

## **Spinal fluid abnormalities in patients with chronic fatigue syndrome.**

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Arguments exist as to the cause of chronic fatigue syndrome (CFS). Some think that it is an example of symptom amplification indicative of functional or psychogenic illness, while our group thinks that some CFS patients may have brain dysfunction. To further pursue our encephalopathy hypothesis, we did spinal taps on 31 women and 13 men fulfilling the 1994 case definition for CFS and on 8 women and 5 men serving as healthy controls. Our outcome measures were white blood cell count, protein concentration in spinal fluid, and cytokines detectable in spinal fluid. We found that significantly more CFS patients had elevations in either protein levels or number of cells than healthy controls (30 versus 0%), and 13 CFS patients had protein levels and cell numbers that were higher than laboratory norms; patients with abnormal fluid had a lower rate of having comorbid depression than those with normal fluid. In addition, of the 11 cytokines detectable in spinal fluid, (i) levels of granulocyte-macrophage colony-stimulating factor were lower in patients than controls, (ii) levels of interleukin-8 (IL-8) were higher in patients with sudden, influenza-like onset than in patients with gradual onset or in controls, and (iii) IL-10 levels were higher in the patients with abnormal spinal fluids than in those with normal fluid or controls. The results support two hypotheses: that some CFS patients have a neurological abnormality that may contribute to the clinical picture of the illness and that immune dysregulation within the central nervous system may be involved in this process.

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