

Detection of intracranial abnormalities in patients with chronic fatigue syndrome: comparison of MR imaging and SPECT.

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OBJECTIVE. Chronic fatigue syndrome is a recently characterized condition of unknown origin that is manifested by fatigue, flulike complaints, and neurologic signs and symptoms, including persistent headache, impaired cognitive abilities, mood disorders, and sensorimotor disturbances. This syndrome can be difficult to diagnose clinically or by standard neuroradiologic tests. We performed MR imaging and single-photon emission computed tomography (SPECT) in patients with chronic fatigue syndrome to compare the usefulness of functional and anatomic imaging in the detection of intracranial abnormalities. **SUBJECTS AND METHODS.** Sixteen patients who fulfilled the Centers for Disease Control, British, and/or Australian criteria for chronic fatigue syndrome had MR and SPECT examinations within a 10-week period. Axial MR and SPECT scans were analyzed as to the number and location of focal abnormalities by using analysis of variance with the Student-Newman-Keuls option. MR imaging findings in patients with chronic fatigue syndrome were compared with those in 15 age-matched control subjects, and SPECT findings in the patients with chronic fatigue syndrome were compared with those in 14 age-matched control subjects by using Fisher's exact test. The findings on MR and SPECT scans in the same patients were compared by using the Wilcoxon matched-pairs signed-ranks test. **RESULTS.** MR abnormalities consisted of foci of T2-bright signal in the periventricular and subcortical white matter and in the centrum semiovale; there were 2.06 foci per patient, vs 0.80 foci per control subject. MR abnormalities were present in eight (50%) of 16 patients, compared with three (20%) of 15 age-matched control subjects. Neither of these differences reached significance, although the power of the study to detect differences between groups was small. Patients with chronic fatigue syndrome had significantly more defects throughout the cerebral cortex on SPECT scans than did normal subjects (7.31 vs 0.43 defects per subject, $p < .001$). SPECT abnormalities were present in 13 (81%) of 16 patients, vs three (21%) of 14 control subjects ($p < .01$). SPECT scans showed significantly more abnormalities than did MR scans in patients with chronic fatigue syndrome ($p < .025$). In the few patients who had repeat SPECT and MR studies, the number of SPECT abnormalities appeared to correlate with clinical status, whereas MR changes were irreversible. **CONCLUSION.** SPECT abnormalities occur more frequently and in greater numbers than MR abnormalities do in patients with chronic fatigue syndrome. SPECT may prove to be useful in following the clinical progress of patients with this syndrome.

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