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TITLE

PARASITOLOGICAL PROFILE OF SCHISTOSOMA MANSONI FROM THE WILD RODENT NECTOMYS SQUAMIPES IN SWISS WEBSTER MICE AFTER INFECTION AND TREATMENT WITH PRAZIQUANTEL

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ABSTRACT

Introduction: The mass administration of a single dose of Praziquantel (PZQ) has been recommended by the World Health Organization for reducing or eliminating schistosomiasis transmission. The Fio-Schisto program of Fundação Oswaldo Cruz, in Brazil, recommends that the local conditions of each focus, such as socioeconomicand epidemiological characteristics, the role of wild reservoirs, public health policies and the history of chemotherapy intervention, must be considered. Therefore, studying experimentally the parasitological parameters after the use of PZQ is essential as an indicator of PZQ resistance or elimination of parasite infection. Objective: To investigate the effects of PZQ treatment on the parasitological parameters of S. mansoni, such as the number of worms recovered, the number of eggs eliminated in feces and the viability of eggs in intestinal tissue. Methods: Experimental infections were conducted in 18 outbred mice individually infected with 120 cercariae via transcutaneous route through the tail. The mice were divided into three groups of six animals each: 1) the infected control group (IC); 2) the infected group and treated with 3× 150 mg/kg PZQ (IT150) (50% LD); and 3) the infected group and treated with 3× 300 mg/kg PZQ (IT300) (90% LD). The treatment occurred at 50, 51, and 52 days post-exposure, and the mice were necropsied 15 days later. The elimination of parasite eggs in feces was determined by the number of eggs per gram of feces (EPG) using the Kato-Katz and the Hoffman methods at 42, 45 and 48 days before treatment and at 60 and 63 days after treatment. The oogram method was used to quantify the number of S. mansoni eggs retained in the intestinal wall tissue. The worms were washed in saline solution (0.85% NaCl), counted to determine the parasite load after treatment and stored individually in 70% ethanol at -20°C. Results: The pre-patent period varied from 45 to 48 days after infection, depending on the diagnostic technique used. Both the Kato-Katz and the Hoffman methods resulted in a progressive increase in the number of eggs released in the IC group until 60 days post-infection. In the treated groups, there was a decrease in the number of eggs after treatment with both doses until no eggs were observed at the end of the experiment. A significant increase in eggs without miracidia was observed in the second through fourth intestinal segments trapped in the intestinal wall. An 85.5% reduction in parasite load ($p = 0.04$) was observed after 300 mg/kg PZQ treatment, with greater efficacy in male worms. Conclusion: This study demonstrated that in experimental infection of mice with a wild-type strain of S. mansoni, the treatment with PZQ led to a reduction in the parasite burden and number of eggs in feces and an increase in the number of eggs without miracidia trapped in the intestinal wall, contributing to the approach proposed by the Fio-Schisto program regarding the role of wild rodents as reservoirs.

KEYWORDS

Schistosomiasis; Wild Reservoir; Rodent; Transmission

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