

Scrub Typhus Co-infection in an Adolescent Girl with Varicella

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Background: Co-infections with scrub typhus have been described quite frequently in adults but less frequently in children. **Case characteristics:** An adolescent girl with varicella infection who had persistent fever. Associated clinical features like pain abdomen, vomiting, and features of third space losses made us suspect a co-infection. IgM and IgG antibodies by ELISA in acute and convalescent serum were suggestive of scrub typhus. **Outcome:** She recovered following a course of oral doxycycline. **Message:** In unexplained prolonged fever or atypical clinical manifestations not explainable by the primary disease process, co-infection needs to be considered.

Keywords: Chicken pox, Doxycycline, Persistent fever, Rickettsial infections.

Scrub typhus, an emerging zoonotic disease caused by *Orientia tsutsugamushi*, is endemic to the Himalayan regions, being a part of tsutsugamushi triangle. Of late, it is being increasingly reported from many parts of India [1-3]. Scrub typhus can present either as an uncomplicated febrile illness with or without rash or as a complicated febrile illness with organ dysfunction and fatality [3,4]. Co-infections in scrub typhus are being increasingly recognized of late [5]. We report an adolescent girl with varicella who had scrub typhus co-infection.

CASE REPORT

A 13-year-old girl presented to us with fever for 9 days, history suggestive of pleomorphic papulo-vesicular rash for 9 days with scab formation, and a family history of similar rash in four other family members recently. She also had abdominal pain and vomiting for three days prior to presentation. On examination, she was moderately built with healed scabs all over the body. She had congested eyes with mild facial puffiness and tender lymphadenopathy of axillary and inguinal regions. Abdominal examination revealed mild hepatomegaly. Rest of the systemic examination was normal. As the girl had persistent fever, even after the varicella lesions had healed well without any signs of secondary infection, she was investigated for other causes of fever. Her complete blood count and liver enzymes were normal, blood culture was sterile, there was no evidence of malarial parasite in peripheral blood smear. In view of abdominal pain, vomiting, facial puffiness, congestion of eyes, significant axillary lymphadenopathy and hepatomegaly, febrile illnesses with third space losses like dengue, leptospirosis and scrub typhus were also

considered and investigated. Immunochromatographic test (ICT) for scrub typhus (Bioline Tsutsugamushi Kit, Standard Diagnostics, Republic of Korea) was positive. IgM and IgG titers (Scrub Typhus Detect IgG & IgM ELISA, System In Bios International, USA) in acute serum and subsequently in convalescent serum were 1:80. Although there were numerous healed varicella scabs all over the girl's body, a typical eschar like lesion was not seen. She received a course of oral doxycycline following which defervescence was noted on the third day, and she was discharged 48 hours later.

DISCUSSION

Co-infections with scrub typhus have been described infrequently in children. Co-infections complicate disease management either by changing the disease manifestations into a mixed form representing both infections or increasing the severity of disease process. The usual co-infections described in children with scrub typhus include leptospirosis, malaria and dengue fever [5-7]. Varicella co-infection with scrub typhus has been reported only once in a 19 year-old-girl previously [8]. Co-infection with leptospirosis and scrub typhus can be explained as both conditions are spread by rodents. The association with malaria and dengue can be explained by rainfall and water stagnation. Rain water flooding displaces rodents from their holes and force them to take shelter in human habitats. Rain water stagnation also helps in mosquito breeding helping the spread of malaria and dengue. In varicella-affected individuals, skin breach may favour the entry of organism into the body through mite bite without causing much inflammation or eschar. It is also possible that eschar remains hidden among the

healed chicken pox scab wounds. The cultural practice of making the varicella infected children sleep on the floor also favours mite bite, especially in rural households.

The varicella infection in the reported child was not treated with acyclovir as all the lesions had scabbing at the time of presentation, without evidence of any secondary infection. Moreover, the clinical picture did not resemble any known complication of varicella infection. In the reported child, in whom no eschar was identified, the persistence of fever and third space losses with warning signs like vomiting and pain abdomen made us suspect a co-infection. In the reported child the complete blood counts and liver enzymes were found to be normal possibly because the sampling was done early (a repeat test was not done) or because of prompt treatment with antibiotics which probably resulted in less severe manifestations. Prompt recognition and treatment of co-infections should be undertaken to minimize morbidity and mortality due to primary infection.

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