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Summary of Research Results for NRG-CC001: Testing Whether Avoiding the Hippocampus in Addition to Memantine During Whole-Brain Radiation Therapy Better Prevents Cognitive Side Effects in People With Brain Metastases

Introduction

This summary reviews the main results of the study. There may be benefits and risks to learning study results. A benefit for some people is knowing that they contributed to the research and their participation is appreciated. Another benefit is what was learned from the study may help them make decisions about their health care now or in the future.

For some people, a risk is getting results that make them feel distressed or remember a difficult time in their lives. Some people may feel upset about the study results if the study did not help their condition.

Please talk with your doctor about any questions you may have about this summary. Your doctor can help explain these results to you in relation to your medical concerns.

NRG Oncology thanks you for your participation in this research. Your participation has helped us learn about and advance cancer care.

Background of the study

The hippocampus is a brain structure (see picture) that is important for memory. This study compared the effects of avoiding the hippocampus during whole-brain radiation therapy plus memantine to the usual whole-brain radiation therapy plus memantine. Memantine is an FDA-approved drug for patients with dementia and is commonly used off-label (meaning for other diseases besides dementia) for patients receiving whole-brain radiation therapy for patients with brain cancer.

This study further explored whether the hippocampal avoidance technique will prevent cognitive (such as thinking, memory, use of words/language) side effects.

What did the study involve?

After enrolling on this study, participants were randomized to one of two study groups. Group 1 received the usual whole-brain radiation therapy plus memantine while Group 2 received whole-brain radiation therapy using the hippocampal avoidance technique plus memantine.

What were the major findings of the study?

Five hundred and eighteen participants were randomly assigned from 111 institutions through the NRG Oncology network. Whole-brain radiation therapy using hippocampal avoidance plus memantine was better at keeping the patient's cognitive function stable and minimizing changes in patient reported symptoms such as fatigue, difficulty remembering things, and difficulty with speaking. These benefits continued as patients lived longer. There was also no difference in the length of time until the cancer got worse and in overall survival.

Are there any steps that may need to be taken at this time or in the future for those who participated in the study?

For participants in this study, there are no immediate or long-term steps that need to be considered because of these findings. All participants in this study have completed their treatment and should be followed by their doctor.

What did the researchers learn that will be helpful to other people with this condition?

Based on the study results, it is recommended that whole brain radiotherapy using hippocampal avoidance with memantine should be considered standard of care for patients who plan to receive whole-brain radiation therapy for brain metastases and have good ability to carry out activities of daily living and no metastases in the hippocampus area of the brain.

Who can I contact for further information?

Please talk with your doctor about any questions or concerns you may have about this summary. Further details about the design, conduct and results of this study are available at www.clinicaltrials.gov.

List of publications with references that were generated from this study.

1. Brown PD, Gondi V, Pugh S, Tome WA, Wefel JS, Armstrong TS, Bovi JA, Robinson C, Konski A, Khuntia D, Grosshans D, Benzinger TLS, Bruner D, Gilbert MR, Roberge D, Kundapur V, Devisetty K, Shah S, Usuki K, Anderson BM, Stea B, Yoon H, Li J, Laack NN, Kruser TJ, Chmura SJ, Shi W, Deshmukh S, Mehta MP, Kachnic LA; for NRG Oncology. Hippocampal Avoidance During Whole-Brain Radiotherapy Plus Memantine for Patients With Brain Metastases: Phase III Trial NRG Oncology CC001. J Clin Oncol. 2020 Apr 1;38(10):1019-1029. doi: 10.1200/JCO.19.02767. Epub 2020 Feb 14. PMID: 32058845; PMCID: PMC7106984.

2. Bovi J, Pugh S, Brown P, Gondi V, Wefel JS, Tomé WA, Gilbert MR, Robinson C, Benzinger TL, Kundapur V, Roberge D, Kaufman I, Shah SA, Usuki KY, Stea BD, Yoon HA, DeMora L, Mehta M, Kachnic L. Pretreatment volume of MR-determined white matter injury (WMI) predicts neurocognitive decline after hippocampal avoidant (HA)-WBRT+Memantine for brain metastases: Secondary analysis of NRG Oncology CC001. SNO (Society for Neuro-Oncology). 11/19/2020. NCOG-04
3. Devisetty K, Pugh SL, Brown PD, Gondi V, Wefel JS, Solanki AA, Kalapparambath T, Harmon G, Saripalli A, Chou B, Venkatesulu BP, Boike TP, Kundapur V, Roberge D, Bovi JA, McGee MC, Kruser TJ, Baschnagel AM, Usuki K, Mehta MP, Kachnic LA. Impact of the rate of radiographic response (RR) of brain metastases (BM) to whole brain radiation therapy (WBRT) on neurocognitive function (NCF) on NRG-CC001. SNO (Society for Neuro-Oncology). 11/16/2022. NCOG-03
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5. Gondi V, Deshmukh S, Brown P, Wefel JS, Tome WA, Bruner D, Bovi JA, Robinson C, Khuntia D, Grosshans D, Konski A, Robidoux A, Kundapur V, Devisetty K, Shah S, Usuki K, Anderson BM, Mehta MP, Kachnic L. Preservation of neurocognitive function (NCF) with hippocampal avoidance during whole-brain radiotherapy (WBRT) for brain metastases: preliminary results of phase III trial NRG Oncology CC001. ASTRO/Int J Radiat Oncol Biol Phys. 10/21/2018. LBA9
6. Gondi V, Deshmukh S, Brown PD, Wefel JS, Armstrong TS, Tome WA, Gilbert MR, Konski A, Robinson CG, Bovi JA, Benzinger TLS, Roberge D, Kundapur V, Kaufman I, Shah S, Usuki KY, Baschnagel AM, Mehta MP, Kachnic LA. Sustained Preservation of Cognition and Prevention of Patient-Reported Symptoms with Hippocampal Avoidance during Whole-Brain Radiotherapy for Brain Metastases: Final Results of NRG Oncology CC001. Int J Radiat Oncol Biol Phys. 2023 May 5:S0360-3016(23)00438-8. doi: 10.1016/j.ijrobp.2023.04.030. Epub ahead of print. PMID: 37150264.
7. Gondi V, Pugh S, Brown P, Wefel JS, Gilbert MR, Bovi JA, Robinson C, Benzinger TL, Tome WA, Armstrong T, Bruner D, Khuntia D, Grosshans D, Konski A, Robidoux A, Kundapur V, Devisetty K, Shah S, Usuki K, Anderson BM, Stea B, Yoon H, Li J, Laack NN, Kruser T, Chmura SJ, Shi W, Mehta MP, Kachnic L. Preservation of neurocognitive function (NCF) with hippocampal avoidance during whole-brain radiotherapy (WBRT) for brain metastases: preliminary results of phase III trial NRG Oncology CC001 . AAN (American Academy of Neurology). 5/4/2019. Plenary
8. Gondi V, Pugh S, Brown P, Wefel JS, Gilbert MR, Bovi JA, Robinson C, Benzinger TL, Tome WA, Armstrong T, Bruner D, Khuntia D, Grosshans D, Konski A, Robidoux A, Kundapur V, Devisetty K, Shah S, Usuki K, Anderson BM, Stea B, Yoon H, Li J, Laack NN, Kruser T, Chmura SJ, Shi W, Mehta MP, Kachnic L. Preservation of neurocognitive function (NCF) with hippocampal avoidance during whole-brain radiotherapy (WBRT) for brain metastases: preliminary results of phase III trial NRG Oncology CC001. SNO. 11/15/2018. NCOG-01