

# Unravelling the Diagnostic Potential of MR Imaging in Dengue Encephalitis: A Call for Further Exploration in Pakistan

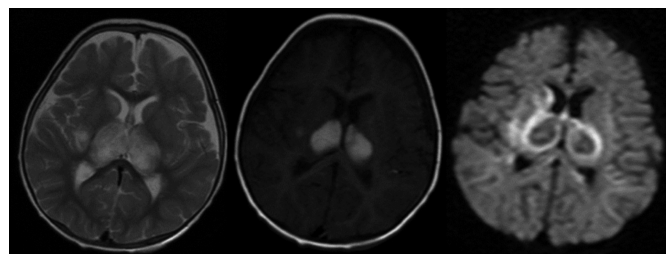
Sir,

We herein present a case of an incidental diagnosis of Dengue encephalitis in a nontypical case of Dengue fever. Dengue fever is a common Flavivirus infection with annual epidemics known to occur globally, especially in the tropics.<sup>1</sup> The clinical spectrum of the disease may range from a febrile phase concurrent with arthralgia, myalgia, and skin rashes, to life-threatening complications such as Dengue shock syndrome and encephalitis. Recent evidence from the neighbouring regions suggested an increased incidence of possible neurotropism by Dengue virus;<sup>2</sup> however, inadequate literature is available from Pakistan. Symptoms might include signs of meningeal irritation, headaches, or altered levels of consciousness.<sup>3</sup> MR imaging findings in such cases depend on the underlying pathological processes and their clinical presentation. Multifocal cerebral and cerebellar haemorrhages due to thrombocytopenia, multiple infarcts secondary to haemoconcentration, and acute disseminated encephalomyelitis as part of an autoimmune phenomenon might be observed. Metabolic factors might also cause an encephalopathy-like appearance and thus, should be ruled out promptly for a better prognosis.

A 5-year male child presented to the emergency room with a two-day history of worsening headaches and a one-day history of altered sensorium, along with a vague five-day history of undocumented fever and generalised body aches. Extensive general and physical examination was carried out to rule out the metabolic and systemic causes of altered consciousness. Fundoscopy was normal and signs of meningeal irritation were negative. Basic haematological investigations at the time of presentation revealed reduced haemoglobin and thrombocytopenia. The family faced a lack of financial resources and requested minimal laboratory investigations. Hence, supplementary diagnostic tools were utilised. Brain MRI revealed multiple, bilateral symmetrical, hyperintense areas on fluid-attenuated inversion recovery (FLAIR), and T2-weighted images involving the thalami, cerebellum, bilateral frontal, and parietal subcortical and deep white matter, giving the 'double-doughnut' appearance (Figure 1).<sup>4</sup>

The endemicity of mosquito-borne infections in our region coupled with MR findings raised strong suspicion of Dengue encephalitis, and hence Dengue-specific immunologic assays

were sent, which came out positive. The child was intubated and managed conservatively in the intensive care unit for an 8-day stay, and had an uneventful recovery.



**Figure 1:** MR brain T2-weighted (T2W) and (T1-weighted) T1W axial sections reveal swollen bilateral thalami with signal abnormality. Note the classic "Double Doughnut sign" on susceptibility-weighted imaging (SWI) sequences.

Based on the above MR brain findings, we conclude that MR imaging shows reasonable evidence of being a potential diagnostic marker in such cases due to its high sensitivity for the diagnosis of Dengue encephalitis. Further exploration of radiological tools and the use of screening MRI for such cases in Pakistan can save delays in therapeutic measures in critical Dengue encephalitis cases. A nationally coordinated response is needed to increase awareness amongst junior radiologists and clinicians to utilise the radiological resources where possible to limit excessive needle pricks, especially in the young population.

## COMPETING INTEREST:

The authors declared no potential conflict of interest with respect to the authorship and publication of this article.

## AUTHORS' CONTRIBUTION:

MH: Designed and oversaw the conduct of the paper.  
 STK: Reviewed the literature and wrote the manuscript.  
 SK: Participated in project administration, resources, and investigation.  
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