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A CASE REPORT OF EXPANDED DENGUE SYNDROME FROM RURAL INDIA

Medicine

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ABSTRACT

Dengue infection is the most common arboviral infection in India. Most of the time, it is a self-limiting benign illness. At times, atypical manifestations can occur in Dengue infection of which cardiac involvement requires high degree of suspicion with timely treatment. It is postulated that; dengue rarely affects the heart. Medical literature has reports of isolated cases of atrioventricular conduction disorders (junctional rhythm and atrioventricular block), supraventricular arrhythmias, and myocarditis. On the other hand, the ventricular dysfunction associated with the acute phase of dengue hemorrhagic fever has been described by several authors and is probably under diagnosed in clinical practice.

KEYWORDS

Dengue fever, myocarditis, conduction abnormalities

INTRODUCTION

Arboviruses represent a serious public health problem in tropical and subtropical regions of the world. Dengue virus (DENV), the most important arthropod borne diseases is transmitted to humans by mosquitos of the Aedes family[1]. The dengue virus, a member of flavivirus group in the family Flaviviridae, is a single stranded enveloped RNA virus. All four dengue virus serotypes (DENV- 1, DENV-2, DENV-3 and DENV-4) can cause the disease which can present as a mild self-limiting illness, dengue fever (DF), or as the more severe forms of the disease, dengue hemorrhagic fever (DHF) or dengue shock syndrome (DSS).[2]

Most cases of dengue are self limited, and the course of the disease is a nonspecific febrile state, general malaise and weakness. Patients feel severe muscle pain and retro-orbital pain, with or without skin rash. Laboratory tests may reveal increased hepatic enzyme levels, leukopenia and thrombocytopenia, which are abnormalities consistent with but nonspecific for dengue fever.[1] However, a small proportion of patients develop severe clinical manifestations, including bleeding, organ impairment and endothelial dysfunction with increased capillary permeability causing hypovolemic shock that can lead to cardiovascular collapse. Defining the role of cardiac dysfunction in the hemodynamic compromise of severe dengue has potentially important management implications.[3]

Cardiac dysfunction associated with the acute phase of dengue fever has been under diagnosed in clinical practice. Although cardiac manifestations specific to dengue are rare, depression of myocardial function is frequent in dengue hemorrhagic fever and dengue shock syndrome.[11] the "Dengue related shock syndrome" is due to the increased vascular permeability and hypovolemic pattern [4]. An adequate approach to the hemodynamic instability associated with dengue requires not only a significant volemic expansion, but also evaluation and treatment of the accompanying ventricular dysfunction, as in the current treatment of sepsis.

CASE REPORT

We report a case of 22-year-old male from the rural part of west India admitted to us with chief complaints of fever with chills for 3 days. It was associated with retroorbital pain, myalgia, headache, arthralgia. He had complain of black stools 2 days back. His examination revealed a toxic and dyspneic patient with a pulse rate of 50/min, BP of 86/66 mm of Hg and cold extremities. There was no pallor, cyanosis, icterus, clubbing, lymphadenopathy, or pedal edema. His personal history was insignificant. Systemic examination revealed diffuse bilateral crackles up to mid-scapular region in the chest and S3 gallop rhythm on cardiovascular system examination. His abdomen was soft with slight tenderness in the epigastric region. ECG shows sinus bradycardia. His chest X ray showed evidence of pulmonary edema with no cardiomegaly. An urgent echocardiography was advised which revealed normal sized chambers with an EF of 40%, Reduced LV compliance, global LV hypokinesia with RVSP of 28mmHg. USG abdomen and chest revealed streak of pleural fluid in both the lung bases with mild splenomegaly(13.5cm) and mild ascites. His lab investigations were normal except for low platelet. His CPK-MB 250 U/I and TROP-I-0.487 were raised. Dengue NS1 was positive. Patient was put on inotropic support. He was treated according to the national guidelines. No specific treatment was given for bradycardia as it was asymptomatic. There was no evidence of bleed after first episode. Patient improved symptomatically thereafter. Vasopressor support was tapered off. Platelets got normalized after 4 days. Patient was discharged and on follow up visit, echocardiography was done which had turned to be normal.

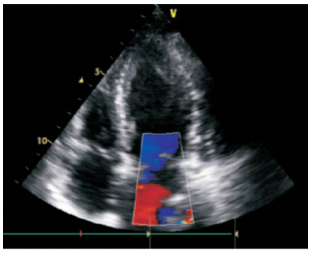

Figure 1: 2D ECHO of our patient

DISCUSSION

Dengue is one of the most important emerging viral diseases globally. The majority of symptomatic infections result in a relatively benign disease course. Cardiac complications are not uncommon in dengue illness. Viral myocarditis is a well-recognised complication of many viruses leading to subsequent cardiomyopathies (dilated type).[9] Although it was self-limiting in our patient, under supportive treatment, acute myocarditis in dengue may be clinically severe to such an extent that it has a fatal outcome.[11] The rhythm abnormalities in dengue fever tend to be benign and self-limited, and resolve in the majority of patients at discharge or on follow up.[10] Bradycardia in dengue fever may not only be a relative phenomenon and should be looked at carefully during both acute and convalescence period. However, the bradycardia in dengue fever does not correlate with the severity of illness or affect the management and outcome of the patient. Dengue hemorrhagic fever patients have higher levels of TNF-alpha, interleukins-6, -13 and - 18, and cytotoxic factor. These cytokines are implicated in causing increased vascular permeability and shock during dengue infection [6,7,8] but their contribution towards development of myocarditis remain undefined.[9]

Although shock in dengue hemorrhagic fever (DHF)/dengue shock syndrome (DSS) has been attributed largely to decreased intravascular volume due to capillary leakage of plasma into the interstitial space, a

few recent studies have reported that it may be due to cardiac involvement.[5] It is widely agreed that dengue hemorrhagic fever is an immunologically mediated disease, a mechanism similar to those involved in causing viral myocarditis, may play a role in the development of dengue virus related myocarditis. Early recognition of myocardial involvement in dengue illness, prompt restoration of hemodynamic instability while avoiding fluid overload, and sparing unnecessary invasive management are important in treating dengue affected patient with cardiac involvement.

CONCLUSION

To conclude, dengue fever can have varied and multisystemic presentation with typical and atypical manifestations. Atypical presentation of myocarditis can mimic DSS or respiratory distress, primarily due to increased fluid permeability and leak from alveolar capillary membrane. Early recognition of myocarditis as atypical presentation is imperative in the management of dengue shock syndrome. Thus, an entity of primary cardiac failure due to myocarditis in dengue infection needs to be evaluated early for proper management and outcome.

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