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Avoiding the Hippocampus During Whole-Brain Radiotherapy Prevents Cognitive Side Effects

New Study Presented at ASTRO Provides Practice-Changing Evidence

San Antonio, TX – EMBARGO 8:45am (EDT), October 23, 2018– Whole-brain radiotherapy can be delivered more safely to patients with brain metastases by avoiding the hippocampus according to a randomized phase III NRG Oncology trial presented at the American Society for Radiation Oncology (ASTRO) Annual Meeting.

To study the hypothesis that radiation to the hippocampal stem cells plays a role in cognitive decline, 518 patients were randomized to whole brain radiotherapy plus memantine with or without hippocampal avoidance. The results of the clinical trial found a 26 percent relative reduction in risk of cognitive toxicity following whole brain radiation therapy with hippocampal avoidance versus whole brain radiotherapy. The cognitive function benefit of hippocampal avoidance did not differ by age.

“This study demonstrates that we can deliver whole brain radiotherapy with similar cognitive outcomes as radiosurgery,” said lead author and co-principal investigator of the phase III trial [Vinai Gondi, MD](#), director of research at the [Northwestern Medicine Chicago Proton Center](#) and co-director of the Brain Tumor Center at [Northwestern Medicine Cancer Center Warrenville](#). “These trial results revolutionize our understanding of the cognitive effects of brain irradiation in a manner that has far-reaching implications in terms of the safer radiotherapy treatment of primary or metastatic brain tumors.”

Brain metastases, cancer cells that have spread to the brain from primary tumors in other organs, is one of the most common cancer conditions managed by radiation oncologists. Due to concerns about cognitive decline, whole brain radiotherapy is currently often the last resort, even though it is one of the most effective treatments for brain metastases.

“This hippocampal-sparing approach reduces both the risk of growth of new brain metastases and the risk of cognitive decline, and no prior study has ever demonstrated this dual effect,”

added Walter J. Curran, MD, Executive Director of the Winship Cancer Institute at Emory University and an [NRG Oncology Group](#) Chair.

By establishing that the hippocampal region is sensitive to radiation, treatment plans for brain metastases or other brain tumors can employ advanced techniques such as intensity-modulated radiation therapy (IMRT) or proton therapy to reduce dose to the hippocampus and offer brain therapy with less toxicity.

“Our phase III trial not only provides evidence for practice-change in the management of brain metastases, but also builds upon decades of preclinical and clinical research to definitely establish the hippocampus as a radiosensitive and cognition-specific organ at risk during brain irradiation,” said Dr. Gondi.

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About Northwestern Medicine

The Northwestern Medicine Chicago Proton Center is the first and only proton therapy center in Illinois to bring innovative proton radiation treatment to patients. Proton therapy treats tumors with a precise dose of radiation that conforms to the shape of the tumor, reducing the risk of side effects and damage to surrounding healthy tissues. For more information visit chicagoprotoncenter.com.

Northwestern Medicine Central DuPage Hospital, an acute-care hospital located in Winfield, Illinois, has been recognized as a 100 Top Hospital by Truven Health Analytics and as one of the best hospitals in Chicago Metro Region by U.S. News & World Report (2017–18). Northwestern Medicine is the shared strategic vision of Northwestern Memorial HealthCare and Northwestern University Feinberg School of Medicine to transform the future of healthcare. For more information, visit <https://www.nm.org/>.

About NRG Oncology

NRG Oncology conducts practice-changing, multi-institutional clinical and translational research to improve the lives of patients with cancer. Founded in 2012, NRG Oncology is a Pennsylvania-based nonprofit corporation that integrates the research of the National Surgical Adjuvant Breast and Bowel Project (NSABP), the Radiation Therapy Oncology Group (RTOG), and the Gynecologic Oncology Group (GOG). The research network seeks to carry out clinical trials with emphases on gender-specific malignancies, including gynecologic, breast, and prostate cancers, and on localized or locally advanced cancers of all types. NRG Oncology’s extensive research organization comprises multidisciplinary investigators, including medical oncologists, radiation oncologists, surgeons, physicists, pathologists, and statisticians, and encompasses more than 1,300 research sites located world-wide with predominance in the United States and Canada. NRG Oncology is supported primarily through grants from the National Cancer Institute (NCI) and is one of five research groups in the NCI’s National Clinical Trials Network.