Natural infection of Bulinus senegalensis by Schistosoma haematobium in a temporary pool focus in Niger: characterization by cercarial emergence patterns

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The transmission in West Africa of Schistosoma haematobium by Bulinus truncatus and B. globosus is well known (Brown, 1980). On the contrary, B. senegalensis, widely distributed in the sub-desert and sahelian zone and associated principally with a temporary environment (Bettern et al., 1985), has been found naturally infected in Senegal and The Gambia only (VerCruysse et al., 1985). In Niger, snail–schistosome infection experiments have proved that B. senegalensis is an excellent potential vector of S. haematobium originating from the sahelian zone (Vera et al., 1990).

The purpose of this study was to establish and determine the natural role of B. senegalensis in the transmission of urinary schistosomiasis. The survey was carried out in 1988 in temporary rain-fed pools near the village of Bomberi, in the western part of Niger, 120 km north-east of Niamey in the south sahelian zone. A parasitological survey of schoolchildren in that village showed a prevalence of urinary schistosomiasis of 83% (77/92).

A fortnightly hand collection of snails (lasting 20 min) was conducted from the time when the ponds filled until their drying up. The schistosomes were characterized by an MST between 0800 h and 1000 h under similar experimental conditions (Moahid et al., 1987; Pages & Théron, 1990).

The results indicate that the chronobiology of cercarial emergence can be used as a reliable character for distinguishing between S. haematobium on one hand and S. bovis and S. curassoni on the other hand. Furthermore, in Niger, S. curassoni is present only in the eastern part of the country (Mouchet et al., 1989). These results consequently allow us to affirm that natural infection by B. senegalensis by S. haematobium in the focus of Bomberi.

The importance of this temporary rain-fed pool focus, which represents the predominant focus within the sahelian zone and harbours principally B. senegalensis, cannot be underestimated in a schistosomiasis control programme because the pools are numerous and can result in a high level of endemicity, as shown in our study. Complementary studies are under way in Niger in order to determine the effective importance of B. senegalensis in the transmission of S. haematobium within the sahelian region.

References

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