Study of the small intestine of Swiss Webster mice with diabetes mellitus and schistosomiasis

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Schistosomiasis mansoni and diabetes mellitus are considered public health problems, due to the morbidity determined by these diseases. The association of these diseases can lead to changes in host metabolism generating physiological complications and compromising both oviposition and worm development. We studied possible changes in the small intestinal morphology of schistosomiasis and diabetic mice. Diabetes mellitus was induced by streptozotocin (100 mg / kg body weight). We used 40 males with 60 days of life, of which 20 received a single dose of streptozotocin and those with glycemia greater than 150 mg / dl were infected subcutaneously with 80 cercariae of Schistosoma mansoni (strain BH). The mice were separated into four groups: control group (A); Infected group (B); Diabetic group (C) and diabetic and infected (D). All animals were sacrificed at the 9th week after schistosomiasis. The small intestine was removed and the jejunum was separated, fixed and subjected to routine histological processing. The histological sections were stained by H & E and subjected to stereological analysis. The test system used was that of cycloid arches and the partial volumes of the mucosa, the muscular mucosa, the submucosa, and the volume density of the goblet cells were determined. The results showed that group B had a 179% increase in the partial volume of muscle layer when compared to group A (32.68% ± 3.08 vs. 11.68% ± 0.85); however, the group C presented a reduction of 54.4% when compared to group B (15.87% ± 1.12 vs. 32.68% ± 3.08). Regarding the partial volume of the submucosal layer, group B showed a reduction of 34.6% when compared to group A (4.21% ± 0.18 vs. 6.75 ± 0.53). The partial volume of the mucosal layer of group B presented a reduction of 25.5% when compared to group A (62.00% ± 2.37 vs. 82.12% ± 1.55). Group D showed a reduction of 14.6% in relation to group C (65.60% ± 1.63 vs. 76.87% ± 1.21) and 20.1% in relation to group A (65.60% ± 1.63 vs. 82.12% ± 1.55). In group B, a 192% increase in the partial volume of goblet cells was observed in relation to the control group (A) (16.60% ± 0.71 vs. 5.68% ± 0.21). Group D presented an increase of 160% in relation to group A (14.81% ± 0.87 vs. 5.68% ± 0.21). The increase of the muscular layer is related to the structural alterations resulting from the passage of the schistosomotic eggs by the place. Eggs deposited in the submucosal and mucosa layers, possibly because the connective tissue is loose (not limited by firmer tissue), these changes may be related to the decrease of these layers observed in the infected groups (diabetic or not). The increase of the goblet cells may indicate a greater secretion of intestinal mucus, since the increase of these cells exerts this function. It is concluded that Type I Diabetes Mellitus, when associated with schistosomiasis infection, interferes in some morphostructural parameters of the jejunum.