

Short-term hormone replacement therapy may benefit brains of postmenopausal women

22 November 2011, By Nancy Humphrey

(Medical Xpress) -- Short-term estrogen treatment increased the volume of the brain's gray matter in postmenopausal women, making a case for the potential benefit of short-term hormone replacement therapy, according to a study presented this week by Vanderbilt's Paul Newhouse, M.D.

Newhouse, professor of Psychiatry and director of the Center for Cognitive Medicine at Vanderbilt University Medical Center, presented the information at the annual meeting of the Society for Neuroscience in Washington, D.C. The research was done while Newhouse was at the University of Vermont College of Medicine where he was professor of Psychiatry and director of the Clinical Neuroscience Research Unit and [Brain](#) Imaging Program. He joined Vanderbilt's faculty in October.

The brains of 25 healthy postmenopausal women who took either [estrogen](#) or a placebo for three months were imaged for the study. After treatment, the women who took estrogen had more gray matter in the parietal, temporal and prefrontal areas of the brain, areas that are known to be involved in attention, decision-making and memory.

The findings show that long-term hormone treatment, shown to have adverse effects in older postmenopausal women, may be unnecessary for cognitive benefit. The ideal length of treatment will be decided in further studies.

"My focus the past 10 years has been studying the effects of how estrogen affects the cholinergic system in the brain, the system that deteriorates in Alzheimer's disease," Newhouse said. "Estrogen enhances that system.

"Our findings suggest the brain remains responsive

to [estrogen treatment](#) even after menopause, and that this responsiveness or plasticity is important for preserving cognitive functioning, especially in the early postmenopausal period," he said. "Short term estrogen treatment in normal [postmenopausal women](#) is sufficient to increase [gray matter](#) in the brain.

Newhouse said when estrogen levels decline after menopause, the brain has to adapt. "It's been seeing estrogen for decades and it has enormous effects on brain development, growth and maintenance."

Newhouse has also studied the effects of nicotine on the aging brain, particularly in those with mild cognitive impairment.

At Vanderbilt, Newhouse plans to use functional magnetic resonance imaging (fMRI) to study how estrogen changes the emotional response in the brain. "One of the reasons I came to Vanderbilt is that I saw an opportunity to take this work to the next level, in terms of the collaborations that are here and in terms of interacting with basic science investigators, molecular specialists and pharmacologists."

Newhouse is currently recruiting faculty for Vanderbilt's Center for Cognitive Medicine which should be fully operational in about two years.

Provided by Vanderbilt Medical Center

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