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Letter to the Editor

Scrub typhus: a re-emerging threat in India

Sir,

Scrub typhus is an acute infectious disease of varying severity caused by *Orientia tsutsugamushi* (formerly Rickettsia) and was originally identified in Japan in 1899. It is transmitted to humans by an arthropod vector of the Trombiculidae family. Humans unwittingly serve as hosts for this zoonotic disease. People of all ages, including children, are affected. While scrub typhus is geographically restricted to the Asia Pacific region, a billion people are at risk, and almost a million cases are reported each year.[1,2] In humans, the usual incubation period of *O. tsutsugamushi* is 10-12 days, with symptoms including fever, headache, myalgia, cough, and gastrointestinal problems.[3] The disease is most common in south-eastern and eastern Asia, including India, Pakistan, Indonesia, the Maldives, Myanmar, Nepal, Sri Lanka, Thailand, and other islands in the region. This area is referred as 'tsutsugamushi triangle'.[1] "Scrub typhus is probably one of the most underdiagnosed and underreported febrile infections necessitating hospitalization in the region," the WHO declared in 1999.[4] This viewpoint is still relevant today and scrub typhus is probably the single most common, under-recognized, neglected, and severe but world's most readily treatable disease in the world.

The first outbreak of scrub typhus was recorded in 2003-2004, when a group of pedriatric patients arrived with fever, hepatosplenomegaly, and eschar. Serological confirmation was performed at the National Center for Disease Control in New Delhi. Outbreaks were also observed from Jammu to Nagaland, as well as Himachal Pradesh, Pondicherry, Tamil Nadu, Sikkim, and Darjeeling in the sub-Himalayan area. Outbreaks are typically reported during the rainy season; however, occasional outbreaks from South India have been documented throughout the winter months as well.[5-10] However there is a surge in number of cases reported in Odisha last year.[11]

According to Indian studies, the case fatality rate (CFR) of scrub typhus ranges from 1.3% to 33.5%, depending on organ involvement and comorbidities.[12-14] A recent systematic review demonstrated that 20.3% of all reported cases were under the age of 15, 47.1% were above the age of 15, and 32% covered all age groups. It is well known that agricultural workers in the endemic area are more likely to develop scrub typhus because 53.3% of cases were found to be agricultural laborers or unskilled workers.[15] Some studies suggests, scrub typhus is responsible for up to 20% of febrile hospital admissions in Asia's rural areas especially indigenous people, which makes it a significant public health issues for indigenous.[16] Numerous approaches have failed over the last 70 years to generate protective immunity against *O. tsutsugamushi* challenge in order to prevent scrub typhus. The use of formalin-killed Orientia, inoculation with living organisms followed by antimicrobial therapy, irradiation *O. tsutsugamushi*, and subunit vaccines have all been tried.[17-19] The outcomes ranged from short-term protection to failure to protect. Protection was commonly described as the prevention of death but not the prevention of sickness. Scrub typhus is showing a recent resurgence in India as demonstrated by reports from different parts of the country since one year. It is being reported from Himachal Pradesh, Uttar Pradesh, Kerala, and Western parts of Odisha. Scrub typhus, due to its changing epidemiology contributes to AFI in India. Because there is no vaccination to protect people from becoming infected, the rapid increase in scrub typhus prevalence has become a severe public health concern. Interestingly the majority of current articles on scrub typhus discuss the prevalence and effects of scrub typhus in HIV1 infected patients.[20] Some scrub typhus infections produce HIV-1 supressive factors, which should be further explored in the search for innovating strategies for treatment. In order to control and prevent the outbreak of this neglected disease, a well-established surveillance system and collaborative actions in endemic regions using early diagnostic tools are required. Scrub typhus infection can lead to life-threatening complications. Thus raising awareness of the disease's clinical characteristics and laboratory findings will aid in the reduction of mortality. Further research in the Indian context is required to suffice the dearth of evidence of scrub typhus prevalence and particularly regarding epidemiology, pathogenesis, diagnosis, and treatment of this neglected infectious disease.

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