

A case of dengue fever associated with acute scrotal oedema

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RESEARCH

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ABSTRACT

In Southeast Asia, dengue fever (DF) is endemic. Dengue fever is caused by the Flaviviridae virus that is spread due to the bite of a mosquito which is infected *Aedes aegypti*. Dengue fever can be aggravated by dengue haemorrhagic fever and dengue shock syndrome. Encephalitis, meningitis, hepatitis, acalculous cholecystitis, appendicitis, pancreatitis, parotitis, myocarditis, adult respiratory distress syndrome, pleural effusion, ascites, and scrotal and penile oedema are some of the conditions that can cause it. Dengue has spread over Africa, Americas, Eastern Mediterranean, Southeast Asia, Western Pacific, with disease being endemic in over hundred countries. Most adversely affected regions are Southeast Asia and the Western Pacific. Dengue fever is estimated to affect fifty million people all over the world annually, by the data provided by world health organization. A significant increase in urban populations is exposing an increasing number of individuals to this vector, particularly in locations where mosquito breeding is frequent, like domestic water storage common & other waste disposal systems are insufficient. Reasons behind etiopathological consequences of dengue fever and severe dengue illness is unknown. In an endemic location, it has been observed that sequential manifestation by any 2 of the 4 serotypes of dengue virus causes DHF/DSS. Antibodies generated during the initial infection are thought to be capable of neutralizing a second viral infection of the same serotype. Symptomatic treatment is used. Because of the danger of bleeding,

aspirin should be avoided. In individuals with shock, volume replacement and blood transfusions may be necessary. Mortality rates are less than 1 per cent with intensive care support. Corticosteroids have yet to be demonstrated to be useful. This is a case report of 18 year old male with dengue haemorrhagic fever & thrombocytopenia with right sided hydrocele.

Key Words

Dengue haemorrhagic shock, Respiratory distress syndrome, Edema of scrotum, Pleural effusion

Introduction

Dengue fever has a wide spectrum of clinical symptoms and an unpredictable course and result. The incubation phase is 3 to 7 days long. Small age group candidates may present with a fever like symptoms that is nonspecific. It is now considered most important Arboviral infection on the planet, as half of the world's population lives in areas at risk of infection, with around half of that living in dengue-endemic countries.^{1,2}

Fever, myalgia, arthralgia, and rash are all symptoms of dengue fever, which is an acute febrile sickness. Severe dengue infection is characterized by haemostasis problems and plasma leaking from capillaries, the latter of which can lead to shock (dengue shock syndrome). Plasma leakage and defective haemostasis, which result in rising haematocrit levels, moderate to notable thrombocytopenia, and varied degrees of bleeding, distinguish severe dengue from dengue fever. The source of aberrant plasma leakage isn't completely understood. However, the fast recovery without any lasting abnormalities in the arteries shows that it was caused by the discharge of an anaesthetic. AISE is treated with a conservative approach that includes elevation of scrotum & support, comfort, & as-needed antibiotics and antihistamines.

Case Report

Patient Information & Clinical findings

An 18 year old male presented having complaint of fever, generalized weakness and decreased appetite. Patient was treated as per regular procedure and protocol. In this case

study we are discussing about case of an adult having dengue haemorrhagic fever & thrombocytopenia with right sided hydrocele. On examination patient was febrile on touch with pulse 114 beats per minutes, with BP 112/74 millimetre of mercury. Respiratory rate was 18 cycles per minutes. On examination scrotal swelling was seen on right side.

Diagnostic Assessment

Patient was referred from outside hospital with diagnosis of Dengue NS-1 positive status. Complete blood count report suggestive of platelet count of $88000/\text{mm}^3$. The laboratory investigation reports suggested haemoglobin 13.9gm per cent, total leukocyte count 1600/micro litre, thrombocyte count $51000/\text{mm}^3$. All routine investigations were done on admissions which suggestive of platelet count of $51000/\text{mm}^3$ with negative rapid antigen test.

Therapeutic Intervention & Outcomes

Patient was started on injectable antibiotics, IV fluids and other supportive medications. Three units of platelets were transfused after cross matching and blood grouping. Platelet count was monitored throughout the hospital stay which is in increasing trend.

Surgery opinion was taken in view of scrotal swelling and pain in inguinal region. USG B/L inguinal region and scrotal region which was suggestive of mild right sided hydrocele. No active intervention was advised for the same.

Scrotal edema and associated symptoms are relieved with supportive therapy. Plasma leaking can produce scrotal edema in patients with dengue haemorrhagic fever. Platelet count was monitored throughout the hospital stay which was in increasing trend. Patient is clinically improved during hospital stay then discharged.

Discussion

Dengue fever is the world's most widespread arthropod-borne viral disease. Southeast Asia is plagued by dengue fever. The flaviviridae virus causes dengue fever, which is spread by the bite of an infected mosquito known as *Aedes aegypti*.³

The acute onset of fever, haemorrhagic diathesis, thrombocytopenia, and plasma leakage are all symptoms of dengue haemorrhagic fever".⁴

In some situations, severe dengue can lead to dengue haemorrhagic fever and dengue shock syndrome, which can cause acute unusual symptoms encephalitis, meningitis, hepatitis, acalculous cholecystitis, Adult myocarditis, Appendicitis, pleural effusion, and respiratory distress syndrome, edema of scrotum, etc.^{5,6}

Common laboratory finding in dengue infection is thrombocytopenia. It normally reaches its height at the critical moment and then fades away. In dengue infection,

pathophysiology of thrombocytopenia is not clearly understood. It is believed that it depends mainly on two events: decreased in bone marrow production or increased peripheral destruction and platelets clearance.^{7,8}

Antibodies directed against NS-1 antigen and platelets cross-react, implying that antiplatelet antibodies play a role in the pathophysiology of thrombocytopenia.⁹ An important role is played by complement-mediated platelets destruction in dengue infection.

AISE is the second most prevalent cause of acute scrotal illnesses in young boys after testicular torsion, accounting for 20–30 per cent of all acute scrotal disorders. This is most common in males between the ages of 5 and 11.^{10,11}

Adult acute idiopathic scrotal edema has yet to be identified as a dengue haemorrhagic fever complication. It is a self-limited scrotal oedema and erythema that disappears without complications in 1–3 days.^{6,12,13}

The cause of AISE is uncertain, but it has been linked to anaphylaxis, injury, insect stings, and eczema, among other things.^{6,14} Plasma leakage from increased vascular permeability is a consequence of dengue haemorrhagic fever which causes adult acute idiopathic scrotal edema.

Cross-reactive antibody, in combination with cytokine and activated complement, causes platelet clearance, coagulation system disruption, vascular leakage, and dengue haemorrhagic fever/dengue shock syndrome.¹⁵

Pleural effusion and ascites induced by plasma leakage are common clinical findings in dengue haemorrhagic fever patients.

Epididymo-orchitis, testicular or appendical torsion, incarcerated inguinal hernia, and trauma requiring surgical intervention are among the differential diagnoses for AISE. Avoid unnecessary surgical investigation, a comprehensive history, physical examination, and scrotal sonography are used to distinguish AISE from a scrotal surgical urgency.

Oedema can spread to the perineum, abdomen, and penis. Prepubescent boys between the ages of 5 and 11 are the most commonly suffered and that is the fourth prevalent cause of scrotum edema in individuals under 20 years age, after epididymitis, testicular torsion, and appendage torsion. It is uncommon among adults, with 3 patients having diabetic foot and the 3 having complications of proximal penis.

AISE is most prevalent diagnosis in child having scrotal edema, accounting for 20-30 per cent of all acute scrotal diseases. Thickening, edema, & congestion scrotum & testicles are normal, ultrasonographic findings of AISE. In few studies, hydrocele (most likely reactive) has been reported alongside usual scrotal wall findings.

AISE's etiology isn't well understood. According to previous case reports, the disease is due to an allergic reaction rather

than an infectious or traumatic source. Leakage of plasma from high permeability of vessels caused by interaction with antigenic structures of virus may be the cause of AISE in DF. Few of the interesting cases on Dengue were reviewed.¹⁶⁻¹⁹ It's critical to figure out painful nature of edema of scrotum and penis. Edema with pain should consider specially & that necessitates immediate attention and testing for finding out torsion in testis and persistence erection of penis. Inflammation of epididymis, orchitis and haematocele are among the other reasons. Scrotal oedema is painless causes of acute scrotal oedema.

To avoid unnecessary examination, distinguishing acute scrotal oedema from a surgical urgency of scrotum is considered critical. The most common method of diagnosis is clinical examination, but ultrasonography can also help (US). This enables direct sight of structural characteristics and they utilized for ruling out potential causes of scrotum edema. Analysis of urine, culture of tissues, and leucocyte count are all within proper limits in diseased condition. Scrotal wall swelling having high vascularity is a common US finding in (AISE). Hypervascularity causes compressibility and expansion of the inguinal lymph nodes.

Although the cause of AISE is unknown, it is thought to be a type of angioneurotic oedema. Mediators of inflammation came in contact with antigen of dengue induced an anaphylactic response in DF, which caused ASE.³ The inflammatory response is composed of antibodies-dependent increase, enhanced dengue virus replication, and the discharge of tumour necrotizing factors, interleukins.⁴ Activation of endothelium producing coagulation system causes disrupted vascular leakage, leading in effusion in pleura, with oedema that localized & widespread.

Torsion of epididymis and testicles, hernia in inguinal region, and injuries requiring surgical intervention are among the differential diagnoses for AISE. To minimize unnecessary surgical investigation, it's critical to distinguish AISE with surgical scrotal urgency dependent upon a thorough history, general and systemic examination, and ultrasonography of scrotum.

AISE is treated with a conservative approach that includes elevation of scrotum with supportive measures, reassure patient, systemic drugs on an as-needed basis. With supportive care, ASE related with DF also goes away totally.³ Antipyretic medications, fluid replacement, and scrotal support were also used to keep the patient comfortable. The oedema was completely gone in 5 days.

Radiographic features (Ultrasound)

In the case of an acute scrotum, ultrasonography is best method. The condition defined by thickening with edema of the wall of scrotum, high blood supply to scrotal structures, with normally appearing testes.

The "fountain sign," a unique result on colour Doppler investigation that suggests the diagnosis has been described by Geiger et al. The "fountain" shown on transverse scrotal imaging is owing to enhanced blood supply in the scrotum region, having blood supply through sacral arteries from deep external and internal pudendal artery branches.

Mild reactive hydrocele & swollen, hypervascular inguinal lymph nodes are among the other sonographic abnormalities documented in AISE. Other etiological factors like cellulitis, and torsion of testicles, are clinical differential diagnoses for AISE. In a paediatric patient with joint pain and rash, and lymphatic abnormalities of the scrotum, Henoch-Schoenlein purpura appear with scrotal discomfort on both sides.

Conclusion

Dengue haemorrhagic fever is one of the most deadly side effects of dengue virus infection, which can lead to dengue shock syndrome.

The emergence of this dreaded consequence can be detected early by monitoring vital signs and bleeding symptoms.

Dengue fever-related acute scrotal and/or penile oedema is a rare but self-limiting condition that goes away after a few days.

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