

## ABSTRACT

Thromb Res. 2022 Sep 6;219:14-21. doi: 10.1016/j.thromres.2022.08.029. Online ahead of print.

Isocitrate dehydrogenase mutation and risk of venous thromboembolism in glioma: A systematic review and meta-analysis.

Low SK(1), Anjum Z(2), Mahmoud A(2), Joshi U(2), Kouides P(3).

### Author information:

(1)Department of Internal Medicine, Rochester General Hospital, NY, United States of America. Electronic address: soonkhai.low@gmail.com.

(2)Department of Internal Medicine, Rochester General Hospital, NY, United States of America.

(3)Department of Hematology, Lipson Cancer Institute, Rochester General Hospital, NY, United States of America.

**BACKGROUND:** Patients with malignancies including malignant gliomas have a relatively high risk for venous thromboembolism (VTE). Recent evidence has linked isocitrate dehydrogenase (IDH) mutation with reduced VTE risk in malignant glioma. This meta-analysis aims to quantify the association of IDH mutation status with risks of VTE in patients with glioma.

**METHODS:** We searched PubMed, Google Scholar, Medline OVID, Cochrane library, Cumulative Index to Nursing and Allied Health Literature databases to identify relevant studies. The overall odd ratio (OR) was pooled using the random-effects model. We evaluated the statistical heterogeneity using Cochran's Q statistics and I<sup>2</sup> tests. We performed subgroup analyses according to age, tumor, study design, and study quality.

**RESULTS:** A total of 2600 patients from 8 studies were included in the meta-analysis. Patients with IDH mutant-type gliomas had a significantly lower risk of VTE (OR: 0.21, 95 % confidence interval [CI]: 0.09-0.46, I<sup>2</sup> = 34 %) compared to patients with IDH wild-type gliomas. Among high-grade (III and IV) glioma, VTE events in IDH-mutant gliomas occurred with an OR of 0.28 (95 % CI: 0.14-0.53). No statistically significant decrease in the VTE risk was observed in grade II gliomas with IDH mutation compared to IDH wild-type gliomas, as indicated by the OR of 0.60 (95 % CI: 0.17-2.11).

**CONCLUSION:** IDH mutation is significantly associated with 79 % lower risk of VTE among patients with high-grade glioma compared to IDH wild-type. Our findings suggest the potential utility of IDH mutation status regarding thromboprophylaxis, and the need for further studies to elucidate the mechanism of the association.

Copyright © 2022 Elsevier Ltd. All rights reserved.

DOI: 10.1016/j.thromres.2022.08.029  
PMID: 36088710

**Conflict of interest statement:** Declaration of competing interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.