A Phase 2 Study of Multiparametric Magnetic Resonance Imaging-Guided High-Dose Response-Adaptive Radiation Therapy With Concurrent Temozolomide in Patients With Newly Diagnosed Glioblastoma: Results From an Interim Analysis[1]

Demetrius Moncrease*

Glioblastoma remains the most lethal primary brain tumor, nearly always recurring despite standard surgery and chemoradiation. While advanced imaging can predict outcomes better than standard MRI, these biomarkers have not yet been integrated into standard treatment to target therapy-resistant regions. In this single-arm phase 2 study, researchers evaluated a response-adaptive radiation therapy (RT) approach using multiparametric MRI to identify and dose-intensify treatment for hypercellular and hyperperfused tumor volumes. Patients received an initial boost of 50 Gy to high-risk regions, followed by a mid-treatment reassessment at fraction 14 to identify persistent or emerging resistant volumes for an additional 30 Gy boost. At the planned interim analysis of 16 patients, the authors found that mid-treatment imaging successfully identified shifting resistant regions, with nearly half of these volumes occurring in nonenhancing areas typically missed by standard RT. They conclude that individualized, response-adaptive chemoradiation is feasible and demonstrates short-term safety, with further accrual necessary to determine long-term efficacy.

References

1) Kim MM, Aryal MP, Suresh K, et al. A Phase 2 Study of Multiparametric Magnetic Resonance Imaging-Guided High-Dose Response-Adaptive Radiation Therapy With Concurrent Temozolomide in Patients With Newly Diagnosed Glioblastoma: Results From an Interim Analysis. *Int J Radiat Oncol*. 2025;122(3):605-610. doi:10.1016/j.ijrobp.2025.02.020

Affiliation:
Corresponding author: *Demetrius Moncrease, (Dmoncrease@wayne.edu)

https://doi.org/10.37549/HotTopics_4_Q2_2026