Population-based studies of brain tumor surgery: surgical outcome and prognostic factors

Akademisk avhandling

Som för avläggande av medicine doktorsexamen vid Sahlgrenska akademin, Göteborgs universitet kommer att offentligen försvaras i Arvid Carlsson, Academicum, Medicinaregatan 3, den 1a oktober, klockan 09.00

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ABSTRACT
Neurosurgery is the cornerstone in the treatment of a majority of brain tumors. Surgery can sometimes cure or delay tumor progression. However, surgery is associated with risks, and adequate information about the anticipated peri- and postoperative course is important for informed consent. The identification of tumor markers in a preoperative setting is beneficial in lower-grade gliomas, a heterogeneous group in terms of biological behavior where molecular markers play an important role in diagnosis and treatment. We investigated the role of the non-invasive radiological marker T2-FLAIR mismatch by means of a population-based study. The mismatch sign is highly specific for IDH-mutated 1p/19q non-codeleted gliomas and thus useful in the preoperative setting. We examined how age affects lower-grade glioma treatment, in addition to short-term postoperative complications. Older patients (≥60 years) seem to tolerate neurosurgery compared with younger patients (<60 years), although a higher rate of neurological deficit occurred postoperatively. Meningioma is the most common intracranial tumor and surgery is the main treatment modality. The short-term postoperative risk for complications after meningioma surgery, both in symptomatic and asymptomatic, was studied. The complication rate in the short-term (30-day) postoperative period in Sweden lies in line with the relevant literature. Through a registry-based approach we studied the return to work long-term (up to two years) after meningioma surgery. The sick leave pattern after meningioma surgery revealed that surgery is associated with considerable risk of long-term sick leave two years after the operation as 57% in meningioma patients returned to work compared with 84% of matched controls. Risk factors for long-term sick leave were history of depression, surgical neurological deficit and higher tumor grade. The present work contributes with elucidating on a promising non-invasive radiological marker and the role of age in lower-grade gliomas, and in patients with meningioma data on the current postoperative risk after meningioma surgery and novel data with regard to return to work.

Keywords: Lower-grade gliomas; biomarkers; neurosurgery; segmentation; population-based; registry-based