

LEPTOSPIROSIS IN THE MALAYSIAN ARMY

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Summary

The status of leptospirosis among Malaysian army personnel is reviewed. Two cases have been reported from 1969 to 1978 and two deaths have been certified as due to leptospirosis. Serological studies revealed a 12% to 22% prevalence of antibodies indicating past infection. A study of febrile cases showed that only 4.6% of fever in Malaysian soldiers were due to leptospirosis compared to 12.2% in American servicemen serving in Vietnam and 30% in British soldiers in Malaysia. The reasons are briefly mentioned. Control measures in the Malaysian army are outlined.

INTRODUCTION

Leptospirosis as an occupational hazard of soldiers operating in wet environments has been recognised since World War I when outbreaks occurred among soldiers involved in trench warfare. During World War II, the Vietnam Wars and the First Malayan Emergency, leptospirosis was frequently seen among soldiers of all ethnic groups(1). The Malaysian soldiers are no exception to their European counterparts in their susceptibility to leptospiral infections, but have a lower incidence.

MATERIALS AND METHODS

Leptospirosis is a notifiable disease in the country and all cases diagnosed among soldiers are reported to appropriate authorities including the Medical Directorate at the Ministry of Defence by medical officers on the ground. Military hospitals at Kinrara and Terendak submit monthly returns of all admissions and discharges. A register of deaths of all serving military personnel is also maintained at the Medical Directorate. From all these returns received from units and other pertinent information, an annual health report is prepared. It is an analysis of the health status of all service personnel and their families. Annual health reports are available from 1969. These were the four sources of data made use of in searching for cases of leptospirosis in soldiers.

RESULTS

No cases of leptospirosis were reported between 1977 and March 1979. Admissions for 1978

into Kinrara Military Hospital Wing and Terendak Military Hospital also show no cases of leptospirosis. However, annual health reports indicate two cases in 1976 and no cases between 1969 and 1975. Both the 1976 cases were officers, one in Sarawak and the other in Peninsular Malaysia. The death register showed the death of a soldier in 1974 and another in 1977 in Sarawak as possibly due to leptospirosis.

DISCUSSION

Leptospirosis appears to occur infrequently in Malaysian soldiers. Cases consisted of two detected at the Mentakab District Hospital and the four mentioned above. This does not fit the pattern of leptospirosis observed in British soldiers, who while operating in Peninsular Malaysia during the First Malayan Emergency in the 50's had a yearly incidence of more than 100 cases. In 1954, the attack rate was 63 per 1000 soldiers at risk(1). In Borneo, during the Indonesian confrontation (1962-66), "leptospirosis ranked second to malaria in overall importance"(2). In one instance, the casualty rate due to leptospirosis in a patrol of 21 was 43%(3). Archer(4) wrote that leptospirosis in Malaya was "a major medical problem and is almost a military one, confined to the soldier operating in the jungle". It is, therefore, surprising that Malaysian soldiers should be free from leptospirosis when compared to their British counterparts who operated in the same environment of tropical forests with hundreds of criss-crossing streams and rivers, jungle swamps,

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stagnant pools, and abundant rainfall in Sabah, Sarawak and Peninsular Malaysia. These surface waters have been shown to be contaminated with leptospirae and are capable of causing infection (5,6). Rodents and other mammalian hosts are still present in abundance around us and are known to be susceptible to the infection (7). The methods of military operations used are no different from those used by the British namely, tracking the enemy on foot through jungle marshes, swamps, flooded rice fields, wading across rivers and streams and waiting in ambush on wet muddy ground. All the conditions for infection present before are present today. Why then is leptospirosis not reported in Malaysian soldiers? This may be due to several factors:

- (i) Lack of awareness of the disease by medical officers.
- (ii) Cases are seen too early in the disease when definite symptoms and signs are not present or characteristic signs are few.
- (iii) Lack of laboratory facilities as well as inadequate use of available facilities.
- (iv) Leptospirosis is self-limiting.
- (v) Masking of symptoms and signs by the use of broad spectrum antibiotics.
- (vi) Inadequate reporting of cases.

Two studies on Malaysian soldiers have been carried out which indicate leptospiral infections are common. The first study was for leptospirosis in febrile Malaysian soldiers (Tan, unpublished). Table I shows the results of the various studies. British soldiers had the highest percentage of leptospirosis, the Americans 12% and Malaysian soldiers only 5%. The difference between the British and the Americans is probably due to the mode of operations. The Americans are frequently airlifted while the British having to track on foot in the Malaysian jungles had greater exposure to contaminated water and a higher risk of infection (3). The lower incidence in Malaysian soldiers may be due to immunity derived from constant exposure to leptospirosis as shown in Table II. 12% of Malaysian soldiers had protective antibodies in this study. Though the results cannot

be extrapolated to the entire army population as the study sample is not representative of army population, the information broadly indicates the immunity status of soldiers against leptospirosis. This is greater than the 5% of British soldiers. It is interesting that a higher percentage of recruits have antibodies compared to regular soldiers. This is because 90% of our recruits are from rural areas where opportunities for leptospiral infection is abundant (10).

A summary of preventive measures taken by the Malaysian armed forces is outlined below:—

A. *Personal Measures*

1. Personal hygiene:
 - a. Early treatment of cuts and abrasions.
 - b. Hygiene of the feet.
2. Minimise exposure:
 - a. Cross rivers at narrowest and shallowest place.
 - b. Avoid splashing while crossing rivers and other bodies of water.
 - c. Avoid contact with mud on banks.

B. *General Measures*

1. Health education and standing instructions while on operations and exercises (11) -
2. Treatment of water supplies. Use of rain water for all purposes in the absence of a potable water supply.
3. Restrictions on bathing and swimming.
4. Medial intelligence i.e. creating a high index of suspicion of leptospirosis among clinicians.
5. Protection of food supplies by storing food above ground in protected metal safes and containers to prevent contamination from urine of rats and other animals.
6. Rodent control and rat-proofing.
7. Proper refuse disposal by deep burial or burning.

In conjunction with the Institute for Medical Research, we have recently started to study leptospirosis among febrile army cases. This study involves four army centres in Kuala Lumpur, Malacca, Kluang and Port Dickson.

TABLE I
PERCENTAGE OF LEPTOSPIROSIS CASES AMONG
FEBRILE PATIENTS

<i>Study Period</i>	<i>Subjects</i>	<i>No. examined</i>	<i>Percentage Positive</i>
1960–1961	British soldiers in Malaysia (Tan, unpublished)	93	30
1960–1961	Malaysian soldiers (Tan, unpublished)	43	4.6
1975–1976	Malaysian patients (Brown <i>et al.</i> , 1976) ⁸	1437	6
1970–1972	American servicemen in Vietnam (Bernam <i>et al.</i> , 1973) ⁹	1650	12.2

TABLE II
LEPTOSPIRAL ANTIBODY PREVALENCE IN HEALTHY SUBJECTS

<i>Study Year</i>	<i>Subjects</i>	<i>No. examined</i>	<i>Percentage Significant</i>
1970	Malaysian Recruits (Tan & Lopes, 1972) ¹⁰	150	22
1970	Malaysian soldiers (Tan & Lopes, 1972) ¹⁰	140	12.1
1960–1961	British soldiers in Malaysia (Tan, unpublished)	204	4.9

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