

Original Articles

SCRUB TYPHUS IN THE KARNAL DISTRICT OF PUNJAB (INDIA)

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CASES of scrub typhus have been reported from the Simla hills by Covell (1936), from Barrackpur by Krishnan *et al* (1949), from Calcutta by Chaudhuri and Chakravarti (1949), Lusk (1945) and Lowe (1946), from Bombay by Soman and Menon (1948), from territory adjoining Burma by Tattersall and Parry (1945), and from Jubbulpur by Kalra and Rao (1949). But we are not aware of any published reports about the occurrence of scrub typhus from the plains of the State of the Punjab. Perhaps there is not enough awareness of the existence of scrub typhus and cases are being missed. Two cases of scrub typhus giving the serological reaction against *Proteus* OXK occurred in the months of September and early in October, 1951. These cases came from the rural areas of the district.

Case Reports

Case No. 1.—M. S., 26 years, Sikh male, was from the Sub-Jail, Karnal. He started getting fever on 9th September 1951 when he had been in the Jail for only 7 days, which shows that he must have received the dose of infection prior to his entry into the Jail. He was a declared offender and was running from one village to another to escape arrest. He belonged to village Ror, Tehsil Kaithal, District Karnal. He had continuous fever and was admitted to the jail hospital on 14th September 1951 when he had 5 days' continuous temperature. The Weil-Felix reaction on the sixth day of his illness was as follows:—

	25	50	83	125	250
<i>Proteus</i> OXK ..	+	+	+	—	—
<i>Proteus</i> OX19 ..	—	—	—	—	—

His total leukocytic count was 10,200. The differential leucocytic count was:—

Polymorphs ..	72%
Lymphocytes ..	26%
Monocytes ..	2%

The temperature came down to normal by crisis on the fourteenth day *i.e.* on 22. 10. '51 and the patient recovered. There was no rash visible

on his body, but it might be due to the very dark colour of his skin. There was no eschar and no glandular enlargement. Throughout the illness there was extreme prostration. The fever lasted 14 days and, as will be seen from the chart, was continuous and ranged between 103 and 104 F in the last nine days of his illness. Three weeks after the onset of the fever *i.e.* on 30. 9. '51 when the temperature had been normal for 8 days, his Weil-Felix test was repeated and the following was the result:—

	1/250	1/500	1/833	1/12550	1/5000
<i>Proteus</i> OXK	+	+	+	+	+
<i>Proteus</i> OX19	—	—	—	—	—

The clinical findings and the high titre of the Weil-Felix reaction against *Proteus* OXK left no doubt that the case was one of scrub typhus. There was no history of any insect bite.

Case No. 2.—B. S., years old Sikh male, was admitted to the K. E. Hospital, Karnal on the 2nd October, 1951 in a comatosed condition with a history of 12 days' continuous fever. The patient was very dark skinned and no rash could be seen on his body. There was no eschar and glandular enlargement. There was no history of any insect bite. One day after his admission he had critical diarrhoea and died on 5th October *i.e.* the 15th day of his illness. Weil-Felix reaction on the day of his admission was positive against *Proteus* OXK up to 1 in 5,000. No further dilutions were put up. The type of temperature in the two cases can be seen from the charts.

Epidemiological Consideration

In the District of Karnal there are many waste lands where hard grass and scrub grows and it is quite possible that scrub typhus and other types of typhus fevers might be occurring and passing for cases of typhoid or Para typhoid fever or may be classed with P.U.O's. The district is situated on the Western bank of the river Jumna which overflows its banks in the rainy season and there is a collection of water for some time in the fields nearby. Large areas of land are lying waste and are overgrown with bushes and thick long grass. These lands had been lying waste but are now being reclaimed. Due to reclamation it is possible that the wild rodents with their ectoparasites might have migrated to fresh areas and spread infection. It is also possible that those working in the reclaimed fields may be attacked by the arthropod vectors.

The usual arthropod vector of scrub typhus in India are mites of the Tsutsugamushi group particularly *Trombicula deliensis*, but the arthropod vector of the disease in this district and the reservoir of infection remain to be discovered.

The village of Kabulpur Khera from where case no. 2 came, is situated on the bank of a branch of the western Jumna Canal. During the course of an enquiry in the village it was found that in the rainy season of 1951 there had been 6 more cases of a similar fever and that some cases had even a rash. The villagers thought the fever was a form of measles. Blood of 5 recovered cases was examined and of 2 of them found to be positive against *Proteus OXK* in a dilution of 1 in 250 even 2 months after recovery from the illness.

It was found that during the rainy season there were similar cases in the adjoining villages. Investigation is proposed to be carried out and it is proposed to examine the field rats and their ectoparasites. In the 2 cases reported there was no rash, and, in fact as, only about 30% of the cases show rash, it is possible to miss these cases clinically if the Weil-Felix reaction is not carried out. Krishnan *et al.* (1949) observed rash in 75% of their severe cases and 7% of their mild cases; of their 72 cases 80% were mild and 20% severe.

Before the partition of India the majority of the people living in the village of Kabulpur Khera were Mohammadans; after the partition, the lands were lying uncultivated for some time, then the Hindu and Sikh refugees from Punjab (P) who had perhaps no immunity against scrub typhus started cultivating the lands and became infected. There were no cases of scrub typhus in the non-refugee residents of the village.

Soman & Dass (1948) have described cases of scrub typhus from the outskirts of the city of Bombay after the rainy season. Cases of scrub typhus have also been reported from Calcutta and Barrackpur where the condition approached semi-rural conditions. During the course of investigation 2 rats from the New Township in Karnal were caught. Conditions in the Civil Lines and the New Township approach semi-rural conditions. Both cultivated and uncultivated land, lie near-by and grow scrub after the rains.

The brains and half of spleens of these rats were emulsified in saline and injected intrape-

ritonally into a male guinea pig which reacted with mild serotal and febrile reaction and slight ascites. On the eleventh day of the injection the peritoneal cavity of the guinea pig was aspirated. Just enough fluid to make smears on the glass slides could be taken out. The smears when examined showed almost a pure growth of *Rickettsia*. It is however not claimed that it was *R. orientalis* as two cases of murine typhus had also occurred in this colony, and to isolate a strain of *R. orientalis* is more difficult than to isolate a strain of *R. mooseri*.

It is possible that more cases of scrub typhus may occur when reclamation operations are undertaken in this district during and after the rainy season.

Summary

Two cases of scrub typhus are reported from the Karnal district.

The possibility of there being more cases during and after the rainy season is suggested and it is possible that the cases are being missed.

Some epidemiological features of the cases are described.

The possibility of more cases occurring with the land reclamation operations in the rainy season is suggested.

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PLATE LXXXVI

SCRUB TYPHUS IN THE KARNAL DISTRICT OF PUNJAB (I) Page 622

