Case Report

Dengue fever presenting with severe myositis—An unusual presentation

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Abstract

Dengue fever is an arbovirus (dengue virus DEN) disease caused by bite of mosquitoes, affecting people worldwide but is frequently seen as pandemic in Latin America and Asian countries. Among children it has been the most frequent reason for hospitalization and mortality. Symptoms range from subclinical disease to severe flu-like illness including myalgias. Dengue commonly presents as myalgia but myositis and/or elevated serum creatine phosphokinase (CPK) is rarely witnessed in dengue fever. Therefore, we present a case of dengue fever presenting as myositis: muscle weakness with raised creatine phosphokinase (CPK).

Keywords: Creatine phosphokinase, dengue, myositis

Dengue fever is caused by arthropod borne viruses called dengue virus (DENV) having four serotypes (DENV1, DENV2, DENV3, and DENV4). Dengue viruses have been transmitted by bite of female mosquitoes, that is, Aedes aegypti. Transmission can occur if mosquitoes fed by blood during biting from infected host bites a new host.

It has been postulated that about 3.9 billion people are susceptible to dengue virus by one study. Although 128 countries[1] are vulnerable to dengue virus but the maximum number of this susceptible population reside in Asia (70%) D.[2]

Dengue fever has clinical spectrum varying from common viral fever like illness to hemorrhagic manifestations which may lead to shock like presentation in most severe cases. Clinical presentation depends upon factors like age, host immune status, virus strain, and primary or secondary infection.[3]

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Symptoms include biphasic fever, myalgia, arthralgia, and rash. Myalgias are common but myositis and/or elevated serum creatine phosphokinase (CPK) is an uncommon complication of dengue fever. Here, we report a case of myositis and raised serum CPK which is diagnosed as dengue myositis after taking patient consent and permission for publication.

Case Report

A 14-year-old male was brought with complaints of fever for 4 days which was acute in onset, continuous, high grade, documented as 102°F. Fever was associated with chills and rigors and was relieved by antipyretics. On day three of fever, child developed pain in bilateral thigh and calf muscles which was acute onset, non-radiating, and severe enough to limit child's activity. There was no history of pain abdomen, vomiting, bleeding from mucosal sites. There was no history of any antecedent trauma or similar muscle pain in the past.

Examination

Child had stable vitals; blood pressure was maintained with good pulse volume. Anthropometrically, child had mild stunting, weight normal for age. On general physical examination, facial flushing

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present, petechial spots- absent. Chest was clear with equal breath sounds bilaterally. Per abdomen – soft, non-tender. Liver - just palpable, spleen - not palpable. Neuromuscular examination was unremarkable except - Calf muscles - slightly swollen, tenderness was present. Movement of legs - painful, but preserved throughout range of motion. Investigations are mentioned in Table 1.

Treatment: child is treated as per standard dengue national management guidelines and recovered well.

Course during hospital stay

Child was afebrile since day 2 of admission, pain in calf muscles gradually decreased. This was also reflected upon as improvement in Serum CPK levels from 3908 IU/L to 127 IU/L over 7 days. All limb movements were normal and without pain at the time of discharge.

DISCUSSION –Viral infections leading to myositis has been described widely in literature but there are very few reports of it associated with dengue infection.[4] It has been postulated that myositis can be because of interaction of host cells and virus after a viral infection like dengue by various ways. It can occur because of specific receptors present on particular organs stressing the reason for specific organ involvement. The probable mechanisms of dengue myositis can be because of invasion of muscle cells by virus directly and generation of toxins inside the muscle cells. Various myotoxins has been seen like tumor necrosis factor (TNF) and interferon-(IFN)-γ.[5]

Misra *et al.*[6] observed that out of 24 patients with dengue fever aged 5–65 years, 8 had pure motor quadriparesis. These patients with muscle weakness in all four limbs had normal NCS, myopathic EMG, and raised serum CPK suggesting myositis. CPK was elevated in 7 patients from this group. All these patients had complete recovery by 2 weeks.

In another observational study,[7] they studied 30 patients who presented with acute myopathy and high CPK levels. Among various presentations they observed, symmetrical weakness in all 30 patients, fever in 17 patients. Etiology was dengue fever in 14 patients; other causes included hypokalemia, pyomyositis, thyrotoxicosis, and systemic lupus erythematosus. Electrophysiological study was deranged in 8 patients and muscle biopsies were abnormal in 9 patients. They have also observed that patients with normal levels of serum potassium levels had more incidence of myalgias and decreased tendon reflexes than. patients with low potassium levels.

Table 1: Investigations

Hemoglobin	14.3 g/dl		
TLC	4570/cumm		
DLC	N-64%, L-20%		
PCV	42.5%		
Platelet count	1.82 lakhs/cumm		
AST/ALT	108/39 IU/L		
Creatinine	0.71 mg/dl		
Sodium	137.1 mmol/L		
Potassium	5 mmol/L		
Creatine Phosphokinase (CPK)	8/11/19 3908 IU/L	11/11/19 818 IU/L	15/11/19 127 IU/L
Dengue Rapid Test	NS1 Antigen positive		
Dengue ELISA	IgM Positive		
Scrub Typhus Rapid Test	Negative		
Scrub Typhus ELISA	Non Reactive		
Malaria Rapid Test	Negative		

In our case, the child presented with pain in both legs 3 days after onset of fever. On examination, tone and power of examined muscle groups were normal. Potassium level was in normal range. CPK levels improved from 3908 IU/L (on 8/11/19) to 127 IU/L (on 15/11/19) over 1 week.

A total of 34 studies[8] of dengue-associated myositis were compiled and it was reported that dengue-associated myositis is common in younger age group (range: 3256 years; mean: 24.6 years). Majority of affected patients were male (male: female = 26:8). Onset of weakness varies from 3 days to 36 days (mean: 9.4 days). Muscle weakness is frequently accompanied by muscular pain. Serum CPK is often markedly elevated (mean: 10,558 IU/L; range: 162–117,200 IU/L). In majority of patients, there was spontaneous and complete recovery (mean: 7 days). Occasionally, corticosteroids were used. This report has relevance to all primary care physician as it emphasizes that myositis can be one of the manifestation of dengue and it can be managed very well as per dengue national management guideline, very occasionally corticosteroids are used. Patients usually recover completely without any residual weakness.

Conclusion

Endemic regions of dengue should consider dengue myositis as one of the differential in cases of acute flaccid paralysis in children. Dengue myositis in children is usually benign and is differentiated from other causes of flaccid paralysis by tenderness of calf and thigh muscles and raised CPK levels with other normal findings of musculoskeletal system examination. Dengue myositis, particularly in children, may mimic many other musculoskeletal disorders, hence should be considered as a differential in fever and muscle pain or weakness.

Key Points

- Myositis can be one of the manifestations of dengue.
- All patients presented with fever, pain, and tenderness of muscles and associated raised CPK enzyme should be screened for dengue.
- Recovery is complete and spontaneous.

Abbreviations

CPK = Creatine phosphokinase

NCS = Nerve conduction study

EMG = Electromyography

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Conflicts of interest

There are no conflicts of interest.

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