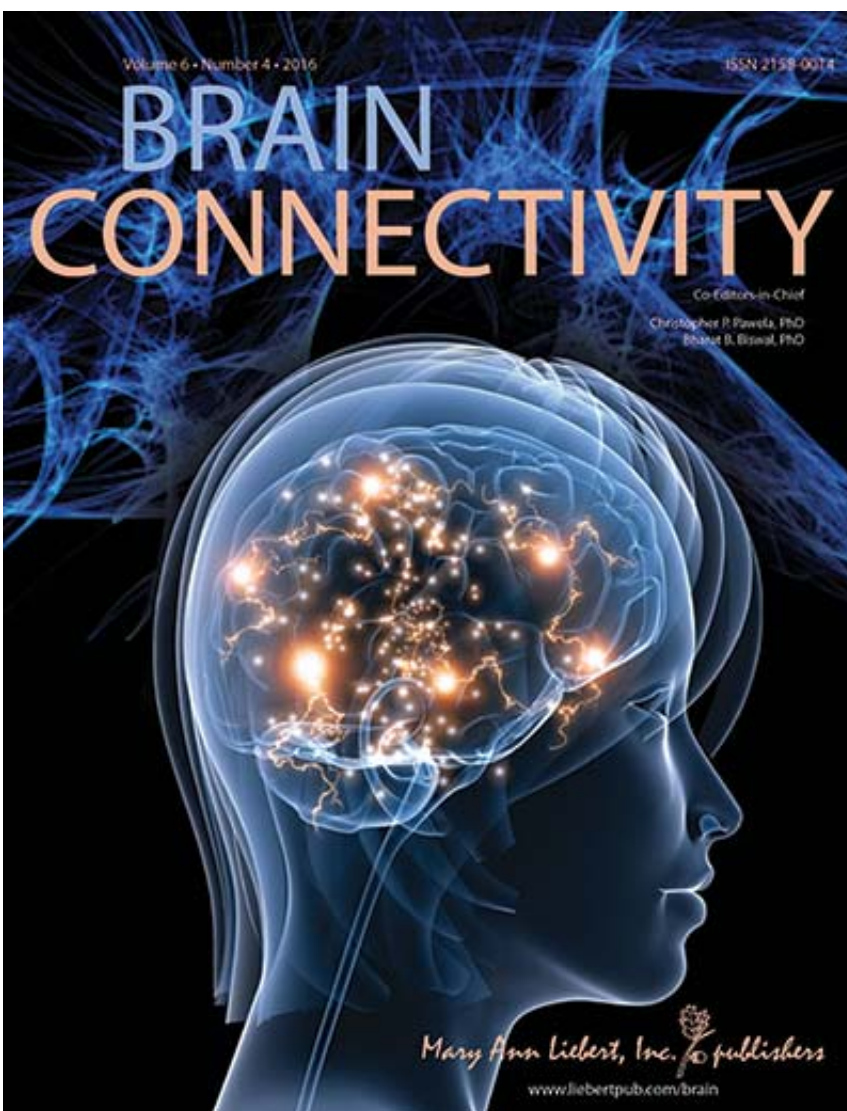


Altered brain connectivity may explain cognitive impairment in pediatric leukemia survivors

May 18 2016



Credit: Mary Ann Liebert, Inc., publishers

The neurotoxic effects of chemotherapeutic drugs on the developing brains of young patients with acute lymphoblastic leukemia (ALL) may impair their cognitive functioning by disrupting the formation of neural networks that connect brain regions and transfer information. A study showing reduced connectome organization in the brains of ALL survivors is published in *Brain Connectivity*, a peer-reviewed journal from Mary Ann Liebert, Inc., publishers. The article is available free on the *Brain Connectivity* website until June 18, 2016.

Shelli Kesler, PhD, University of Texas MD Anderson Cancer Center, Houston, and coauthors from Stanford University and University of California at San Francisco, used diffusion tensor imaging to analyze and compare the gray matter connectome of pediatric ALL survivors and healthy young people. They reported greater [cognitive impairment](#) and significantly lower connectivity, based on measures of network clustering and path length, in the ALL group. The researchers describe the study design and present their findings in the article "Atypical Structural Connectome Organization and Cognitive Impairment in Young Survivors of Acute Lymphoblastic Leukemia."

"As survival rates for cancer patients increase, issues related to survivorship such as chemotherapy-induced cognitive impairment become more important to the cancer research community," says Christopher Pawela, PhD, Co-Editor-in-Chief of *Brain Connectivity* and Assistant Professor, Medical College of Wisconsin. "Dr. Kesler and colleagues are developing new MRI-based biomarkers to measure brain changes associated with the neurotoxic effects of chemotherapy in the brain. These biomarkers may find utility in providing insight into the mechanisms of brain damage caused by [chemotherapeutic drugs](#) and could be used to develop neuroprotective therapies to mitigate the harmful effects of these drugs on the brain."

More information: Shelli R. Kesler et al, Atypical Structural Connectome Organization and Cognitive Impairment in Young Survivors of Acute Lymphoblastic Leukemia, *Brain Connectivity* (2016). DOI: [10.1089/brain.2015.0409](https://doi.org/10.1089/brain.2015.0409)

Provided by Mary Ann Liebert, Inc

Citation: Altered brain connectivity may explain cognitive impairment in pediatric leukemia survivors (2016, May 18) retrieved 27 April 2024 from <https://medicalxpress.com/news/2016-05-brain-cognitive-impairment-pediatric-leukemia.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.