Under the Radar: Balamuthia Amebic Encephalitis.

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BACKGROUND: We present data from 9 years (1999-2008) of tests for Balamuthia mandrillaris, an agent of amebic encephalitis that were conducted as part of the California Encephalitis Project.

METHODS: Specimens obtained from patients with encephalitis were sent to the California Encephalitis Project for diagnostic testing; a subset of these specimens were tested for Balamuthia species. Tests included indirect immunofluorescent staining of sections for amebae, fluorescent antibody staining and enzyme-linked immunosorbent assay for serum titers, and polymerase chain reaction for Balamuthia 16S mitochondrial DNA. Cerebrospinal fluid (CSF) samples obtained from patients with diverse types of encephalitis were also tested for a broad range of cytokines.

RESULTS: Of >3500 cases referred to the California Encephalitis Project, 10 were found to be amebic encephalitis on the basis of serologic and CSF tests and examination of stained tissue sections. Most of these cases would have been described as "encephalitis of unknown origin" if it were not for the California Encephalitis Project. Nine of the 10 patients were male; ages ranged from 1.5 to 72 years. All patients had abnormal neuroimaging findings and abnormal CSF composition. The more common symptoms at presentation included headache, seizures, cranial nerve palsies, and lethargy. CSF specimens from patients with Balamuthia infection had significant elevations in the levels of cytokines IL-6 and IL-8, compared with specimens obtained from persons with viral or noninfectious encephalitides.

CONCLUSIONS: Balamuthiasis is difficult to diagnose, and it is likely that cases go unrecognized because clinicians and laboratorians are unfamiliar with the disease. Alerting the medical community to this disease may lead to earlier diagnosis and improve the chances of survival.