A comprehensive analysis of vascular complications in 3,889 glioma patients from the German Glioma Network.


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Abstract

Ischemic strokes, intracranial hemorrhages (ICH) and deep venous thromboembolism (DVT) are clinically important events in patients with gliomas. In this multicentre, noninterventional observational study, current data pertaining to frequency, contributing factors and outcomes of vascular events during times of anti-angiogenic therapy with the antibody against vascular endothelial growth factor, bevacizumab (BEV) was collected from the German Glioma Network. Among 3,889 glioma patients, 70 ischemic strokes (1.8 %) and 123 ICH (3.2 %) were recorded. 143 DVT (5.0 %) were recorded in 2,855 patients. Rates of DVT and ICH, but not of ischemic strokes, increased with the World Health Organization (WHO) grade of glioma. In 81 BEV-treated patients, five ischemic strokes (6.2 %), one ICH (1.2 %) and six DVT (7.4 %) were documented. Compared to patients that were not treated with BEV, ischemic stroke rate was significantly higher during treatment with BEV (p < 0.001). The rates of DVT (p = 0.123) or ICH (p = 0.571) in BEV-treated patients did not differ. On cerebral magnetic resonance imaging (MRI), BEV-related ischemic strokes appeared as diffusion-restricted sites next to contrast-enhancing tumor. 67 % of ICH, 61 % of ischemic strokes and 18 % of DVT occurred postoperatively (within 30 days after tumor resection). Outcome after postoperative ICH was significantly worse than after spontaneous ICH (p = 0.008). Ischemic stroke outcomes did not differ between postoperative and spontaneous occurrence (p = 0.401). Rate of pulmonary embolism did not differ significantly between postoperative and spontaneous DVT (p = 0.133). Relatively low rates of ICH and DVT might be partially due to a high proportion of low-grade gliomas in this patient cohort. The finding of a relevant number of symptomatic, therapy-associated intracerebral diffusion restrictions should be controlled in ongoing phase III studies.

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