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Dengue Hypokalemic Quadrparesis and Myocarditis- A Rare Presentation of A Common Infection

KEYWORDS: dengue, hypokalemic quadriparesis, myocarditis.

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ABSTRACT *Dengue infection is one of the most common viral hemorrhagic fevers seen in tropical countries, including India. Neurological manifestations and myocarditis is not very common and hypokalemic quadriparesis as a presenting feature of dengue is rare. We report a case of 19 year old male who presented to us with history of fever since 3 days, acute onset weakness of all 4 limbs since 5 hours and mild chest discomfort since 2 hours with no history of previous such attacks and no history of streneuous exercise. Investigations revealed that patient had severe hypokalemia and his cardiac enzymes were raised with global LV hypokinesia on echo and cardiogram showing right bundle branch block with 'U' waves and dengue NS1Ag positive*

INTRODUCTION:

Dengue infection is one of the most common viral hemorrhagic fevers seen in tropical countries, including India. Clinical presentation varies from a severe flu-like illness to a potentially lethal dengue hemorrhagic fever. Less common presentations such as encephalitis, hypokalemic quadriparesis and myocarditis have also been reported. There are only a few isolated case reports documenting acute pure motor quadriparesis in dengue fever.[1] Hypokalemia, as a cause of quadriparesis is being increasingly recognized. Although the cardiac complications of dengue are rare, asymptomatic myocardial involvement has been documented.[2] Acute myocarditis is the most common cardiac pathology described in cases that succumb to dengue shock syndrome.

CASE REPORT:

A 19 year male, with unremarkable past medical history presented with low grade fever since 3 days and acute onset weakness of all 4 limbs (since 5 hours). Weakness progressed to maximum in 4-5 hours duration and was symmetrical. There was no history of neck pain, bowel, bladder or bulbar involvement. There was no history of paresthesias, diarrhoea and respiratory distress. There was no history of vaccination or streneous exercise. There was no family history of episodic weakness or any similar episodes of weakness in the past. Patient was febrile (100 F), Pulse was 102/min, Blood Pressure was 120/70 mmHg. There was no pallor, icterus or edema. Patient had maculopapular rash over whole body. CNS examination revealed a conscious oriented male with normal Higher Mental Functions and intact cranial nerves. Motor system examination revealed hypotonia and power was graded 2/5 in all group of muscles in all 4 limbs. All deep tendon reflexes were absent. Plantars were bilateral flexors. Single Breath Count was more than 50. Sensory system examination was normal. No significant abnormality was found in other systemic examination. Routine serology revealed Sr.Potassium-2.7mEq/L,Sr.Magnesium-1.9mE/L,Sr.Sodium-140mEq/L,Sr. Calcium(ionised)-1.15mmol/L,Hb12.8g/dl,TLC3000/cumm,Platlets57,000/cumm. Dengue Ns1Ag was Positive and Thyroid Function Tests were normal. Arterial Blood Gas studies were within normal limits. CPK(Total) was 548 IU/L. Cardiogram was suggestive of intermittent bundle branch block with 'U'waves. Further investigations revealed normal spot urine Na^{++} and K^{+} levels and normal Nerve conduction study. 2DECHO revealed depressed global LV contractility and intact valves.

For hypokalemic motor paralysis, patient was initially treated with IV potassium, 40 mEq potassium chloride infusion in 500 ml of normal saline and later with oral potassium chloride solution 1tsp (5ml) given ½ hourly x 5 doses. There was a significant improvement in the motor power within two to three hours of potassium correction. Repeat serum potassium on next day was 4.8 mEq and repeat ECG was normal. The platelet count and total leukocyte counts remained in the lower normal range for the initial three days and later gradually increased to normal values. Cardiac enzymes which were raised initially returned to normal values in three days without any specific treatment and the LV contractility also improved.

DISCUSSION:

Hypokalemia is known to cause pure motor weakness in dengue. Hypokalemia in association with infectious diseases, dengue fever inparticular, have been reported and documented in upto 28% of serologically proven cases of dengue infection.[3] The putative mechanism of the hypokalemia in these patients could be due to:

1. Redistribution of potassium in cells (due to increased catecholamine levels and secondary insulin release).
2. Anabolic states due to rapid cell growth or transient renal tubular abnormalities leading to increased urinary potassium wasting.
3. Patients with dengue have vomiting and loose motions in the febrile and/or critical phase of the illness.

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4. Another cause can be hyperreninemia, Renin levels can rise in hypovolemic states, which can happen in dengue in the critical phase of the illness when serositis and fluid leak is the predominant pathophysiology of the disease.

Other causes of hypokalemic quadriparesis like alcohol, thyrotoxicosis, drugs (diuretics), gastrointestinal loss and urinary potassium wasting syndrome (Bartter's, Gittelman's syndromes and acute tubular necrosis) were ruled out by clinical examination and relevant investigations.

Dengue myocarditis can present in an asymptomatic way. There have been reports of acute myocarditis, as well as myopericarditis, pericarditis, asymptomatic myocardial dysfunction and cardiac rhythm disturbances, such as atrioventricular blocks, sinus node dysfunction, ventricular ectopic beats, bradycardia. A Vietnamese observational study reported 35% cardiac involvement in early dengue, compared to 62.5% during an outbreak in Sri Lanka.[4]

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