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Nimotuzumab and bevacizumab combined with temozolomide and radiotherapy in patients with newly diagnosed glioblastoma multiforme: a retrospective single-arm study

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Abstract

Purpose: Glioblastoma (GBM), the most common malignant tumor of the central nervous system (CNS) in adults, continues to result in poor survival rates despite standard treatment. Advancements in understanding GBM's molecular complexity have increased interest in targeted therapeutic approaches. This retrospective, single-center, single-arm study combined nimotuzumab and bevacizumab with radiotherapy (RT) and temozolomide (TMZ) for the treatment of newly diagnosed GBM. The objectives were to determine the efficacy of this treatment combination and the associated toxicity.

Methods: A retrospective analysis of clinical data of GBM patients treated at our institution from September 2021 to May 2023 with postoperative combination therapy of nimotuzumab, bevacizumab, and TMZ concurrent with RT, as well as maintenance therapy with bevacizumab and TMZ. Follow-ups were performed every 3 to 6 months via hospital visits and telephone interviews. The primary endpoints were overall survival (OS) and progression-free survival (PFS). The secondary endpoint was the incidence of adverse events (AEs).

Results: A total of 18 patients were included. The median follow-up time was 23 months. The one-year PFS rate was 77.8%, and the one-year OS rate was 94.4%. The median PFS was 18 months (95%CI, 15.9-20.1), and the median OS was 28 months (95%CI, 18.9-37.1). All AEs were controllable.

Conclusion: The combination of nimotuzumab and bevacizumab with TMZ and RT appears to demonstrate efficacy and safety in newly diagnosed GBM patients, providing a reference for clinical treatment. Further prospective studies are needed to confirm our results.

Keywords: EGFR inhibition; Glioblastoma; Radiotherapy; Temozolomide; VEGF inhibition.