

Original Research Paper

Medical Science

A STUDY ON CSF ABNORMALITY IN DENGUE PATIENTS

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ABSTRACT Dengue fever is the most common arthropod borne viral illness in humans. Globally 2.5-3 billion individuals live in approx. 112 countries that experience dengue transmission. Annually approx.. 50-100 million individuals are infected. Dengue has 4 serotypes from type 1 to type 4.Dengue is transmitted by mosquitoes of the genus Aedes in subtropical and tropical areas of the World. Classical dengue fever presents with rapid onset high fever, headache, retro orbital pain, diffuse body ache, weakness, vomitting & centrifugal

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KEYWORDS : Dengue, CSF, Encephalitis

INTRODUCTION:

Dengue is a major health problem in our country. The first confirmed case of dengue in India was reported way back in 1940s and since then dengue is striking in epidemic proportions in different states of India. Several fatal cases of dengue in the form of Dengue haemorrhagic fever and Dengue shock syndrome have been reported in India from time to time. All the 4 serotypes are responsible for causing the outbreaks, though infection with a particular serotype gives lifelong immunity to that serotype.

The initial dengue infection may be asymptomatic or may result in nonspecific febrile illness or may produce classical dengue fever with rapid onset high fever, headache, retro orbital pain, diffuse body ache, weakness, vomitting ¢rifugal maculo-papular rash.

Complications of dengue fever are common and usually related to renal and hepatic dysfunction. Numerous neurological manifestations are reported like encephalopathy, encephalitis, Guillaine-Barre syndrome, transverse myelitis, acute disseminated encephalomyelitis, and myositis.

MATERIALS AND METHODS:

The study was undertaken in J L N Medical College, Bhagalpur. Patients with fever positive for dengue IgM ELISA, attending the medicine OPD as well as admitted in Indoor medicine department were enrolled in the study.

SAMPLE SIZE: 50 IgM positive dengue patients

The diagnosis of dengue fever was based on clinical features, (fever, headache or bodyache, altered sensorium in case of encephalitis or encephalopathy, hemorrhagic manifestation, jaundice, and shock) and positive serum IgM/IgG antibodies.

Those patients who had other documented cause of fever were excluded from the study. Also patients with previous liver or kidney failure and recent cerebral events (stroke, meningoencephalitis), malaria, and hepatitis were excluded.

Patients were given a questionnaire including name, sex, history of contact, history of present illness etc & thorough clinical examination with special emphasis on neurological examination. We observed the patients for signs of encephalitis. Those patients who were having encephalitic features (Low GCS, altered sensorium, headache, and seizures) or presenting with abnormal CNS examination were subjected to CSF examination (IgM and IgG antibodies, Cell count, protein and sugar).

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Routine laboratory tests likecomplete blood examination, blood sugar, blood urea, serum creatinine, bilirubin, SGOT, SGPT, prothrombin time, INR, partial thromboplastin time, S.lactate, LDH, C-Reactive Protein and Dengue serum antibodies. ECG and Chest X-Ray was done in all patients and CT scan and Cerebrospinal fluid analysis (analysed for protein, sugar, cells, fungal and bacterial smear and culture) and Electroencephalogram were carried out in patients with altered sensorium.

RESULTS:

Out of the 50 patients admitted in study 8 patients developed features of encephalitis. We subjected these patients to CSF examination and 7 patients (14%) had abnormal CSF(ELISA for IgM positive or high protein and normal cell count). IgM positive CSF for dengue was seen in 2 patients while the rest had raised protein and normal cell count.

Table 1. Percentage of patients showing encephalitic features

NUMBER OF	NUMBER OF	PERCENTAGE OF
PATIENTS ENROLLED	PATIENTS WITH	PATIENTS WITH
IN STUDY	ENCEPHALITIC	ENCEPHALITC
	FEATURES	FEATURES
50	8	16

Table 2. Percentage of patients with abnormal CSF

-	-	
NUMBER OF	NUMBER OF	PERCENTAGE OF
PATIENTS WITH	PATIENTS WITH	PATIENTS WITH
ENCEPHALITIC	ABNORMAL CSF	ABNORMAL CSF
FEATURES		
8	7	14

DISCUSSION:

Dengue viral infection is common worldwide, caused by dengue virus a member of flavivirus group in the family flaviviridae, a single stranded enveloped RNA virus. Dengue is endemic to over 100 countries and approximately 2.5 billion people are at risk. It is estimated that 50–100 million infections and 25,000 fatalities occur worldwide every year. World health organization (WHO) surveillance shows that global incidence is increasing.There are four closely related, but antigenically different virus serotypes: DENV1 to DENV4. An infection caused by one of them can cause dengue fever and, rarely, most severe form of the disease. The infection provides life-long protective immunity to the same subtype, but no immunity against the other three serotypes. Moreover, previous infection with a different subtype increases the chances of

developing dengue hemorrhagic fever. This is due to a phenomenon called antibody dependent enhancement (ADE).

The association of dengue infection and neurological abnormalities was first described by Sanguansermsri and colleagues in 1976, in a patient presenting with encephalopathy. The neurological symptoms are diverse and related to the location of the lesion. Headache, alteration of consciousness, irritability, insomnia, seizures and focal neurological deficit associated with encephalitis, encephalopathy and stroke pictures are the most common symptoms observed during the acute dengue. Other neurological manifestations, such as motor deficit can occur in acute dengue infection in cases of myelitis and myositis, or during post-dengue stage, in patients with polyradiculoneuritis, encephalomyelitis, neuromyelitis optica, polyneuropathy and mononeuropathy.

Encephalitis is the most common neurological manifestation of dengue infection and the main symptoms include seizures, altered consciousness, and headache. The diagnostis criteria for dengue encephalitis consists of: fever and acute signs of cerebral involvement associated with the presence of anti-dengue IgM or dengue RNA in the serum and/or CSF added to the exclusion of other causes of viral encephalitis and encephalopathy. In these cases computed tomography (CT) and magnetic resonance imaging (MRI) findings may be normal.

The outcome of Dengue infection depends on how early it is detected and whether it is managed aggressively or not. Usually dengue encephalitis runs a benign course but some studies have shown that it the most severe spectrum of the same disease. In case of dengue Encephalitis diagnosis can be made either by detection of virus in CSF (viral culture/PCR) or immune response by the body (Ig-M antibodies in CSF). The gold standard method is viral culture which is difficult and time consuming. Singh et al. found specificity of PCR assay to be 100% and sensitivity of 70% when sample are taken in first 5 days of fever. Brain imaging- MRI is the modality of choice which shows the findings consistent with viral encephalitis include cerebral edema, white matter changes, necrosis and brain atrophy. Encephalitis features in brain (Hyperintense areas) can be seen in global pallidus, temporal lobes, thalamus, hippocampus, pons, and spinal cord.

There were certain limitations in the study as we could not do CSF examination for dengue screen in the patients without encephalitic features due to financial constraints.

CONCLUSION:

CNS manifestations of dengue fever are often ignored. Increased trend of dengue encephalitis in the recent year is concerning. Since there is no single full proof diagnostic test, it is posing a diagnostic challenge.In our study we see that almost 16 % of patient are presenting with encephalitic features and 14 % of the patients had CSF abnormality. High degree of suspicion is needed to diagnose a case of dengue encephalitis and prompt and aggressive treatment can be instituted saving lives of people.

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