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## International Journal of Pharmaceutical Chemistry and Analysis

Journal homepage: <https://www.ijpca.org/>

## Original Research Article

## Tuberculous Meningitis with dengue – A rare case

Akshaya N Shetti<sup>1,\*</sup>, Prashant Ahiwale<sup>1</sup><sup>1</sup>Dept. of Anesthesiology and Critical Care, Rural Medical College, PIMS, Loni, Maharashtra, India

## ARTICLE INFO

## Article history:

Received 08-02-2021

Accepted 12.02.2021

Available online 04-05-2021

## Keywords:

CSF examination

Dengue

Meningitis

Tuberculosis

## ABSTRACT

A 23-year male patient came to Rural Tertiary Care Hospital with complaints of fever, difficulty in talking, disorientation and neck stiffness and was diagnosed with Dengue. When Dengue antibody testing was done, IgM was positive while IgG and NS1 being negative. We report an evaluation of an IgM seropositive case for dengue who showed neurological manifestation whose MRI Brain suggested Meningitis. CSF examination suggested Tuberculous Meningitis in the course of the infection. The patient responded to medications during hospitalisation, was discharged in a haemodynamically stable condition and was advised to continue with antitubercular treatment and tapering dose of oral steroids. Hence one should not avoid considering a Cerebrospinal fluid examination especially of patients belonging to Dengue endemic areas.

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## 1. Introduction

Dengue infection is one of the most common mosquito borne viral infection in India and also worldwide, affecting the population of developing countries to a very large extent. Around 50–100 million cases of dengue fever and about 250,000–500,000 cases of dengue hemorrhagic fever occur each year.<sup>1</sup> Dengue infection is caused by Flavivirus which is related to yellow fever virus and Japanese encephalitis virus and has four different virus serotypes and is transmitted by the mosquito *Aedes aegypti*. The infection can be mild with few symptoms like fever, headache, maculopapular rash, orbital and joint pain and blood picture showing thrombocytopenia and leucopenia that occur after 2–7 days of incubation<sup>2</sup> to very serious complications like Dengue Haemorrhagic Fever and Dengue shock syndrome presenting with acute fever, hemorrhagic manifestations, thrombocytopenia, hemoconcentration and a tendency to develop shock. In the past few years, unusual manifestations of dengue infection, including neurological syndromes, have been

observed.<sup>3</sup> Neurological manifestations of dengue consist of encephalitis, transverse myelitis, meningitis, Guillain Barré syndrome, and neuromyelitis optica.<sup>4</sup> We report an evaluation of an IgM seropositive case for dengue who showed neurological manifestation of Tuberculous Meningitis in the course of the infection. CSF sample was analyzed and clinical and laboratory findings were assessed. There are very few case reports or short series that discuss the laboratory characterisation of dengue infection in CNS. The use of virological tests in combination with cerebrospinal fluid (CSF) analysis may improve the sensitivity and specificity for neurological diagnosis.<sup>5</sup>

## 2. Case Report

A 23-year male patient brought by relatives with complaints of fever, difficulty in talking, disorientation and neck stiffness since 2 days. Fever was acute in onset and was continuous with no diurnal variation. It had no aggravating or relieving factors and was accompanied with stiffness in neck. Patient's relatives noticed he was having difficulty in talking, was getting disoriented and hence brought him to Rural Tertiary Care hospital. Patient had no history of

\* Corresponding author.

E-mail address: [aksnsdr@gmail.com](mailto:aksnsdr@gmail.com) (A. N. Shetti).

cold, cough, head trauma or convulsions. Patient gives no history of similar complaints in the past. Also, there is no history of Tuberculosis, Diabetes Mellitus, Hypertension, Bronchial Asthma or surgical history. None of his family members give similar complaints or history if tuberculosis at present or in the past. He consumes a mixed diet with a normal appetite. His sleep cycles and bowel and bladder habits are normal. On Examination: He weighs 59 kg with a height of 130 cm hence BMI= 34.91. His Pulse -90 beats / min, Blood Pressure-116/70 mm of Hg taken on left arm in supine position, oxygen saturation-98% on room air, Respiratory Rate-18/min, No Pallor, Icterus, Clubbing, Cyanosis, Lymphadenopathy, Oedema. In his Systemic Examination, CNS-GCS-12/15(E2, V4, M6), Patient was drowsy, disoriented, Pupils bilaterally reactive to light, Plantar reflexes- Right upward flexion, Left downward flexion; CVS- S1, S2 Heard, No murmur RS-Air entry bilaterally equal, clear P/A- Soft, non tender. On Investigation, patient's complete blood picture revealed-Haemoglobin=13.2 gm/dl, Total WBC count-13190 (N-84, L-12, M-04, E-0, B-0), Platelets=2,78,000, PCV=38.8; Random blood sugar=104.0 mg/dl, Serum Proteins=7.3 (Albumin=4.4, Globulin 2.9), Serum LDH=278.0; Renal Function Test-Urea=26 mg/dl, Creatinine=0.8 mg/dl, Sodium=137.0 mEq/L, Potassium=4.4 mEq/L. Dengue-IgM-positive, IgG-Negative, NS2-Negative; Cerebrospinal Fluid- Glucose= 20 mg/dl Proteins=108 mg/dl LDH=152.0 IU/L ADA=11.8. MRI Brain (plain and contrast) was suggestive of leptomeningeal enhancement along the sulcal spaces involving bilateral fronto-parietal regions, which is persistent on delayed scans suggestive of meningitis.

He was started with treatment Inj Acyclovir 1 gram i/v TID, Inj Ceftriaxone 2 grams i/v BD, Inj Vancomycin 1 gram TID, Inj Dexamethasone 8 mg TID, Inj Mannitol 100ml TID, Inj Pantoprazole 40 OD, Inj Metoclopramide 10 mg TID, Inj Paracetamol 300mg SOS, Inj Vitamin B12 in 100 ml NS OD, Anti tubercular treatment consisting of Isoniazid, Rifampin, Pyrazinamide, Streptomycin; Tab Pyridoxine 1 OD, Inj Multivitamin.

### 3. Discussion

Dengue and tuberculosis sometimes have an abnormal presentation. A study conducted by Pancharoen and Thisyakorn on 1304 cases having neurological disease and on analysing their CSF suggested that 1.3% of the cases had neurological manifestations associated with acute dengue infection.<sup>6</sup> The serotype along with other factors like age, ethnicity, interval between first and second infection and presence of other chronic diseases are associated with more severe forms of the disease and maybe responsible for the increase in incidence of neurological manifestations.<sup>1</sup> Neurological manifestations were mostly associated with serotypes 2 and 3 of the dengue virus.<sup>7</sup> The dengue antibody IgM usually appears in serum 5–10 days from the

onset of infection.<sup>8</sup> The patient presented with fever and neurological symptoms. Also, his MRI Brain suggested Meningitis. When Dengue antibody testing was done, IgM was positive with IgG and NS1 being negative. This is not a classical clinical picture of Dengue.

#### 3.1. Anesthetic implications

The presence of an active infection and complications such as raised Intracranial pressure, seizures, and stroke decide the choice of the anesthetic technique. The risk of neuraxial puncture in patients with increased ICP can result in tentorial herniation.<sup>9</sup> To prevent further increases in the ICP excessive coughing and gagging during the emergence from anesthesia should be avoided. Also, in dengue there can be highly diminished platelet counts that are an absolute contraindication to regional anaesthesia.

Hence one should not avoid considering a Cerebrospinal fluid examination especially of patients belonging to Dengue endemic areas.

### 4. Conclusion

Dengue and tuberculosis are a major public health problem especially in the rural sections of our country. One should keep in mind that it may present with wide range of neurological manifestations hence a case of dengue exhibiting neurological manifestations must initiate a suspicion in one's mind. The best aid for the diagnosis of neurological manifestations associated with dengue infection may be done by a combination of PCR and immunological tests.<sup>10</sup>

### 5. Source of Funding

None.

### 6. Conflict of Interest

None.

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### Author biography

**Akshaya N Shetti**, Professor

**Prashant Ahiwale**, Resident

**Cite this article:** Shetti AN, Ahiwale P. Tuberculous Meningitis with dengue – A rare case. *Int J Pharm Chem Anal* 2021;8(1):25-27.