

Orientia Tsutsugamushi an Emerging Etiology of Acute Encephalitis Syndrome in Northern Part of India

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Abstract : Introduction: Acute encephalitis syndrome (AES) is a complex multi etiology syndrome posing a great public health problem in the northern part of India. Japanese encephalitis (JE) virus is an established etiology of AES in this region. Recently, Scrub typhus (ST) is being recognized as an emerging aetiology of AES in JE endemic belt. This study was conducted to establish the direct evidence of Central nervous system invasion by *Orientia tsutsugamushi* leading to AES. Methodology: A total of 849 cases with clinical diagnosis of AES were enrolled from six districts (Deoria and its adjoining area) of the traditional north Indian Japanese encephalitis (JE) belt. Serum and Cerebrospinal fluid samples were collected and tested for major agent causing acute encephalitis. AES cases either positive for anti-ST IgM antibodies or negative for all tested etiologies were investigated for ST-DNA by real-time PCR. Results: Of these 505 cases, 250 patients were laboratory confirmed for *O. tsutsugamushi* infection either by anti-ST IgM antibodies positivity (n=206) on serum sample or by ST-DNA detection by real-time PCR assay on CSF sample (n=2) or by both (n=42). Total 29 isolate could be sequenced for 56KDa gene. Conclusion: All the strains were found to cluster with Gilliam strains. The majority of the isolates showed a 97-99% sequence similarity with Thailand and Cambodian strains. Gilliam strain of *O. tsutsugamushi* is an emerging as one of the major aetiologies leading to AES in northern part of India.

Keywords : acute encephalitis syndrome, *O. tsutsugamushi*, Gilliam strain, North India, cerebrospinal fluid

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