



# Case Report

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## Scrub typhus: A case report

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### ABSTRACT

Fever with rash is a common cause for dermatological referral. The causes can range from viral to protozoal, bacterial or spirochaetal. A case of rickettsial fever is reported.

**KEY WORDS:** Fever, Rash

### INTRODUCTION

The syndrome of fever with rash can be a diagnostic dilemma for the dermatologist and physician alike. The differential diagnosis may range from common viral exanthems, bacterial infections, parasitic and spirochaetal infections to connective tissue disorders. In cases of fever with rash, the dermatological characteristics provide the clue to the diagnosis and initiation of proper therapy. Rickettsial fevers are uncommon but occasional presentations of the syndrome with fever and rash. A case of rickettsial fever with rash in a soldier is reported.

### CASE REPORT

A 31-year-old male soldier, a paratrooper by branch, was referred for a widespread itchy rash 11 days after multiple insect and tick bites in the jungle. Since the last four days he was running high-grade fever, which was remittent, with chills and accompanied by headache. The rash was present all over the back, abdomen and proximal part of the upper and lower limbs, but spared the face, scalp, palms, soles and

mucous membranes. There were associated symptoms of vomiting, diarrhea and hematuria of 7 days' duration. There was no history of snake bite; bleeding from the gums, nose or throat; blood in the stools; oral or genital ulcers; seizures; joint pains or swelling. There was no history of any drug intake.

General examination revealed a febrile patient with a temperature of 103°F. The patient was conscious, oriented and the higher mental functions were normal. Conjunctival injection was present.

Dermatological examination revealed an erythematous maculopapular rash with petechiae and ecchymoses (Figure 1) over the back, abdomen, lower chest, and upper and lower limbs. The rash was tender to point pressure. A tick bite mark of 1 x 1 cm with overlying eschar and an inflammatory areola was seen on the left side of the abdomen (Figure 2). The wrists, ankles, palms, soles, mucous membranes, face and scalp were spared. There were no digital infarcts, or gangrene of the fingertips, nose or ear lobes. The external genitalia were normal. Systemic examination revealed mild splenomegaly of 2 cm.

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Figure 1: Ecchymotic rash over the right forearm

The hemogram, peripheral blood smear and platelet count were normal. Smears for malarial parasite were negative. The serum bilirubin level was normal. The liver transaminases were elevated: SGOT 250 IU/L, and SGPT 136 IU/L. Urine examination revealed microscopic hematuria. The BUN and serum creatinine levels were normal.

The results of Weil-Felix and Widal tests are depicted in Table 1. Serology for HBsAg and HCV were negative. During the course of hospitalization, the patient developed palpitations and was found to have sinus tachycardia of 130/min with borderline cardiomegaly. The cardiothoracic ratio was 15:30. The CKMB value was 26 U/L. An echocardiogram ruled out any pericardial effusion. The patient was treated for myocarditis. He continued to have persistent fever with fresh crops of purpura and ecchymotic rash during the first 7 days.

Skin biopsy of a petechial lesion showed a focal dense mononuclear inflammatory infiltrate with a few neutrophils in the epidermis with edema. The upper

Table 1: Results of Weil-Felix tests			
Weil Felix	OX K	OX 2	OX 19
07 Jul 03	1:160	1:40	1:80
14 Jul 03	1:640	1:20	1:40



Figure 2: Eschar of tick bite over the left side of the abdomen

dermis showed a similar infiltrate with edema. A dense predominantly lymphocytic infiltrate surrounding blood vessels was seen with endothelial thickening of the vessel walls (Figure 3). However, thrombus formation was not seen. These changes were compatible with mild vasculitis.

The patient was diagnosed as a case of scrub typhus on clinical and serological grounds and was treated with doxycycline 100 mg twice daily and additional supportive treatment for myocarditis, and hepatitis and renal involvement. He responded well to the treatment with subsidence of both the fever and the rash.

**DISCUSSION**

A physician commonly refers a case of fever with a rash

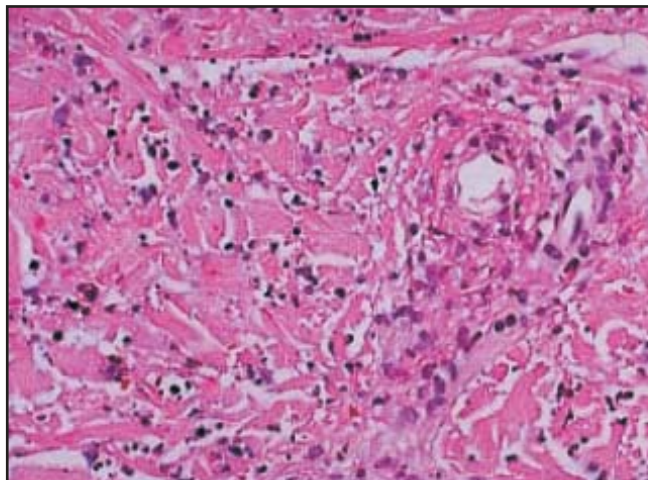


Figure 3: Skin biopsy showing a perivascular lymphocytic infiltrate with endothelial thickening of dermal vessel (x 400 H&E)



to the dermatologist for clues to the diagnosis. There are a few characteristic hallmarks of the rickettsial rash: the eschar of the tick bite and the confluent petechial nature of the rash. In India, Southeast Asia and Australia, the scrub typhus group is more common than the spotted fever group.<sup>1</sup> Scrub typhus is caused by *Rickettsia tsutsugamushi*. It has been reported in Indian soldiers,<sup>3,7</sup> who are susceptible because the Indian Army is deployed over a vast stretch of the subcontinent, in diverse terrain. It often presents with outbreaks, including fatalities.<sup>2</sup> In one recent report of 8 cases, there was one fatality.<sup>4</sup> Exposure to mite islands during outdoor exercises has been identified as a possible cause.<sup>3</sup>

Our patient had all the classical features of scrub typhus. A history of tick bite with the eschar, the petechial rash with the predominantly truncal distribution sparing the palms, soles and face, unlike a spotted fever where these sites are involved, were more suggestive of scrub typhus.

The serological test used was the Weil-Felix test. This test is based on the fact that some of the antibodies that are formed in the body during a rickettsial infection can react with certain strains (OX-2, OX-19 and OX-K) of *Proteus vulgaris* and cause them to clump (agglutinate). Four different tests are available to diagnose rickettsial infections. The Weil-Felix test is inexpensive and easy to perform, with the result that it is widely used.<sup>2</sup> It is, however, not very specific. In addition, the clumping is not detectable until the second week of the illness, which limits the test's usefulness in early diagnosis. However in this case the test was done in the second week of the patient's illness.

The other tests that are used and are more specific for the diagnosis of scrub typhus are the complement fixation test, the micro-IF test and PCR. However, being at a peripheral location, these tests were not available. The correlation between Weil-Felix test and micro-IF test is better (70%) if the sera tested with Weil-Felix test show a four-fold rise in titer.<sup>8</sup> If the Weil-Felix test is used, a titer of less than 1:320 is not definitely

diagnostic and demonstration of a rising titer is desirable.<sup>1</sup> Though the initial titer in this case was 1:160, the OX-K agglutinin showed a diagnostic rise in titer to 1:640 (four fold rise in titre from 1:160), while the tests with OX-2 and OX-19 were negative, as is usual in cases of scrub typhus,<sup>1</sup> as compared to Rocky Mountain spotted fever where tests with all strains show a rise in titer.

The case had a few interesting features, myocarditis, hepatitis and renal involvement (which is more common with the spotted fever group than with scrub typhus) and the absence of pneumonitis (which is more common with the scrub typhus group). However, cases of scrub typhus have also been reported with interstitial myocarditis.<sup>9</sup>

The case is reported for the importance of the typhus group of fevers as an important differential diagnosis in cases of fever with rash in individuals predisposed due to their outdoor activities, especially soldiers.

## REFERENCES

- Schaffner W. The Rickettsioses. In: Fitzpatrick BT, Eisen ZA, Wolff K, Freedberg IM, Austen KF, editors. *Dermatology in general medicine*. 4th ed. New York: McGraw-Hill; 1993. p. 2499-506.
- Bhalwar R, Tilak R, Rao MKK, Tilak VW. Surveillance of scrub typhus in the fringe areas around Pune: Potential for transmission does exist. *MJAFI* 2003;59:117-20.
- Aggarwal SK. Report on outbreak of scrub typhus in IMA Dehradun by SHO Dehradun (Personal Communication), 1992:1-15.
- Prasad BNBM, Das MR, Kasthuri AS. Scrub typhus - not a bygone disease. *JAPI* 1997;45:188-90.
- Singh P, Singh R, Dhand VP. Resurgence of scrub typhus. *MJAFI* 1992;48:84-7.
- Chauhan SS, Ohri VC, Kumar N, Dhingra A. Scrub typhus: two interesting cases. *MJAFI* 1993;49:277-8.
- Mehta SR, Dham SK, Jetley V, Shahane AG. Scrub typhus – a report of six cases. *MJAFI* 1993;49:279-81.
- Hechemy KE, Stevens RW, Sasowski S, Michaelson EE, Casper EA, Philip RN. Discrepancies in Weil Felix tests and microimmunofluorescence test results in Rocky Mountain Spotted fever. *J Clin Microbiol* Feb 1979;9;2:292-3.
- Cherath L. Scrub typhus. URL: <http://www.ehendrick.org/healthy/001228.htm> accessed 10 Mar 04.