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SCRUB TYPHUS – A SYSTEMATIC APPROACH TO CLINICAL DIAGNOSIS AND MANAGEMENT

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Summary

In Peninsular Malaysia there is multiple antigenic assault with infectious disease agents, additionally, few patients present with classical syndromes of specific infections. This increases the difficulties of making a specific diagnosis and the problems of clinical management. A systematic approach to minimise these difficulties and maximise the individual and community benefits of currently available knowledge is used in a situation of high endemicity of scrub typhus.

Recent studies[1] showed that about 20% of febrile patients presenting at certain rural Malaysian hospitals have scrub typhus. On that basis this disease alone could account for over 1%[2] of all rural hospital admissions (excluding maternity admissions).

The classical description of the scrub typhus syndrome includes fever, eschar, rash and generalised lymphadenopathy.[3] These features are useful when present but, unfortunately, save for fever, their presence is uncommon or even rare in cases of proven scrub typhus in the indigenous population,[1] as shown in table 1.

Our experience indicates that, retrospectively at least, a firm diagnosis is possible in about 80% of adult hospital patients admitted with a fever for which no cause is immediately apparent.[2] It is, however, just as problematical to use clinical differentiation to identify other diagnoses as it is to identify scrub typhus as a cause of fever.[1,2] Table 2 shows the range of diagnoses found in a recent series.[2]

A SYSTEMATIC APPROACH

To obtain a causal diagnosis, laboratory examination of each febrile patient includes: a full blood picture twice in three days; three films for malaria parasites in two days; two blood cultures in 2 days; urinalysis; stool microscopy; bacteriological examination of stool, urine, throat swab and sputum; slide serology for Widal 'O' and Proteus OXK agglutinins; inoculation of mice with whole blood and serological tests on serial specimens as shown in table 3.

Much of this effort is of no benefit to the patient or clinician unless it is performed routinely at the earliest opportunity so that results are available in the event of clinical deterioration. A change in serological titres can often be detected in paired sera collected at short intervals.[9] The lag time between the collection of specimens and the availability of early results is about 3 days, it is essential therefore that initial specimens are collected on admission.

There is fortunately a further factor that can be used to assist the clinician. Scrub typhus and other rickettsial diseases respond dramatically to the oral administration of tetracycline[10] and in the distribution of diagnoses seen in Peninsular Malaysia[2] tetracycline was not inappropriate in 90% of fever cases and was ideal or acceptable initial treatment in about two-thirds (table 2).[2] Furthermore, the successful completion of a trial wherein a single dose of doxycycline was shown to be as effective as a 7 day course of tetracycline for treatment of scrub typhus[11] has opened the way for such therapy to constitute a diagnostic test for all practical purposes. Such a test also yields rapid results – in scrub typhus cases defervescence occurs in 24 hours in the majority of cases and within 48 hours in virtually all.

It must be emphasised that such a systematic approach does not allow for an either/or decision. Successful management, community benefit, maximum patient safety and maximum economy of resource utilisation require the

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early and virtually simultaneous deployment of clinical laboratory resources and therapy.

A similar systematic approach can be employed in attempting the solution of an outstanding problem in the study of scrub typhus. Reported mortality rates in expatriate soldiers in the SE Asian campaigns during and after

TABLE I

PREVALENCE OF CLINICAL SIGNS AND SYMPTOMS IN 44 CONFIRMED CASES OF SCRUB TYPHUS.[1]

Signs/Synptoms	*No. of Patients (Percent)*
Fever	44 (100)
Chills	39 (89)
Headache	22 (50)
Cough	16 (36)
Splenomegaly	6 (14)
Adenopathy	6 (14)
Rash	0
Eschar	0
Fever, Chills, Cough and Headache	6 (14)

TABLE II

DIAGNOSES ON 149 FEBRILE PATIENTS ADMITTED TO A DISTRICT HOSPITAL[2]

Scrub Typhus	65	83	(55.7%)
Leptospirosis	18		
G-U Tract Infections			
Respiratory Tract Infections		18*	(12.1%)
Other Bacterial Infections*			
Arboviral Infections		17	(11.4%)
Salmonelloses	12		
Malaria	2	14	(9.4%)
Undiagnosed		33	(22.1%)
TOTAL		165**	(108.7%)

* Includes 3 melioidosis cases.

** Includes 14 double diagnoses and 1 triple diagnosis.

TABLE III

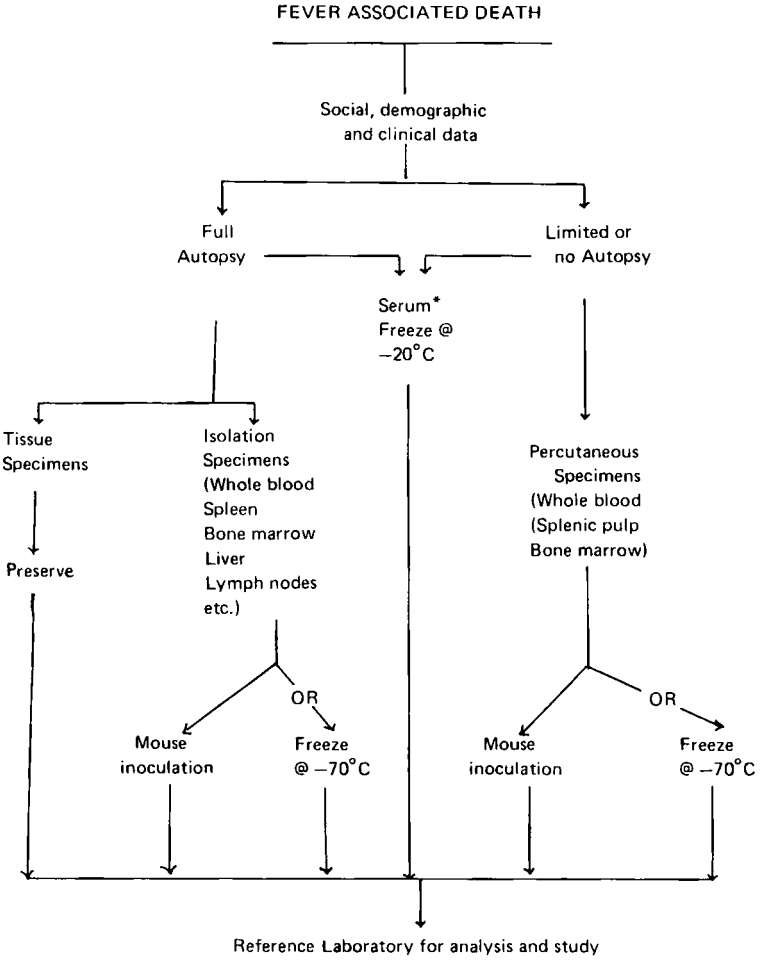
	Serological Tests
A.	Bacterial Diseases
	Widal S. typhi 'O' & 'H' agglutinins[4]
	Leptospirosis HL test[5]
	Melioidosis IHA test[6]
	Brucellosis IHA test[4]
B.	Rickettsial Diseases
	Weil-Felix OXK, OX2, OX19[4]
	9 strains of *R. tsutsugamushi*[7]
	R. typhi[7] *(R. mooseri)*
	R. sibericus[7]
C.	Viral Diseases[8]
	Influenza A & B (HAI)
	Arbovirus groups A & B (HAI)

WWII varied from <1% to >30%. No wholly satisfactory explanation for this wide variation has been proposed. Malaysian Ministry of Health figures indicate a mortality rate <2% in reported cases. Our own studies have done much to indicate the size and extent of the morbidity problem but nothing to index mortality. A systems approach using fever associated deaths as case material could lead to a rapid answer to the question of mortality. Such an approach is shown in figure 1.

CONCLUSION

A systems approach to the problems of clinical management of scrub typhus is a useful tool in the circumstances found in Peninsular Malaysia where multiple factors complicate and obscure the picture.

FIGURE 1



* Paired, if possible, with serum taken before death and during final illness.

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