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Original Article

Neurological symptoms in dengue fever: A cross sectional observational study

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ABSTRACT

The objective of this study was to understand the spectrum of neurological symptoms in patients with dengue infection. This was a cross-sectional study undertaken at the Departments of Medicine and Neurology, Guntur Medical College, Guntur, India. All patients diagnosed with dengue fever (September 2016 – December 2016) were screened for neurological symptoms. A total of 112 patients with dengue infection were studied. Neurological symptoms were present in 51 (45.5%), 43 of whom were women with a mean age of 32.4±13.9 years. The neurological diagnoses were Altered sensorium-4/51, Headache-40/51, Limb weakness-3/51, Dizziness-18/51.

Keywords: Neurological, Dengue fever, Cross Sectional Study

INTRODUCTION

Dengue fever is the Aedes mosquito-transmitted, arboviral infection primarily found in tropical and semitropical countries with a variable clinical spectrum starting from symptomless infection to life-threatening breakbone fever, haemorrhagic fever and dengue shock syndrome. The characteristics of break bone fever viruses are ever-changing, leading to widespread neurologic complications(1). There is a dearth of information concerning the neurologic symptoms in dengue fever patients from developing countries even as these regions have the highest prevalence of dengue infection(2). This study was performed to address this lacuna. We additionally compared our observations with the previous literature.

METHODS

In this descriptive cross-sectional study, all the consecutive patients presenting with neurological symptoms with positive serology for dengue infection in the Department of Medicine and Neurology, Guntur Medical College, Guntur, a tertiary care hospital in Southern India from September 2016 to December 2016 were included in the study. The diagnosis of dengue disease was based on clinical picture and laboratory investigations consistent with dengue infection (fever, body ache, thrombocytopenia; positive serum immunoglobulin M [IgM], or positive enzyme-linked immunoadsorbent assay [ELISA] or nonstructural protein 1 [NS1] antigen). Only patients >16 years of age were included.

All patients were screened for neurological symptoms, received a clinical examination and had provided a detailed medical history. Routine laboratory investigations including hemoglobin level, blood counts, platelets estimation, hematocrit, blood sugar, liver function test, renal function test and serum electrolytes were performed in each patient. The patients were managed as per the World Health Organization guidelines.

Statistical analysis: Qualitative data is presented as percentages. Quantitative variables are expressed as mean±standard deviation (SD).

RESULTS

Neurological symptoms were noted in 51 (45.5%) of the 112 patients who were diagnosed with dengue virus infection. There were 43 women and the mean age was 32.4±13.9 years. The neurological symptoms are shown in Figure 1. All the patients had a history of fever with a mean duration of 5.3±3.1 days.

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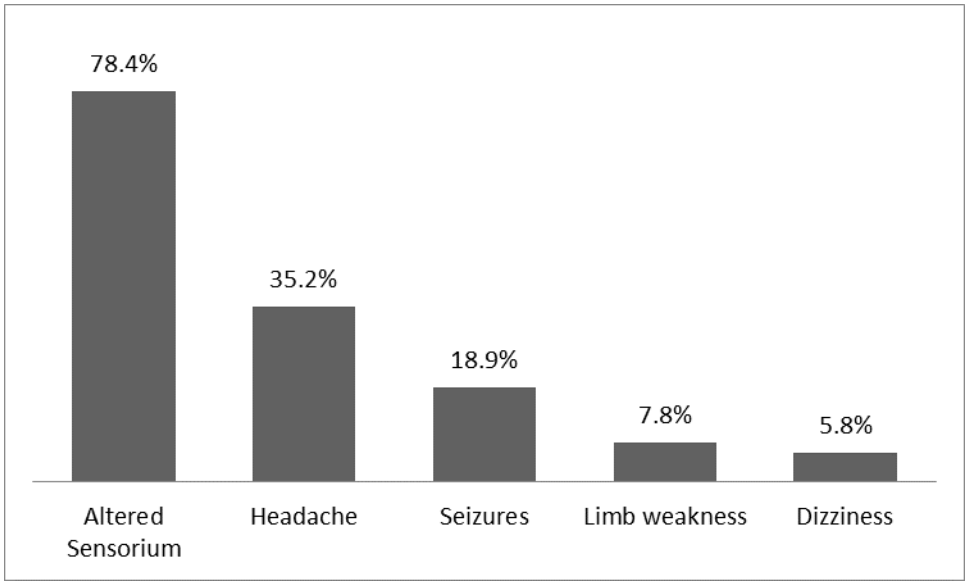
Figure 1: Neurological symptoms (51) in dengue patients (112)



DISCUSSION

In the present study, varied neurological symptoms were observed in association with dengue fever. Demographically, patients belonged to younger ages, and males outnumbered females by the factor of 1.6. Various studies reported age range 18–35 years (mean, 27 years), and male sex predominance related to neurological symptoms associated with dengue infection.(3) (4)

Altered sensorium, headache and seizures constituted the chief neurological symptoms in our patients. These are typical of meningoencephalitis and this might be the reason for the symptoms in our patients. The high proportion of this cluster of symptoms and the implicated diagnosis of meningoencephalitis is consistent with other reports. Misra *et al*. study of 17 patients (5) ,Verma et al.(6) study from India and a Thai study also reported encephalopathy as the commonest manifestation (7),(8).

Some of our patients presented with limb weakness. This pattern has been seen elsewhere also. A Jamaican(9) study reporting symptoms of dengue included seizures (11%) and acute flaccid paralysis(1%). One other study of 41 dengue cases with neurological complications reports both central and peripheral neurological complications.(10) Our study also shows the myriad of symptoms of nervous system affliction in dengue patients.

In the last few decades, many neurological complications of dengue fever have been reported. Neurological complications are seen in 0.5–6% of the cases. (11) In our observation 45.5% showed neurological symptoms. Both direct viral invasion and immunological mechanisms are responsible for neurological symptoms in dengue infection. The neurological involvement leads to significant morbidity and mortality. Our study highlights the high incidence of neurological morbidity in dengue patients.

CONCLUSION

Dengue fever is an emerging global public health problem throughout the globe. Neurological involvement in dengue infection is widespread involving all parts of the nervous system through various pathogenetic mechanisms. Symptoms of meningo encephalitis are very common in this viral fever. Clinicians treating dengue fever should be aware of the varied neurological symptoms of dengue and be watchful for brain involvement.

REFERENCES

1. Pal S, Sen K, Biswas NM, Ghosal A, Rousan Jaman SK, Yashavantha Kumar KY. Clinico-radiological profile and outcome of dengue patients with central nervous system manifestations: A case series in an Eastern India tertiary care hospital. J Neurosci Rural Pract. 2016;7(1):114–24.
2. Koshy JM, Joseph DM, John M, Mani A, Malhotra N, Abraham GM, et al. Spectrum of neurological manifestations in dengue virus infection in Northwest India. Trop Doct. 2012;42(4):191–194.
3. Murthy JMK, others. Neurological complications of dengue infection. Neurol India. 2010;58(4):581.

4. Wasay M, Channa R, Jumani M, Shabbir G, Azeemuddin M, Zafar A. Encephalitis and myelitis associated with dengue viral infection: Clinical and neuroimaging features. Clin Neurol Neurosurg. 2008;110(6):635–640.
5. Misra UK, Kalita J, Syam UK, Dhole TN. Neurological manifestations of dengue virus infection. J Neurol Sci. 2006;244(1):117–122.
6. Verma R, Sharma P, Garg RK, Atam V, Singh MK, Mehrotra HS. Neurological complications of dengue fever: Experience from a tertiary center of north India. Ann Indian Acad Neurol. 2011;14(4):272–8.
7. Pancharoen C, Thisyakorn U. Neurological manifestations in dengue patients. The Southeast Asian Journal of Tropical Medicine and Public Health. 2001 Jun; 32(2): 341-5
8. Solomon T, Dung NM, Vaughn DW, Kneen R, Raengsakulrach B, Loan HT, et al. Neurological manifestations of dengue infection. The Lancet. 2000;355(9209):1053–1059.
9. Jackson ST, Mullings A, Bennett F, Khan C, Gordon-Strachan G, Rhoden T. Dengue infection in patients presenting with neurological manifestations in a dengue endemic population. West Indian Med J. 2008;57(4):373–376.
10. Ferreira MLB, Cavalcanti CG, Coelho CA, Mesquita SD. Neurological manifestations of dengue: study of 41 cases. Arq Neuropsiquiatr. 2005;63(2B):488–493.
11. Hendarto SK, Hadinegoro R. Dengue encephalopathy. Pediatr Int. 1992;34(3):350–357.