NEUROINFLAMMATION AND BEHAVIORAL ALTERATIONS INDUCED BY VISCERAL LEISHMANIASIS IN A MURINE MODEL

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Visceral leishmaniasis (VL) is a severe zoonosis that, if untreated, can be fatal. While its general aspects are well-studied, its effects on the central nervous system (CNS) remain unclear. This study investigated neuroinflammation and behavioral changes in a murine model of *Leishmania* infantum infection. Female BALB/c mice (5–7 weeks old) were divided into two groups: non-infected (NI) and infected (LI-35). The LI-35 group received 5×10^7 *L. infantum* ITMAP-263 promastigotes and remained infected for 35 days. From days 27 to 35, all animals underwent behavioral tests (open field, elevated plus maze, Y-maze, and splash test) to assess anxiety, depression, and memory. After euthanasia, brain and serum samples were analyzed for parasite load, cytokine expression, enzymatic activity (NAG, MPO, EPO), histopathology, and fractalkine quantification by ELISA. Behavioral tests revealed significant differences between groups. The LI-35 group showed reduced distance traveled in the open field and elevated plus maze tests, indicating decreased exploratory behavior. In the Y-maze test, infected mice exhibited lower distance traveled and arm alternations, suggesting memory impairment. The splash test revealed reduced grooming behavior, consistent with depressive-like behavior. CNS analyses confirmed *L. infantum* presence in the brain and increased expression of pro-inflammatory cytokines, notably IL-33, a damage-associated alarmin, and TNF-α, a key pro-inflammatory cytokine. These findings suggest that *L. infantum* infection induces CNS inflammation, contributing to behavioral and cognitive alterations in infected individuals.

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