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Research Article

TWO RARE NEUROLOGICAL COMPLICATIONS OF A VERY COMMON TROPICAL DISEASE: A CASE REPORT

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A B S T R A C T

Dengue is a very frequent cause of acute febrile illness in tropics. It is caused by a single-strand positive-sense RNA virus, which belongs to *Flavivirus genus*. The spectrum of the disease can range from mild fever to a severe dengue hemorrhagic fever/dengue shock syndrome. Neurological manifestations related to dengue infections are on a rise in recent past. However, Guillain-Barré syndrome (GBS) and long extensive transverse myelitis (LETM) as complication of dengue are very rare and both of these rare manifestations to be found simultaneously in a single patient is an extremely rare occurrence. Only a few cases of acute transverse myelitis and GBS occurring simultaneously have been reported in literature so far. We came across a similar patient in our institute, with the features of both the diseases simultaneously at the same time.

INTRODUCTION

Dengue is arboviral disease transmitted by mosquitoes bite of species Aedes (Aedes aegypti and A. albopictus). The incidence of neurological manifestations of dengue ranges from 1% to 5% which is quite rare.[1,2] Various neurological manifestations can be encephalitis, encephalopathy, meningitis, Guillain-Barré syndrome, myelitis, acute disseminated encephalomyelitis, polyneuropathy, mononeuropathy, and cerebral haemorrhage. The possibility of occurrence of two neurological complications in a singal patient is very remote. The possibility of concurrent Guillain-Barré syndrome and acute transverse myelitis should be considered if recovery takes longer than anticipated and not responding to the usual treatment.

Pathogenesis of neurological complications can be related to direct nervous system invasion, autoimmune reaction, metabolic and hemorrhagic disturbances. The diagnosis of the neurological complications associated with dengue is dependent on the development of neurological symptoms and dengue specific serology. Viral antigens, specific IgM antibodies, and the intrathecal synthesis of dengue antibodies are commonly used test to successfully detect the disease. However, these neurological complications can be very difficult to treat.

Case Presentation

A previously healthy, 32 years female landed in the emergency room of our institute, with history of fever for three days and acute onset, rapidly progressive weakness in all four limbs with retention of urine for ten hours. Patient immediately cathetrized, after which about 800ml of urine was drained. On examination patient had flaccid tone in all for limbs and planter response was dorsiflexion, that is babinski positive and deep tendon reflex were diminished to absent in all for limbs with a definite sensory loss of all the modalities upto a C4 spinal level, therefore with these findings, a diagnosis of post infectious acute transverse myelitis with spinal shock was made and patient was immediately started on 1g of methylprednisolone for 5 days. In between we investigated the patient for the cause of febrile illness and we found that patient was suffering from dengue fever as he was positive for dengue IgM antibody. We did a MRI spine which showed long extensive transverse myelitis (LETM) Fig.1 and However patient showed not clinical improvement in his condition and on examination on day 6th of illness patient had plantar response as plantar flexion and tone was flaccid with decreased DTRs, with these findings we thought of an acute demyelinating polyneuropathy and thus we ordered a nerve conduction study, to our surprise it showed both motor demyelinating and axonal affection of bilateral Peroneal and Tibial nerves Fig.2. We also did a CSF examination, which revealed albumino-cytological dissociation Table 1. So we were having two very rare neurological manifestations of dengue in a single patient, which is very rare as only a few cases have been reported in literature till date. Other investigations were within normal range. Table 2

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Table 1 Cerebrospinal fluid examination

Cell count	02/cumm
Lymphocytes	All
Monocytes	Nill
Proteins	72mg%
Glucose	56mg%

Table 2 Showing routine investigations

Random blood sugar	100mg/dl
Serum creatinine	0.95mg/dl
Serum urea	30mg/dl
Sodium	137mMol/l
S.G.O.T	45 U/L
S.G.P.T	38 U/L
Haemoglobin	13.5gm/dl
Platelet count	1.6 lakh/mm^3
T.L.C	5.4*1000/mm^3

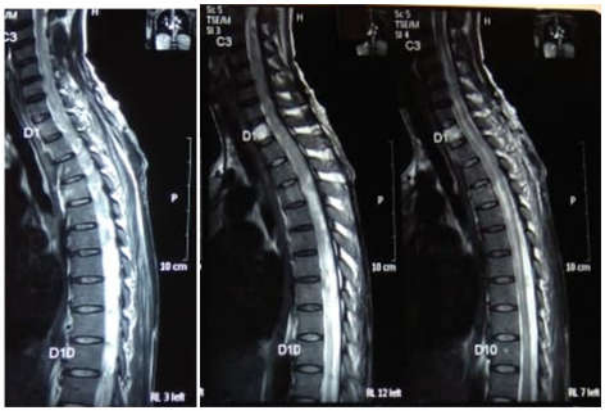

Fig 1 MRI spine s/o hyperintensity of cord ectending from C3 to D10 level.

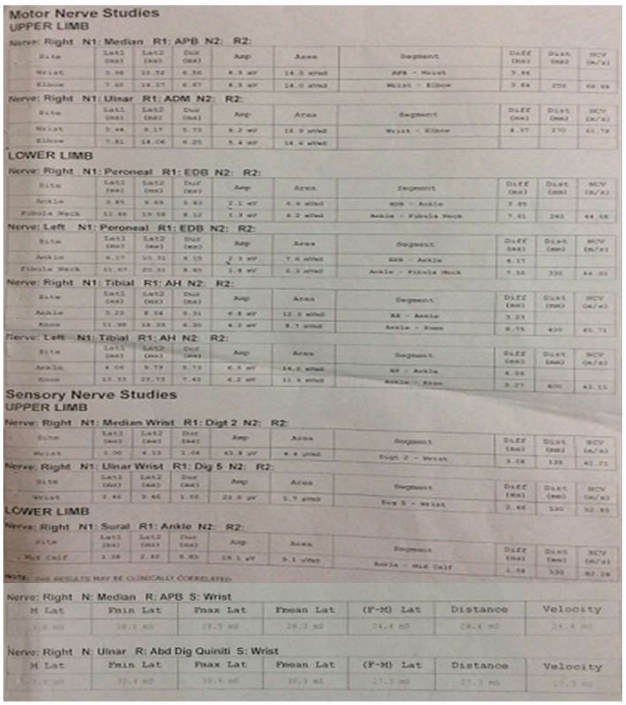

Fig 2 NCS s/o Motor demyelinating and axonal affection of bilateral Peroneal nerve and Tibial nerve

DISCUSSION

Tropical diseases are very prevalent in India and dengue is one of these tropical diseases, which is on a rise in the subcontinent, it may be because of the poor hygienic conditions. Insects such as mosquitoes and flies are by far the most common vector of these tropical diseases.

Dengue can have a series of symptoms, ranging from mild fever to dreaded complications as Dengue haemorrhagic fever (DHF), Dengue shock syndrome (DSS) and many neurological complications, which can be lethal for the patient.

Two of such neurological complications occurring in a single patient, is a very rare event and it can prove to be a diagnostic curse for the patient, as this was the case with our patient. Our patient had fever and was diagnosed as dengue, but later in due course, he developed Guillain-Barré syndrome (GBS) and long extensive transverse myelitis (LETM) concurrently,which is a very rare phenomenon in dengue.

The diagnosis of dengue infection mainly depends on the detection of antigens or antibodies in blood.[3,4] Viral antigens may be detected in blood or cerebrospinal fluid during the first week after the onset of symptoms, by following technique such as cell culture or tissue fixation, enzyme linked immunosorbent assay (ELISA), or polymerase chain reaction.[5-8] The detection of dengue IgM antibodies in serum can be used to confirm diagnosis of a recent infection.[9,10,11] Our patient also had positive IgM antibody test.

The reactivity for dengue IgM antibody may be found as early as five days after the onset of symptoms and it may persist for 30-60 days. An increase in IgG antibodies is seen during first or second day of secondary infection. Specific IgG antibody levels return to normal levels after 30-40 days.[9]

Specific IgM and IgG antibodies can be detected in CSF in cases of dengue CNS infection until 5-7 days after the onset of neurological symptoms.

The percentage of IgM detection in CSF is variable, depending on the technique used. ELISA can detect dengue IgM antibody with a high specificity (97-100%). The absence of specific IgM detection in CSF does not exclude dengue as the causative agent.[1,5,12,13,14]

On the other hand, specific IgG in CSF is not useful as a diagnostic tool, as these antibodies may result from a previous infection. The presence of specific antibodies as a potential marker of myelitis associated with dengue, seems to be related with the neuroinvasive properties of the virus.[15]

Non-structural 1 antigen (NS1 Ag) is present in the CSF of dengue patients as detected with a sensitivity of 50% and specificity of 100%.[5] Combined use of NS1 Ag and specific IgM antibodies can be used to increase the sensitivity of dengue analysis in CSF to 92%.[5]

A diagnosis of neurological disease associated with dengue is made by detecting the presence of positive dengue IgM or viral antigens in patients with acute neurological symptoms.[16]

Neurological manifestations of dengue infection can be very difficult to diagnose as there is no specific test for the same, the test available are only supportive and not confirmatory. Blood tests, CSF analysis and MRI images contribute to reach at a diagnosis. It is also mandatory to rule out other etiologies having similar clinical presentation.

CSF analyses includes, a cell count, a determination of protein and glucose concentration, a smear and culture for bacteria and fungi and a measurement of specific antibodies against syphilis, cytomegalovirus, Epstein-Barr, and herpes simplex

viruses, which is an important part of the workup of CNS diseases.

There is no licensed vaccine or specific treatment to prevent dengue or the neurological diseases associated with it.[17] The only preventative measure is to avoid catastrophic dengue epidemics through the control of dengue vectors.[18] Neurological diseases associated with dengue may be treated according to diagnosis. The majority of patients have a benign evolution with spontaneous recovery, especially those who have encephalitis or Guillain-Barrè syndrome.[13]

Mortality among the patients, who develop neurological complication associated with dengue depends on the severity of the disease and ranges between 5% and 30%.[1,13,19,20] In most cases, the mortality results from Haemorrhagic fever or Dengue shock syndrome.

CONCLUSION

Dengue is a very common tropical disease with very vast number of presentation, which can be very difficult to diagnose and even more difficult to treat. However a good clinical examination can be a key to diagnosing very rare neurological conditions. We should early diagnose and treat the uncommon presentations of dengue, by keeping in mind the wide spectrum of dengue fever.

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