Early expression of local cytokines during systemic Candida albicans infection in a murine intravenous challenge model

ABSTRACT

Local cytokine production is a significant indicator for disease pathogenesis or progression. Previous studies on cytokine production during systemic Candida albicans (C. albicans) infection were solely on kidney or single cell type interaction with C. albicans. Therefore, the present study aimed to assess the early cytokine expression of various target organs (kidney, spleen and brain) over a 72-h time course during systemic C. albicans infection. The local cytokine profiles of the target organs during systemic C. albicans infection were measured by cytometric bead array and ELISA analysis. The results demonstrated that interleukin-6 (IL-6) and IL-2 were statistically significant (P<0.05) in the spleen at 24 and 72 h post-infection, whereas in the kidney, IL-6 and tumor necrosis factor-α (TNF-α) were statistically significant (P<0.05) at 24 and 72 h post-infection and CXCL-1 and transforming growth factor-β (TGF-β) were statistically significant (P<0.05) at 72 h post-infection. In the brain, IL-6 and TNF-α were statistically significant (P<0.05) at 24 and 72 h post-infection, whereas TGF-β was statistically significant (P<0.05) at 72 h post-infection. These findings demonstrate that host immune responses were varied among target organs during systemic C. albicans infection. This could be important for designing targeted immunotherapy against this pathogen through immunomodulatory approaches in future exploratory research.

Keyword: Candida albicans; Cytometric bead array analysis; ELISA; Cytokines