J Vector Borne Dis 46, December 2009, pp. 310–312

Spotted fever in a child in Mumbai, India

Vishank Shah, Vaibhav Vaidya, Vigyan Bang & Ira Shah

Department of Pediatrics, B.J. Wadia Hospital for Children, Parel, Mumbai, India

Key words Children – India – Indian tick typhus – rickettsia – typhus

Indian tick typhus, an emerging zoonotic disease, is a type of rickettsial spotted fever (SF). Between 1996 and 1998, serological testing amongst residents of south India, who presented with pyrexia of unknown origin confirmed that SF continues to occur in south India[1]. Subsequently, Indian tick typhus (ITT) has been reported in Pune district of Maharashtra[2], Himachal Pradesh[3], in a French traveller returning from India[4] and in Haryana[5]. No pediatric case of ITT has yet been reported. We report a child from Mumbai with hemorrhagic rash and positive Weil-Felix test who responded to Chloramphenicol.

Case report: A 7-year old boy born of non-consanguineous marriage hailing from Banaras, presented with remittent fever for 10 days, erythematous hemorrhagic rash which started over face and then spread over the body for past seven days, altered sensorium for two days and two episodes of generalized tonic clonic convulsion prior to admission. He had a bite on left calf 15 days prior to this illness. There was no vomiting, bleeding from any site or focal neurological deficit. On examination, he was febrile (101°F) with heart rate of 120/min, respiratory rate of 30/min, blood pressure of 106/66 mm of Hg. There were multiple blackish reddish-pigmented lesions over trunk and legs with eschar over left calf (Fig. 1). On systemic examination, he was $E_3V_2M_4$ with meningeal irritation present. There was no focal neurological deficit. Tone was normal. Reflexes were brisk and planters were flexors. He had hepatosplenomegaly. Other systems were normal. Investigations showed hemoglobin of 7.8 g/dl, WBC count of 15,800/mm^3 [69% neutrophils, 28% lymphocytes, 3% eosinophils] and platelets of 2,41,000/mm^3. CSF showed 16 cells/hpf (13 polymorphs, 3 lymphocytes), 37 mg/dL of proteins and sugar of 57 mg/dL with blood sugar of 94 mg/dL. SGOT was 148 IU/L; SGPT was 120 IU/L with total proteins of 4.8 g/dL and albumin of 2.3 g/dL. Serum bilirubin was 0.8 mg/dL. Renal functions were normal. Prothrombin time was 11.8 sec and partial thromboplastin time was 33.6 sec, which were normal. OptiMal test for malaria was negative and CSF latex for meningococcus was negative. Child was treated with crystalline penicillin and amikacin to which his sensorium improved, however, fever persisted. His Weil-Felix test showed 1:640 litre of OX-2 (OX-K and OX-19 were negative). Due to non-availablility of serological test, it could not be done. Widal and Brucella tests were also negative. He was treated with Chloramphenicol for typhus fever and the fever subsided in 48 h.

The presence of rickettsial diseases in India has been documented in Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Rajasthan, Assam, West

Fig. 1: Healing hemorrhagic lesions (arrow) over legs with eschar over left calf

Bengal, Maharashtra, Kerala and Tamil Nadu[6]. Amongst the rickettsiosis, scrub typhus is prevalent in many parts of India[6]. There are reports of outbreaks of scrub typhus in southern India during the cooler months of the year[7]. However, it has never been detected in Mumbai. The patient had classical rash, eschar that made us consider spotted fever in him.

The salient clinical features of SF include the primary lesion, inoculation eschar (tache noire), headache, malaise, fever, generalized myalgia, a pink maculopapular rash and hepatosplenomegaly as was seen in the patient. Complications include pericarditis, myocarditis, acute respiratory distress syndrome (ARDS), pleuritis, pneumonitis and neurological involvement including impaired consciousness and convulsions rarely[2–4]. The patient did have meningeal involvement along with deranged liver enzymes but did not have any other organ involvement. In Indian tick typhus, maculopapular rash is present which may be purpuric as was seen in outpatients. Inoculation eschar is rare, and if present is always single as was seen in outpatients with inoculation eschar at left calf. Lymphadenopathy is generally absent. The patient also had prominent neurological manifestations. The disease needs to be differentiated from meningococcemia, brucellosis, malaria and typhoid fever. The patient, was initially suspected as a case of meningococcemia and administered crystalline penicillin and amikacin. Persistence of neurological manifestations, absence of meningococci on CSF gram staining and presence of the eschar pointed to rickettsial etiology, with positive OX-2 titres on Weil-Felix test.

Among the routine investigations, the liver function tests are commonly affected. Serum transaminases are raised in > 50% of the cases. Alkaline phosphatase levels are elevated in 33% of the cases. In this case also the liver enzymes were deranged. Among the specific investigations the most commonly used serological test is microimmunofluorescence, which is reliable but does not help in species identification. To establish the exact species of SFG rickettsia, Western blot immunoassay can be done[8]. If biopsy is performed then rickettsial organisms can be detected by restriction fragment length polymorphism analysis of a PCR product[9]. Microimmunofluorescence studies were not performed in the patient, as they were unavailable. Weil-Felix test (W-F) based on detection of antibodies to various proteus antigens with cross reacting epitopes to antigens of genus Rickettsiae (except *R. akari*) has low sensitivity and specificity for diagnosis of these infections. Although there is often a good correlation between results of WF test and detection of IgM antibodies by IFA/ELISA, WF test should be used only in those settings where better tests are not available[10]. Saah *et al*[11] suggested that even though Weil-Felix test is not a very sensitive test but when positive it is rather specific test. Moreover, the exact species identification among SFG is not essential for the treatment, as response to the antibiotics does not vary much amongst individual species. The commomly used antibiotics for treatment are Tetracyclines, Chloramphenicol, Macrolides and Rifampicin. Doxycycline is considered as a drug of choice for SFG rickettsioses. In the case reported by Parola *et al*[4] the symptoms fully resolved with 5-day intravenous course of Doxycycline. As the patient belonged to the pediatric age group, Chloramphenicol was used instead of Doxycycline, to avoid staining of teeth in later life to which he responded in 48 h.

Thus to conclude, spotted fever is rare in children and presence of hemorrhagic rash with fever and eschar should make one suspect spotted fever.

References

1. Mathai E, Lloyd G, Cherian T, Abraham OC, Cherian AM. Serological evidence for the continued presence of human rickettsioses in southern India. *Ann Trop Med Parasitol* 2001; *95:* 395–8.
2. Padbidri VS, Rodrigues JJ, Shetty PS, Joshi MV, Rao BL, Shukla RN. Tick-borne rickettsioses in Pune district, Maharashtra, India. *Ind J Zoonoses* 1984; *11:* 45–52.
3. Mahajan SK, Kashyap R, Sankhyan N, Sharma V, Rolain JM, Prasher BS, Raoult D. Spotted fever group rickettsioses in Himachal Pradesh. *J Assoc Physicians India* 2007; *55:* 868.

4. Parola P, Fenollar F, Badiaga S, Brouqui P, Raoult D. First documentation of *Rickettsia conorii* infection (strain Indian tick typhus) in a traveler. *J Emerg Infect Dis* 2001; *7:* 909–10.

5. Chaudhry D, Garg A, Singh I, Tandon C, Saini R. Rickettsial diseases in Haryana: not an uncommon entity. *J Assoc Physicians India* 2009; *57:* 334–7.

6. Padbidri VS, Gupta NP. Rickettsiosis in India: a review. *J Indian Med Assoc* 1978; *71:* 104–7.

7. Mathai E, Rolain JM, Varghese GM, Abraham OC, Mathai D, Raoult D. Outbreak of scrub typhus in southern India during the cooler months. *Ann N Y Acad Sci* 2003; *990:* 359–64.

8. Raoult D, Dasch GA. Immunoblot cross reaction among *Rickettsia, Proteus* and *Legionella* spp in patients with mediterranean spotted fever. *FEMS Immunol Med Microbiol* 1995; *11:* 13–8.

9. Williams WJ, Radulovic S, Dasch GA, Lindstrom J, Kelly DJ, Oster CN, Walker DH. Identification of *Rickettsia conori* infection by a polymerase chain reaction in a soldier returning from Somalia. *Clin Infect Dis* 1994; *19:* 93–9.

10. Update on rickettsial infections. *Clin Infect Dis* 2007; *45:* S39–44.

11. Saah AJ. Orientia Tsutsugamushi (scrub typhus). In: Mandell GL, Bennet GE, Doalin R, editors. *Principles and practice of infectious diseases.* Philadelphia: Churchill Livingstone 2000; p. 2056–7.

Corresponding author: Dr Ira Shah, 240 D, Walkeshwar Road, Malabar Hill, Mumbai–400 006, India.
E-mail: irashah@pediatriconcall.com

Received: 23 July 2009 *Accepted in revised form:* 17 September 2009