

Review *Neurosurg Rev.* 2025 Feb 8;48(1):226. doi: 10.1007/s10143-025-03335-1.

Are EGFR monoclonal antibodies associated with clinical benefits in patients with glioma: a systematic review, meta-analysis, and specific analysis on glioblastoma and diffuse intrinsic pontine glioma

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PMID: 39920453 DOI: [10.1007/s10143-025-03335-1](https://doi.org/10.1007/s10143-025-03335-1)

Abstract

Glioma is one of the most common CNS malignancies with a high mortality rate. Overexpression of endothelial growth factor receptor (EGFR) has been suspected to play a critical role in the pathology of gliomas. This study aims to investigate the effectiveness of anti-EGFR monoclonal antibodies against glioma, specifically for glioblastoma and diffuse intrinsic pontine glioma. This Systematic review and meta-analysis was conducted according to The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline. The search used the relevant keywords in four databases, including PubMed, Scopus, Web of Science, and Embase, until December 25th, 2023. All statistical analysis was done by STATA v.17. A total of 29 studies were included. A meta-analysis revealed that overall response was 34% (95%CI: 19-51%), complete response was 14% (95%CI: 3-24%), partial response was 13% (95% CI: 8-17%), progressive disease rate was 33% (95%CI: 24-43%), and stable disease rate was 29% (95%CI: 22-36%). In addition, the pooled 6-month progression-free survival (PFS) rate was 48% (95% CI: 33-62%), 1-year PFS was 25% (95%CI: 14-36%), 18-month PFS was 17% (95%CI: -5-39%), and 2-year PFS was 14% (95%CI: 3-25%). The 6-month overall survival (OS) was 82% (95%CI: 69-96%), 1-year OS was 61% (95%CI: 50-71%), 18-months OS was 39% (95%CI: 25 - 53%), and 2-year OS was 24% (95%CI: 15-33%). EGFR inhibitors benefit PFS, OS, and radiologic response in patients with different types of gliomas. Clinicians should consider them an attractive option for treating gliomas.

Keywords: EGFR inhibitor; Endothelial growth factor receptor inhibitor; Glioma.

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