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Efficacy and safety of bevacizumab combined with temozolomide in the treatment of glioma a systematic review and meta-analysis of clinical trials

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Abstract

Objective: Glioma is the most common malignant brain tumor in neurosurgery. Bevacizumab (BEV) is a monoclonal antibody that inhibits tumors by inhibiting vascular endothelial growth factor and reducing tumor angiogenesis. To evaluate the efficacy and safety of BEV combined with temozolomide (TMZ) in glioma, we performed a meta-analysis.

Methods: PubMed, Embase, The Cochrane Library, and Web of Science databases were searched for randomized controlled trials comparing survival outcomes between TMZ combined with BEV and TMZ alone as well as cohort studies were included in our study. The primary outcome measures analyzed were overall survival (OS) and progression-free survival (PFS).

Results: A total of six randomized controlled trials and four cohort studies with a total of 2515 patients were included in our meta-analysis. The results of meta-analysis suggested that there were no significant improvements in overall survival, but the combination of TMZ and BEV prolonged progression-free survival, improved overall response rate (ORR), and increased the incidence of some adverse reactions, compared with TMZ alone. Subgroup analysis suggested sex, recursive partitioning analysis (RPA) grade, MGMT gene status and radiotherapy combination did not affect the improvement of OS with the combination of the two drugs, and RPA grade did not affect the improvement of PFS with the combination of the two drugs.

Conclusions: The combination of TMZ and BEV can improve PFS as well as ORR in patients and has no benefit on OS. At the same time, the adverse reactions during the combination of the two drugs were acceptable.

Keywords: Bevacizumab; Glioma; Meta-analysis; Temozolomide.

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