SHORT COMMUNICATION

Serological Evidence of Schistosomiasis in the Malaysian Police Field Force

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Summary

A total of 1131 Police Field Force personnel were screened serologically for schistosomiasis in Malaysia. A total of 150 (13.3%) were tested positive or borderline. Stool samples from 75 of these cases were however all negative for schistosome eggs. This survey suggests that Police Field Force personnel may be agents for propagating the schistosome life cycle in Malaysia.

Key Words: Schistosomiasis, *Schistosoma malayensis*, Schistosoma serological tests

Research work on schistosomiasis in Malaysia has intensified since 1973 when the first case was discovered where *Schistosoma japonicum*-like eggs were found in the liver tissue during a routine autopsy of a 38-year-old Orang Asli (aboriginal) woman. The first living case was diagnosed based on eggs found in liver biopsy material, which also showed a positive circum oval precipitin test (COPT) though no eggs were recovered from several stool specimens nor in the rectal biopsy material[1].

The failure to detect eggs in a parasitologically confirmed case indicates that stool examination has a low sensitivity for detection of Malaysian schistosomiasis. The COPT has a lower sensitivity than ELISA but it has a high specificity. These findings led us to choose a combination of the two serological tests to carry out this study.

The Malaysian Police Field Force personnel in this study represented a population at risk as they have been using water from a stream where snails infected with the Baling strain of *S.malayensis* (unpublished data) was present.

A serological survey was conducted in Kuala Lumpur on three of the 21 battalions of the Malaysian Police Field Force personnel who had operated at a possible transmission site, for at least six weeks within the last two years. Of the total 1239 persons, a total of 1131 persons volunteered to take part in this study.

Finger prick blood samples were collected from the 1131 subjects and the sera were tested using ELISA as a screening test for schistosomiasis antibodies. The COPT was used as a confirmatory test for all ELISA positives and it was also tested against a subset of negative cases.

Eggs of *S.malayensis* were harvested from outbred white mice. Eggs were lypholised and stored in a dessicator. Lypholised eggs were homogenised and sonicated for two minutes. Crude soluble egg antigen (SEA) was prepared. Protein concentrations were determined by comparison with bovine serum albumin standards at 280 nm wave length using a spectrophotometer (Toshiba Co.). Optimal concentrations of antigen, test sera and conjugate were determined by checker board titrations using positive and negative control sera. Duplicate of patient and control sera were tested on each plate at 1:160 dilution. Pooled serum from five blood donors found to be negative for schistosomiasis by ELISA, COPT and fecal examination was used as the negative control. Positive control sera were obtained from Orang Asli found to be consistently positive for

COPT. ELISA reading was read at 405 nm using a Titertek Multiscan Photometer (Dynatech, Laboratories).

Averaged absorbance values for each duplicate set were used for all comparison. Control, positive sera gave absorbance readings that were in the range of 0.6-1.5 optical density and were consistently 2 to 3 times those of the control negative sera. Consequently we considered absorbance values greater than twice of the negative control run on the same plate to be positive. Samples with values between 1.5-2.0 times the negative control were considered borderline cases.

Faecal samples were requested from all ELISA positive and ELISA borderline cases and examined for schistosome eggs using the modified formol-ether sedimentation method.

Out of 1131 sera tested, 150 (13.3%) were ELISA positive and borderline. COPT was performed on all the ELISA positive and borderline cases plus another random sample of eleven cases from the ELISA negatives. The eleven random ELISA negatives were all COPT negative. A total of 13 COPT positives were found among the 150 ELISA positives and borderline. Assuming that all the negative ELISA were also COPT negative, the prevalence of COPT positives was 13 of 1131 or 1.1%. Faecal samples were obtained from 50% of the ELISA positives and ELISA borderline cases (total 150 subjects). All the 75 stool samples were negative for schistosome eggs. Clinically none of the subjects showed any sign or symptom.

Demonstration of eggs in the stool is desirable but not compulsory to confirm schistosomiasis diagnosis. The exclusion of stool negative patients would markedly underestimate infection. The absence of eggs in faeces and the virtual absence of clinical symptoms seen in cases of Malaysian schistosomiasis indicate that serological tests will provide a more sensitive and accurate means of diagnosis[2].

The enzyme-linked immunosorbent assay and the circum oval precipitin test are both sensitive and specific test for the diagnosis of schistosomiasis but they do not differentiate between the past and present infections[3].

The Police Field Force may be at a high risk of contracting the disease; especially so when they camp near the Orang Asli groups, using the same source of water supply.

In this survey with an ELISA prevalence of 13.3% and COPT 1.1% it is possible that the Police Field Force personnel are agents for propagating the schistosome life cycle. These COPT positive subjects need to be followed up medically to see if they do develop schistosomiasis later on. Health education and prevention to exposure at the transmission sites should be emphasized at all levels of operation in the jungles.

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