

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 <u>multiple sclerosis</u>. 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 laborintensive manual analysis of MRI images.

Sicotte, the article's senior author, and others have previously found evidence of tissue loss in the <u>hippocampus</u>, 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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