

Imaging technique shows brain anatomy change in women with multiple sclerosis, depression

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A multicenter research team led by Cedars-Sinai neurologist Nancy Sicotte, MD, an expert in multiple sclerosis and state-of-the-art imaging techniques, used a new, automated technique to identify shrinkage of a mood-regulating brain structure in a large sample of women with MS who also have a certain type of depression.

In the study, women with MS and symptoms of "depressive affect" – such as depressed mood and loss of interest – were found to have reduced size of the right hippocampus. The left hippocampus remained unchanged, and other types of depression – such as vegetative depression, which can bring about extreme fatigue – did not correlate with hippocampal size reduction, according to an article featured on the cover of the January 2014 issue of *Human Brain Mapping*.

The research supports earlier studies suggesting that the hippocampus may contribute to the high frequency of depression in [multiple sclerosis](#). It also shows that a computerized imaging technique called automated surface mesh modeling can readily detect thickness changes in subregions of the hippocampus. This previously required a labor-intensive manual analysis of MRI images.

Sicotte, the article's senior author, and others have previously found evidence of tissue loss in the [hippocampus](#), but the changes could only be documented in manual tracings of a series of special high-resolution

MRI images. The new approach can use more easily obtainable MRI scans and it automates the brain mapping process.

"Patients with medical disorders – and especially those with inflammatory diseases such as MS – often suffer from depression, which can cause fatigue. But not all fatigue is caused by depression. We believe that while fatigue and depression often co-occur in patients with MS, they may be brought about by different biological mechanisms. Our studies are designed to help us better understand how MS-related [depression](#) differs from other types, improve diagnostic imaging systems to make them more widely available and efficient, and create better, more individualized treatments for our patients," said Sicotte, director of Cedars-Sinai's Multiple Sclerosis Program and the Neurology Residency Program. She received a \$506,000 grant from the National Multiple Sclerosis Society last year to continue this research.

More information: *Human Brain Mapping*, "Detection of Altered Hippocampal Morphology in Multiple Sclerosis-Associated Depression Using Automated Surface Mesh Modeling." Cover of the January 2014 print edition.

Provided by Cedars-Sinai Medical Center

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