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The safety and efficacy of bevacizumab in treatment of recurrent low-grade glioma: a systematic review and meta-analysis

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Abstract

Background: Central nervous system (CNS) tumors are among the most common malignancies in various age ranges. Low-grade glioma (LGG) can account for nearly 30% of pediatric CNS malignancies. Progression or recurrence after the first-line treatments is common among these patients. Therefore, more treatments are required. Bevacizumab as an anti-VEGF antibody has come into the spotlight recently and is especially used in relapse or recurrence settings. This review aims to study the safety and efficacy of bevacizumab for patients with recurrent LGG.

Methods: This study was conducted according to The Preferred Reporting Items for Systematic Reviews and Meta-Analyses. PubMed, Scopus, Web of Science, and Embase were comprehensively searched using the relevant key terms until 24th August 2023 to retrieve the studies that investigated clinical outcomes of bevacizumab in patients with recurrent LGG. All statistical analysis was performed by STATA v.17.

Results: A total of 1306 papers were gathered, out of which 13 were incorporated in the meta-analysis. The pooled incidence rate of treatment according to the RANO scale was 70% (95% CI = 43-98%) for objective response rate, 26% (95% CI = 58-96%) for partial response, 21% (95% CI = 15-28%) for minor response, 14% (95% CI = 3-24%) for complete response, 48% (95% CI = 37-59%) for stable disease, and 8% (95% CI = 4-11%) for progressive disease. Furthermore, according to progressive survival after treatment, it was 4% (95% CI = -1 to 9%) for 6-month PFS, 41% (95% CI = 32-50%) for 2-year PFS, and 29% (95% CI = 22-35%) for 3-year PFS.

Conclusion: According to the RANO scale and PFS, clinicians should be aware that Bevacizumab could be a favorable alternative therapy for recurrent LGG. Furthermore, bevacizumab exhibits minimal toxicity and high tolerability in recurrent LGG.

Keywords: Bevacizumab; Glioma; Low-grade; Recurrence.

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