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Evaluation of autoantibodies to common and neuronal cell antigens in Chronic Fatigue Syndrome

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Abstract

People with chronic fatigue syndrome (CFS) suffer from multiple symptoms including fatigue, impaired memory and concentration, unrefreshing sleep and musculoskeletal pain. The exact causes of CFS are not known, but the symptom complex resembles that of several diseases that affect the immune system and autoantibodies may provide clues to the various etiologies of CFS. We used ELISA, immunoblot and commercially available assays to test serum from subjects enrolled in a physician-based surveillance study conducted in Atlanta, Georgia and a population-based study in Wichita, Kansas for a number of common autoantibodies and antibodies to neuron specific antigens. Subsets of those with CFS had higher rates of antibodies to microtubule-associated protein 2 (MAP2) ($p = 0.03$) and ssDNA ($p = 0.04$). There was no evidence of higher rates for several common nuclear and cellular antigens in people with CFS. Autoantibodies to specific host cell antigens may be a useful approach for identifying subsets of people with CFS, identify biomarkers, and provide clues to CFS etiologies.

Background

Chronic fatigue syndrome (CFS) is defined as persistent or relapsing fatigue that has occurred for at least 6 months, is not alleviated by rest, and causes substantial reduction in activities. The fatigue cannot be explained by medical or psychiatric conditions and must be accompanied by at least 4 of 8 specified symptoms (unusual post exertional fatigue, impaired memory or concentration, unrefreshing sleep, headaches, muscle pain, joint pain, sore throat, and tender cervical nodes) [1]. There is considerable discrepancy in results between studies from different institutions; so as yet, there are no characteristic signs or laboratory markers of CFS and its pathophysiology has not been elucidated [2].

This lack of diagnostic signs or laboratory markers notwithstanding, many manifestations of CFS resemble those of musculoskeletal and infectious diseases [3]. In large part, the illnesses caused by these diseases reflect immune system activation and there is evidence for immune system dysfunction in some cases of CFS. In particular, antinuclear antibodies (ANA) and other common autoantibodies have been evaluated in people with CFS: unfortunately, with variable results. For example, one study found that 52% of tertiary care- CFS referral-patients