Infectivity and pathogenicity of 14-month-cultured embryonated eggs of Toxocara canis in mice

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摘要

Abstract

Infectivity and pathogenicity to mice of embryonated eggs of Toxocara canis, that had been maintained in 2% formalin for 14 months at 4 degrees C, were evaluated by immunological and pathological assessment at 1, 4, 8, 12, 16, 20, 24, 28, 42 and 67 weeks post-infection (WPI). On each date, three infected mice and two age-matched uninfected mice were sacrificed for serum collection and histological processing of the liver, lungs, musculature, and brain. Infectivity assessment by enzyme-linked immunosorbent assay (ELISA) revealed that the overall immunological pattern of infected mice tended to be towards the Th2 type response. Serum IgG1 antibody titers in infected mice were significantly higher than that of the uninfected control mice throughout the trial ($P<0.05$). On the other hand, no significant difference in titers of IgG3 antibody, an indicator for the Th1 type response, was observed between the infected and control mice , except at eight WPI ($P<0.05$). Pathogenicity was assessed semiquantitatively by comparing the mean number or diameter of inflammatory foci as well as histopathological changes in the liver, musculature, brain, or lungs of the infected mice and the control mice. Each hematoxylin and eosin (H&E) stained tissue section slide was examined under 100x magnification and 15 random fields were counted. Degree of inflammatory injury among the four organs was scored and categorized into four levels: normal (0), mild (1+), moderate (2+), and severe (3+). An index of inflammatory injury (mean score of experimental group/mean score of 10 control groups of 20 uninfected mice) of 2-3 is considered as moderate to severe, 1-2 as mild to moderate, and 0-1 as normal to mild. Histopathological changes were moderate to severe in the liver and lungs, mild to moderate in the musculature, and only normal to mild in the brain throughout the trial. It is noteworthy that apocrine-like change in epithelial cells of the bile duct was observed in most of the infected mice from eight WPI onward. Furthermore, larvae trapped by organized granulomas were found in soft tissue near the musculature at 12, 20, and 28 WPI. Altogether, not only were the infectivity and pathogenicity of the 14-month- cultured T. canis embryonated eggs retained, the hatched

larvae were also capable of eliciting some special pathological changes in the murine host.