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Effects of gross total resection and subtotal resection on survival outcomes of glioma patients: a meta-analysis

Yu Shi [1], Chengming Liu [1], Dejing Cheng [1], Liyan Tang [1], Zhenyu Qi [1]

Affiliations

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Abstract

This study was to conduct a meta-analysis to explore the impact of gross total resection (GTR) and subtotal resection (STR) on survival outcomes in glioma patients. Relevant studies were searched in multiple databases from the available date of inception through 30 December 2021. The weighted mean differences (WMDs), relative risks (RRs), or hazard ratios (HRs) with 95% confidence intervals (CIs) were used to access the effect of GTR versus STR treatments on the outcomes. The histology (low-grade or high-grade) and study population (children and adults) were used for subgroup analysis. Sensitivity analysis was performed for all outcomes. Begg's test and trim-and-fill method were used for publication bias. Totally 100 studies enrolling 62,129 patients were selected in this meta-analysis. The summary results showed that GTR was superior in improving 1-, 2-, 3-, 5-, 10-, 15-year overall survival (OS), OS time, 1-, 3-, 5-year progression-free survival (PFS), recurrence, local control and seizure control among glioma patients. In addition, high-grade patients who underwent GTR had improvements in 1-, 2- and 3-year OS, OS time, and 1-year PFS, while low-grade patients receiving GTR had improvements in 2-, 5- and 15-year OS, recurrence, seizure control, and tumor progression compared with those receiving STR. GTR was likely to be more effective on survival outcomes than STR among patients with gliomas.

Keywords: Glioma; gross total resection; meta-analysis; subtotal resection; survival.

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