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The risk of intracranial hemorrhage in glioma patients receiving anticoagulant treatment for venous thromboembolism: a bayesian network meta-analysis

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Abstract

Purpose: We aimed to perform a Bayesian network meta-analysis to assess the risk of intracranial hemorrhage (ICH) in patients with glioma receiving anticoagulant treatment for venous thromboembolism.

Methods: The PubMed, Embase and Web of Science databases were searched for relevant publications until September 2022. All studies evaluating the risk of ICH in patients with glioma receiving anticoagulant treatment were included. Bayesian network meta-analysis and pairwise meta-analysis were performed to compare the ICH risk between the anticoagulant treatments. The Cochrane's Risk of Bias Tool and the Newcastle-Ottawa Scale (NOS) were used to evaluate the quality of studies.

Results: A total of 11 studies with 1301 patients were included. Pairwise comparisons showed no significant differences excepted with LMWH vs. DOACs (OR: 7.28, 95% CI: 2.11-25.17) and LMWH vs. Placebo (OR: 3.66, 95% CI: 2.15-6.24). For network meta-analysis, significant difference was found between patients treated with LMWH vs. Placebo (OR: 4.16, 95% CI: 2.00-10.14) and LMWH vs. DOACs (OR: 10.13, 95% CI: 2.70-70.19).

Conclusions: It seems that LMWH has the highest risk of ICH in glioma patients, while no evidence indicates that DOACs increase the risk of ICH. The use of DOACs may perhaps be a better choice. Further larger studies focusing on the benefit-to-risk ratio are warranted.

Keywords: Anticoagulants; Glioma; Intracranial hemorrhages; Meta-analysis; Thromboembolism.