Glioma surgery complications

These complications can be broadly divided into neurologic, regional, and systemic, including direct cortical and vascular injury, surgical wound complications, and postsurgical medical complications. Certain patient characteristics, including Karnofsky performance status score (KPS) and pathology of the tumor, have been shown to have an impact on the risk of postsurgical complications. Advancement in preoperative and intraoperative adjunct technology such as cortical mapping and navigation has improved the surgeon's ability to safely and maximally resect the tumors. It is therefore important to understand the perioperative complications after craniotomy and tumor resection and factors affecting morbidity and mortality in order for surgeons to optimally select and counsel patients who will benefit the most from surgical resection [1].

Ischemia after high-grade glioma surgery are frequent and may constitute potential cause of false-positive results in postsurgical evaluation using 18F fluorocholine positron emission tomography. On the other hand, hypoxia caused by ischemia promotes invasive glioma growth.

García Vicente et al., presented 3 cases of patients with different grades of ischemic injury after resection of High-grade glioma. The combined interpretation of diffusion weighted imaging and apparent diffusion coefficient map on MRI, in this clinical setting, is mandatory to avoid PET/CT misinterpretations [2].

Global aphasia after glioma surgery

Global aphasia after glioma surgery

Ventricular Entry

The consequences of ventricular entry during resection of High-grade gliomas (HGG) are uncertain and often not detectable clinically.

Mistry et al. searched titles and abstracts of published journals in the NCBI/NLM PubMed and OVID EMBASE databases were searched without language restriction and systematically screened. Outcomes extracted included the odds of leptomeningeal dissemination and hydrocephalus in patients with ventricular entry during HGG resection compared to without. They were analyzed using a random-effects model to calculate summary odds ratios (sORs). Overall survival data were also compared between patients with and without ventricular entry.

Twenty final studies with 2251 total patients were included from the 6910 retrieved. Patients with ventricular entry during HGG resection demonstrated higher odds of leptomeningeal dissemination (sOR: 3.91 [95% confidence interval (CI): 1.89-8.10]; P = .0002; 86/410 vs 57/847 patients in 9 studies) and hydrocephalus (sOR: 7.78 [95% CI: 3.77-16.05]; P < .00001; 58/431 vs 11/565 patients in 11 studies). They also had decreased survival (median survival: 16.8 vs 19.1 mo; 413 vs 322 patients in 10 studies; hazard ratio: 1.25 [95% CI: 1.05-1.48], P = .01).

The association between ventricular entry during HGG resection and tumor dissemination, hydrocephalus, and decreased survival invites investigations to understand this link. Neurosurgeons and neuro-oncologists must be aware of the consequences of ventricular entry during surgery for HGG [3].

1)
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2)
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3)
Mistry AM, Kelly PD, Thompson RC, Chambless LB. Cancer Dissemination, Hydrocephalus, and Survival After Cerebral Ventricular Entry During High-Grade Glioma Surgery: A Meta-Analysis. Neurosurgery. 2018 Dec 1;83(6):1119-1127. doi: 10.1093/neuros/nyy202. PubMed PMID: 29790976.