

Poster presentation

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Localized recrudescence of *Toxoplasma gondii* infections in the central nervous system of immunocompromised mice assessed by in vivo bioluminescence imaging

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Reactivation of *Toxoplasma* infection in the central nervous system (CNS) is a major concern in chronically infected immunocompromised individuals. Yet, the pathophysiology associated with recrudescence of infection remains to be further characterized.

The onset of acute recrudescence *Toxoplasma* encephalitis in the murine model was assessed using bioluminescence imaging (BLI) as a spatio-temporal indicator. An uneven distribution of recrudescence of infection in the CNS was found. Foci of recrudescence after immunosuppression were most commonly located in frontal and parietal cortex, whereas little infection was found in the cerebellum. Recrudescence was also more common in gray matter than in white matter. Pathology was exacerbated in mice deficient in interferon gamma receptors (IFN γ R^{-/-}) corroborating the importance of interferon gamma (IFN γ) for control of CNS infection. Analysis of parasitic foci identified abundant leukocyte infiltration (CD45⁺, CD4⁺, CD8⁺, F4/80⁺ cells) in the vicinity of replicating parasites. Also, activation of astrocytes and abundance of microglia was observed. Further, replicating parasites were localized in the vicinity of microvasculature.

Collectively, the findings suggest that the localization of reactivation foci in the CNS, in conjunction with immune responses, influences the outcome of acute reactivated *Toxoplasma* encephalitis.