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Primary and Secondary Gliosarcomas: A Review of Clinical Features and Pathological Diagnosis

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Introduction

Gliosarcoma (GSM) is a rare primary malignant brain tumor, accounting for approximately 4 % of all malignant gliomas. GSM can be further classified into primary tumors (PGS), and secondary gliosarcomas (SGS), which are identified in patients with prior glioblastoma (GBM). Clinical guidelines for GSM are poorly defined and the patients are usually treated in accordance with existing guidelines for glioblastoma. We conducted a single-institution retrospective review all of patients diagnosed with GSM over the past 5 years.

Methods

We retrospectively reviewed and analyzed the clinical data of all patients treated at our institution with a histopathological diagnosis of GSM. Various characteristics were evaluated in univariate and multivariate models to examine their effects on overall survival.

Results

A total of 43 patients were included in the study. 36 of the patients were primary GSM(83.7%). The median age was 52 years with a male preponderance (1.4:1). The locations, all supratentorial, included temporal in 55.8 %, midline in 35.9 %, frontal in 16.3 % and parietal in 11.3 %. Every patient underwent resection, and 60.5% underwent gross-total resection (GTR). Median overall survival (OS) for all patients who received adjuvant therapy was 9 months from the diagnosis of GSM, with a progression free survival (PFS) of 8 months. Comparing PGS with SGS, the median OS was 12 and 8.95 months, respectively (from the time of sarcomatous transformation in the case of SGS). The median OS in SGS patients from the initial diagnosis of GBM was 19 months, with a PFS of 13 months. On histopathology, all tumours showed biphasic pattern, glial component positive for glial fibrillary acidic protein and mesenchymal component positive for vimentin. The Cox proportional hazards regression model indicated that the adjuvant therapy (P = 0.001) was the significant prognostic factor.

Conclusions

Despite an overall poor prognosis, adjuvant multi-modality therapy appears to be associated with better outcomes. Therefore, GSM can be treated according to glioblastoma guidelines, but further research into the clinical and molecular-genetic characteristics of GSM is required to better understand this malignant brain tumor.

Learning Objectives

To analyze the prognostic factors for survival in patients with primary and secondary gliosarcomas.

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