

Scrub Typhus, a Case Report : Military and Regional Significance

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Introduction

Scrub Typhus is a Rickettsial disease caused by the bite of an infected larval mite or “chiggers” belonging to the family *Trombiculidae*, genus and subgenus *Leptotrombidium*. *Rickettsia orientalis* is the agent of Scrub Typhus in India and differs from other *Rickettsia* in its antigenic structure. There are at least eight serotypes known and infection with one strain does not provide immunity against infection by others. The disease has occurred amongst troops during World War II in Assam and West Bengal and in 1965 Indo-Pak war in the Jammu - Sialkot sectors. Some cases were also reported during the 1971 Indo-Pak conflict from the northwestern border. There was a resurgence of the disease in 1990 when the author discovered 11 cases [1] in a unit, which was deployed in the scrub type jungle on the northwestern border of India. Timely recognition and treatment along with widespread and immediate use of preventive measures prevented a major epidemic. There were no fatalities. In 1992, a few cases occurred in Indian Military Academy in Dehradun amongst cadets and one fatality occurred before the disease could be recognized and specific treatment instituted. Recently, a case occurred in one of the units inducted in Jammu and Kashmir and the same is presented.

Case Report

A 23 year old serving soldier was admitted to a zonal hospital on 13th Sep 2001 with complaints of fever, nausea, weakness and headache of 7 days duration. Fever was of sudden onset continuous with chills and rigor, spiking for one to two hours and decreasing with profuse sweating. The soldier had been treated at a peripheral medical inspection (MI) room with antimalarials and antipyretics without relief before being referred to the hospital.

There was no history of vomiting, cough, expectoration, dysuria, neck rigidity, any other drug intake or rashes. On examination the individual looked ill, throat was congested, temperature was 102.9°F, pulse 120/min and BP 100/60 mm of Hg. There was no pallor, icterus, cyanosis, clubbing. There was mild generalized lymphadenopathy. Liver was palpable 1 cm below the right costal margin, tender on deep palpation

with a smooth surface. The spleen was palpable and there was no evidence of free fluid in the abdomen. Other systems were normal. The soldier was diagnosed as a case of malaria, treated with chloroquin, primaquin, injection ampicillin and IV fluids. Routine investigations for blood and urine including blood for malarial parasite, serum bilirubin, SGOT, SGPT, chest X-ray and ultrasound abdomen were ordered. Case was reviewed by the medical specialist in the afternoon and it was revealed that the unit of the soldier had been deployed in Punjab on the western border and had moved into the valley about 6 days ago.

By the evening, clinical examination revealed suffused conjunctiva, generalised lymph node enlargement, which was non-tender. The diagnosis was revised to chloroquin resistant malaria with early signs of septicemia. Blood culture was ordered. On the early morning of 14th Sep, the patient's condition deteriorated with tachypnoea of 60/min, temperature 104°F, pulse 126/min and blood pressure 74/50 mm of Hg. The conjunctiva was congested and axillary and inguinal lymphadenopathy had increased. Patient was put on ventilatory support and administered the following drugs: Inj ceftriaxone 2 gm IV BD, Inj amikacin 500 mg BD, IV metronidazole, IV quinine, IV ranitidine. The blood culture report showed no organism. HIV status was negative, peripheral blood smear was normal and Widal test was negative.

The patient's condition deteriorated by the evening. Pupils were small and non-reacting, there was no pharyngeal reflex and bedside ultrasound showed hepatosplenomegaly with splenic enlargement of 18 cm and minimal free fluid in the right pleural cavity. The patient's urine output had decreased and urine was dark coloured. BT, CT, prothrombin time and platelet counts were normal. Virological studies were ordered and Weil Felix test was asked for. At this time a small ulcer was discovered on the left gluteal region. On 15th September patient's condition had further deteriorated and a macular rash had developed on the shins and left deltoid region. The patient had developed multi-organ failure. The Weil Felix test was found to be positive with OX K 1:320 and a diagnosis of Scrub Typhus was made. The patient was started on Inj chloromycetin. Patient continued to remain on ventilatory support till he expired on 16 Sep 01 at 1450 hours. The postmortem report showed cause of death as Scrub Typhus with Gram negative septicemia.

Discussion

Of the diseases caused by *Rickettsia* in man, the most widespread is Scrub Typhus. It appears that the disease is active over a very wide area bound by Japan in the east, through China, the Philippines, tropical Australia in the south and west through India, Pakistan, possibly to Tibet, Afghanistan, and southern parts of Russia in the north [2,3]. During the decades 1970-90, Scrub Typhus was reported in many countries including China, Japan, India, Indonesia, Malaysia, Thailand and Vietnam. The percentage of positive findings in sera from the general population varied from 2% in India to 40% in Malaysia [4].

Fever, headache, conjunctivitis, lymphadenopathy and a vesicular lesion at the site of bite by larval mite or 'chiggers' characterize a severe attack of the disease. The lesion turns into a punched out ulcer covered with a blackened scab (eschar). A macular rash may appear on the body by the 5th to 7th day and last for a few hours to days. It is difficult to perceive in dark skinned individuals. Complications such as pneumonitis, myocarditis, encephalitis and peripheral circulatory failure may occur. Weil Felix fluorescent antibody, complement fixation or microscopic agglutination tests can confirm the diagnosis. The incubation period ranges from 6 to 21 days and averages 12 days. There is no person to person spread hence isolation is not required.

The present case exhibited all the features of a severe attack of Scrub Typhus. Medical officers need to understand the importance of epidemiological approach to diagnosis of disease. Diseases of regional significance should always form a part of the differential diagnosis of various unresolved cases especially when the deterioration of the case is usually rapid. This has immense military significance also, as the normal campaigning season for warfare on our north western

borders is usually August to October and this matches directly with the seasonal increase in the mite islands. Transovarian transmission over 5 to 6 generations ensures that these mite islands remain typhus islands, waiting to affect the troops moving into the area.

The present sporadic case of scrub typhus when viewed with the earlier occurrence of cases in 1990 and 1992 should serve as a warning to us, that troops need to take preventive measures when deployed in scrub typhus prone areas. The preventive measures include campsite selection, its clearing and disinfection with BHC, anti rodent measures and personal protective measures. Camps should be occupied after examination for typhus risk by assessing mite infestation of rats and soil and scrutinizing records of previous units for typhus incidence. DBP application on clothing is the most important single preventive measure while preparing for combat or occupation of an uncontrolled area. Benzyl benzoate is also miticidal [5] and can be utilized to impregnate clothing. Deet (Diethyltoluamide) or permethrin can be used as mite repellent. Deet-based repellents are effective on the skin, whereas permethrin-based repellents are for use only on clothing [6].

References

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The judge addresses the man in the court room "Don't you feel ashamed, coming here for the third time?"
The man replies : "I am here for the third time. You come every day".