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DENGUE FEVER AND ATYPICAL KAWASAKI DISEASE: A RARE AND CHALLENGING COMBINATION

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ABSTRACT

Dengue fever is the most common arthropod-borne viral disease of the tropical and subtropical regions of the world. The majority of cases of dengue infection are represented by dengue fever, which is a self-limiting disease. Kawasaki disease, also a self-limiting disease, an important cause of vasculitis in paediatric age group, may occasionally lead to cardiac abnormalities in the long run. In the present case, a child presented with fever, finally diagnosed to have suffered from both dengue fever and atypical Kawasaki disease. This is an extremely rare presentation of concomitant dengue fever and atypical Kawasaki Disease.

KEYWORDS: arthropod-borne disease, childhood vasculitis, coronary artery disease.

INTRODUCTION

Dengue is the most rapidly spreading mosquito-borne viral disease in the world, caused by four antigenically distinct dengue virus of flavivirus group.[1] Dengue fever is characterized

by fever, muscle and joint pains, headache, rash, weakness, anorexia, constipation and abdominal pain. Kawasaki disease (KD) is also a self-limiting condition that is a common cause of paediatric vasculitis and the leading cause of paediatric acquired heart disease particularly in Asian children.[2,3,4] The disease most frequently occurs in infants and children and is often associated with coronary artery aneurysms of varying severity.[5,6] Typical KD is clinically characterized by fever of more than five days accompanied by at least four of the following features: conjunctivitis without exudates, oral mucosal erythema, lymphadenopathy, rash, oedema and desquamation of skin. Atypical or incomplete KD is characterized by presence of coronary artery aneurysm with presence of few early classical signs.[4] Dengue fever and atypical KD in the same patient have not been reported previously. We report here such an extremely unusual case of dengue fever with atypical Kawasaki disease.

CASE REPORT

A previously healthy seven year six months old boy was admitted at general pediatric ward in a tertiary care super-speciality hospital for children in Kolkata, West Bengal with history of a high grade fever associated with myalgia and headache for six days and generalised swelling of the body which was started from face since last two days. He had also history of intermittent, diffuse pain abdomen for last two days. There was no history of cough & cold, rash, joint pain, dysuria, vomiting and altered sensorium. On admission examination revealed surface temperature 38.9^0c, respiratory rate 36/ min, pulse rate 152/ min, blood pressure 90/58 mmHg.

There was bilateral pitting pedal oedema, but no pallor, cyanosis, jaundice, clubbing, rash, conjunctival congestion, lip cracking or lymphadenopathy. Systemic examination revealed diffuse bilateral crepitation in the chest, S3 gallop rhythm with a tender and enlarged liver extending four cm below the right costal margin in the mid-clavicular line. A clinical diagnosis of viral myocarditis with congestive cardiac failure (CCF) was done. Then the patient was transferred to the paediatric intensive care unit (PICU) and he was treated with intravenous fluid supplementation with 0.9% normal saline at a rate of 2ml/kg/hr and dobutamine (10µg/kg/min). In PICU, other supportive measures were taken; close monitoring of vital parameters, urine output and sequential hematocrit level was done. Owing to high endemicity of dengue fever in this region, rapid card test for dengue specific IgM antibody was done in PICU and it became positive. Subsequently dengue was confirmed by

determining dengue specific IgM antibody by MAC- ELISA test. Routine laboratory investigations were done (Table 1). Urinalysis showed protein 2+. A chest radiograph disclosed bilateral mild pleural effusion and enlarged heart size with a cardiothoracic ratio (CTR) of 0.6. Ultrasonography of abdomen revealed enlarged liver, oedematous bowel loop in right iliac fossa, bilateral mild pleural effusion but no ascities was seen. The following investigations gave normal or negative results: C- reactive protein, serum electrolytes, serum bilirubin, urea, creatinine, blood and urine cultures, malaria parasite dual antigen, serology for salmonellosis and leptospirosis. After supportive management, the patient was clinically improved but fever spike persist. On the 2nd day, a 2D echocardiography was done which disclosed aneurysm of right coronary artery (4 mm, suggestive of Kawasaki disease) along with generalised wall hypokinesia and mild systolic dysfunction with LV ejection fraction 45%. Haemogram was also repeated on the 2nd day (Table 1).

Table 1: Routine blood test results.

Blood tests	Results on day 1	Results on day 2
Hb	10.1 gm%	9.8 gm%
Haematocrit	30%	30%
TC	13,000/cmm	16,600/ cmm
DC	N62, L36	N69, L27
Platelets	2,20,000/cmm	3,66,000/cmm
ESR on first hour	64 mm	94 mm
SGOT/SGPT	83/63 U/L	Not done
CPK-MB	69.6 U/L	Not done

On this background, the diagnosis of atypical Kawasaki Disease was done and the patient was treated with 2gm/kg of intravenous immunoglobulin (IVIG) and high dose aspirin (80 mg/kg/day) as the platelet count had increased to 3,66,000/ mm^3. Defervescence with overall improvement of the patient's general condition occurred after 48 hrs of treatment with IVIG. Response to IVIG confirmed the diagnosis of atypical KD. The patient was discharged with low dose aspirin (3mg/kg/day) for two weeks. Two weeks later, a follow-up echocardiogram and hemogram showed normal cardiac function with normal coronary artery size and normal platelet count respectively.

DISCUSSION

The clinical findings and laboratory investigations of the patient were consistent with the diagnosis of both dengue and atypical Kawasaki disease. Dengue was confirmed by both rapid kit test and serologic test result which revealed elevated IgM. There were no symptoms

and signs suggestive of classical Kawasaki disease but persistent fever with coronary artery involvement (Echocardiography) and response to IVIG confirmed the diagnosis of atypical Kawasaki Disease. Atypical / incomplete KD most frequently occurs in infants, but the case presented here is a seven and half year old child.[4]

Dengue fever and Kawasaki disease are two common illnesses in paediatric age group but concomitant dengue fever and Kawasaki disease is extremely unusual with only few cases have been described previously in literature; concomitant dengue fever and atypical KD have not been reported in literature. The first concomitant dengue fever with KD in a 10 years Thai boy was reported in 2000 but the patient was presented with dengue hemorrhagic fever.[7] In the same year, a retrospective case study from France reported a case of 26 month old French boy who presented with classic KD. He was one of the 13 KD patients whose sera were kept during illnesses between 1995 and 1999.

The serological testing of dengue IgM antibody (MAC-ELISA) of the cases were tested later and became positive although in this report there were no clinical features suggestive of dengue fever.[8] Two other cases, one infant from Thailand and a eight years child from India, who suffered from concomitant dengue infection and Kawasaki disease, were reported.[9,10] In all the reported cases of concomitant dengue fever and Kawasaki disease, classical features of KD were present on admission or later, but in this case classical features of KD were absent. This patient was initially clinically diagnosed as viral myocarditis with congestive heart failure. Later dengue fever was confirmed by dengue MAC- ELISA test. Initially he was treated with intravenous fluid and inotrope. The patient was clinically improved from CCF but fever spike persist. Subsequent echocardiography showed mild aneurysm of right coronary artery (4 mm) with generalised wall hypokinesia and mild systolic dysfunction with LV ejection fraction 45% with small pericardial effusion. Then he was treated with intravenous immunoglobulin (IVIG) and high dose aspirin. Patient became afebrile after 48 hours of IVIG transfusion and then low dose aspirin continued for two weeks. Two weeks later, a follow-up echocardiogram and hemogram showed normal cardiac function with normal coronary artery size and normal blood count(including ESR) respectively.

To conclude, clinicians need to be aware of the existence of dengue fever with atypical KD for early diagnosis and prompt management. Both Dengue fever and KD are self-limiting diseases. But KD on occasion may give rise to complications which are related to the formation of coronary artery aneurysm, the risk of development of which is reduced to less

than 5% by timely institution of treatment. Small aneurysm usually regresses over time as occurred in our case.

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