Parietal lobe glioma case series

2018

Between 2012 and 2016 Liouta et al., recruited 38 patients with parietal lobe glioma. Patients were examined for primary and secondary association deficits with a dedicated battery of neuropsychological tests. The parietal association deficits (PADs) were grouped into 5 categories: visuospatial attention, gnosis, praxis, upper limb coordination, and language.

For descriptive analysis tumors were divided into high grade glioma and low-grade gliomas and also according to patient age and tumor size.

Parietal association deficits were elicited in 80% of patients, thus being more common than primary deficits (50%). Apraxia was the most common PAD (47.4%), followed by anomic aphasia and subcomponents of Gerstmann's syndrome (34.2% each). Other deficits such as hemineglect, Astereognosis, extinction, and visuomotor ataxia were also detected, albeit at lower rates. There was a statistically nonsignificant difference between PADs and sex (72.2% males, 85% females) and age (77.8% at ≤ 60 years, 80% at age > 60 years), but a statistically significant difference between the > 4 cm and the ≤ 4 cm diameter group ($p = 0.02$, 94.7% vs 63.2%, respectively). There was a tendency ($p = 0.094$) for low-grade gliomas to present with fewer PADs (50%) than high-grade gliomas (85.7%). Tumor laterality showed a strong correlation with hemineglect ($p = 0.004$, predilection for right hemisphere), anomia ($p = 0.001$), and Gerstmann's symptoms ($p = 0.01$); the last 2 deficits showed a left (dominant) hemispheric preponderance.

This is the first study to prospectively evaluate the incidence and nature of parietal association deficits (PADs) in patients with parietal lobe gliomas. It could be that the current literature may have underestimated the true incidence of deficits. Dedicated neuropsychological examination detects a high frequency of PADs, the most common being apraxia, followed by anomia and subcomponents of Gerstmann's syndrome. Nevertheless, a direct correlation between the clinical deficit and its anatomical substrate is only possible to a limited extent, highlighting the need for intraoperative cortical mapping and subcortical functional mapping [1)].

2012

One hundred nineteen patients with parietal gliomas were identified–34 with low-grade gliomas and 85 with high-grade gliomas. The median patient age was 45 years, and most patients (53) presented with seizures, whereas only 4 patients had an appreciable parietal lobe syndrome. The median preoperative tumor volume was 31.3 cm(3), the median extent of resection was 96%, and the median postoperative tumor volume was 0.9 cm(3). Surprisingly, the most common early postoperative neurological deficit was dysphasia (16 patients), not weakness (12 patients), sensory deficits (14 patients), or parietal lobe syndrome (10 patients). A proposed parietal glioma classification system, based on surgical anatomy, was predictive of language deficits.

This is the largest reported experience with parietal lobe gliomas. The findings suggested that parietal language pathways are compromised at a surprisingly high rate. The proposed parietal glioma classification system is predictive of postoperative morbidity associated with language and can assist with preoperative planning. Taken together, these data emphasize the value of identifying language

pathways when operating within the parietal lobe [2].

2005

In 28 consecutive patients who underwent resection of a glial neoplasm found on imaging studies to be confined to the parietal lobe. Neurological deficits were correlated with hemispheric dominance, location of the lesion within the superior or inferior parietal lobules, subcortical extension, and involvement of the postcentral gyrus. The tumors were located in the dominant hemisphere in 18 patients (64%); had a mean diameter of 39 mm (range 14-69 mm); were isolated to the superior parietal lobule in six patients (21%) and to the inferior parietal lobule in eight patients (29%); and involved both lobules in 14 patients (50%). Gross-total resection, documented by MR imaging, was achieved in 24 patients (86%). Postoperatively, nine patients (32%) experienced new neurological deficits, whereas seven (25%) had an improvement in their preoperative deficit. A correlation was noted between larger tumors and the presence of neurological deficits both before and after resection. Postoperatively higher-level (association) parietal deficits were noted only in patients with tumors involving both the superior and inferior parietal lobules in the dominant hemisphere. At the 3-month follow-up examination, five of nine new postoperative deficits had resolved.

Neurological deterioration and improvement occur after resection of parietal lobe gliomas. Parietal lobe association deficits, specifically the components of Gerstmann syndrome, are mostly associated with large tumors that involve both the superior and inferior parietal lobules of the dominant hemisphere. New hemineglect or sensory extinction was not noted in any patient following resection of lesions located in the nondominant hemisphere. Nevertheless, primary parietal lobe deficits (for example, a visual field defect or cortical sensory syndrome) occurred in patients regardless of hemispheric dominance [3].

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2)
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Russell SM, Elliott R, Forshaw D, Kelly PJ, Golfinos JG. Resection of parietal lobe gliomas: incidence and evolution of neurological deficits in 28 consecutive patients correlated to the location and morphological characteristics of the tumor. J Neurosurg. 2005 Dec;103(6):1010-7. PubMed PMID: 16381187.