

Serological and molecular evidence of leptospirosis among undifferentiated acute febrile patients in selected four hospitals in the Eastern Province of Sri Lanka

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Introduction and Objectives: Leptospirosis is a globally distributed zoonotic disease that has become a major public health concern in Sri Lanka in recent years. However, there is a paucity of data on leptospirosis in the Eastern Province. This study aimed to determine the incidence of leptospirosis among patients presenting with undifferentiated acute febrile illness in the region.

Methods: A prospective hospital-based study was conducted from February 2024 to February 2025 in four selected hospitals in the Eastern Province of Sri Lanka. Ethical approval was obtained from the Ethics Review Committee of the Faculty of Health-Care Sciences, Eastern University, Sri Lanka. Blood samples were collected from inpatients with acute febrile illness. Serological testing was performed using the Microscopic Agglutination Test (MAT) with a panel of 12 serovars representing 11 serogroups: *Tarrasovi*, *Grippotyphosa*, *Seiroe*, *Canicola*, *Autumnalis*, *Pomona*, *Shermani*, *Samaranga*, *Bataviae*, *Javanica*, and *Icterohaemorrhagiae*. DNA extraction was performed using the QIAGEN DNeasy kit (QIAGEN, Venlo, Netherlands), and nested PCR targeting the *flaB* gene of pathogenic *Leptospira* was carried out with a known positive control. Due to logistic constraints, PCR was performed only on a subset of early-phase serum samples.

Results: A total of 231 serum samples were analysed using MAT. Twenty-four samples (10.4%) had antibody titers $\geq 1:400$ ($1:400 = 10$, $1:800 = 10$, $1:1600 = 2$, $1:3200 = 2$). Of these, 14 were from patients with ≤ 7 days of illness. Convalescent-phase sera were obtained from 13 patients, and 2 (15.3%) showed a fourfold rise in titer, confirming acute leptospirosis. Among 50 early-phase samples tested by PCR, 7 (14%) were positive for *Leptospira* DNA. In total, 30 (13%) of 231 samples were confirmed positive for leptospirosis by either serological or molecular methods.

Conclusion: Leptospirosis accounted for 13% of undifferentiated acute febrile illnesses in the study cohort, suggesting that other infections such as dengue and hantavirus may also be contributing causes. Strengthening diagnostic facilities in the region is crucial for accurate aetiological diagnosis and effective disease surveillance.

Keywords: Leptospirosis, Eastern Province, Sri Lanka, Serological, Molecular, Acute febrile illness

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