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Serological evidence for wide distribution of spotted fevers & typhus fever in Tamil Nadu

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***Background & objectives*: Although the re-emergence of spotted fevers and typhus was documented from southern India a few years ago, there was a paucity of community based data. Therefore a collaborative study was carried out in several districts of Tamil Nadu to understand the distribution of these infections.**

***Method*: Blood (3 ml) was collected from patients presenting to primary health centres (PHCs) with fever >10 days duration in 15 districts of Tamil Nadu during January 2004 to December 2005. Patients negative for malaria, were tested by Weil-Felix test. Clinical data were collected from patients visiting two hospitals.**

***Results*: A total 306 samples were tested in 2004 and 115 (37.5%) had titres of ≥ 80 with OX K antigen, suggesting a diagnosis of scrub typhus. During 2005, 964 patients were tested and 89 (9.2%) were positive for scrub typhus. An additional 44 (4.6%) were positive for other rickettsial illnesses. In both years majority of scrub typhus occurred in individuals above 14 yr of age. Cases increased from August until the earlier part of next year.**

***Interpretation & conclusion*: This community based study from south India involving several districts in Tamil Nadu, showed that scrub typhus and rickettsial illnesses were widely distributed in the State. Measures to increase awareness and also to diagnose and treat this infection in the affected areas are essential.**

Key words Spotted fevers - scrub typhus - Weil Felix test

Although the presence of spotted fevers and scrub typhus, vector borne illnesses with high mortality, was documented from Tamil Nadu in southern India a few years ago[1], there are little community based data available from this or any other state in India. Lack of access to reliable testing methods for hospitals functioning at a community level is the main reason. The specific 'gold standard' test, microimmunofluorescence test [2,3] is not available in India. Availability of tests based on ELISA principles is also limited. Therefore, at present, Weil Felix test which utilises antigens prepared from Proteus spp remains the only laboratory test available to investigate these infections occurring in communities in India.

Evaluations done in our laboratory showed that this test had a specificity of over 98 per cent and a sensitivity of about 43 per cent[4]. In several areas around the world, Weil Felix test has proved useful in documenting the presence of these infections for the first time[2].

Based on hospital data, it was evident that this infection is likely to be prevalent in many parts of Tamil Nadu[5]. Since there were no data available on the occurrence of these infections in the community, a collaborative study was undertaken by the Institute of Vector Control and Zoonoses, Hosur, and Christian Medical College (CMC), Vellore in several districts of Tamil Nadu to develop preliminary understanding of the distribution of these infections.

Material & Methods

3 ml of blood was collected from patients with fever of more than 10 days duration after obtaining informed consent from 32 health centres in 11 districts of 15 health units of Tamil Nadu during the period January 2004 to December 2005 and sent to Institute of Vector Control and Zoonoses, Hosur. The aim at this stage was only to document wide distribution. No attempt was made to document actual magnitude, due to logistical reasons. Blood samples were therefore collected from as many patients as possible. Serum samples of those patients who were smear negative for malaria were tested by Weil - Felix test at this centre. Antigen was prepared using standard protocol developed at CMC, Vellore[6]. Titres of 80 or more were considered to indicate either spotted fever or scrub typhus[4]. Clinical data were collected from patients visiting Government Pentland Hospital Vellore and the Primary Health Centre at Usoor.

Results & Disussion

A total 306 samples were tested in the year 2004 and 115 (37.6%) had titres of 80 or above with OX K antigen, suggesting a diagnosis of scrub typhus and four others had titres indicating other rickettsial illnesses. During 2005, 964 patients were tested and 89 (9.2%) were positive for scrub typhus. An additional 44 (4.6 %) were positive for other rickettsial illnesses (Table). In the year 2004, 80 of the 115 patients with scrub typhus (69.6%) were males while only 48 (53.9%) of the 89 patients were males in 2005. Among those affected with scrub typhus, during the two years under study, 102 (88.7%) and 85 (95.5%) respectively were above 14 yrs. All individuals with other rickettsial illnesses were above 14 yrs and 23 (52.3%) were men. The number of cases increased from August and continued to be high in the earlier part of next year. Very few cases were recorded during May, June and July in both years. Clinical feature could be recorded only for 48 and 32 cases respectively presenting to out patients clinics of Vellore Government Pentland Hospital and Usoor PHC. Head ache and myalgia were the most common manifestations along with fever and were observed in 45 (93.8%) and 23 (71.9%) cases respectively. Although 22 (27.5%) of individuals had rash, none had eschar. Conjunctival suffusion was present in 20 (25%).

Table. Health Unit Districts (HUD) wise distribution of cases in the years 2004 and 2005

Name of the Health Unit Districts (HUD)	2004		2005	
	No. tested	No. positive	No. tested	No. positive
Vellore	220	91	475	66
Thiruppathur	16	6	95	15
Thirvannamalai	1	0	133	8
Cheyyar	29	13	167	34
Perambalur	16	0	0	0
Erode	1	1	6	0
Coimbatore	22	7	14	6
Udhagamandalam	1	1	23	2
Thiruvallur	NT	NT	6	2
Dharapuram	NT	NT	5	0
Kanchipuram	NT	NT	1	0
Dindigul	NT	NT	5	0
Trichy	NT	NT	30	0
Tirupur	NT	NT	2	0
Madurai	NT	NT	2	0
Total	306	119	964	133

NT - Not tested

Serological data collected during two consecutive years show that scrub typhus and rickettsial illnesses are widely distributed in Tamil Nadu. This is probably the first community based study from India where data was collected from different districts in one state. Most reports from Tamil Nadu so far, are based on data from one tertiary level referral hospital[1,4,5].

The prevalence rates could not be assessed, since all cases with fever occurring in the area could not be tested because of logistical reasons. However, it is clear that, patients with scrub typhus and other types of rickettsial illnesses present to primary health care facilities. Therefore public health interventions and measures to increase awareness among doctors and

general public are required to control and treat these infections. The numbers of cases identified increased during the cooler months following rains as described earlier[5].

These infections respond well to antimicrobials like doxycycline and chloramphenicol[2]. However, mortality can be high if untreated[3]. The mortality rate in a tertiary care hospital, where patients from this state are referred when complications develop, was found to be about 15 per cent[5].

Since manifestations are varied laboratory tests are required for diagnosis. Weil Felix test, though easy to perform, lacks sensitivity[4]. The test becomes positive only after about two weeks after onset of illness and so cannot be relied upon to initiate therapy. Specificity of this test is however high and therefore can be used to identify new areas where rickettsial infections are prevalent.

In conclusion, it is possible that more areas in the country harbour these infections. Large scale studies in different parts of the country need to be undertaken to understand the magnitude of this infection in India.

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