

Dengue virus detection in cerebrospinal fluid among patients presented with central nervous system infection

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ABSTRACT

Introduction: Dengue infection is a tropical viral disease caused by dengue virus (DENV) which is a *Flaviviridae* with four serological types (DENV 1–4). With expanding clinical spectrum of dengue fever, a rising number of central nervous system (CNS) infection has been documented. Neuroinvasion during dengue infection is supported by viral antigen discovery in brain postmortem samples, dengue-specific antibodies, and a positive polymerase chain reaction (PCR) test in cerebrospinal fluid (CSF). **Objective:** This study aimed to determine the frequency of DENV detection in CSF samples from patients with CNS infection that were sent to Virology lab, Institute for Medical Research for routine PCR serotyping **Materials and Method:** Dengue Real-Time RT-PCR results from 2022-2024 were screened from the laboratory data and filtered by sample type and clinical diagnosis. The frequency of DENV detection and serotype in CSF samples was calculated and analysed based on demography and clinical presentation. **Results:** Between 2022 and 2024, 137 CSF samples were obtained for dengue PCR testing and serotyping. Meningoencephalitis (38.0%) was the most common diagnosis, followed by meningitis (20.0%), encephalitis (17.0%), seizure (6%), encephalopathy (6%), and fewer than 2% of other neurological illnesses. Six (4.4%) were identified as dengue positive, with serotyping revealing two DENV 1 cases, two DENV 2, and one of each DENV 3 and DENV 4. Three cases were paediatrics with median age 10 (IQR=5.3) and another three were adults with median age 37 (IQR=27.0). Four (66.7%) of these were diagnosed for encephalitis, one (16.7%) for seizure and one (16.7%) for meningoencephalitis. The median PCR cycle threshold (CT) value was 32.0 (IQR =1.7) indicating moderately low dengue viral load in CSF samples. **Conclusion:** DENV detection in CSF is of great importance for neurological diagnostic accuracy, early diagnosis of neuroinvasive dengue and clinical discrimination between viral and bacterial CNS infection that can be accomplished with routine molecular assays.