CORRELATION OF MAGNETIC-RESONANCE IMAGING WITH NEUROPSYCHOLOGICAL TESTING IN MULTIPLE-SCLEROSIS

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Previous research has suggested that cerebral lesions observed on magnetic resonance imaging (MRI) of MS patients are clinically “silent.” We examined the validity of this assertion by correlating neuropsychological test performance with MRI findings in 53 MS patients. We used a semiautomated quantitation system to measure three MRI variables: total lesion area (TLA), ventricular-brain ratio (VBR), and size of the corpus callosum (SCC). Stepwise multiple regression analyses indicated that TLA was a robust predictor of cognitive dysfunction, particularly for measures of recent memory, abstract/conceptual reasoning, language, and visuospatial problem solving. SCC predicted test performance on measures of mental processing speed and rapid problem solving, while VBR did not independently predict cognitive test findings. These findings suggest that cerebral lesions in MS produce cognitive dysfunction and that MRI may be a useful predictor of cognitive dysfunction.

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Comment from Richard M. Ransohoff, MD, Associate Editor: A pioneering study showing that MS-related cognitive impairment correlated with MRI changes, and thus arose directly from the disease process.

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