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Clinicopathological and Neuroimaging Features of Primary Gliosarcoma: A Case Series And Review of Literature

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Abstract

Background: Gliosarcoma (GS) is a rare primary high-grade brain neoplasm with a poor prognosis and challenging surgical resection. Although it is now considered a morphological variant of IDH-wildtype glioblastoma (World Health Organization Classification of Tumours 2021), GS may display peculiarities that hamper both surgical and oncological management.

Methods: In this retrospective study, we searched our registry for histologically confirmed GS patients between 2006 and 2020. Cases were reviewed for clinical information, pathological characteristics, imaging findings, management, and outcome.

Results: 21 patients with histologically confirmed GS were identified with a median age of 62 years. Twelve were men and nine women. The temporal lobe was the most common location (9 patients, 42.9%). Nineteen patients underwent surgical resection, and only four (19%) demonstrated gross total resection on postsurgical MRI, with an overall median survival of 7 months (range, 0.5-37). Diagnostic MRI demonstrated heterogenous lesions with necrotic-cystic areas and a ring-enhancement pattern. Only one case of extracranial extension was seen in our sample, and no patient showed distant metastases.

Conclusions: The rarity of primary GS and the absence of specific therapeutic guidelines represent a significant clinical challenge. Our study provides a comprehensive analysis of clinical and neuroimaging characteristics in a real-world patient cohort and compares our findings with the available literature.

Keywords: Glioblastoma; Gliosarcoma; Magnetic Resonance Imaging; Neuroimaging; Neurosurgery.