Review J Neurooncol. 2023 Dec 8. doi: 10.1007/s11060-023-04503-3. Online ahead of print.

Ganciclovir as a potential treatment for glioma: a systematic review and meta-analysis

Chun-Tao Chang¹, Hsing-Hui Chen², Chun-Chao Chuang³, Shao-Hsun Chang², Nai-Wan Hsiao⁴

Affiliations PMID: 38066255 DOI: 10.1007/s11060-023-04503-3

Abstract

Background: Glioma is a challenging malignant tumor with a low survival rate and no effective treatment. Recently, ganciclovir, an antiviral drug, combined with gene therapy and its own antiviral ability, has been proposed as a potential treatment for glioma. However, there are differences in the results of various clinical trials. In this study, we conducted a systematic review and meta-analysis to evaluate the efficacy of ganciclovir in treating glioma.

Methods: We searched databases such as PubMed, EMBASE, and Cochrane Library before March 30, 2023. The search terms included glioma, ganciclovir, valganciclovir and treatment. Calculated 1, 2 and 4-year survival rate by risk difference (RD), and overall survival (OS) by odds ratio (OR).

Results: Five randomized controlled trials (RCTs) with a total of 606 high-grade glioma patients were included. The results showed that ganciclovir can improve 2-yeaer (RD = 0.179, 95% CI 0.012-0.346, P = 0.036) and 4-year survival rate (RD = 0.185, 95% CI 0.069-0.3, P = 0.002) and OS (OR 2.393, 95% CI 1.212-4.728, P = 0.012) compared with the control group.

Conclusions: This meta-analysis showed that ganciclovir significantly improved the prognosis of glioma patients. Therefore, we suggest that more cases of ganciclovir as a glioma treatment can be conducted, or a large clinical trial can be designed.

Keywords: Drug repurposing; Ganciclovir; Glioblastoma; Glioma; Valganciclovir.

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