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TITLE

TEMPORAL ANALYSIS OF SCHISTOSOMIASIS POSITIVITY IN A RURAL BRAZILIAN COMMUNITY UNDERGOING REPEATED PRAZIQUANTEL INTERVENTIONS

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ABSTRACT

Introduction: Northeastern of Brazil is one of the most affected areas by schistosomiasis, even with interventions promoted by the Ministry of Health. Numerous treatments have been carried out since the creation of the Schistosomiasis Control Program, however, we have observed that the prevalence of the disease in some areas remains high, despite the reduction in the parasite load. Methodology: The positivity rate and parasite load of Schistosoma mansoni were evaluated using the Kato-Katz test in individuals from the rural area of Conde, Brazil, from independent cross-sectional studies (CS) carried out between 2001 and 2018, as well as the response of these individuals to treatment with praziquantel. Results: Data on the positivity rate and parasite load of 2,628 individuals included in six CS carried out in 2001, 2004, 2008, 2010, 2014 and 2018 were evaluated. Regarding the parasite load, most individuals remained below 99 epg. In this regard, the lowest parasite load observed among the CS was in 2010 (36– IQR 12–90) epg and the highest was in 2014, (108– IQR 24–516) epg. In 2010, significant differences in parasite load were observed between all age groups when compared to the group ⩾ 60 years ($p < 0.0001$). The parasite load was higher in the ⩾ 60 years groups (96 – IQR 72-219 epg) compared to the 0 to 9 years (30 – IQR 12-99 epg), 10 to 19 years (36 – IQR 16-78 epg), and 20 to 59 years groups (36 – IQR 24-48 epg). In 2001, differences were observed between the groups 0 to 9 years (48 – IQR 24 – 156, p= 0,0071) and 10 to 19 years groups (120 – IQR 48-264, p = 0,0080), compared to the ⩾ 60 years group (24 – IQR 24-60). In 2010 and 2018, the median parasite load was consistently higher in the elderly group (60–90 years), reaching 96 (IQR 72–219) epg in 2010, and 96 (IQR 48–804) epg in 2018, despite a general decreasing trend over time. Evaluating these independent studies, with their respective treatments, we can observe a reduction in positivity rate of 70,0% in 2021 to 55,6% in 2018 and in parasite load $p < 0.0001$ (42.9%) for S. mansoni, indicating that praziquantel can temporarily reduce the prevalence of Schistosoma mansoni, as observed in 2018, where we saw a 96.9% reduction in prevalence 30 days after treatment, and an increase of 13.4% 1 year after treatment. Between 2010 and 2014 there was only one treatment (2010), which resulted in a 66.1% increase in prevalence and 300% in parasite load ($p = 0.0002$) in 2018. Conclusion: It is concluded that, although treatment with praziquantel has high cure rates, and subsequent reduction in parasite load, it is not sufficient to eliminate transmission in the medium-long term, due to the characteristics and habits of the affected populations.

KEYWORDS

Schistosomiasis; Preventive Chemoterapy; Temporal Analysis.

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