

# Subdural Effusion in Dengue Patient as A Late Neurological Complication: A Rare Case Report

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## ABSTRACT

Dengue is the most common and widespread arthropod borne arboviral infection in the world today. Recent observations indicate that the clinical profile of dengue fever is changing with neurological manifestations being reported more frequently. A 50-year-old male patient was admitted with fever and thrombocytopenia. He was diagnosed as dengue fever with positive IgM dengue serology. Patient was managed medically in the ward for seven days and observed for any complications. Fever subsided since third day of admission and platelet count started to improve; he had no complication of dengue fever and was discharged in stable condition. However, patient again came back to emergency with two episodes of generalized tonic clonic seizures followed by altered sensorium. Emergency NCCT head and later MRI brain revealed bilateral subdural effusion. Patient was managed with antiepileptic drugs and anti-oedema measures were taken. Patient showed improvement in sensorium after 48 hours of admission. Later after six weeks NCCT and MRI brain revealed complete resolution of subdural effusion.

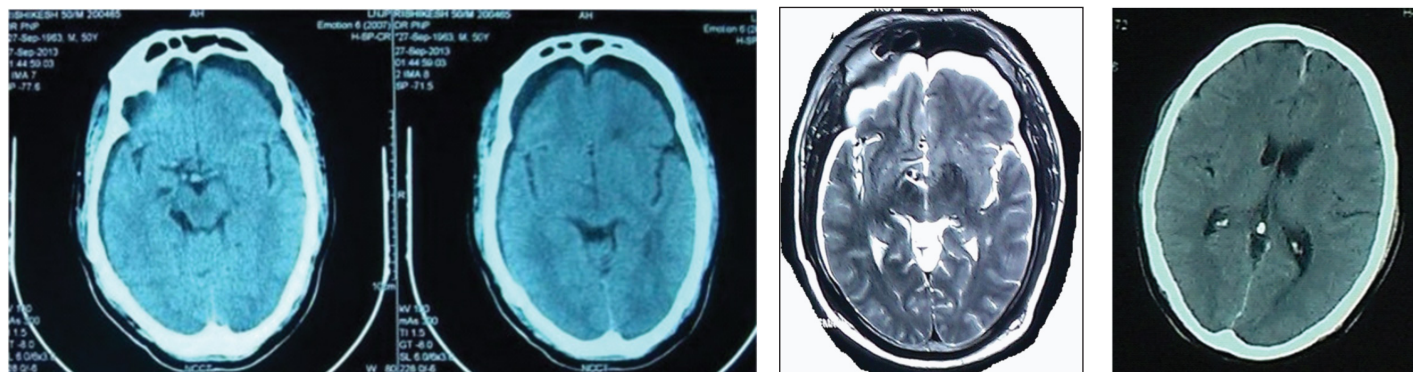
**Keywords:** Dengue infection, CSF, Thrombocytopenia

## CASE REPORT

A 50-year-old man from Delhi presented in outpatient Department of Medicine with high grade fever with chills, arthralgia and myalgia along with abdominal pain and occasional vomiting for 4 to 5 days. There was no history of cough, sputum, diarrhea, burning micturition, jaundice, rashes or bleeding from any other site. There was no past history of tuberculosis, diabetes and hypertension. On examination he was febrile and had tachycardia. There was no pallor, icterus, cyanosis, clubbing, oedema, or lymphadenopathy. Rest of the systemic examination was normal. Blood investigations on admission were as follows, haemoglobin 14.2gm/dl, total leucocyte count was  $8.3 \times 10^3/\mu\text{l}$  with 64% polymorphs, 34% lymphocytes, 1% eosinophil and 1% monocytes. Platelet count was  $24000/\text{mm}^3$ . Peripheral smear suggested normocytic normochromic red blood cells with reduced platelets. Other investigations liver function tests, kidney function test, Calcium and phosphorus, urine examination, chest X ray, USG abdomen were within normal limits. Peripheral smear for malarial parasite was negative and malarial antigen card test was also negative. Dengue serology for NS1 antigen and IgM antibodies were performed with NIV (National institute of Virology; Pune, India) ELISA kit (NIV DEN MAC). The serum NS1 antigen and IgM antibody of dengue serology were positive.

Patient was managed conservatively with antipyretics, antiemetics and intravenous fluids. Patient condition started improving; fever

subsided on third day and platelet count started to increase since fourth day. Finally patient was discharged in stable condition with platelet count of  $95,000/\text{mm}^3$  with diagnosis of dengue fever without any complications. However, patient again returned to medical emergency four days after discharge with complaints of sudden onset headache, two episodes of generalized tonic clonic seizures (GTCS) and altered sensorium. There was no history of fever, trauma, previous history of seizures and any other focal neurological deficit. On examination patient was afebrile, vitals were stable. There was no pallor, icterus, clubbing, cyanosis or lymphadenopathy. His respiratory, cardiovascular and abdominal examination was within normal limits. Neurological examination revealed that he was drowsy but arousable and disoriented. His bilateral planters were extensors. There was no apparent focal neurological deficit or cranial nerve palsy, no motor deficit or no signs of meningeal irritation seen. Ophthalmological evaluation did not show any abnormality. His haematological and biochemical parameters were also normal with platelet count 1.7 lakh/ $\text{mm}^3$ . Cerebrospinal fluid examination revealed no leucocytes, sugar 46 mg/dl and protein 82mg/dl. CSF chloride and adenosine deaminase were within normal limits. IgG dengue serology was positive in CSF. Gram stain and microscopy for *Mycobacterium tuberculosis* was negative. Normal Contrast Computerized Tomography (NCCT) head [Table/Fig-1a,b] suggested bilateral frontal lobe subdural effusion which



[Table/Fig-1a,b]: NCCT Head showing subdural collection of fluid in bilateral frontal lobe [Table/Fig-2]: MRI brain showing subdural collection of fluid in bilateral frontal lobe [Table/Fig-3]: NCCT Brain - Repeat NCCT brain after six weeks showing complete resolution

was later on confirmed on Magnetic Resonance Imaging (MRI) brain [Table/Fig-2]. ELISA for HIV was negative. On analysis of the CSF, bacterial/fungal cultures and immunological testing for syphilis (VDRL) were negative. Serology for viral hepatic markers, Japanese encephalitis, Epstein Barr virus and HSV-1 was also negative. Patient was managed with sodium valproate 500 mg twice a day and anti-oedema measures. Sensorium started to improve gradually during the stay with spontaneous eye opening since day 2 after admission and he regained complete consciousness from 3<sup>rd</sup> day of admission. Patient was discharged on sixth day in stable condition with no fresh episodes of seizures. Patient was discharged on sodium valproate and a follow up NCCT [Table/Fig-3] and MRI brain was done after six weeks which shows complete resolution of subdural effusion. Patient is under follow up since four months and on antiepileptic drugs without any fresh seizures or any other complications.

## DISCUSSION

Dengue is a mosquito borne viral illness caused by dengue virus, a single stranded RNA virus of *Flaviviridae* family (genus *Flavivirus*) and currently is the second most common mosquito borne illness after malaria [1]. Most infections are asymptomatic [2]. Traditionally, symptomatic dengue virus infection is classified as undifferentiated fever, dengue fever, DHF and DSS [3]. Symptomatically patients commonly have fever, headache, retro-orbital pain, rash, nausea, vomiting, muscle, bone and joint pains. Dengue illness can involve other organ system like liver failure, heart involvement and CNS involvement. To recognize involvement of these organ, WHO in 2009, proposed a new categories of disease into dengue without warning signs, dengue with warning signs and severe dengue [1]. Newer category classification has been shown to have similar specificity but better sensitivity than older traditional classification [4].

Dengue infection manifests neurologically with wide range of features, depending on clinical setting in 0.5%-21% of admitted dengue patients. From the pathogenesis point of view, the neurological manifestations of dengue infection can be grouped into 3 categories: 1) Related to neurotrophic effect of the virus: encephalitis, meningitis, myositis, rhabdomyolysis and myelitis; 2) Related to the systemic complications of dengue infection: encephalopathy, stroke (both haemorrhagic and ischemic), hypokalemic paralysis and papilloedema; and 3) Post-infection: Acute disseminated encephalomyelitis (ADEM), encephalomyelitis, myelitis, neuromyelitis optica, optic neuritis, Guillain-Barré syndrome, probable Miller-Fisher syndrome, phrenic neuropathy, long thoracic neuropathy, oculomotor palsy, maculopathy and fatigue syndrome. In an Indian

study done by Kumar et al., 15% (39 out of 265) of the patients had neurological manifestations [5].

Subdural effusion means collection fluid in subdural space. Common aetiology includes meningitis in children [6], head injury, postoperative, and bleeding diathesis. Most common patients presented with headache and seizures. Subdural effusions as a neurological complication have been reported in literature [1]. However, exact incidence of subdural effusion in dengue has not been in literature, till now no case report has been published of this type of neurological complication. Subdural effusion is common in infants with *H. influenzae* bacterial meningitis. Exact aetiopathogenesis is not known, however three distinct hypotheses have been proposed. First, is due to liquefaction of an acute subdural haematoma, second is subdural fluid collection after an opening in arachnoid space resulting in leaking of CSF in subdural space and third, is due to development subdural empyema from direct extension from otitis media or sinusitis into epidural space followed by subdural space [7]. Treatment is mainly conservative and in some cases surgical evacuation or subduroperitoneal shunting may be required.

## CONCLUSION

Our patient did not had any complication of dengue fever, DH For DSS and was discharged in, stable condition and later returned with seizures and altered sensorium in convalescence period. Our patient developed this complication as a late neurological complication, and we therefore suggests close observation in convalescence period. Further, studies are required to know incidence and pathophysiology of subdural effusion in dengue patients.

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