

ABSTRACT

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A systematic review and meta-analysis of fluorescent-guided resection and therapy-based photodynamics on the survival of patients with glioma.

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Glioma is the most common primary central nervous system tumor; many methods are currently being used to research and treat glioma. In recent years, fluorescent-guided resection (FGR) and photodynamic therapy (PDT) have become hot spots in the treatment of glioma. Based on the existing literatures regarding the FGR enhancing resection rate and regarding efficacy of PDT for the treatment of glioma, this paper made a systematic review of FGR for gross total resection of patients and the PDT for the survival of patients with glioma. Meta-analysis of eligible studies was performed to derive precise estimation of PDT on the prognosis of patients with glioma by searching all related literatures in PubMed, EMBASE, Cochrane, and Web of Science databases, and further to evaluate (GTR) under FGR and the efficacy of PDT therapy, including 1-year and 2-year survival rates, overall survival (OS), and progression-free survival (PFS). According to the inclusion and exclusion criteria, a total of 1294 patients with glioma were included in the final analysis of 31 articles, among which a 73.00% (95% CI, 68.00 ~ 79.00%, $P < 0.01$) rate of GTR in 27 groups included in 23 articles was reported for those receiving FGR. The OS was 17.78 months (95% CI, 8.89 ~ 26.67, $P < 0.01$) in 5 articles on PDT-treated patients with glioma, and the mean difference of OS was 6.18 (95% CI, 3.3 ~ 9.06, $P < 0.01$) between PDT treatment and conventional glioma surgery, showing a statistically significant difference ($P < 0.01$). The PFS was 10.82 months (95% CI, 7.04 ~ 14.61, $P < 0.01$) in 5 articles on PDT-treated patients with glioma. A 1-year survival rate of 59.00% (95% CI, 38.00 ~ 77.00%, $P < 0.01$) in 10 groups included in 8 articles and 2-year survival rate of 25.00% (95% CI, 15.00 ~ 36.00%, $P < 0.01$) in 7 groups included in 6 articles were reported for those with PDT. FGR and PDT are feasible for treatment of patients with glioma, because FGR can effectively increase the resection rate, at the same time, PDT can prolong the survival time. However, due to the limitation of small sample size in the existing studies, larger samples and randomized controlled clinical trials are needed to analyze the resection under FGR and efficacy of PDT in patients with glioma.

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