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Biomarkers Could Predict Death in AIDS Patients With Severe Inflammation

A study in this week's PLoS Medicine suggests that AIDS patients with cryptococcal meningitis who start HIV therapy are predisposed to Immune Reconstitution Inflammatory Syndrome (IRIS) -- an exaggerated inflammatory immune response that kills up to one-third of affected people -- if they have biomarkers (biochemicals) in their blood showing evidence of a damaged immune system that is not capable of clearing the fungal infection.

David Boulware and Paul Bohjanen from the University of Minnesota, Minneapolis, USA, and their colleagues, David Meya and Andrew Kambugu, at Makerere University in Kampala, Uganda enrolled 101 Ugandans with AIDS and recent cryptococcal meningitis who had not previously received HIV therapy and compared biomarker patterns in individuals who did and did not subsequently develop IRIS after starting HIV therapy. 45% of patients developed IRIS of whom 36% died, while only 21% of patients who did not develop IRIS died.

Furthermore, the authors found that patients, who later developed IRIS associated with cryptococcal meningitis after starting HIV therapy had 4-fold higher baseline concentrations of cryptococcal antigen and lower levels of several inflammatory cytokines in their blood compared to patients who did not develop CM-IRIS.

The authors say: "This study suggests that prediction of IRIS or death may be possible with measurement of pre-antiretroviral therapy serum biomarkers." They add, "Although requiring validation, these biomarkers might be an objective tool to stratify the risk of CM-IRIS and death, and could be used clinically to guide when to start antiretroviral therapy or use prophylactic interventions."

David R. Boulware, David B. Meya, Tracy L. Bergemann, Darin L. Wiesner, Joshua Rhein, Abdu Musubire, Sarah J. Lee, Andrew Kambugu, Edward N. Janoff, Paul R. Bohjanen. Clinical Features and Serum Biomarkers in HIV Immune Reconstitution Inflammatory Syndrome after Cryptococcal Meningitis: A Prospective Cohort Study. PLoS Medicine, 2010; 7 (12): e1000384 DOI: 10.1371/journal.pmed.1000384