

Serological evidence of hantavirus exposure among healthy individuals in Batticaloa District, Sri Lanka

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Introduction and Objective: Rodent-borne diseases continue to pose a significant public health threat in rural regions of Sri Lanka. Among these, hantavirus infections are often misdiagnosed as leptospirosis or other febrile illnesses due to overlapping clinical presentations and limited availability of diagnostic facilities. Studies have reported a rising incidence of hantavirus infections over the past decades, particularly among farming communities. The Batticaloa District, an agrarian region in Sri Lanka's Eastern Province with a large farming population remains understudied in this context. The present study investigates serological evidence of hantavirus exposure among healthy individuals residing in Batticaloa, aiming to address a significant knowledge gap and support early surveillance and preventive strategies in a potentially vulnerable population.

Methods: A total of 132 blood samples and demographic data were collected from healthy individuals residing in three randomly selected Divisional Secretariats (Valaichchenai, Eravur, and Chenkalady) in the Batticaloa District, Sri Lanka, with participants recruited by convenience sampling. The serum samples were screened for anti-hantavirus IgG antibodies using an Indirect Immunofluorescent Antibody (IFA) assay with Thailand orthohantavirus-infected Vero E6 cell antigens. Possible factors associated with hantavirus exposure were analysed using the chi-square test in IBM SPSS (version 23.0).

Results: Of 132 individuals screened, 20 (15.2%) were seropositive for anti-hantavirus antibodies. Seropositivity was significantly higher ($p < 0.05$) among those ≥ 50 years (13/39, 33.3%) compared to < 50 years (7/93, 7.5%), and among males (11/29, 37.9%) compared to females (9/103, 8.7%): $p < 0.05$. Agricultural workers had a higher exposure rate (13/26, 50.0%) than non-agricultural individuals (7/106, 6.6%), which was also found to be a significant risk factor ($p < 0.05$). Hantavirus seropositivity was also associated with the presence of rats at home or surroundings (17/76, 22.4%; $p < 0.05$) and sightings of dried rodent feces (13/32, 40.6%; $p < 0.05$). However, storing crops at home (3/8, 37.5%) and rat sightings at workplaces (6/9, 66.7%) were not identified as significant risk factors for hantavirus exposure ($p > 0.05$).

Conclusions: The detection of hantavirus antibodies in healthy individuals in Batticaloa highlights possible unrecognized hantavirus exposure/infection in this population. The significant associations with agricultural activity and rodent-related environmental exposures underscore the need for region-specific epidemiological monitoring and incorporation of hantavirus testing into differential diagnosis of febrile illnesses in Eastern Sri Lanka.

Keywords: Hantavirus infection, Zoonotic disease, Sri Lanka

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