

## THE CHEMOKINE AND PROINFLAMMATORY CYTOKINE RESPONSE IN HUMAN NEUROCYSTICERCOSIS.

Evans CAW<sup>1</sup>, Garcia HH<sup>3</sup>, Hartnell A<sup>2</sup>, Gilman RH<sup>3</sup>, Jose PJ<sup>2</sup>, Martinez M<sup>3</sup>, Remick DG<sup>4</sup>, Williams TJ<sup>2</sup> and Friedland JS<sup>1</sup>

(<sup>1</sup>Departments of Infectious Diseases and <sup>2</sup>Applied Pharmacology, Imperial College School of Medicine, London, UK; <sup>3</sup>Universidad Cayetano Heredia, Peru; and <sup>4</sup>University of Michigan Medical School, USA)

Neurocysticercosis is a major cause of epilepsy in developing nations. For example, this infection causes approximately 20% of adult-onset epilepsy in Peru. Morbidity and mortality result from inflammation around degenerating *T. solium* larvae and are associated with immune cell, particularly eosinophil, influx to the brain during anti-parasitic therapy. Little is known about the immunopathology of infection and current anti-inflammatory therapy has limited efficacy.

We analysed serum from 9 patients and 20 controls as well as cerebrospinal fluid (CSF) from 14 patients and 9 controls. ELISAs were used to measure concentrations of the eosinophil-selective cytokines eotaxin and Interleukin (IL)-5 and of IL-8, a neutrophil attractant. In addition, bioassays were used to measure concentrations of the proinflammatory cytokine TNF- $\alpha$  and the acute phase cytokine IL-6.

Eotaxin was detected in the serum of all patients compared with 23.5% of controls and the serum eotaxin concentration was significantly higher in patients (geometric mean 69.9pg/ml,  $p=0.01$ ). Eotaxin was not detected in CSF. Serum IL-5 concentrations were elevated in 78% of patients compared to 29% of controls and mean concentrations were higher in patients ( $p=0.05$ ). CSF IL-5 was detected in 43% of patients (geometric mean 35pg/ml) but not in controls ( $p=0.03$ ). Serum IL-6 concentrations were similar in patients and controls but CSF IL-6 was elevated in all patients compared with 44% of controls and mean levels were significantly higher in patients (geometric means 81.3pg/ml and 9.5pg/ml respectively,  $p=0.02$ ). In contrast, TNF- $\alpha$  and IL-8 were rarely detectable and there were no differences between patients and controls.

This is the first report of elevated eotaxin concentrations in a human infectious disease. These findings suggest that the eosinophil-selective mediators eotaxin and IL-5 may have a role in either host defense or inflammatory injury in cysticercosis. In addition, patients with neurocysticercosis mount an acute phase response to the pathogen.

300 words

i) ORAL presentation preferred.

ii) Preferred symposium: CYTOKINES IN INFECTION AND DISEASE  
(alternative possibilities are ZOONOSIS or EMERGING PARASITIC INFECTIONS)