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CASE REPORTS

MYOCARDITIS RESPONDING TO DOXYCYCLINE- IS IT RICKETTSIAL FEVER?

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ABSTRACT

Myocarditis presenting with pyrexia of unknown origin (PUO) indicates either a viral etiology or bacterial infection with endotoxin production. Rickettsial fever presenting as myocarditis leading to cardiac failure is rare. A three years old boy presented with high grade fever for 3 weeks, cardiac failure secondary to myocarditis, pallor and hepatosplenomegaly. Weil Felix test was positive with OX 19 and OX 2 > 1:320 suggestive of Indian Tick Typhus. The child responded to doxycycline. Thus, rickettsial fever needs to be considered in the differential diagnoses of PUO with myocarditis.

ARTICLE HISTORY

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KEYWORDS

Rickettsia, Myocarditis, Weil-Felix test, Doxycycline

Introduction

Infectious causes of myocarditis are largely viral. (1) Bacterial myocarditis (BM) is encountered less commonly and is associated with sepsis, anemia and specific toxin producing bacterial infections. (2) Rickettsia are a rare cause of myocarditis with case fatality of 7 – 11%. (2) Rickettsia usually cause malaise, headache followed by maculopapular rash and eruptions changing to eschar along with lymphadenopathy in due course. In rickettsial infections Q fever, Rocky mountain spotted fever and scrub typhus are frequently associated with ECG changes but the clinical manifestations are pertaining to vascular endothelial involvement leading to circulatory shock. (3) Presentation with myocarditis is rare. (4) We present a 3 years old boy with fever and myocarditis due to Indian tick typhus.

Case Report

A 3 years old boy presented with fever for 3 weeks and generalized swelling over the body for 1 week. The swelling started over the feet initially, rapidly extending upwards to become generalized. There was no cough, rash over body or breathlessness. There was no history of insect bite or animal exposure. On examination, he was febrile (102°F), had bounding pulses with rate of 140 beats/min, respiratory rate of 70 breaths/ min with intercostal retractions. Blood Pressure was 90/52 mm Hg in right arm in supine position. Child had severe pallor and anasarca. BCG scar was present. There was no rash or lymphadenopathy. On abdominal system examination, he had hepatosplenomegaly. On chest examination, there were bilateral basal crepitations and ejection systolic murmur grade II most prominent at the apex. Child had already received chloroquine, artemether + lumefantrine along with piperacillin + tazobactum and amikacin for 2 weeks from previous clinician before referral at our institute. On investigations, hemoglobin was 5.5 gm%, total white cell count was 3630 cells/cumm (63% lymphocytes, 33% neutrophils) and platelet count was 83,000 cells/cumm. Rapid test for malaria, Widal, Dengue Elisa and Leptopira Elisa were negative. Urine examination was normal. Blood and urine cultures did not grow any organism. Mantoux test was negative. Liver function tests revealed total bilirubin of 4.0 mg % (Direct 2.8mg %), SGOT and SGPT were 261 IU/L and 190 IU/L respectively. Hepatitis A IgM and Hepatitis E IgM were negative. Ultrasound abdomen showed hepatosplenomegaly. Electrocardiogram (ECG) showed ST segment elevation in left sided chest leads and X-ray chest showed cardiomegaly with cardiothoracic ratio of 0.68. Two-dimensional echocardiography (2D ECHO) showed biventricular hypokinesia with dilated cardiac chambers and left ventricular ejection fraction of 40%. CPK-MB was elevated (220 IU/ml). Weil-Felix (WF) test was positive with titres of OX 19 and OX 2 of 1:320 each (normal being < 1:80) suggestive of Indian tick typhus. Considering the clinical presentation, positive Weil-Felix test, the child was started on oral doxycycline in a dose of 5 mg/kg/day for 10 days. Supportive treatment in the form of oxygen, intravenous fluids and digitalis therapy for congestive heart failure secondary to myocarditis, packed red cell transfusion for severe anemia was given. The child became afebrile within 3 days of starting doxycycline, vital parameters normalized, edema gradually subsided. Digoxin was withdrawn on day 7 of therapy after a repeat 2D ECHO showed normalization of cardiac chambers and an improved left ventricular ejection fraction of 65%. Repeat blood counts and liver profile on tenth day of treatment were near normal hence child was discharged. On follow up of the child 1 month later, he is healthy.

Discussion

A wide plethora of micro-organisms are associated with myocarditis, still etiology of the disorder remains idiopathic in most of the cases. (1) Viruses have been implicated in most of the cases; confirmed by endomyocardial biopsies. (5) Bacteria can cause myocarditis through the effects of toxins. Endotoxins produced by gram negative bacteria have direct myocardial suppressant effect. Alternatively, presence of atypical bacteria like Mmycoplasma pneumoniae, Chlamydia sp, Rickettsia sp, Borrelia, etc. in endo-myocardium has been demonstrated indicating a more direct effect relationship. (5)

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Rickettsial infections are distributed throughout the world and are re-emerging in the Indian subcontinent, especially among children. (6-8) In South – western Asia the prevalence of Indian tick typhus is marked than others. (4) Our patient also had Indian tick typhus though he had no typical presentation of rickettsial illness characterized by maculopapular rash, developing eschar, lymphadenopathy except had typical mildly decreased leukocytes. Response to doxycycline was also dramatic. A similar case has been reported by Patil et al. (4)

Though non-specific and having low sensitivity, WF is a simple and low-cost test. (9) Mittal et al have demonstrated WF to be a successful initial screening test. (9) Lijuan et al recommend rapid serum testing for IgM and IgG titres to be 100% specific in acute phase of illness with immunoflorescent antibody being unnecessary. (10) In our patient also the diagnosis was based on WF as that is the only test available to screen for rickettsial fever. Treatment of Indian tick typhus consists of doxycycline, tetracycline, chloramphenicol, ciprofloxacin and josamycin. Our patient responded to doxycycline.

Thus, in a patient with an atypical febrile myocarditis, one needs to rule out rickettsial infection as one of the differential diagnosis.

Compliance with Ethical Standards

Contributor Statement

SSM managed the patient, drafted the initial manuscript, reviewed the manuscript and approved the final manuscript. AAP drafted the manuscript and did review of literature.

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