

Gliosarcoma: A Rare Variant of Glioblastoma Multiforme

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ABSTRACT

Gliosarcoma is biphasic intraaxial malignant neoplasm of the central nervous system and rare variant of Glioblastoma Multiforme (GBM). Gliosarcoma constitute approximately 2% of all glioblastoma multiforme. Here we present a case report of 32 year-old gentleman presented with a history of right-sided weakness and slurred speech. Brain imaging (CT scan and MRI) was suggestive of a right frontal mass lesion with contrast enhancement at the periphery. Histopathological diagnosis was gliosarcoma that was further confirmed by immunohistochemically.

KEYWORDS: Biphasic, Gliosarcoma, Glioblastoma Multiforme.

INTRODUCTION

Gliosarcoma is a rare variant of Glioblastoma Multiforme. Gliosarcoma corresponds histologically to WHO Grade IV astrocytoma. We present a case of gliosarcoma and review the literature of this uncommon clinical entity.

CASE REPORT

A 32 year-old gentleman presented with a history of right sided weakness and slurred of speech. On examination, he had right hemiparesis grade 4/5 and slurred speech.

Investigations

CT scan showed a left fronto-parietal isodense lesion with marked peripheral edema in the left frontal region; peripheral enhancement was noted after administration of contrast. On MRI the lesion was hypointense on T1- and hyperintense on T2-weighted images, and was irregularly enhancing with contrast. Total surgical excision was undertaken.

Histopathology

The histopathology examination revealed a malignant brain tumour presenting a biphasic tissue pattern with gliomatous and mesenchymal components. The glial component was similar to a glioblastoma with nuclear pleomorphism, high mitotic index, marked vascular proliferation and foci of necrosis (Fig 1) The mesenchymal component consists of areas with densely packed long bundles of spindle cells in a storiform pattern (Fig 2).

Reticulin stain positive in the sarcomatous component. Immunohistochemically, Gliomatous areas showed glial-

fibrillary acidic protein expression. The sarcomatous cells expressed vimentin.

DISCUSSION

Gliosarcomas constitute approximately 2% of all glioblastomas^{1,2}. The age distribution is similar to that of the primary glioblastomas, with preferential manifestation between ages 40 and 60. Males are frequently affected. Gliosarcomas are usually located in the cerebrum, involving the temporal, frontal, parietal and occipital lobes in decreasing order of frequency.³

The clinical history is usually short. Most of patient present with seizures and paresis. At angiography, some gliosarcomas reveal mixed dural and pial vascular supply. CT scans often show the features of a diffusely infiltrating glioblastoma. In case of predominant sarcomatous components, the tumour appears as a well-demarcated hyperdense mass with homogenous contrast-enhancement which may mimic a meningioma. Macroscopically the sarcomatous component produces a firm, often superficial, discrete mass in a lesion.

Histopathologically, Gliosarcomas are characterized by a biphasic pattern with areas of both glial and sarcomatous components⁴. The glial portion usually shows the typical features of a glioblastoma with a varying degree of anaplasia and GFAP expression. The sarcomatous areas often show the typical herringbone pattern of fibrosarcoma, with densely packed long bundles of spindle cells. Occasionally, the histology resembles features of a malignant fibrous histiocytoma.^{2,5} For diagnosis purposes, the

demonstration of reticulin in the sarcomatous component and GFAP in the gliomatous portion is important⁶. Gliosarcoma may show a variety of additional lines of mesenchymal differentiation. Epithelial metaplasia with clusters of keratinizing stratified epithelium and adenoid

formation have been noted⁷.

Gliosarcoma show similar genetic aberrations to those occurring in glioblastomas. Clinical trials have failed to demonstrate a difference in outcomes for gliosarcoma and GBM.

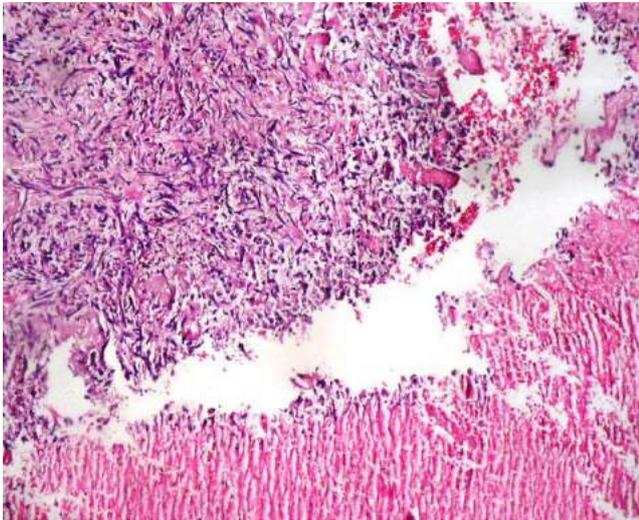


Fig 1: Microphotograph shows Gliomatous component. H & E, 10 x

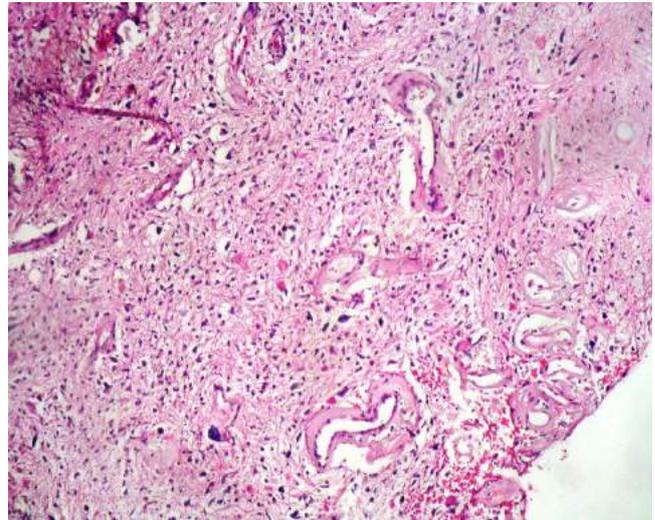


Fig 2: Microphotograph shows sarcomatous component. H & E, 10 x

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