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LUNG ALERT

Potential role of *Cryptococcus neoformans* in the pathogenesis of asthma

▲ Goldman DL, Davis J, Bommarito F, *et al*. Enhanced allergic inflammation and airway responsiveness in rats with chronic *Cryptococcus neoformans* infection: potential role for fungal pulmonary infection in the pathogenesis of asthma. *J Infect Dis* 2006;**193**:1178–86

The potential of pulmonary *Cryptococcus neoformans* infection in immunocompetent subjects to modify allergic inflammation and airway responsiveness was investigated using a rat model.

Rats were inoculated with *C neoformans* either endotracheally or intravenously. Four modes of infection were studied: short term and persistent localised pulmonary infection, resolved pulmonary infection, and disseminated systemic infection. All were subsequently sensitised and challenged with ovalbumin.

Compared with controls and experimental subjects before sensitisation, only the disseminated infection mode had a higher IgE titre. All active infections had higher bronchoalveolar lavage (BAL) eosinophil counts. After sensitisation and challenge, IgE titre and BAL cell count generally increased. However, when compared with controls, only active localised pulmonary infections showed higher serum titres of total and ovalbumin specific IgE, as well as higher BAL eosinophil counts. Baseline airway resistance did not differ between infected and uninfected rats. However, regardless of sensitisation status, short term pulmonary infected rats had higher airway responsiveness. All forms of active infection expressed increased interleukin (IL)-13, IL-10, and tumour necrosis factor α without any detectable IL-4 or IL-12. Localised infection was associated with higher IL-13 expression than disseminated infection. Furthermore, disseminated (but not localised) infection was associated with an increased level of interferon-γ.

The authors concluded that active pulmonary cryptococcal infection may enhance allergic response with Th2 polarisation and increased airway responsiveness in rats. They suggested that epidemiological studies are warranted to explore the potential contribution of subclinical cryptococcal infection to the high prevalence of urban asthma.

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