

Clinical and laboratorial evaluation of urinary schistosomiasis in Brazilians after staying in Mozambique

Avaliação clínica e laboratorial de esquistossomose urinária em brasileiros após permanência em Moçambique

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ABSTRACT

We examined 87 Brazilian individuals of a group of 132 that, on July and November 1994, participated in a peace mission in Mozambique. They served in an endemic area for haematobitic schistosomiasis, where they swam in Licungo river during leisure time. Their arithmetic mean age was 31 year and all of them were male. Their urine test showed that 30 (34.5%) eliminated *S. haematobium* eggs and 55 (63.2%) presented positive serology by the enzyme-linked immunoelectrotransfer blot test with purified microsomal antigen of *S. haematobium* adult worms. Eosinophilia was found in 30 (34.5%), haematuria in 26 (29.9%), dysuria in 32 (36.8%) and lombar pain in 36 (41.4%). All of those that eliminated eggs through urine had positive serology. Among the 25 patients with positive serology and without *S. haematobium* eggs in the urine test, 13 were symptomatic and 12 asymptomatic. The treatment with praziquantel for the 30 patients, with urine positive to *S. haematobium* eggs, presented 70% of parasitological cure.

Key-words: Schistosomiasis. Enzyme-linked immunoelectrotransfer blot assay. Brazilians. Mozambique.

RESUMO

Nós examinamos 87 brasileiros de um grupo de 132 que, entre julho e novembro de 1994, participaram de um missão de paz em Moçambique. Eles serviram em uma área endêmica de esquistossomose haematóbica e nadaram no rio Licungo em períodos de lazer. A idade aritmética deles era 31 anos e todos eram do gênero masculino. O exame de urina revelou que 30 (34,5%) eliminavam ovos de *S. haematobium* e 55 (63,2%) tinham sorologia positiva pelo teste *enzyme-linked immunoelectrotransfer blot* com antígeno microsomal purificado de vermes adultos de *S. haematobium*. Eosinofilia foi encontrada em 30 (34,5%), haematuria em 26 (29,9%), disúria em 32 (36,8%) e dor lombar em 36 (41,4%). Todos que eliminavam ovos pela urina tiveram sorologia positiva. Entre os 25 pacientes com sorologia positiva e sem ovos de *S. haematobium* no exame de urina, 13 eram sintomáticos e 12 assintomáticos. O tratamento pelo Praziquantel nos 30 pacientes com urina positiva para ovos de *S. haematobium* apresentou 70% de cura parasitológica.

Palavras-chaves: Esquistossomose. Enzyme-linked immunoelectrotransfer blot assay. Brasileiros. Moçambique.

The habitat of *S. haematobium* is the urinary tract where the host response to the eggs retained in the tissues results in lesions and hematuria.

Urinary schistosomiasis is found in 53 countries on the African continent and in the Middle East^{33,34}; however, no autochthonous case has been reported in Brazil thus far. A

number of the 132 Brazilian military and ex-military servicemen, who served 4 months in Mozambique (Africa) on a United Nations peace mission in 1994 and had swum in the Licungo River, Zambezia province, during their leisure time, were infected with *Schistosoma haematobium*. The enzyme-linked immunoelectrotransfer blot assay (EITB)

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with purified antigens²⁵ has been used for the diagnosis of several infectious diseases. EITB has been important in elucidating epidemiological information in neurocysticercosis and schistosomiasis^{1 4 5 8 15 17 19 22 29}. EITB was used to solve problems with cross reactivity in the serological diagnosis of parasitic infections, aiding in the selection of specific diagnostic antigens^{3 10 18 20 23 25 26 27}; in the evaluation of immunodiagnostic techniques for various infectious diseases^{2 5 8 9 11 13 15 21 24 35} and in acquired immunity studies after the use of specific antigens¹¹. EITB can be highly specific and sensitive in the detection of antibodies for many infectious agents^{7 14 31 33}.

The aim of this study was to evaluate the signs and symptoms, laboratorial exams and clinical usefulness of EITB serology for the identification of *Schistosoma haematobium* infections in Brazilian returnees after exposure in Mozambique.

PATIENTS AND METHODS

The protocol of this study was approved by the Research Ethics Committee of the Army Biology Institute (Instituto de Biologia do Exército), Rio de Janeiro. Informed consent was obtained from all patients and the guidelines for human experimentation of the National Health Council were followed in the conduct of clinical research. Among the 132 Brazilian men who participated in a United Nations Peace Mission in Mozambique, Africa, 87 accepted our offer of clinical and serological evaluation for schistosomiasis. The principal signs and symptoms were evaluated together with laboratory exams. Three 24-hour urine samples were collected at a minimum interval of one week from all patients. Helminth eggs were recovered by sedimentation (24hr) and centrifugation (3,500g/5 min) of the urine sample. One-hundred µL of the centrifuged material was examined with a microscope at 100X and 400X magnifications. EITB assay, with purified adult worm microsomal antigens from *S. haematobium* (HAMA) or *S. mansoni* (MAMA), was performed as previously described^{27 32}.

The patients avoiding *S. haematobium* eggs by urine were treated by praziquantel in a single dose (40mg/kg body weight) by oral route. The parasitological control of cure was done by urine, cystoscopy and histopathology.

RESULTS

The arithmetic mean age of the 87 patients was 31 (median = 32.02) years old.

The clinical and laboratory evaluations are listed in Table 1.

Among them 30 (34.5%) presented *S. haematobium* eggs in their urine and 55 (63.2%) were serologically positive for EITB. Eosinophilia was observed in 30 (34.5%), dysuria in 32 (36.8%), hematuria in 26 (29.9%) and lumbar pain in 36 (41.4%). All individuals with *S. haematobium* eggs in their urine had serum EITB positive for HAMA. Among the 55 EITB positive individuals 30 (54.5%) presented *S. haematobium* eggs in their urine.

Table 1- Clinical and laboratorial evaluation in the 87 individuals after exposure to *Schistosoma haematobium* infection in Licungo River (Mozambique - Africa).

Evaluation	Positive		Negative	
	n°	%	n°	%
Symptomatology	65	74.7	22	25,3
Hematuria	26	29.9	61	70.1
Dysuria	32	36.8	55	63.2
Pollakiuria	13	28.6	42	76.4
Lumbar pain	36	41.4	51	58.6
Eosinophilia	30	34.5	57	65.5
Eggs in urine exam	30	34.5	57	65.5
EITB (HAMA)	55	63.2	32	36.8

EITB: Enzyme linked immunoelectrotransfer blot. HAMA: Antigen from *Schistosoma haematobium*.

Among the 25 individuals who were negative for the urine examination, but positive for serology, 13 (52%) were symptomatic and 12 (48%) asymptomatic. Among these 25 individuals, 6 (24%) reported dysuria, 6 (24%) lumbar pain 5 (20%), hematuria and 2 (8%) pollakiuria.

In the follow up of 30 patients with *S. haematobium* eggs in urine exams, treated by praziquantel, 21 presented parasitological cure by urine exams and cystoscopy, biopsy and histopathological examination. Nine patients continued with viable eggs in the cystoscopy examination, in spite of negative urine examination. After the second treatment, five became negative for cystoscopy, one positive and the last three without information.

DISCUSSION

According our findings, signs and symptoms, *S. haematobium* eggs in the urine and eosinophilia, each one of them were frequent in about a third of the patients and the EITB assay positive in two third of them; the serology was twice most sensitive than urine examination. Other authors reported to be three times more sensitive in detecting *S. haematobium* infection⁷. The presence of eggs in urina confirm the infection. It is considered the golden standard of the diagnosis and indicate the specific treatment.

The EITB positive in all our cases with *S. haematobium* eggs in urine enhances the intrinsic value of this serological method. Otherwise 25 individuals who were negative for the urine examination had positive serology, and among them 12 without symptomatology. That 12 positive patients would not have been identified without EITB. Considering the frequent lacks of symptoms, we deem the EITB an important adjunct to patient identification for schistosomiasis, when its realization is possible.

Hematuria, dysuria, lumbar pain, eosinophilia are good indicators of infection, when the individuals come from endemic areas, as happened with some of our patients.

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