2) have received specialist training in advising patients about the procedure.[2]

Junior medical staff may be placed in a position where they fulfil neither of the above two criteria. Certain specialist procedures, such as cataract surgery or elective angiography, have very specific risks, which may not be adequately covered in undergraduate education. A thorough understanding is required to be able to appropriately advise the patient. Instruction in obtaining informed consent is therefore vital.

The last point may be an issue if consent is obtained upon the day of surgery. Most patients will have firmly decided to proceed before attending for surgery. However, a minority may develop doubts upon learning about the procedure in more detail, during the consent process. If these doubts arise on the day of surgery the patient may feel under duress to proceed, as all the arrangements have been made. Therefore it would be wiser to obtain informed consent at the time of listing in clinic, when the risks and benefits are often explained. The patient will feel under less pressure to proceed, and hence will not be acting under duress.

Consent should begin with a brief explanation of the planned operation, including the anaesthetic involved. It is wise to describe what the patient may expect to experience during surgery, if under a local anaesthetic. Medical jargon should be avoided as it only serves to reduce understanding. Sufficient information to make a decision should also include an explanation of (1) the risks and benefits involved; (2) any alternative treatments; and (3) the risks and benefits of doing nothing.[2,3]

Ultimately, the decision of what to mention lies with the consenting surgeon. Currently the Department of Health advises that a doctor:

> Should warn the patient of anything that poses a substantial risk of grave adverse consequences.[6,7]
>
> Should mention significant risk that would affect the decision of a reasonable patient.[6,8]
>
> Is under a clear and legal obligation to tell the truth if asked a direct question.[6,8,9]

A key point to remember is the doctor's responsibility to inform a patient of ‘a significant risk which would affect the judgement of a reasonable patient’ (i.e. cause the patient to decline surgery). This does not mean that the doctor is liable every time a complication occurs which he or she has not mentioned: it only applies to complications that may cause a reasonable patient to decline surgery, had they known about them. In practice this includes serious or frequently occurring risks which may tip the risk/benefit balance, in that patient's mind, in favour of declining

patients are different it is the doctor's duty to highlight patients who are unsure, and give them more discussion time to reach an appropriate decision.

Preceding surgery, patient's knowledge of the procedure varies. Kiss et al. surveyed patients who were about to undergo cataract surgery, and who were giving informed consent. They found that 40% of patients had not informed themselves about the surgery prior to the consent process, with 60% believing that cataract surgery held no risk of severe, sight-threatening complications.[13] Information regarding surgery (including risks) has been shown to have positive/neutral effect upon the decision to proceed.[13,14] supporting a complete and frank provision of relevant information. Patients consider informed consent to be important and expect all pertinent information to be conveyed.[15]

Consent is an opportunity to guide the patient to the right decision for them, and also dispel any unrealistic expectations concerning the procedure. Ultimately it is an opportunity to create a relationship of openness and trust between doctor and patient, which may help if operative complications are encountered.

Informed consent is a world-wide well-known medical or ethical notion. Informed consent is important because it has a legal urge, and many health laws have included this conception as a vital clause. Secondly, almost all medical codes and guidelines have incorporated this requirement in order to protect the patient or the human subject from harm. In the patient-physician relationship informed consent procedure is valuable for the treatment. By informed consent procedure the competent patient's voluntariness is protected. The practice and requirements of informed consent ensure the patient's autonomy to decide for treatment and limit medical paternalism. Capron has indicated two basic justifications of informed consent: the first one, "protection from harm" and the second, "protection of autonomy"

So an Informed consent is a process, not a form, and should involve ongoing, interactive dialog between research staff and prospective participants.[16]

Suggestion

- Make sure you are suitably qualified to take informed consent for that particular procedure
- Choose the appropriate consent form to use
- Aim to gain informed consent before the day of the procedure
- Explanation of
- Procedure
- Risks and benefits
- Alternative treatments
- Risks and benefits of doing nothing
- Avoid the use of medical jargon
- Do not rush a decision if more time is needed

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DEMOGRAPHIC AND CLINICAL CHARACTERISTICS OF ORAL SQUAMOUS CELL CARCINOMA PATIENTS IN A TERTIARY LEVEL HOSPITAL IN BANGLADESH

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ABSTRACT

Introduction: Oral cancer constitutes 3% of all neoplasms and is the eighth most frequent cancer in the world. Oral squamous cell carcinoma corresponds to 95% of all oral cancer.[1] In Bangladesh, more than 7000 new cases are diagnosed per year with mortality is about 6.6%.[2] Cancer is the sixth leading cause of death in Bangladesh (BBS, 2004), according to the Bangladesh Bureau of Statistics. International Agency for Research on cancer (IARC) stated that cancer related death in Bangladesh is 7.5% in 2005 and projected to 13% in 2030. **Objective:** The aim of this paper was to determine the demographic and clinical characteristics of oral squamous cell carcinoma patients attending in a tertiary level hospital in Bangladesh. **Methods:** This descriptive type of cross-sectional study was conducted in at the department of Department of Oral & Maxillofacial Surgery, Dhaka Dental College Hospital, Dhaka, Bangladesh during June 2022 to June 2023. A total of 100 patients who were clinically and histopathologically diagnosed as OSCC would report to the Department of Oral & Maxillofacial Surgery of Dhaka Dental College Hospital, Dhaka, Bangladesh were enrolled in this study. Purposive consecutive sampling technique was used in this study. The ethical clearance of this study was obtained from the Ethics Committee of Dhaka Dental College and Hospital, Dhaka, Bangladesh. **Results:** A total of 100 patients who were clinically and histopathologically diagnosed as OSCC patients were enrolled in this study. According to the age distribution, 39% patients belonged to the age group (61-70) years and followed by 32% patients age group (41-50) years , 16% patients , age group (31-40) years , 6% patients, age group (71-80) years, 6% patients, age group (18-30) only 1% patients, age group(!8-30) years. The mean age of the patients was 56.63±9.54 years. According to the sex distribution,

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54% patients were male and the female patients were 46%. The mean BMI of the study patients was observed 18.20±0.60 kg/m2. The maximum patients had BMI 19 kg/m2 and minimum patients had BMI 17 kg/m2 which was underweight. The most frequent patients were observed unemployed 45(45%) followed business 33(33%0, job holders 14(14%), housewife 6(6%) and day laborer 2(2%).36% of patients were middle class and 64% of patients were from lower class. 52% of patients had the habit of betel nut and followed by 39% of patients had betel nut with tobacco, 8% of patients had tobacco,1% of patients had no habit. 54% of patients had Grade-II and followed by 39% of patients had Grade-I and 7% of patients had Grade-III. **Conclusion:** This study investigated that the old age group, eating betel nut, eating betel nut with tobacco are the prime factors of the prevalence of oral squamous cell carcinoma. The lower class people suffered much than upper or middle class people and the male dominants in the prevalence of oral squamous cell carcinoma patients in Bangladesh.

Key words: Demographic, clinical, characteristics, oral, cell, carcinoma

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Introduction:

Oral cancer constitutes 3% of all neoplasms and is the eighth most frequent cancer in the world. Oral squamous cell carcinoma corresponds to 95% of all oral cancer.[1] In Bangladesh, more than 7000 new cases are diagnosed per year with mortality is about 6.6%.[2] Cancer is the sixth leading cause of death in Bangladesh (BBS, 2004), according to the Bangladesh Bureau of Statistics. International Agency for Research on cancer (IARC) stated that cancer related death in Bangladesh is 7.5% in 2005 and projected to 13% in 2030. The prevalence of oral cancer in Bangladesh is second and third leading cancer among males and females respectively.[6] Elderly population aged more than 50 years are commonly affected3. However, the incidence of oral cancer is increasing mostly among young female population at age less than 45 years. The etiology of oral cancer is multifactorial and smoking with alcohol consumption lead the position among established risk factors. Others established risk factors include tobacco chewing, snuff dipping, betel quid with tobacco like products, exposure to sunlight and radiation, viruses (human papilloma virus and Epstein bar virus), immune deficiency, dentition and ethnicity.[4] Electrolytes play significant roles in enzymatic and biochemical reactions, the regulation of cellular membrane potentials, energy transformation, neurotransmission, nerve signal conduction, hormone function, muscle contraction, cardiovascular role, bone composition, and fluid and acid-based regulation.[5] Acute and severe electrolyte imbalances can induce a wide variety of clinical disorders, such as severe arrhythmias and neuromuscular dysfunction and are associated with increased morbidity and mortality.[6] The risk posed by these abnormalities increases significantly when more than one electrolyte is deficient, and the severity of the symptoms is

commonly associated with the severity of the disorder and the rate at which the disorder progresses.[5] Changes in both fluid volume and electrolyte composition happen preoperatively, intraoperative, and postoperatively. Postoperative surgery patients are prone to electrolyte changes probably because of the loss of blood and bodily fluids.[7] The stress response to surgery, fasting before surgery, the inability of the patients to receive necessary nutrition after the operation of the jaws, anesthesia and surgical trauma, fluid replacement and/ or use of diuretics, blood transfusion, and the underlying surgical disease.[8-9] Electrolyte disorders are very common conditions in cancer patients. They mainly concern changes in serum sodium, potassium, calcium, and magnesium levels. In most cases, these alterations are asymptomatic and therefore not always taken into consideration in clinical practice. That's why they can sometimes be associated with clinical manifestations that can worsen patient's clinical condition up to more serious life-threatening events. Furthermore, several clinical studies showed an important impact of electrolyte disorders on cancer patients' journey. Firstly, they seem to correlate with a worsening quality of life and performance status, reduced probability of tumor response to anti-cancer treatment and treatment delays, and cause poorer outcomes and reduced survival. Electrolyte disorders in cancer patients might depend on several causes: cancer physiopathology, anti-tumor treatments, concomitant clinical conditions, or therapies. However, they often have a multifactorial origin and they might be both secondary and responsible for multiple organ systems dysfunction.[10] However, there are very few studies and limited data in Bangladesh regarding demographic and clinical characteristics of oral squamous cell carcinoma patients. The aim of this paper was to determine the demographic and clinical characteristics of oral squamous cell carcinoma patients attending in a tertiary level hospital in Bangladesh.

Objectives

General Objective:

To determine the demographic and clinical characteristics of oral squamous cell carcinoma patients attending in a tertiary level hospital.

Specific Objectives:

To know the demographic characteristics of oral squamous cell carcinoma patients.

To identify the clinical characteristics of oral squamous cell carcinoma patients.

Methodology

This descriptive type of cross-sectional study was conducted in at the department of Department of Oral & Maxillofacial Surgery, Dhaka Dental College Hospital, Dhaka, Bangladesh during June 2022 to June 2023. Written informed consent was taken and a total of 100 patients who were clinically and histopathologically diagnosed as OSCC would report to the Department of Oral & Maxillofacial Surgery of Dhaka Dental College Hospital, Dhaka, Bangladesh were enrolled in this study. Purposive consecutive sampling technique was used in this study. The demographic data were collected by face to face interview and clinical data were collected by previous case history with a restructured questionnaire and a case record form. The collected data were organized and entered into computer. Then the data were analyzed by using Statistical Package for Social Sciences (SPSS) software, version-23.0. Descriptive statistical

analysis were performedand the results were presented in table and charts. The ethical clearance of this study was obtained from the Ethics Committee of Dhaka Dental College and Hospital, Dhaka, Bangladesh.

Inclusion criteria:

Patient undergoing oral squamous cell carcinoma surgery

Patient hospitalized for > 3 days

Exclusion criteria:

OSCC patients having severe co-mobility like lever disease, kidney disease uncontrolled diabetes mellitus, steroid therapy

Patients unwilling to participate in the study.

Results

Table 1: Age distribution and BMI of the study patients (N=100).

Age Groups	Frequency (N=100)	Percentage
18-30	1	1
31-40	6	6
41-50	16	16
51-60	39	39
61-70	32	32
71-80	6	6
Total	100	100

Table 1: shows the age distribution of the study patients. According to the age distribution, 39% patients belonged to the age group (61-70) years and followed by 32% patients age group (41-50) years , 16% patients , age group (31-40) years, 6% patients, age group (71-80) years, 6% patients, age group (18-30) only 1% patients, age group(18-30) years. The mean age of the patients was 56.63±9.54 years.

Table 2: Sex distribution of the study patients (N=100).

Sex	Frequency (N=100)	Percentage
Male	54	54
Female	46	46
Total	100	100

Table 2 shows the sex distribution of the study patients. According to the sex distribution, 54% patients were male and the female patients were 46%.

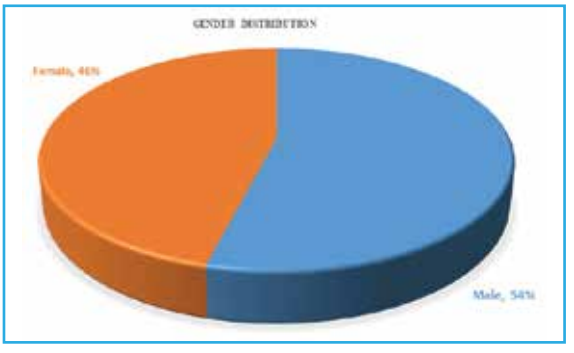

Fig.-1: Shows the gender distribution of the study patients (n=100).

Table 3: BMI distribution of the study patients (N=100).

BMI	Frequency	Percentage
<18.5 kg/m^2	74	74.0
18.5-29.9 kg/m^2	26	26.0
Total	100	100.0
Mean BMI	18.20±0.60 kg/m^2	
Minimum	17 kg/m^2	
Maximum	19 kg/m^2	

Table 3 shows the BMI distribution of the study patients. Among the patients 74(74%) patients had BMI <18.5 kg/m2 and 26(26%) patients had BMI between 18.5-29.9 kg/m2.. The mean BMI of the study patients was observed 18.20±0.60 kg/m2. The maximum patients had BMI 19 kg/m2 and minimum patients had BMI 17 kg/m2 which was underweight.

Table 4: Occupation distribution of the study patients (N=100).

Occupation	Frequency	Percentage
House wife	6	6
Job holder	14	14
Business	33	33
Unemployed	45	45
Day Laborer	2	2
Total	100	100

Table 4 shows the occupation distribution of the study patients. According to occupation distribution, the most frequent patients were observed unemployed 45(45%) followed business 33(33%0, job holders 14(14%), housewife 6(6%) and day laborer 2(2%).

Table 5: Socio-economic level of the study patients (N=100).

Socio-economic level	Frequency	Percentage
Middle class	36	36
Lower class	64	64
Total	100	100

Table 5 shows the distribution of the Socio-economic level of the study patients. According to the socio-economic level distribution, 36% of patients were middle class and 64% of patients were from lower class.

Table 6: Patients habit associated with the oral squamous cell (N=100).

Habit of the patients	Frequency	Percentage
No habit	1	1
Betel nut	52	52
Tobacco	8	8
Betel nut with tobacco	39	39
Total	100	100

Table 6 shows the distribution of the habit associated with the oral squamous of the study patients. According to the habit associated with the oral squamous distribution, 52% of patients had the habit of betel nut and followed by 39% of patients had betel nut with tobacco, 8% of patients had tobacco,1% of patients had no habit.

Table 7: Pre surgical histological grading of the oral squamous observed (N=100).

Pre surgical histological grading	Frequency	Percentage
Grade-I	39	39
Grade-II	54	54
Grade-III	7	7
Total	100	100

Table 7 shows the distribution of pre surgical histological grading of the oral squamous observed of the study patients. According to the distribution of pre surgical histological grading, 54% of patients had Grade-II and followed by 39% of patients had Grade-I and 7% of patients had Grade-III.

Discussion

This study was performed on 100 patients at the Department of Oral & maxillofacial surgery in Dhaka Dental College Hospital, Dhaka, Bangladesh who had received oral cancer surgery. The aim of this study was to determine the demographic and clinical characteristics of oral squamous cell carcinoma patients attending in a tertiary level hospital. In this study 39% patients belonged to the age group (61-70) years. These findings of our study suggested that the people of late age may mostly suffer from oral squamous cell carcinoma and the mean age of the patients was 56.63±9.54 years, mean BMI of the study patients was 18.20±0.60 kg//m2. According to the sex distribution, 54% patients were male and the female patients were 46%.

These findings of this present study prevailed that the male dominant in the prevalence of oral squamous cell carcinoma patients in Bangladesh which showing similarity with the study of Soltaninia O et al. the age of the patients ranged from 19 to 54 years (mean age=42.31±1.9); 68 patients (67.3%) were male and 33(32.7%) were female where also few Demographic information (e.g. age and gender), weight, height, body mass index (BMI), kinds of trauma, medication, comorbidity and clinical data were compiled for each patient like this report.[30] In our study, we observed the most frequent patients unemployed 45(45%) followed business 33(33%0, job holders 14(14%), housewife 6(6%) and day laborer 2(2%). This current study found 36% of the patients were middle class and 64% patients were from lower class social-economic condition of Bangladesh. These findings of our study claims that the economically insolvent people dominant in oral squamous cell carcinoma than that of competitively economically solvent people in Bangladesh. These findings are the almost unique of this study because most of the previous study ignored this factors. This present study also observed 52% of the patients had the habit of betel nut and followed by 39% of patients had betel nut with tobacco, 8% of patients had tobacco, 1% of patients had no habit and these factors may be the prime cause of oral squamous cell carcinoma in Bangladeshi population. Another study stating the habit association with the oral squamous distribution, 52% of patients had the habit of betel nut and followed by 39% of patients had betel nut with tobacco, 8% of patients had tobacco, 1% of patients had no habit differing with the study of Melo GMD et al. reported 75% of patients were alcohol users along tobacco users about 90% among them.[31] According to the distribution of pre surgical histological grading, this current study found 54% of patients had Grade-II and followed by 39% of patients had Grade-I, 7% of patients had Grade-III. Almost similar observation was noted in some other studies 13-17 regarding electrolyte disorders in oral squamous cell carcinoma patients. However a comprehensive frame work is demand of the time to create awareness among the population of Bangladesh about the determinants of oral squamous cell carcinoma to decrease mortality rate due to oral squamous cell carcinoma in Bangladesh.

Conclusion

This study investigated that the old age group, eating betel nut, eating betel nut with tobacco are the prime factors of the prevalence of oral squamous cell carcinoma. The lower class people suffered much than upper or middle class people and the male dominants in the prevalence of oral squamous cell carcinoma patients in Bangladesh.

Limitations of the study

This was a single centre study with a limited sample size over a short period of time. Therefore, the results of this study may not reflect the whole country.

Recommendations

A multi-cantered study is recommended with a large sample size and long period of time to justify the results of this study

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EXAMINATION OF CLINICAL AND LABORATORY FEATURES IN DENGUE VIRUS INFECTION AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Dengue virus infection remains a significant global health concern, particularly in regions with tropical and subtropical climates. As one of the most prevalent mosquito-transmitted diseases, Dengue fever affects over 128 countries worldwide. Bangladesh, in particular, has experienced recurrent outbreaks of Dengue since the year 2000, with the situation escalating to a critical level in 2019, marking it as one of the most severe outbreaks in the country's recent history. The clinical and laboratory features of Dengue virus infection is crucial for effective management and intervention. **Objective:** To comprehensively examine the clinical and laboratory aspects of Dengue virus infection in patients admitted to a Tertiary Care Hospital. **Material and Methods:** This cross-sectional study took place between June 2023 to December 2023 in Bashundhara Ad-din Medical College & Hospital, South Keranigonj, Dhaka, Bangladesh. Data pertaining to demographic details, clinical attributes, and laboratory profiles of 271 confirmed cases of hospitalized acute dengue were gathered through the utilization of a structured questionnaire. Subsequent to data collection, thorough cleaning and analysis were conducted using the statistical software SPSS version 25. **Results:** This study shows the mean age of the participants was 26.21 years, with nearly half of them (48.8%) falling within the 20–40 years age bracket. Predominant clinical symptoms included fever (93.7%), abdominal pain (29.9%), skin rash (25.5%), and diarrhea (19.9%). Complications were observed in 159 patients, with prevalent issues such as breathing problems (41.7%), pleural effusion (38.4%), and gum bleeding (11.4%). A substantial majority, exceeding 90%, exhibited seropositivity for the DENV-NS1 antigen. **Conclusions:** The study highlighted the severity of Dengue, with a substantial number of hospitalizations and confirmed deaths. Early diagnosis, especially through NS1 antigen detection, played a crucial role. We identified risk factors for severe Dengue and observed diverse clinical presentations. The study sheds light on the demographic profile and emphasizes the need for continued research and public health efforts to manage Dengue effectively.

Key word: Examination, Clinical and Laboratory, Dengue Virus Infection

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Introduction:

"Dengue fever," also known as "Break-bone fever," is the most prevalent acute systemic viral infection transmitted by arthropods.[1,2,3] Dengue virus infection (DENV) stands as the most common mosquito-borne infectious ailment on a global scale. Considered endemic in over 100 countries, dengue affects approximately[2.5] billion people residing in dengue-prone regions, with an annual reporting of around 100 million new cases.[4] The primary vector responsible for transmitting the dengue virus is the Aedes aegypti mosquito. The pathogenic female Aedes mosquito conveys the virus to humans through bites, often acquiring the virus while feeding on the blood of an infected person. These mosquitoes thrive in stagnant water, such as water tanks, puddles, old tires, and containers.[1,2,3,5]

Over the last five decades, the occurrence of dengue has surged by 30 times, and Bangladesh bears one of the highest dengue burdens globally.[5] Since the year 2000, Bangladesh has experienced a dengue outbreak nearly every year, with over 3000 reported cases in at least six of these yearly outbreaks.[6] In 2019, the country witnessed a significant impact, with more than 100,000 individuals hospitalized due to Dengue Virus (DENV) infection. Notably, around 50% of these cases were concentrated in Dhaka City, the capital of Bangladesh. According to the Directorate General of Health Services (DGHS), there were 164 confirmed deaths attributed to dengue in 2019.[5,7]

The manifestations of dengue range from non-specific febrile symptoms to classic dengue fever, often accompanied by hemorrhage or shock (Dengue Shock Syndrome).[7] Initially, common clinical indicators include fever, nausea, vomiting, skin rash, and body aches. Classic dengue fever is characterized by a sudden onset of high fever (up to 40°C), intense headache, nausea, vomiting, severe joint and muscle pain, retro-orbital pain, and a spreading maculopapular rash.[5]

In contrast, severe dengue symptoms emerge 1-2 days after the fever subsides and include tenderness, abdominal pain, frequent vomiting, nosebleeding, vomiting of blood (hematemesis), dark stools (melena), fatigue, and restlessness.[1,5] While most dengue cases resolve on their own, untreated cases can progress to a life-threatening condition. The onset of severe dengue can be swift, leading to internal hemorrhage, organ failure, a drastic drop in blood pressure resulting in shock, and complications such as pre-term birth and very low birth weight during pregnancy.[2,3,5]

Risk factors for severe dengue include secondary dengue infection, elderly patients, elevated hematocrit levels, low platelet count, and prolonged activated partial thromboplastin time (APTT). Emergency hospitalization is imperative for patients exhibiting these parameters.[5,8] The rapid onset of severe dengue contributes to numerous deaths among children and young adults, particularly in Asian and Latin American countries.[4,5]

Early detection is essential for preventing fatalities resulting from dengue infection. Differential and diagnostic confirmation typically involve routine laboratory tests such as complete blood count (CBC), blood culture, or serological examination. The primary method for early dengue diagnosis is detecting the NS1 antigen in the blood, as the IgM antibody becomes detectable only after the 6th day of clinical manifestation.[9] Nevertheless, clinical insights obtained from patient history, physical examinations, and routine laboratory tests remain pertinent in diagnosing dengue cases.[5,6,9]

The blood profile of individuals with dengue undergoes changes from the onset of fever. Typically, thrombocytopenia develops within 3-8 days, followed by leukopenia and hemoconcentration due to plasma leakage.[3,5] Statistics indicate an 87% increase in leukopenia and a positive tourniquet test in 52% of dengue patients. Consequently, individuals presenting with acute febrile leukopenia and a positive tourniquet test are more likely to receive a diagnosis of dengue rather than influenza, enteroviruses, or leptospirosis.[5,8] A precise understanding of the clinical and laboratory profile is crucial for accurate diagnosis and effective management of patients. Therefore, this study aims to elucidate the clinical and laboratory profile of serologically confirmed dengue cases in Bangladesh.

Materials and methods

This prospective observational study was conducted between June 2023 and December 2023 in Dhaka city, which is the primary area of the dengue outbreak, served as the focal point. The research took place in the Bashundhara Ad-din Medical College & hospital,South Keranigonj, Dhaka. A total of 271 dengue patients admitted to the hospital from June to December 2023 were included in the study. All patients had confirmed dengue based on the positivity of NS1 (non-structural protein) antigen. Thorough monitoring of admitted patients was conducted, with regular recording of essential clinical and laboratory details on a standard case report form. Comprehensive clinical examinations, encompassing vital signs, skin rashes, pleural effusion, breathlessness, ascites, hepatomegaly, and splenomegaly, were diligently performed. Patients were included based on laboratory confirmation of NS1 Ag or Anti-dengue IgM, presenting with an oral temperature of 100.4 o F, <7 days of fever, and reporting at least one specific symptom (headache, joint pain, backache, abdominal pain, vomiting, fatigue, anorexia, or diarrhea). Recruitment was irrespective of age, gender, economic class, or ethnicity. Informed consent was obtained from non-critically ill patients, while guardians provided assent for critically ill patients. Patients with diagnoses other than dengue were excluded from the study.

Sample collection and processing involved obtaining 3 mL of venous blood through venipuncture from each patient. Subsequently, the blood was centrifuged, and plasma was transferred into EDTA tubes. Plasma aliquots were prepared andrc stored at -20 o C for future analysis. NS1 antigen detection was performed on each patient's plasma. The Tell me fast® Combo Dengue NS1-IgG/IgM Rapid Test (Biocan Diagnostics Inc. Canada) was used to identify IgM antibodies, and the analysis followed the manufacturer's guidelines. To validate IgM and IgG antibodies against the dengue virus, an indirect enzyme-linked immunosorbent assay (ELISA: EUROIMMUN diagnostics) was employed. Confirmed acute dengue cases were defined as patients with samples positive for DENV NS1 protein alone or DENV NS1 protein with IgM antibodies or DENV NS1 protein with IgG antibodies against DENV, exhibiting febrile illness, and reporting at least one of the specified symptoms: headache, backache, abdominal pain, joint pain, vomiting, anorexia, fatigue, or diarrhea. Routine hematological laboratory investigations, including complete blood cell count (CBC) and hematocrit level, were analyzed using an automated blood analyzer. Biochemical tests such as aspartate aminotransferase (AST), alanine transaminase (ALT) for liver function tests, creatinine level, etc., were conducted using

an automated biochemistry analyzer (Vegasys). All patients underwent clinical examination by a registered physician, and clinical features, as well as laboratory parameters, were recorded by registered nurses using a structured questionnaire. Cutoff values for each investigation were based on reference ranges provided by the laboratory. The accuracy and completeness of the data were thoroughly checked, and data cleaning and analyses were performed using statistical software SPSS version.[25]

Results

In this investigation, a total of 271 participants were enrolled, all of whom tested positive for the seroprevalence of acute dengue virus (DENV) infection. Among these individuals, 80.8% were in the recovery phase, and 129.2% were in the critical phase (Table 1). Of the total, 60.1% were male, and 39.9% were female. The mean age of all participants was 26.21(±14.99) years, with almost half (49.8%) falling within the 20-40 age range. Children (<10 years) comprised 12.5% of the subjects, while adolescents (10-19 years) made up 22.5%. Only 15.1% were over 40 years old. Regarding family structure, 65.7% had a nuclear family, and the mean number of family members was 4.82(±2.65), with 44.6% having more than four family members. Approximately half (50.6%) of the patients were unemployed, and the majority resided in urban areas (69.7%), with the remaining 30.3% hailing from semi-urban or rural areas (Table 2).

Fever was reported by 93.7%(254) of the patients, with myalgia, maculopapular skin rash, and itchy skin noted in 26.6%, 25.5%, and 21.8% of the cases, respectively. Abdominal pain and diarrhea were reported by 29.9% and 19.9%, respectively. Nausea and vomiting were experienced by 61.6%, while headaches affected 45.8% of the patients. Less common symptoms included retro-orbital pain in 4.8% and conjunctival suffusion in 2.2%. Additionally, 6.6% reported other complaints such as anorexia, fatigue, and epistaxis (Table 3). Among the 271 patients, 58.7% presented with dengue complications. Hemorrhagic manifestations were found in 11.4%, pleural effusion in 38.4%, and breathing problems in 41.7%. Ascitic fluid exudation was documented in 29.9%, while hepatomegaly and splenomegaly were registered in 7.7%. Multiple organ failure was reported in 9.6% of cases (Table 4).

Thrombocytopenia (platelet count <50,000/cumm) was the most common abnormality, affecting 73.4% of patients. Among these, 32.5% also had leukopenia (leukocyte count <4000/cumm). Elevated liver enzyme levels (AST, ALT >45 IU/L) were identified in 51.3% of patients. A marked increase in hematocrit level (>45%) was observed in 55.2% of participants (Table 5). Regarding seropositivity, 93.7%(254 out of 271) tested positive for the DENV-NS1 antigen alone, while 92.6%(251 out of 271) exhibited dual seropositivity to DENV-NS1 plus anti-DENV IgM. Only 6.6% showed dual seropositivity to DENV-NS1 plus anti-DENV IgG antibodies. The tourniquet test, a clinical diagnostic method, yielded a positive result for DENV infection in 17.7% of the enrolled patients (Table 7).

Table 1: Health status of the enrolled patients with DENV infection (n=271)

Health status	Number of patients	Percentage (%)
Recovery phase	219	80.8
Critical phase	52	19.2

Characteristics	Number of patients	Percentage(%)
Gender		
Male	163	60.1
Female	108	39.9
Age (in years)		
<10	34	12.5
10- 19	61	22.5
20- 40	135	49.8
>40	41	15.1
Mean±SD	26.21±14.99	
Family Type		
Nuclear	178	65.7
Joint	93	34.3
Number of family members		
4	121	44.6
5	68	25.1
>6	82	30.3
Mean±SD	4.82±2.65	
Occupation		
Employed	137	50.6
Unemployed	134	49.4
Residence		
Semi-Urban/Rural	82	30.3
Urban	189	69.7

Table 3: Clinical Features of patients (n=271)

Clinical Features	Number of patients	Percentage (%)
Fever	254	93.7
Abdominal Pain	81	29.9
Diarrhea	54	19.9
Skin Rash	69	25.5
Itching	59	21.8
Myalgia	72	26.6
Nausea/Vomiting	167	61.6
Headache	124	45.8
Conjunctival suffusion	6	2.2
Retro-Orbital Pain	13	4.8
Others (Anorexia, Fatigue and Epistaxis)	18	6.6

Table 4: Complications of the patients (n=271)

Complications	Number of patients	Percentage(%)
None	112	41.3
Bleeding	31	11.4
Pleural Effusion	104	38.4
Breathlessness	113	41.7
Ascites	81	29.9
Hepatomegaly	21	7.7
Splenomegaly	3	1.1
Seizures	9	3.3
Multiple Organ Failure	26	9.6

Total will not correspond to 100% because of multiple complication in individual patients

Table 5. Distribution of patients with complications according to lab parameters (n=271)

Complications due to DENV infection	Platelet count		Leukocyte Count		Liver Enzyme		Hematocrit	
	≤50,000	>50000	≤4000	>4000	Raised AST, ALT	Normal AST, ALT	Normal	Raised
Bleeding (n=31)	13	18	14	17	18	13	19	12
Pleural Effusion (n=104)	39	65	35	69	65	39	59	45
Ascites (n=81)	25	56	35	46	46	35	48	33
Breathlessness (n=113)	24	89	38	75	65	48	57	56
Seizures (n=9)	2	7	6	3	1	8	6	3
Hepatomegaly (n=21)	9	12	6	15	16	5	8	13
Multiple Organ Failure (n=26)	4	22	13	13	13	13	9	17

Table 6: Laboratory parameters of the patients (n=271)

Laboratory parameters	Number of patients	Percentage (%)
Leukocyte Count (n=209)		
≤4000/cumm	68	32.5
>4000/cumm	141	67.5
Platelet Count (n= 271)		
<50000/cumm	199	73.4
≥50000/cumm	72	26.6
Liver Enzyme (n =271)		
Raised AST, ALT (>45 IU/L)	139	51.3
Normal AST, ALT	132	48.7
Hematocrit Value (n=252)		
Raised Hematocrit (>45%)	139	55.2
Normal Hematocrit	113	44.8

Table 7: Pattern of seropositivity and clinical diagnostic method of patients (n=271)

Lab Parameters	Number of patients	Percentage
NS1		
Positive	254	93.7
Negative	17	6.3
NS1+IgM		
Positive	251	92.6
Negative	20	7.4
NS1+IgG		
Positive	18	6.6
Negative	253	93.4
Tourniquet Test		
Positive	48	17.7
Negative	223	82.3

Discussion

In the past few years, dengue has demonstrated a dynamic surge and has emerged as a significant global challenge. The escalation in dengue cases can be attributed to the escalating, unplanned urbanization characterized by unregulated infrastructure development and inadequate sanitation facilities, creating numerous breeding grounds for mosquitoes. In Bangladesh, the majority of dengue cases were documented during the monsoon season (50%) and the post-monsoon period (49%), with the peak season occurring from July to October.[10] Similar to other Southeast Asian nations, Bangladesh, situated in tropical and sub-tropical zones, has become an optimal environment for the dengue vector, fostering its increased transmission. Both Aedes aegypti and Aedes albopictus, the vector types, were identified during dengue outbreaks from 2000 to 2017.[11]

Examining the dengue scenario in Southeast Asia provides an insight into the escalating economic and social challenges posed by this emerging disease, with a pronounced impact in Southeast Asia, particularly Bangladesh. Analogous to other low- and middle-income countries (LMICs), the current state of dengue in Bangladesh is exerting economic pressures on the healthcare sector, as evidenced by a consistent year-on-year decline in healthcare expenditure allocation.[10] Concurrently, out-of-pocket expenditure (OOP) is on the rise, reaching 67%, the highest in the South-East Asia region, as indicated by findings from the Bangladesh National Health Accounts study (BNHA-V).[12] Dengue transmission reaches its zenith during the rainy season, specifically from August to October, creating optimal conditions for the Aedes aegypti mosquito.[13]

In this current investigation, the analysis revealed a higher incidence of dengue fever in men compared to women, aligning with findings from prior studies in Saudi Arabia[14] and Nepal,[15] although differing from a study in Cameroon.[16] The disparity between males and females may be attributed to the increased exposure of men to mosquitoes carrying the

virus, either in the workplace or during commuting. The majority of dengue cases (49.8%) in this study occurred within the 20-40 age group. This pattern is consistent with El-Gilany's discovery of a higher prevalence among individuals aged 16-44 in Saudi Arabia[14] and M. Rahman et al. report of the highest proportion of cases among the 18-33 age group in Bangladesh.[17] Both studies indicate a greater occurrence in adults, aligning with our findings.

Observations also revealed a lower impact of dengue fever on young children under ten years old (12.7%). Similar trends were documented in Nepal,[13] Nigeria,[18] and Cameroon.[19] The reduced prevalence of dengue infection in children compared to the elderly might be explained by the additional care provided to children by their parents.

Dengue diagnosis necessitates either the direct identification of the virus or the detection of specific antibodies. Swift diagnosis is crucial for promptly treating patients. While the conventional "gold standard" involves the isolation and identification of the virus, the real-time reverse transcriptase-polymerase chain reaction (RT-PCR) method is gradually superseding it due to its rapid diagnostic capabilities.[19] However, owing to its affordability and ease of implementation in developing nations, the enzyme-linked immunosorbent assay (ELISA) method for detecting NS1 antigen or specific IgG and IgM antibodies (individually or in combination) remains a vital diagnostic tool compared to RT-PCR.[24]

Combining DENV (NS1) with specific antibodies (IgM and IgG) offers an additional advantage by enhancing the accuracy of dengue diagnosis and mitigating the risk of false-positive results from a single test.[20-22] Hunsperger et al.[23] reported sensitivity and specificity values for the NS1 antigen method ranging from 60-75% and 71-80%, respectively. In the case of IgM anti-DENV ELISA, the range was 96-98% and 78-91%, respectively. Another study by V. Tricou et al.[24] demonstrated that including IgM/IgG test results significantly increased the sensitivity of NS1 alone, from 62.4% to 75.5% when NS1 and/or IgM tested positive, and 83.7% when NS1 and/or IgM and/or IgG were positive.

In our present study, both single and combined methods were employed on 271 serum samples from febrile patients. We observed a higher detection rate of Dengue cases in the NS1 plus IgM antibodies test and NS1 antigen test alone compared to the tourniquet test and NS1 plus IgG antibodies test. These findings align with a study conducted by C. Palomares-Reyes et al. in Peru but differ from those reported by O. G. Oyero in Nigeria and A. M. Ashshi et al. in Saudi Arabia.[25-27]

The clinical presentation of dengue patients included in the present survey indicates that fever was the predominant symptom (93.7%), aligning with findings from studies in Bangladesh,[5] Pakistan,[28] Saudi Arabia,[14] and India.[29] Additionally, patients exhibited symptoms such as nausea-vomiting, headache, abdominal pain, myalgia, and skin rash. Badreddine et al.[30] highlighted abdominal pain and vomiting as more prevalent symptoms in their research. Another study by Abdel-Hady El-Gilany[14] identified headache (74.60%) and myalgia (67.60%) as the most common symptoms after fever, indicating a higher percentage than observed in our study.

Skin rash was observed in 25.5% of dengue patients, consistent with earlier studies by Mahmood et al.[5] El-Gilany14 in Bangladesh and Saudi Arabia, and Ramabhatta[29] in India. Ocular manifestations, such as conjunctival suffusion and retro-orbital pain, were less frequently reported in this study compared to other investigations.[14,31] Notably, among the 271 participants in this study, 17 patients did not exhibit fever during the data collection session, with 16 of them reporting having had a fever either on the previous day or a few hours earlier. This discrepancy might be attributed to the use of antipyretic drugs by the patients.

In the present study, breathlessness (41.7%) emerged as the most prevalent complication of dengue, followed by pleural effusion (38.4%) and ascites (29.9%). These findings are consistent with a prior study conducted in Bangladesh.[5] Godbole[32] reported pleural effusion and ascites in 31% of dengue patients in India, which is comparatively lower than the rates observed in our study. Bleeding was observed in 11.4% of patients, indicating a higher incidence compared to the current study findings (6.5%). Several studies have highlighted both typical and atypical complications of dengue fever, encompassing acute respiratory distress syndrome (ARDS), dengue encephalopathy, encephalitis, lymphadenopathy, splenomegaly, myocarditis, anemia, multiple organ failure, hepatitis, febrile diarrhea, refractory shock, impaired consciousness, portal hypertension, appendicitis, pericardial effusion.[33-35]

Following the examination of laboratory investigations in our study, the results indicate that thrombocytopenia was the most prevalent hematological abnormality among the patients, affecting 73.4% of them. This finding aligns with a prior study conducted in Bangladesh.[5] Similar observations were reported by Humayoun et al.[28] in Pakistan, R. P. Khetan et al.[36] in Nepal, and R. Unnikrishnan et al.[37] in India. However, Kuna et al.[38] in Poland and A. Nigam[39] in India found thrombocytopenia in 20% and 60% of patients, respectively, indicating a comparatively lower prevalence than what was observed in our study. Although the mechanism of thrombocytopenia in dengue involves bone marrow destruction and peripheral platelet degradation, the precise cause remains unclear.[40] Leukopenia was noted in 32.5% of the patients in our study, consistent with a prior study in Bangladesh,[5] which reported a higher prevalence compared to Kuna et al.'s findings (24.6%)[38] Elevated hematocrit levels and increased levels of AST and ALT (>45 IU/L) were also observed in our research, corroborating findings by Humayoun et al.[28]

The clinical features and laboratory parameters, including hematological and biochemical findings, play a crucial role in the prompt management of dengue fever. This study revealed that fever, nausea, vomiting, headache, abdominal pain, myalgia, skin rash, and diarrhea are the most prevalent features. Key indicators such as a high leukocyte count, low platelet count, elevated AST and ALT values, and an increased hematocrit value serve as vital parameters for the rapid diagnosis of dengue-infected patients.

Conclusion

This study shows majority of patients were in the recovery phase, emphasizing the various stages of Dengue Virus Infection observed in the tertiary care setting. Clinical features exhibited a diverse range of symptoms, with fever being predominant. Complications, such as bleeding, pleural effusion, and breathlessness, were notable, emphasizing the complexity of Dengue

cases. Laboratory parameters further highlighted the impact of Dengue, with thrombocytopenia and raised hematocrit levels being common abnormalities. The detection of NS1 antigen and seropositivity to NS1+IgM were crucial for early diagnosis, whereas the Tourniquet Test provided additional diagnostic value. This comprehensive examination sheds light on the multifaceted nature of Dengue Virus Infection at a tertiary care hospital, emphasizing the importance of prompt clinical intervention, continuous monitoring, and effective public health strategies to manage the diverse presentations of Dengue and mitigate its impact on the affected population.

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ANTHROPOMETRIC STUDY AND CORRELATION OF INTERCANTHAL DISTANCE WITH LEFT EYE FISSURE LENGTH IN THE ADULT HEALTHY BANGLADESHI BUDDHIST RAKHAIN FEMALES

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ABSTRACT

Background: Anthropometry is the scientific study of the measurements and proportions of the human body. Anthropometric studies are an integral part of craniofacial surgery and syndromology. Each orbital cavity is essentially intended as a socket for the eyeball. Assessment of orbital dimensions is important for knowing the anatomy of orbital structures and surgical management of orbital pathologies. **Objective:** The purpose of the present study was to determine the anthropometric study and correlation of different orbital proportions in the adult healthy Bangladeshi Buddhist Rakhain females. **Methodology:** This cross-sectional observational study was carried out in the Department of Anatomy, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh from January 2011 to December 2011 for a period of one (01) year. Adult healthy Bangladeshi Buddhist Rakhain females in the age group of 18 to 30 years were included as the study population. Standard of normative facial anthropometric values related to orbital proportion were measured (inner intercanthal distance and left eye fissure length). **Results:** This study showed the inner intercanthal was 31.28±2.48 mm and left eye fissure length was 27.80±1.53 mm. **Conclusion:** In conclusion, intercanthal distance is higher than left eye fissure lengths.

Keywords: Anthropometric study; correlation; intercanthal distance; left eye fissure; adult healthy Bangladeshi; Buuddhist Rakhain; females

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Citation: Anthropometric Study and Correlation of Intercanthal Distance with Left eye Fissure Length in the Adult Healthy Bangladeshi Buddhist Rakhain Females. TMMC Journal 2021; 6(2):66-71.

Introduction:

Anthropometry which equally aids the understanding of anatomical structures, constitutes the technique of expressing quantitatively the form of the human body and skeleton.[1] It is a basic tool of biological anthropology and has been of immense help in the development of forensic sciences in general and forensic medicine in particular. Anthropometric studies are an integral part of craniofacial surgery and syndromology.[2] For these reasons, standards based on ethnic or racial data are desirable because these standards reflect the potentially different patterns of craniofacial growth resulting from racial, ethnic, and sexual differences.[3]

Accordingly, reference anthropometric data of the orbital region are necessary for multiple forensic, medical diagnostic as well as surgical aesthetic procedures. For instance, antemortem and postmortem comparison of the personal database, facial reconstruction, diagnosis of fetal alcohol syndrome, evaluation of traumas, gene alterations and teratogenic induced conditions with periocular dysmorphology.[4-7]

The anthropometric measures of the face have an important place in facial reconstructive surgery and also in the definition of the ideal face. The bilateral orbital region that is located in the upper face acts as a key determinant in the perception of facial attractiveness, youthfulness, and healthy.[8-12] The purpose of this study was to determine anthropometric study and correlation of different orbital proportions in the adult healthy Bangladeshi Buddhist Rakhain females.

Methodology

This cross-sectional study was carried out in the Department of Anatomy at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh from January 2011 to December 2011 for a period of one (01) year. Participants of the study were adult healthy Bangladeshi Buddhist Rakhain ethnic females who were in the age group of 18 to 30 years. Data analysis was carried out in the Department of Anatomy at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka. The following exclusion criteria were used to screen out the ineligible participants through history taking and physical examinations like mixed ethnic origin, congenital craniofacial anomaly, major craniofacial trauma, orthodontic treatment or craniofacial reconstructive surgery, malocclusion, common genetic, endocrine or neurological disorders, craniofacial diseases and abnormalities, growth related disorders and history of facial trauma/reconstruction surgery were excluded from the study. During landmark marking, the participant was asked to sit relaxed on a chair and the head was kept in the normal head position. This position was suitable for correct identification of facial features.[9] All the measurements were taken twice to avoid measurement error. With the help of a sliding calliper, the measurements were taken in millimeters. The data was statistically analyzed by Statistical Package for Social Science (SPSS version 17.0) to determine the range, the mean and standard deviation and any significant correlation between inner intercanthal distance and left eye fissure length.

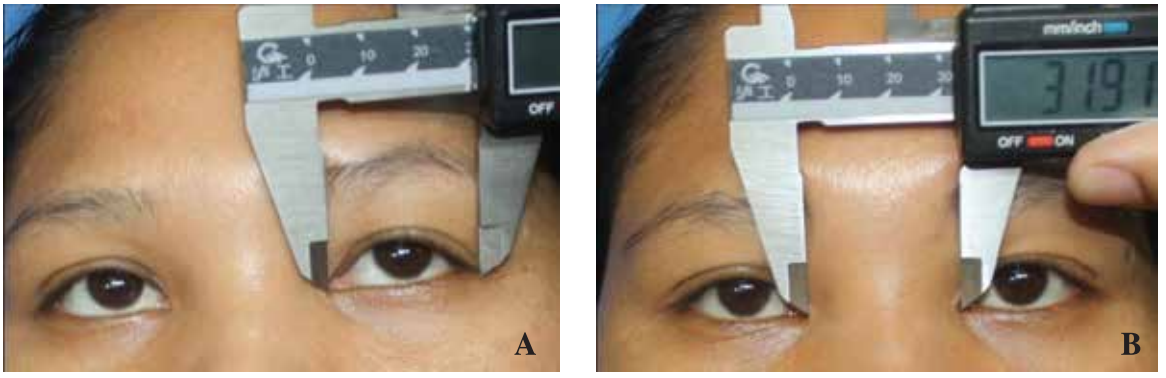

Figure I: A) Procedure of measuring the intercanthal distance ('endocanthion' to 'endocanthion') in a participant using a sliding caliper. **B)** Procedure of measuring the left eye fissure length ('exocanthion' to 'endocanthion') in a participant using a sliding caliper.

Results

A total number of 100 females were recruited for this study. This study showed the inner intercanthal was 31.28±2.48 mm and left eye fissure length was 27.80±1.53 mm.

Table 1: Values of the Varibles related to the different orbital proportion in Adult Healthy Bangladeshi Buddihst Rakhain Females (n=100)*

Variable related to orbital proportion	Value (mm)		P value
	Range	Mean (±SD)	
Intercanthal distance (en - en)	25.17-39.15	31.28(±2.48)	0.000
Left eye fissure length (ex – en)	24.07-32.64	27.80 (±1.53)	

*n (no. of participants)=100 females; en: endocanthion; ex: exocanthion;

†From paired t test; p≤0.05 was considered as significant; S=Significant.

Discussion

The normal morphological and functional values of orbits are variable according to races, sex, and ages. The average values of the external structure of the eye are practically important to determine in the diagnosis of various diseases and identification of anthropological standards in the aesthetic facial surgery.[13] Orbits have been used in race and gender prediction of individuals for more than a century. Understanding human anatomy, proportions, mechanical functions and racial variations concerning the ocular anatomy are of vital importance when treating or clinically evaluating patients.[14]

This study shows the inner intercanthal was 31.28±2.48 mm. These findings are well agreement with the other study.[8] The inner canthal distance has similarities with other studies done on Turkish people.[15-18] Thus, inner canthal distance is considered in the narrow categories in the Turkish people. American, Bulgarian, Czech, Slovak, Azerbaijani, German, and Greek women are also into the same categories.[19-21] This study shows that the left eye fissure length is 27.80±1.53 mm which is similar to other studies.[8-24] Furthermore, the comparison of these results is similar to the most of the studies done by Farkas et al.[21] Our findings regarding left eye fissure length were higher(H) in American, Indian, Azerbaijan, Turkish, Zulu and Bulgarian females.

It is evident from the Table 2 that the Rakhain female showed the mean values orbital proportion of all variables similar to the Croatian, German, Greek, Slovak females. Other population showed varied findings, though two

trends were somewhat visible., The intercanthal distance had a lower (L) mean in the Rakhain females than in the predominantly Mongoloid, Thai, Japanese and Korean American populations. On the other hand, the left eye fissure in the Rakhain females also had a lower(L) mean than in the comparatively less Mongoloid or non-Mongoloid populations like the Turkish, Azerbaijan, Croatian, Indian and African-American populations.

Porter, along with Farkas, evaluated the differences between continental Asian, Asian American, and North American Caucasian faces. The most significant differences between these two groups were that the Asian group had significantly smaller mouth width, greater Intercanthal distance, shorter eye fissures length, and much wider noses. Farkas et al[22] have presented and discussed the findings of 14 anthropometric measurements in peoples of Europe all Caucasoid, Middle East, Asia and of African origin some of which have been discussed above and tested their differences statistically with North American White people.

Table 2: Comparisons of the Rakhain female mean values of variables related to orbital proportion with the means of other female population group

Female Population Group	Age (years)	sample size	Reference	Orbital proportion*	
				Mean intercanthal distance (en–en)	Mean left eye fissure length (ex-en)
1Korean American	18-30	30	Choe et al[25]	L	L
2 Thai	18-30	30	Farkas et al[21]	L	S
3 Japanese	18-30	30	Farkas et al[21]	L	S
4 Indian	18-30	30	Farkas et al[21]	S	L
5Indian American	18-30	30	Husein et al[26]	S	L
6 Turkish	18-25	228	Bozrik et al[27]	S	L
7 Azerbaijan	18-30	30	Farkas et al[21]	S	L
8 Bulgarian	18-30	30	Farkas et al[21]	S	S
9 Czech	18-30	30	Farkas et al[21]	S	L
10 Croatian	18-30	30	Farkas et al[21]	S	S
11 German	18-30	30	Farkas et al[21]	S	S
12 Greek	18-30	30	Farkas et al[21]	S	S
13 Slovak	18-30	30	Farkas et al[21]	S	S
14 African American	18-30	30	Porter and Olson[28]	S	L
15 Angolan	18-30	30	Farkas et al[21]	L	S
16 Zulu	18-30	30	Farkas et al[21]	L	L

*S (Similar): Rakhain females' mean value is similar to that of the mentioned population (varying by 10% or less).
L (Lower): Rakhain females' mean value is lower than that of the mentioned population.
H (Higher): Rakhain females' mean value is higher than that of the mentioned population.

Porter, along with Farkas, evaluated the differences between continental Asian, Asian American, and North American Caucasian faces in 2002. The most significant differences between these two groups were that the Asian group had significantly smaller mouth width, greater Intercanthal distance, shorter eye fissures length, and much wider noses. Farkas et al[21] have presented and discussed the findings of 14 anthropometric measurements in peoples of Europe (all Caucasoid), Middle East, Asia and of African origin (some of which have been discussed above) and tested their differences statistically with North American white people.

Conclusion

This study shows intercanthal distance was higher than left eye fissure lengths. The normative anthropometric data presented in this study would be useful for the clinical interpretation of orbital proportion in the adult healthy Bangladeshi Buddhist Rakhain females. However, this study serves as a guide post to the expansion of normographic data as regards the bony orbit in our immediate environment. It will also present a more in depth guide to the surgical correction of orbital pathologies and fractures.

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TUBE CAECOSTOMY: AN EFFECTIVE WAY TO DEAL WITH THE BASE OF COMPLICATED ACUTE APPENDICITIS

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ABSTRACT

Background: When there is perforation near the base of the appendix, or when the appendico-caecal junction is gangrenous, placement of simple ligature or the caecal purse-string suture may not be viable options, with the possibility of the tissues giving way, leading to intra-abdominal leak, intra- abdominal abscess formation, fecal fistula, peritonitis and sepsis. **Aims and Objectives:** To see the outcome following tube caecostomy in complicated acute appendicitis especially tube related complications. **Materials and Methods:** This prospective observational study was conducted in Enam Medical College and Hospital from January 2017 to December 2020. Fifty patients of complicated acute appendicitis were selected and in all patients tube caecostomy was performed. **Results:** out of 50 patients 7(14%) patients had developed catheter related complications. **Conclusion:** Tube caecostomy can be an effective procedure for dealing angry looking appendiceal base with manageable complications.

Key words: complicated acute appendicitis, caecostomy, faecal fistula.

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Introduction:

In uncomplicated acute appendicitis, appendicectomy is relatively a safe procedure which is usually performed by surgical trainee.[1] But when there is perforation or severe periappendiceal inflammation the chance of septic complications reaches as much as 30%.[2] Post-appendicectomy intra-abdominal abscess or faecal fistulae are still considered as a grave complication.[3] Though caecostomy has some morbidity; in many studies it is shown that tube drainage of caecum is beneficial for many instances.[4]

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Patients and methods:

It was a prospective study conducted in Enam medical college and Hospital from January 2017 to December 2020. The sample size was fifty. The entire patient was selected after evolution with clinical, investigation and per-operative findings.

Inclusion criteria:

Patient with acute appendicitis having severe periappendiceal inflammation like gangrene or burst at or vicinity of appendicular base.

Exclusion criteria:

all patient of acute appendicitis with healthy base.

All selected patient underwent emergency appendicectomy either open or laparoscopy and after fulfillment of inclusion criteria tube caecostomy was performed by 18fr size Foley's catheter. Balloon inflated with 10 ml distilled water and caecum mobilized and fixed with abdominal wall. Intra abdominal drain was also placed in the pelvic cavity. All the patients except who underwent laparoscopic procedure were given delayed primary stitch of skin and caecostomy tube removed 0n 14th post-operative day. Data was recorded from investigation profile, operative findings, at ward and also at OPD during follow-up. All individuals were asked for follow-up at OPD up to 6 months post-operatively.

Results:

Out of fifty, forty five individuals (90%), appendectomy was performed by laparotomy either with lower midline or lower right paramedian incision and five patients (10%) underwent laparoscopic procedure. One patient (2%) developed paracolic abscess. Tube related complications like pericatheter leak with surrounding cellulitis developed in six patients (12%). In one patient (2%) catheter was stuck up due faulty anchoring knot which was managed later by cutting the knot.

Table 1: Complications after tube caecostomy in complicated acute appendicitis (n=50)

Complications	No. of patient	Percentage (%)
Paracolic abscess	1	2%
Peri catheter cellulitis	6	12%
Retain catheter	1	2`%

Method	Number	Percentage
Conventional open	45	90%
Laparoscopic	5	10%
Conversion	0	0%

Discussion:

After the invention of caecostomy in 1710 by Litter, initially there was much controversy about its efficacy.[4,5] But recent reports in the literature have shown that tube drainage of the caecum to be an effective method of decompressing the colon in many surgical procedure.[6,7,8]

The common practice of burst/gangrenous appendix is to perform appendicectomy and drain the area.[8,9] But sometime it become challenging to close/invaginate the appendicular base due to severe periappendiceal inflammation. Procedure like right hemicolectomy, caecostomy even ileostomy has been suggested when a difficult appendicular base is encountered during appendicectomy.[8,9,11]

Post appendectomy intra-abdominal complications like residual abscess (paracolic, subhepatic, pelvic abscess), faecal fistula are rare but serious complications specially when appendicitis is complicated like burst or gangrene in the vicinity of its base or severe periappendiceal inflammation.[8,9,10] In these situations simple closure or invagination of appendicular stump is not possible due to fear of leakage from the appendicular base.[11]

It is surprising that there is little literature to manage a difficult appendicular base during surgery of complicated appendicitis. We found that use of tube caecostomy is quite reasonable in preventing intra abdominal residual abscess formation when simple closure of appendicular base is not possible.[12]

We studied 50 cases, out of which, appendicectomy done by laparotomy in forty (90%) cases and laparoscopic procedure was performed in five patients (10%). All the cases except one showed excellent recovery and average hospital stay was 7 to 8 days.

In our study, one patient who underwent laparoscopic procedure, developed residual collection in right paracolic space. In previous several studies it was shown that about 2.3% chances of formation of intra-abdominal abscess after appendicectomy especially when appendicitis become complicated.[12,13] The paracolic abscess was treated by image guided insertion of a pig tail catheter. And it is now well established that image guided abscess drainage is very effective throughout the different body cavities.[13]

Different tube related morbidity like pericatheter leak, cellulitis, skin excoriation, accidental dislodgement, retains catheter, nonfunctioning, colo-cutaneous fistulae etc had been documented so far 8,10,12,13. In our series about 8(16%) patient had developed catheter related complications and all were minor and didn't need re-exploration.

Limitation of the study: there was some limitation in our study. The sample size was relatively small and long term follow-up couldn't be possible. Further evaluation is required to establish tube caecostomy as a standard technique in selected patient of acute complicated appendicitis.

Conclusion:

Suppuration, sloughing or perforation of base of appendix is often associated with a higher rate of morbidity. And in these situations a major faecal diversion or resection of bowel may not proved to be feasible. Tube caecostomy can be better option.

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EPIDURAL ABSCESS SECONDARY TO STREPTOCOCCUS PNEUMONIAE. A CASE REPORT

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ABSTRACT

While spinal epidural abscess is a well described disease process, this condition is rarely caused by Streptococcus pneumoniae. This case describes a case of spinal epidural abscess secondary to S. pneumoniae in an otherwise healthy, immunocompetent 61-year-old female without a history of spinal procedures, obvious source of hematogenous seeding, or clear risk factors for invasive pneumococcal infection. She was treated with IV and oral antibiotic therapy and made a full recovery.

Keywords: Epidural abscess, Streptococcus pneumoniae, Cerebral, Cerebellar, MRI.

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Introduction:

Spinal epidural abscess (SEA) occurs at an incidence of 2-8/10,000 hospital admissions.[1] SEA is predominantly caused by Staphylococcus aureus (63% of cases) and followed by gram-negative bacilli (16%) with SEA secondary to S. pneumoniae rarely described.[2] SEA classically presents with a triad of fever, back pain, and neurological deficits, but many cases can present with nonspecific signs. Back pain is the most sensitive sign followed by neurologic deficits, with fever the most likely to be absent.[3-5] When considering a diagnosis of SEA, acute onset back pain in the presence of positive inflammatory markers should trigger additional imaging with a contrast-enhanced MRI.[17,18]

S. pneumoniae as a causative organism of SEA has rarely been documented in the literature.[6] Here we describe a case of SEA secondary to S. pneumoniae in an otherwise healthy, immunocompetent 61-year-old female with no history of spinal procedures, obvious source of hematogenous seeding, or other known risk factors for infection and present a literature review of all previously published cases of S. pneu- moniae SEA to date.

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Case presentation

A 61-year-old female presented with progressive and severe back pain that started after lifting a heavy box 12 days prior to presentation. Prior to admission the patient was previously healthy without known chronic medical conditions. She had no history of pneumococcal immunization. The pain was localized to her lower back and radiated down her left buttock and leg and was refractory to oral analgesic medications. Due to the pain an MRI was ordered which revealed a 1.2 × 5.5 cm Para spinal abscess with extension to the spinal canal, causing narrowing at L3-L4, L4-L5, and L5-S1 (Figs. 1-3). The severe pain and MRI findings prompted presentation to the emergency department.

At presentation, physical exam was consistent with right Para spinal tenderness in the lumbar region, right elbow pain and swelling consistent with bursitis, and a grade 3/6 systolic murmur loudest at the apex. Neurologic exam revealed no neurological abnormalities.

Laboratory studies were significant for a white blood cell count (WBC) of 24.04 cells/mm3, erythrocyte sedimentation rate (ESR) of 120 mm/hr, and C-reactive protein (CRP) of 18.35 mg/dL. Aspirate of the right olecranon bursa yielded no growth on routine culture after 4 days of incubation.

Ultrasound-guided needle aspiration of the epidural abscess was performed and yielded 10 cc of purulent fluid. Aerobic and anaerobic culture of the aspirate grew 4+S. pneumoniae susceptible to amoxicillin, erythromycin, levofloxacin, tetracycline, and vancomycin. The isolate was intermediately susceptible to trimethoprim-sulfamethoxazole. Blood cultures drawn from two different sites were negative after five days of incubation. Echocardiogram was negative for valvular vegetations and did not reveal valvular abnormalities. Repeat MRI performed following aspiration demonstrated that the epidural abscess had decreased in size from prior with a small amount of enhancing epidural material remaining dorsally at L3-4, but with greatly reduced spinal canal stenosis. Ceftriaxone 2 g IV daily was initiated and her back pain gradually improved. She received six weeks of outpatient intravenous ceftriaxone. Repeat MRI following this course of antibiotics revealed much improvement in the SEA, but with some residual fluid. After After completion of ceftriaxone, she was treated with four additional weeks of amoxicillin 2 g orally twice daily. The patient's symptoms resolved, and she has not had recurrence of signs of infection or symptoms

Fig. 1. T1 Flair Sagittal Image.

Discussion

SEA is a life-threatening infection capable of producing permanent neurological deficits through a variety of proposed mechanisms.[1] Risk factors for SEA include diabetes mellitus, alcoholism, immuno- compromised states, malignancy, intravenous drug use, trauma, and spinal surgery.[7] This pathology can occur indirectly via hematoge- nous seeding from a distant source of infection (i.e., cardiac valves, soft tissue, urinary tract), or directly, by inoculation or invasion of the epidural space (i.e., epidural injections, nearby septic arthritis).[8,9] In one-third of cases, no source of infection is identified.[2] The epidural space is inherently sterile; however, once bacteria develop a nidus, host immune defenses lead to inflammation and pus in a constricted area. It is the combined effect of spinal nerve impingement and cytokine release from the developed abscess that can manifest as a classic triad of fever, back pain, and neurological deficits. When left untreated, the abscess can progress to cause significant morbidity and mortality.[10,19] When considering a diagnosis of SEA, acute onset back pain in the presence of positive inflammatory markers should prompt advanced imaging, preferably with a contrast-enhanced MRI.[17,18]

In this case, S. pneumoniae was identified as the causative agent of SEA in an immunocompetent, otherwise healthy, and active individual with no medical comorbidities and no identified source of her infection.

S. pneumoniae as a causative organism in SEA in adults is rarely described (see Table 1). A single case series reporting on S. pneumoniae as the etiologic agent of spinal infections contained eight patients, with five involving the epidural space.[11] A literature review of S. pneumoniae spinal infections from 1906 to 2012 identified 52 cases with 19 adult cases involving the epidural space.[6] Since 2012 four additional cases of S. pneumoniae SEA have been identified.[12,13,31, 32]

Fig. 2. T2 Weighted Coronal Image

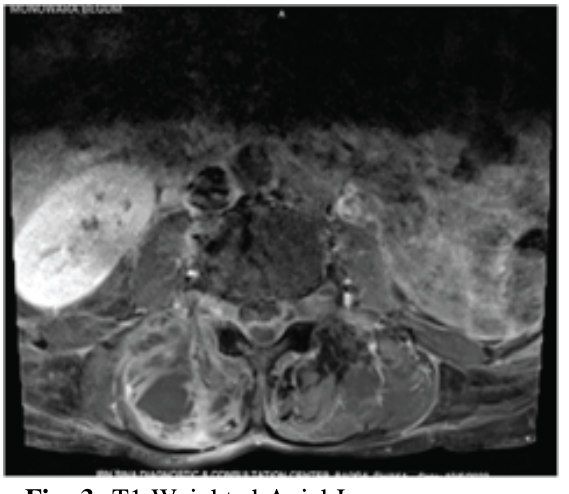

Fig. 3. T1 Weighted Axial Image.

Of the 23 identified adult cases of S. pneumoniae SEA since 1909, there was a predilection towards males with 17 cases reported (81%).[11] cases (52%) presented with fever, and 20(95%) had leukocytosis. Of the cases that reported ESR, all

were elevated.[12] 16 cases had involvement of the lumbar spine, seven of the thoracic spine, and eight of the cervical spine. A wide variety of antimicrobial strategies were employed (see Table 1). Most cases underwent surgical intervention (laminectomy and/or drainage). Only six did not have a neurological deficit upon presentation, including the present case. Seven of the 23 adults with SEA died.

The present case is unique as the patient presented without neuro- logical deficits. Her only apparent risk factor was a mechanical injury prior to diagnosis. She presented without fever, and with an elevated WBC and inflammatory markers. This case adds to the sparce data that exists on SEA caused by S. pneumoniae and outlines a treatment course that successfully managed the infection without neurological sequelae.

Conclusion

This case of spinal epidural abscess (SEA) due to S. pneumoniae in a previously healthy patient with atypical symptoms illustrates the need to maintain awareness of SEA in the differential diagnosis of invasive pneumococcal infection even in the absence of common risk factors. Spinal epidural abscess secondary to S. pneumoniae is infrequent but should be considered in patients who present with signs or symptoms of spinal infection and specific risk factors for invasive pneumococcal disease.

Table 1 : Summary of all Laboratory and imaging data in this present case.

HEMATOLOGY REPORT		**DATE** *18/10/2023*	*19/10/2023*	*20/10/2023*	*21/10/2023*
Hb%		12.1 g/dL	14.3 g/dL	12.8 g/dL	12.3 g/dL
ESR (Westergren)		96 mm/1st hour		79 mm/1st hr	69 mm/1st hr
WBC (Total count)		21980 /cumm		22000 /cumm	21460/cumm
WBC (Differential count)	Neutrophils	87%		87%	88%
	Lymphocytes	07%		07%	06%
	Monocytes	04%		04%	04%
	Eosinophils	02%		02%	02%
	Basophils	00%		00%	00%
	Total Cir. Eosinophils	440 /cumm		442 /cumm	429/cumm
RBC Count		4.02 m/ul		4.21 m/ul	4.09/ul
(HCT/PCV, MCV, MCH, MCHC etc.)	HCT/PCV	35.1%	40.8%	36.8%	35.9%
	MCV	87.2 fL		87.4 fL	87.8 fL
	MCH	30.1 pg		30.3 pg	30.1 pg
	MCHC	34.5 g/dL		34.7 g/dL	34.3 g/dL
	RDW-CV	13.8%		14.1%	14.2%
	RDW-SD	44.9 fl		45.5 fL	46.6 fl
Platelet Count		604000 /cumm		442000/cumm	332000/cumm
(MPV, PDW, PCT)	MPV	8.8 fL		9.0 fL	9.0 fL
	PDW	15.4%		14.5%	15.5%
	PCT	5.29%		3.77%	3.00%

BLOOD BIOCHEMISTRY		DATE			
		18/10/2023	*19/10/2023*	*20/10/2023*	*21/10/2023*
Serum electrolytes	Sodium	143 mmol/L	144.4 mmol/L	140 mmol/L	139 m mol/L
	Potassium	3.5 mmol/L	3.25 mmol/L	3.7 mmol/L	3.20 mmol/L
	Chloride	107 mmol/L		106 mmol/L	103 mmol/L
Biochemistry report	S. Creatinine	1.4 mg/dL		1.60 mg/dL	1.30 mg/dL
	S. Calcium	8.0 mg/dL			
	S. Magnesium	1.05 mg/dL			
	S. Urea	19.0 mg/dL		60.0 mg/dL	86.0 mg/dL
	S. Bilirubin (Total)	0.9 mg/dL			
	S. ALP	75.0 U/L			
	S. Albumin	16.5 g/dL			
	Cardiac troponin I		1.850 ng/dL		
HbA 1C		6.5%			
Lipid profile	Cholesterol (total)	180.0 mg/dL			
	Triglyceride (TG)	145.0 mg/dL			
	HDL - Cholester ol	43.0			
	LDL - Cholesterol	108.0			
Immunology	S. Procalcitonin	22.18			
	NT Pro B N P	22050.7			
Serology report	(CRP)	117.0 mg/dL			
Coagulation profile	APTT				28.6 Sec
	PT				14.5 Sec
	Control				12
	Ratio				1.26
	INR				1.29
Lab Report	pH		7.407	7.219	7.370
	PCO_2		41.0	40.8	33.8
	PO_2		80.9	29.9	63.5

URINE ANALYSIS	**DATE**	
	19/10/2023	***21/10/2023***
Physical Examination		
Color	Straw	Straw
Appearance	Hazy	Clear
Sediment	Present	Present
Sp. Gravity	Q.N.S	Q.N.S
Chemical Examination		
Reaction	Acidic	Acidic
Protein	(++)	(+)
Reducing Subs (Sugar)	Nil	Nil
Bile Pigments	Not done	Not done
Ketone Bodies	Not done	Not done
Urobilinogen	Not done	Not done
Microscopic Examination		
Epithelial Cells	3- 5/HPF	2- 3/HPF
Pus Cells	4- 6/HPF	10- 12/HPF
RBC	Plenty	Plenty
Cellular Cast (RBC)	2- 3/LPF	18- 20/LPF
Candida	(++)	(++)

RADIOLOGY	
29/09/2023	
MRI of Lumbo -Sacral spine (With contrast)	IMPRESSION: # Altered narrow signal intensity lesion at D11 -D12 vertebrae with collapse of D12 vertebral body associated with large paravertebral lesion having epidural and foraminal extension causing spinal canal stenosis, cord compression with corresponding nerve root compression -possibly due to infective spondylitis/pott's disease. CT guided FNAC recommended for further evaluation. # Thecal sac indentation at L5-S1 level due to posterior central disc protrusion with annular tear. # Degenerative change in lumber spine.
05/10/2023	
MRI of Lumbo -Sacral spine (With contrast)	IMPRESSION: # Suggestive infective spondylitis/Pott 's disease at D11 -D12 vertebrae with partial collapse of D12 vertebral body associated with right psoas & large pre-paravertebral lesion having epidural and foraminal extension causing spinal canal stenosis, cord compression with corresponding nerve roots compression. CT guided FNAC recommended for further evaluation. # Thecal sac indentation at L5-S1 level due to posterior central disc protrusion with annular tear. # Posterior disc bulge at multiple dorsal levels causing thecal sac indentation. # Heterogenous m arrow signal intensity in all dorso -lumbar vertebrae- most likely due to osteoporosis with fatty infiltration rather than marrow infiltrative lesion. # Degenerative change in lumber spine. # NB: Image part of lower chest shows: Altered signal intensity les ion in left lung base along with collection in left pleural sac. CT scan of chest with contrast recommended for further evaluation.
15/10/2023	
Ultrasound of Whole Abdomen	COMMENT: Features Suggestive of: 1. Multi septated Gallbladder 2. Right renal parenchymal disease 3. Right renal cortical cyst 4. Cystitis

CYTOLOGY REPORT	
05/10/2023	
CT guided FNAC	Specimen: CT guided FNA from D11-D12 vertebrae lesion Microscopic examination: Smears show plenty of degenerated and intact polymorphs, lymphocytes and hi stiocytes on the background of necrotic material. No malignant cell is seen. Diagnosis: **Suppurative inflammation**

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Ethical approval

Design of the work has been approved by the local ethical committee: Samaritan Health Services Regional Institutional Review Board and HCA Healthcare Institutional Review Board.

Consent statement

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Ethics approval and consent to participate

Design of the work has been approved by the local ethical committee: Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Statement of independence of researchers from funders

No funding was obtained for this present study and authors are free of any financial incentives or involvement in the promoting of this study.

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The lead author affirms that the manuscript is an honest, accurate, and transparent account of the study being reported and that no important aspects of the study have been omitted.

Declaration of Competing Interest

All authors have no support from any organization for the submitted work; no financial relationships with any organizations that might have an interest in the submitted work, no other relationships or activities that could appear to have influenced the submitted work.

Data Availability

Data sharing is not applicable to this article as no datasets were generated or analyzed during completion of the current study.

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Identify statistical measures of variations such as standard deviation and standard error of the mean. Do not use internal horizontal and vertical rules.

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The discussion section should reflect the comprehensive analysis of the results. Emphasis should be made on new and important aspects of the study and the conclusions derived thereof.

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Describe the implications of the findings and their limitations, including, implications for future research.

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Conclusion(s)

Conclusion must be linked with the goals of the study. Unqualified statement(s) and conclusion(s) which completely do not support the data must be avoided and in appropriate situation recommendation, if any, is encouraged.

Acknowledgement

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