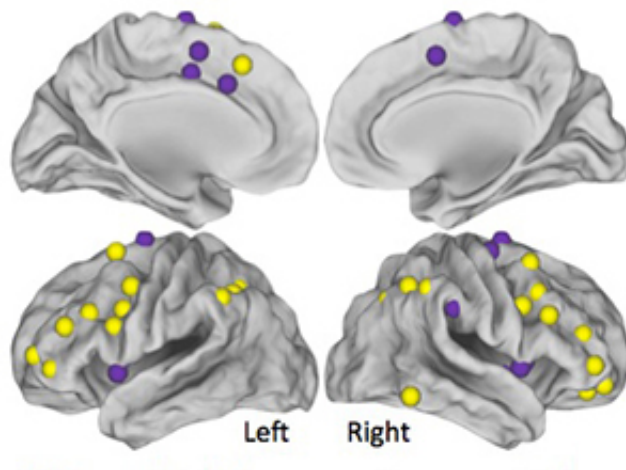


# 'Chemobrain' linked to disrupted brain networks

December 17 2013, by Julia Evangelou Strait

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Research in breast cancer patients may shed light on “chemobrain,” the mental foggy that some cancer patients experience following treatment. New imaging studies show disruptions in brain networks of patients who experience chemobrain. Credit: B.L. SCHLAGGAR AND R.S. COALSON

(Medical Xpress)—For some cancer patients, the mental foggy that develops with chemotherapy lingers long after treatment ends. Now research in breast cancer patients may offer an explanation.

Patients who experience "chemobrain" following treatment for [breast cancer](#) show disruptions in brain networks that are not present in patients who do not report [cognitive difficulties](#), according to researchers at Washington University School of Medicine in St. Louis.

Results of the small study were reported Thursday, Dec. 12 at a poster presentation at the San Antonio Breast Cancer Symposium.

According to the researchers, many breast [cancer patients](#) who receive chemotherapy report long-term problems with memory, attention, learning, visual-spatial skills and other forms of information processing. The brain mechanisms contributing to these difficulties are poorly understood.

The investigators used an imaging technique called resting state functional-connectivity [magnetic resonance imaging](#) (rs-fcMRI) to assess the wiring among regions of the brain in 28 patients treated at Siteman Cancer Center at Barnes-Jewish Hospital and Washington University. Fifteen patients reported they were "extremely" or "strongly" affected by cognitive difficulties. The remaining 13 reported no cognitive impairment.

The imaging studies suggest that standard chemotherapy given to [breast cancer patients](#) may alter connectivity in [brain networks](#), especially in the frontal parietal control regions responsible for executive function, attention and decision-making.

"Chemobrain is most likely a global phenomenon in the brain, but a set of regions involved in executive control, called the frontal-parietal network, is perhaps the most affected brain system," said Jay F. Piccirillo, MD, professor of otolaryngology and a member of the research team with expertise in the use of brain imaging to study tinnitus, or phantom noise. "We're confirming previous studies that also have shown this. And we're developing a solid multidisciplinary working group at Washington University to determine how we can help these women."

Other studies also have used neuroimaging techniques to observe the

neural disruptions associated with Alzheimer's disease, depression and stroke. Washington University researchers are beginning to investigate whether cancer patients experiencing chemobrain may benefit from therapies similar to those that help patients with other cognitive disorders.

Provided by Washington University School of Medicine in St. Louis

Citation: 'Chemobrain' linked to disrupted brain networks (2013, December 17) retrieved 20 March 2024 from

<https://medicalxpress.com/news/2013-12-chemobrain-linked-disrupted-brain-networks.html>

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