ABSTRACT

World Neurosurg. 2021 Dec 29:S1878-8750(21)01936-7. doi: 10.1016/j.wneu.2021.12.091. Online ahead of print.

Efficacy and safety of bevacizumab combined with other therapeutic regimens for treatment of recurrent glioblastoma: A network meta-analysis.

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BACKGROUND: Despite the fact that bevacizumab (Bev) has been approved to treat recurrent GBM, GBM patients failed to demonstrate a significant overall survival (OS) advantage. In recent years, the advent of more bevacizumab (Bev) combination regimens seems to bring new hope for patients, nevertheless, there is still a lack of intuitive comparison among these therapies.

OBJECTIVE: To explore the efficacy and safety of various bevacizumab (Bev) combination regimens in patients with recurrent glioblastoma and to further explore the differences in the efficacy of each treatment in randomized controlled trials (RCTs) and nonrandomized controlled trials (non-RCTs).

METHODS: We comprehensively searched the PubMed, Cochrane Library, and OVID databases for relevant RCTs and non-RCTs of Bev in combined regimens for recurrent glioblastoma. The Cochrane quality assessment method was used to assess the quality of RCTs, and the Newcastle-Ottawa scale was used to assess the quality of non-RCTs. Excel software was used to extract data from the literature, and a network meta-analysis was performed using RevMan 5.3 and Stata 16 statistical software.

RESULTS: In patients with recurrent glioblastoma, the 6-month overall survival of patients receiving bevacizumab combination therapy was ranked from high to low as follows: Bev + rindopepimut, Bev + lomustine (CCNU), CCNU, Tumor Treating Fields (TTFields) + Bev, Bev, Bev + irinotecan (Iri), Bev + temozolomide (TMZ), Bev + vorinostat, Bev + onartuzumab, Bev + dasatinib, Bev + carboplatin, Bev + trebananib, Bev + VB-111, TMZ, PCV, VB-111, and carboplatin. The 6-month progression-free survival from high to low was ranked as follows: Bev + CCNU, Bev + rindopepimut, Bev + dasatinib, Bev + vorinostat, Bev, Bev + Iri, Bev + TMZ, CCNU, Bev + carboplatin, TMZ, Bev + VB-111, PCV, Bev + trebananib, carboplatin, and VB-111. We compared the total incidence of serious adverse events (≥ 3) and found that Bev + vorinostat and Bev + trebananib were safer than Bev, while other regimens were not as safe as Bev. A descriptive analysis showed that Bev + rindopepimut also appeared to be safer than Bev. Subgroup analysis: Among RCTs, Bev + CCNU therapy had the highest 6-month overall survival and 6-month progression-free survival. Among non-RCTs, Bev + Iri therapy showed the highest 6-month overall survival and good 6-month progression-free survival.

CONCLUSION: Both Bev + CCNU and Bev + rindopepimut could be considered as effective therapies for treating the recurrent glioblastoma according to the network meta-analysis results. Among them, Bev + rindopepimut therapy seems to be safer and more effective. Moreover, we found that Bev + Iri also appeared to be an effective therapy in a retrospective study.

DOI: 10.1016/j.wneu.2021.12.091
PMID: 34973444