BEHAVIORAL ALTERATIONS ARE PRESENT IN CHRONIC EXPERIMENTAL TRYPANOSOMA CRUZI INFECTION: BENEFICIAL EFFECT OF BENZNIDAZOLE AND FLUOXETINE IN DEPRESSIVE-LIKE

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Introduction: The existence of the nervous form of Chagas disease (CD) is a matter of discussion since the description of neurological disorders, learning and behavioral by Carlos Chagas. However, chronic CD patients have behavioral changes such as psychomotor, attention and memory disturbs and depression. These alterations may be consequences of parasite presence in the central nervous system. Firstly, we questioned whether or not chronically Trypanosoma cruzi-infected mice present behavioral abnormalities akin CD patients. Mice chronically (150 days post-infection, dpi) infected with the Colombian strain of T. cruzi exhibit behavioral changes as (i) anxiety (elevated plus maze test), (ii) motor coordination (rotarod test) and (iii) depressive-like behavior (tail suspension test; TS). Interestingly, these alterations are not associated with neuromuscular disorders (grip strength test) and sickness behavior (analyzed by temperature and weight loss). Aiming to understand the pathophysiology of chronic behavioral changes in CD, we initially approached the process of reuptake of serotonin, using fluoxetine (Fx), and the participation of the parasite, using the trypanocidal drug benznidazole (Bz), chronically infected mice (at 120 dpi) were treated for 30 consecutive days. Fx therapy improved depressive-like behavior as reduced the time of immobility in the TS, supporting that serotonin reuptake pathway is involved in this process. Bz therapy in the chronic phase (120 to 150 dpi) reduced the immobility time in TS. More than hampering progression, Bz therapy reversed depressive-like behavior in the chronic infection. These results indicate that, in addition to the neurochemical component serotonin, the parasite takes part in the pathogenesis of behavioral changes in experimental chronic DC. Thus, we support that behavioral changes in DC are not restricted to psychological factors, but can reside in a complex network of interactions triggered by the parasite T. cruzi.

Keywords: Depression, Trypanosoma cruzi, Chagas disease