Case Report

A Rare Case of Acute Myocarditis with Dengue Fever

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ABSTRACT

We report a rare case of a19-year old boy suffering from Dengue Fever who presented with shortness of breath, bradytachyrrythmias, hypotension, hypercarbia with acute myocarditis where L.V.E.F. was only 20%. Instead of administering very high dose of liberal fluid therapy,he was restricted to only oral liquids and supportive measures in Medical ICU. The patient improved clinically with resolution of cardiac function at the time of discharge from hospital.

Keywords : Dengue fever, Myocarditis, Liberal fluid therapy, Hypotension.

INTRODUCTION

Dengue is an arboviral disease caused by a flavi virus, transmitted by the Aedes aegypti mosquito. Dengue virus has four antigenically distinct stereotypes (DEN 1, DEN 2, DEN 3 and DEN 4).

Dengue may remain asymptomatic or manifest as undifferentiated fever (or viral syndromes), dengue fever, dengue shock syndrome (DSS) or Dengue Haemorrhagic Fever (DHF). An increasing number of cases of dengue arebeing reported with atypical presentations as frequent epidemics are occurring.

CASE REPORT

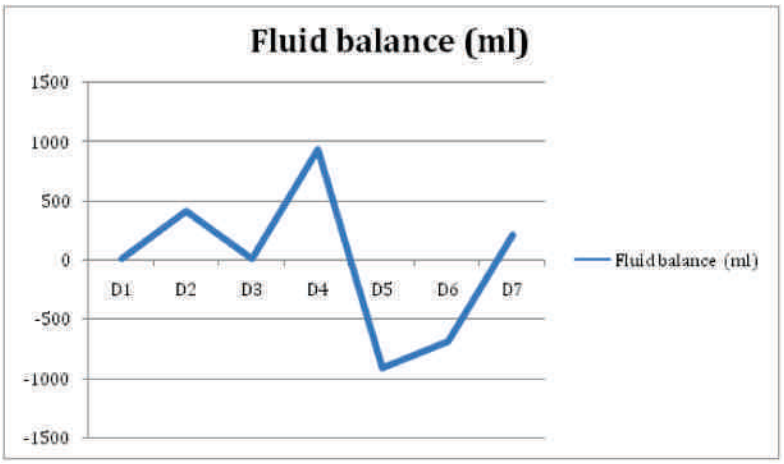
A 19 year old boy was admitted with complaints of fever, retro orbital pain, myalgia, shortness of breath, bradycardia. His investigations revealed thrombocytopenia with positive Dengue NS1 antigen. There was no history of joint pain throughout the illness.At the time of admission in Medical Intensive Care Unit(MICU), patient had pulse rate of 38 beats/ min, BP 88/60 mm of Hg, ABG(Arterial Blood Gas) revealed hypercarbia (pCO2 56 mm of Hg). Four units of platelets were transfused. The patient developed tachycardia but was otherwise asymptomatic and haemodynamically stable. His investigations were suggestive of raised haematocrit (51.6) which was an indication for a liberal fluid therapy. We preferred Venous Blood Gas (VBG) to ABG for fear of bleeding, which was suggestive of hypercarbia and hypoxia.We did not attach importance to the low pO2 levels in the VBG as SpO2 was ~ 99%. We could not ascertain the cause of raised pCO2 as the patient did not have any bronchospasm.

As a part of our ICU protocol we decided to check for IVC collapsibility and cardiac status before giving fluids to the patient. The Echocardiography revealed a minimal IVC collapsibility and a very poor LV function with an EF of ~ 20% with LV global hypokinesia. So we decided to hold on to liberal fluid therapy(10 ml/kg/hr) and we closely monitored the fluid balance. The patient was allowed to take oral feeds as and when desired. The diagnosis of myocarditis was further supported by the increased levels of cardiac enzymes. With minimal intervention and with simple supportive treatment the condition of the patient improved satisfactorily.

Investigations

Date	15/10/ 19	16/10/ 19	17/10/19	20/10/19	On discharge
Haemoglobin (g/dl)	17.8	16.1	17.1	14.1	11.4
Haematocrit %	53.8	47.9	51.6	41.5	35.5
Platelet count (lakh/cumm)	0.10	0.20	0.25	1.40	2.87
TLC (/cumm)	3000	5100	11800	6300	8000
CPK(MB)(1.39-22) (ng/ml)		39.61		4.86	1.26
Troponin T(<0.014) (ng/ml)		0.561		0.203	0.017
LVEF %	20		30		60

Fluid Balance Graph



DISCUSSION

Myocarditis or inflammation of the myocardium associated with infectious diseases especially dengue and chikungunya fever is well recognized but is a rare manifestation of the disease. Thought to be a benign disease, it has been now reported as a chronic disorder. Acute myocarditis presenting as acute MI has also been reported. Myocardial damage is a very rare entity as it is a direct consequence of virus invasion causing damage to muscle fibres.

Hypersensitivity or autoimmune reaction damage has also been postulated; as the insult may persist it makes the myocardium prone to recurrent damage. Pericardium involvement has also been attributed to dengue infection along with myocarditis. The symptomatology is so vague and non-specific that unawareness of its existence in relation to a particular infection may lead to a missed diagnosis and a treatment which can be harmful. Pathological mechanisms and the incidence of myocardial manifestations are obscure. Though in many cases the disease is self-limiting, occasionally it may cause fatal myocarditis. The pathologic mechanism of cardiac dysfunction is not well established though altered autonomic tone and prolonged hypotension may play a significant role. Derangement of calcium storage in the infected cells also contributes to the myocardial damage[1]. Myocardial dysfunction is seen in patients with DHF and in approximately 20% of these, LVEF was <50% which returned to normal within a few weeks. Arbovirus myocarditis as a sequel in patients suffering with dengue has now been a known complication in a chronic form.[2] Patient with severe dengue have evidence of systolic and diastolic cardiac impairment with the septal and right ventricular wall being predominantly effected.[3]

In a report from North India, only 1 out of 115 cases had evidence of myocarditis.[4] The patient had sinus tachycardia, bilateral pleural effusion, echocardiography revealed mild pericardial effusion and global left ventricular hypokinesia. The initial ejection fraction of 40% rose to 56% at hospital discharge.

Fatal dengue myocarditis despite support with Extra Corporeal Membrane Oxygenator (ECMO) has been documented by Yee-Huang Ku et al.[5] This patient was haemodynamically unstable, had ST-T changes on ECG and rising Troponin I levels. Echocardiography showed hypokinesia of anteroseptal region of the left ventricle with ejection fraction of 34%.Ejection Fraction deteriorated to 10% and severe pulmonary edema occurred. Patient died on 6th day in spite of all supportive measures. Another case of fulminant dengue myocarditis with shock and fatal outcome despite IABP support was reported by Lin TC et al.[6]

A study of 100 cases of dengue from South India specifically looking at cardiac manifestations could not document any case with echocardiographic evidence of myocarditis.[7]

In another study from South India involving 120 patients, cardiac manifestations were noted in 44.[8]None of the patients in this study had significant echocardiographic abnormalities.

CONCLUSION

Dengue fever can have varied and multi systemic presentation with typical and atypical manifestations. The patients of myocarditis may not display overtly symptomatic and subtle signs. Nevertheless, signs such as breathlessness, bradycardia or tachycardia should not be ignored. It is always better to check for the cardiac status of the patient as the fluid therapy advised in the guidelines might prove to be counterproductive.

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