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Circulating Tumor Cells and Thromboembolic Events in Patients with Glioblastoma

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Abstract

Patients with glioblastoma (GBM) are at increased risk for arterial and venous thromboembolism (TE). Risk factors include surgery, the use of corticosteroids, radiation, and chemotherapy, but also prothrombotic characteristics of the tumor itself such as expression of tissue factor, vascular endothelial growth factor, or podoplanin. Although distant metastases are extremely rare in this tumor entity, circulating tumor cells (CTCs) have been detected in a significant proportion of GBM patients, potentially linking local tumor growth characteristics to systemic hypercoagulability. We performed post hoc analysis of a study, in which GBM patients had been investigated for CTCs. Information on TE was retrieved from electronic patient charts. In total, 133 patients (median age, 63 years; interquartile range, 53-70 years) were analyzed. During follow-up, TE was documented in 14 patients (11%), including 8 venous and 6 arterial events. CTCs were detected in 26 patients (20%). Four (15%) patients with CTCs had a TE compared with 10 (9%) patients without CTCs. There was no difference in the frequency of TE events between patients with and those without detectable CTCs (p = 0.58). In summary, although our study confirms a high risk of TE in GBM patients, it does not point to an obvious association between CTCs and vascular thrombosis.