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Optimizing Recurrent Glioblastoma Salvage Treatment: A Multicenter Study Integrating Genetic Biomarkers From the Korean Radiation Oncology Group (21-02)

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Abstract

Background and objectives: Few studies have used real-world patient data to compare overall treatment patterns and survival outcomes for recurrent glioblastoma (rGBM). This study aimed to evaluate postprogression survival (PPS) according to the treatment strategy for rGBM by incorporating biomarker analysis.

Methods: We assessed 468 adult patients with rGBM who underwent standard temozolomide-based chemoradiation. The impact of predictors on PPS was evaluated in patients with isocitrate dehydrogenase wild-type rGBM (n = 439) using survival probability analysis. We identified patients who would benefit from reirradiation (re-RT) during the first progression.

Results: Median PPS was 3.4, 13.8, 6.6, and 10.0 months in the best supportive care (n = 82), surgery (with/without adjuvant therapy, n = 112), chemotherapy alone (n = 170), and re-RT (with/without chemotherapy, n = 75) groups, respectively. After propensity score matching analysis of the cohort, both the surgery and re-RT groups had a significantly better PPS than the chemotherapy-only group; however, no significant difference was observed in PPS between the surgery and re-RT groups. In the surgery subgroup, surgery with chemotherapy (P = .024) and surgery with radio(chemo)therapy (P = .039) showed significantly improved PPS compared with surgery alone. In the no-surgery subgroup, radio(chemo)therapy showed significantly improved PPS compared with chemotherapy alone (P = .047). Homozygous deletion of cyclin-dependent kinase inhibitor 2A/B, along with other clinical factors (performance score and progression-free interval), was significantly associated with the re-RT survival benefit.

Conclusion: Surgery combined with radio(chemo)therapy resulted in the best survival outcomes for rGBM. re-RT should also be considered for patients with rGBM at first recurrence. Furthermore, this study identified a specific genetic biomarker and clinical factors that may enhance the survival benefit of re-RT.