In a paper, Loit et al. propose to build a distribution map of small deep infarcts in glioma surgery, and to analyze patients' cognitive outcome in relation to stroke occurrence.

They retrospectively studied a consecutive series of patients operated on for a diffuse glioma between June 2011and June 2017. Patients with lower-grade glioma were cognitively assessed, both before and 4 months after surgery. Areas of decreased apparent diffusion coefficient (ADC) on the immediate postoperative MRI were segmented. All images were registered in the MNI reference by ANTS algorithm, allowing to build a distribution map of the strokes. Stroke occurrence was correlated with the postoperative changes in semantic fluency score in the lower-grade glioma cohort.

One hundred fifteen patients were included. Areas of reduced ADC were observed in 27 out of 54 (50%) patients with a lower-grade glioma, and 25 out of 61 (41%) patients with a glioblastoma. Median volume was 1.6 cc. The distribution map revealed five clusters of deep strokes, corresponding respectively to callosal, prefrontal, insulo-opercular, parietal, and temporal tumor locations. No motor nor speech long-term deficits were caused by these strokes. Cognitive evaluations at 4 months showed that the presence of small infarcts correlated with a slight decrease of semantic fluency scores.

Deep small infarcts are commonly found after glioma surgery, but their actual impact in terms of patients' quality of life remains to be demonstrated. Further studies are needed to better evaluate the cognitive consequences-if any-for each of the described hotspots and to identify risk factors other than the surgery-induced damage of microvessels [1].

2017

In a retrospective study. Patients with grades II-IV supratentorial diffuse glioma, immunohistochemistry results of IDH1-R132H, and antiepileptic drug (AED) prescribed postoperatively were included. The primary outcome was seizure frequency over the first 12 postoperative months: Group A - postoperative seizure freedom; Group B - 1-11 seizures over 12months (less than one seizure per month); and Group C - greater than one seizure per month. Rates of IDH1-R132H mutation were compared between the three outcome groups in univariate and multivariate analyses. Subgroup analysis was performed in 64 patients with IDH1/2 pyrosequencing data.

One hundred cases were included in the analysis: 30.0% grade II, 20.0% grade III, and 50.0% grade IV gliomas. Group B patients averaged 1 seizure over 12months, compared with 2 seizures per month in Group C. Isocitrate dehydrogense 1-R132H mutation was present in 29.3% (17/58) of Group A, 18.2% (14/22) of Group B, and 70.0% (14/20) of Group C patients (p=0.001). On multivariate analysis, after controlling for preoperative seizure, grade, and temporal tumor location, IDH1-R132H was associated with Group C when compared with both Group A (RR 4.75, p=0.032) and Group B (RR 9.70, p=0.012). In the subgroup with IDH1/2 molecular data, an IDH1/2 mutation was present in 64.7% (22/34) of Group A, 28.6% (4/14) of Group C, and 87.5% (14/16) of Group C patients (p=0.004).

In patients with supratentorial diffuse gliomas, IDH1-R132H mutations are associated with a more severe phenotype of postoperative epilepsy. These findings support further research into IDH mutations, and the potential for an antiepileptic therapeutic effect of their inhibitors, in patients with glioma-associated epilepsy [2].

1)
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2)

Neal A, Kwan P, O'Brien TJ, Buckland ME, Gonzales M, Morokoff A. IDH1 and IDH2 mutations in postoperative diffuse glioma-associated epilepsy. Epilepsy Behav. 2017 Nov 21;78:30-36. doi: 10.1016/j.yebeh.2017.10.027. [Epub ahead of print] PubMed PMID: 29172136.