Schistosomiasis Mansoni in the Region of the Triângulo Mineiro, State of Minas Gerais, Brazil

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In order to reevaluate the possible presence of schistosomiasis mansoni in the Triângulo Mineiro, one of the areas of the State of Minas Gerais where this parasite is not commonly found, malacological survey and fecal examinations were undertaken in the region between October 1990 and June 1992. A sample of 7,032 1st grade school children from 29 counties had their feces examined using the Kato-Katz method. Amongst the children examined, two from Planura and one from each county of Capinópolis, Conceição das Alegoas, Uberaba, Uberlândia, Prata and Gurinhutã were positive for Schistosoma mansoni. None of the children were identified as being autochtonous cases. In the malacological survey, 5,406 planorbid snails were examined. The specimens were identified morphologically and examined for S. mansoni by squashing between glass plates. The species were identified as Biomphalaria tenagophila in three counties, as B. straminea in ten and B. intermediæ in 16. No snails were found in eight other counties studies. The snails were found to be negative for S. mansoni. The presence of intermediate hosts for S. mansoni, associated with paratizzato individuals emphasizes the necessity of epidemiological surveillance for schistosomiasis in the region of Triângulo in the State of Minas Gerais.

Key words: Schistosoma mansoni - Biomphalaria tenagophila - Biomphalaria straminea - Biomphalaria intermediæ - Triângulo Mineiro - Brazil

Schistosomiasis mansoni is an endemic disease in the State of Minas Gerais in the regions of Médio São Francisco, Itacambira, Alto Jequitinhonha, Metlurgica, Oeste and Alto São Francisco. The highest prevalence levels are found in Zona da Mata, Mucuri and the Rio Doce (Pellon & Teixeira 1950, Katz et al. 1978, Lambertiucci et al. 1987, Carvalho et al. 1987). In the areas of Uruacu, Alto Paraíba (except for Araxá where some foci of the disease are found), Triângulo, and Sul an insignificant prevalence exists. Nevertheless, as in other regions of Brazil, schistosomiasis is spreading in the State of Minas Gerais to areas that were until recently considered to be free of the disease (Katz & Carvalho 1983, Carvalho et al. 1985, 1987, 1988, 1989).

These observations led us to reevaluate the current status of schistosomiasis mansoni in the region of the Triângulo Mineiro, one of the areas free of schistosomiasis mansoni, by means of a malacological survey in the water sources and parasitological examinations of the feces of school children.

MATERIALS AND METHODS

The region of the Triângulo Mineiro is situated in the west of the State of Minas Gerais and borders the states of Goiás, Mato Grosso do Sul and São Paulo. These studies were undertaken in the period between October 1990 and June 1992 in 29 of the 30 counties of the region.

Snail survey - The survey was undertaken in water sources neighboring the schools and other areas identified as being frequently used by the children. The snails collected were transported to the laboratory where they were measured, classified and examined microscopically, following squashing between two glass plates, for the presence of cercariae or sporocysts of Schistosoma mansoni.

Parasitological diagnosis - diagnosis was undertaken using the Kato-Katz method (Katz et al. 1972). Two slides were examined from each fecal sample taken from 1st grade school children (7 to 14 years old), within the county school network, a total of 29 counties were included in these studies. The sample size required to estimate the
prevalence in the area was based on estimated parameters of 2% prevalence, precision of 0.5 and a confidence limit of 95%.

RESULTS

Snail survey - A total of 5,406 planorbid snails were collected from 21 counties and they were all found to be negative for S. mansoni cercariae and/or sporocysts. The snails were identified as B. tenagophila (3 counties), B. straminea (10 counties) and B. intermedia (16 counties) (Fig). No snails were found in eight counties.

Parasitological diagnosis - Of the 7,032 school children examined, eight (0.1%) were positive for S. mansoni, one child from each of the following counties: Uberaba, Capinópolis, Concepção das Alagoas, Gurinhã, Prata, Uberlândia and two from Planurá. Following epidemiological investigation, none of the children were identified as being autochtonous cases, all of them had been in areas when schistosomiasis transmission is occurring. All the children with schistosomiasis were treated.

DISCUSSION

The region of the Triângulo Mineiro is one of the areas of the State of Minas Gerais in which there is intense and continuous economic development with a significant migration of labor originating from various regions of the country. Such migration has been an important factor in introducing schistosomiasis mansoni into three counties in the state (Itajubá, Paracatu and Passos) which are situated in areas until recently considered to be free of the disease (Katz & Carvalho 1983, Carvalho et al. 1987, 1988, 1989).

The data obtained in the present study indicate that the region of Triângulo continues to be free from schistosomiasis mansoni and that the prevalence of 0.1% found results from infections acquired in other regions. It is important to note that the prevalence of schistosomiasis has not altered in the region in the last 43 years since Pellon and Teixeira (1950) and Katz et al. (1978) observed a prevalence of 0.07%.

Of the three species of snail captured, B. straminea and B. tenagophila have an epidemiological importance in the transmission of schistosomiasis in a number of regions of Brazil. In this context, B. straminea has an important role in the transmission of the disease almost exclusively in the Northeast of the country where it is considered to be more important than B. glabrata.
In the ten counties of the Triângulo, the distribution of B. straminea has increased its known distribution to areas on the border of the state of Minas Gerais and Goiás. Machado et al. (1992) described, for the first time, this species in the county of Uberlândia in Minas Gerais. It has been found only once on the border of the counties of Lagoa Santa and Pedro Leopoldo (Dias Pinto et al. 1984). In a different region of the state, it was also found to be responsible for the schistosomiasis in the county of Paracatu (Carvalho et al., 1988). The species B. tenagophila is responsible for a number of cases of schistosomiasis in the states of Espírito Santo, Minas Gerais, Rio de Janeiro, and Santa Catarina, and has an important role in the transmission of schistosomiasis mansoni in Vídeo do Paraíba (SP). This species was probably introduced into three counties of the studied region: Uberlândia, Água Comprida and Uberaba. B. tenagophila was found for the first time in the other county in 1990 by SUCAM (Superintendência Nacional de Saúde Pública, now Fundação Nacional de Saúde). The same may have occurred with B. straminea in the counties of Conceição das Alagoas and Uberaba.

B. intermedia was described by Paraense and Deslandes (1962) in 11 counties in the State of São Paulo. In addition to the state, where it has a wide distribution (Teles 1988, Vaz et al. 1983, 1985, 1986, 1987, 1992), this species is also found in two counties in the State of Mato Grosso do Sul (Paraense 1985). There still are, however, reports of this species being naturally or experimentally infected with S. mansoni. The finding of this snail in 16 localities within the Triângulo Mineiro extends the North limit of its distribution to Centralina (18° 36' S, 49° 11' W). State of Minas Gerais.

The Triângulo region is considered, at present, an area free of schistosomiasis transmission. Nevertheless, the occurrence of two species of planorbid snails that are intermediate hosts for S. mansoni (B. tenagophila and B. straminea), together with the presence of individuals eliminating eggs and constant migration to this area emphasizes the importance of maintaining an epidemiological surveillance for schistosomiasis in this region of the State of Minas Gerais.

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