

Determination of Reactive *Leptospira* Serovars in Leptospirosis using Microscopic Agglutination Test at a Tertiary Care Center in Jaffna

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Background: The Microscopic Agglutination Test (MAT) serves as the reference serological method for confirming leptospirosis by detecting agglutinating antibodies against diverse *Leptospira* serovars. As *Leptospira* strains exhibit substantial regional variation, developing a regionally optimized MAT panel is essential for accurate diagnosis, particularly in Jaffna, where a recent increase in cases, despite its traditionally low-endemic status.

Objective: This study aimed to determine reactive *Leptospira* serovars in leptospirosis among MAT-positive samples from patients admitted with undifferentiated acute febrile illness to Teaching Hospital Jaffna (THJ).

Methods: It was a descriptive cross-sectional study conducted in the medical wards from September 2023 to February 2024, enrolling all patients clinically suspected of leptospirosis. A 2.5ml blood sample was collected, then serum was separated and tested for MAT using a panel of 11 serovars.

Results: A total of 112 samples (80 acute and 32 convalescent) were tested using MAT. Among them 11 were screening reactive (seven acute and four convalescent) whereas only five were confirmed through runout test. A total of seven (6.25%) samples were reacted with multiple serovars. The identified serovars were; *Leptospira biflexa* (n=5); *Leptospira borgpetersenii* serovar Ceylonica (n=5); *Leptospira interrogans* serovar Bataviae (n=5), Canicola (n=5), Bratislava (n=4), Icterohemorrhagiae (n=3), Weerasinghe (n=3), Wolfi (n=2) and Mankarso (n=1); *Leptospira santarosai* serovar Georgia (n=2); Pyrogenes (n=2). A maximum titre of 1:1600 was observed against *Leptospira interrogans* serovars Bratislava, Canicola, Icterohemorrhagiae, and Bataviae, while 1:800 was seen against *Leptospira borgpetersenii* serovar Ceylonica and *Leptospira biflexa* in acute and convalescent samples.

Conclusion: These findings highlight the necessity of establishing a regionally optimized MAT panel, particularly for districts such as Jaffna, where substantial *Leptospira* diversity and evolving case patterns may limit the effectiveness of standard panels. The identification of multiple reactive serovars and high antibody titres in both acute and convalescent samples underscore the need for localized panels that reflect current epidemiology.

Keywords: MAT, *Leptospira* serovars, Teaching Hospital Jaffna.