Changes of Th1/Th2 cytokines in immunocompetent patients with pulmonary cryptococcosis

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ABSTRACT. The aim of this study was to investigate the changes of Th1/Th2 cytokines in immunocompetent patients with pulmonary cryptococcosis (PC). Twenty immunocompetent patients with PC were identified by histopathological examination and were enrolled in the study along with the age- and gender-matched healthy controls. The serum concentrations of interferon-γ (IFN-γ), interleukin-4 (IL-4), and interleukin-12 (IL-12) were measured by enzyme-linked immunosorbent assay (ELISA). Peripheral blood mononuclear cells (PBMCs) in both groups were isolated and incubated with or without recombinant human IL-12 (rhIL-12) for 48 h, and the concentrations of IFN-γ and IL-4 in the supernatant were measured by ELISA. Serum IFN-γ levels were greatly decreased in the patients compared with control groups (P < 0.01), whereas no significant difference was observed in serum IL-4 and IL-12 levels. The concentrations of IFN-γ and IL-4 in the supernatant of PBMCs without the stimulation of rhIL-
12 showed no differences between the two groups. Treatment with rhIL-12 stimulated the release of IFN-γ, but not IL-4, into the supernatant of PBMCs in both groups, with a lower increase observed in the patients (4.3-fold) compared to that of controls (7.9-fold) (P < 0.01). Serum IFN-γ levels may be dampened in immunocompetent patients with PC with no significant changes in serum IL-4 and IL-12 levels. The deficiency in the response to IL-12 stimulation of Th1 cells may be one of the underlying mechanisms for the decline in serum IFN-γ levels.

**Key words:** Pulmonary cryptococcosis; Interleukin-4; Interferon-γ; Interleukin-12; Peripheral blood mononuclear cells