Multiple gliomas

Some of the following terms are inconsistently used interchangeably: “multicentric glioma,” “multifocal glioma,” and “multiple glioma”.

Discussion of multiple gliomatous masses has to acknowledge the concept that astrocytoma is a multifocal disease, not a focal one. Some terms are probably artificial. The term gliomatosis cerebri has been dropped by the World Health Organization Classification of Tumors of the Central Nervous System 2016. Now, widespread brain invasion involving ≥ 3 lobes, frequently with bilateral involvement and often with posterior fossa extension, is considered a special pattern of spread within several diffuse glioma subtypes.

Settings in which multiple gliomatous masses are encountered:

conventional glioma that has spread by one of the mechanisms previously described multiple primary gliomas: some of the following terms are inconsistently used interchangeably: “multicentric glioma,” “multifocal glioma,” and “multiple glioma.” The reported range of occurrence is 2–20% of gliomas [1)] [2)] (lower end of range ≈ 2–4% is probably more accurate; the higher end of the range is probably accounted for by infiltrative extension [3)]

a) commonly associated with neurofibromatosis and tuberous sclerosis

b) rarely associated with multiple sclerosis and progressive multifocal leukoencephalopathy meningeal gliomatosis: dissemination of glioma throughout the CSF, similar to carcinomatous meningitis. Occurs in up to 20% of autopsies on patients with high-grade gliomas. May present with cranial neuropathies, radiculopathies, myelopathy, dementia, and/or communicating hydrocephalus

In a series of 25 patients with multicentric glioma, [4)] glioblastoma was the most common pathology (48%), followed by anaplastic astrocytoma (20%), and glioblastoma with simultaneous AA (20%).

Rarely multiple gliomas may be undetectable on CT and will be misdiagnosed as pseudotumor cerebri.

▶ Treatment considerations for multiple gliomas. There is little data available. In a nonrandomized study of 25 patients with multifocal glioma [5)] the 16 patients who underwent debulking did better than the 9 who did not. However, there was significant selection bias in choosing patients suitable for craniotomy. A biopsy is generally required/recommended to confirm the diagnosis.

Multiple gliomas were first observed by Virchow in 1864 and Bradley in 1880.

In their seminal paper published in 1962, Batzdorf and Malamud characterized the modes of growth in gliomas by establishing criteria to distinguish multiple and multicentric gliomas

Namely, multiple gliomas disseminates along established CNS routes, such as white matter tracts, cerebrospinal fluid (CSF), or local invasion.

see Multicentric glioma

[1]
Barnard RO, Geddes JF. The Incidence of Multifocal Cerebral Gliomas: A Histological Study of Large Hemisphere Sections. Cancer. 1987; 60:1519–1531
[2]
van Tassel P, Lee Y-Y, Bruner JM. Synchronous and Metachronous Malignant Gliomas: CT Findings. AJNR. 1988; 9:725–732
[3]
Harsh GR, Wilson CB, Youmans JR. Neuroepithelial Tumors of the Adult Brain. In: Neurological Surgery. 3rd ed. Philadelphia: W. B. Saunders;1990:3040–3136
[4] , [5]
Salvati M, Caroli E, Orlando ER, et al. Multicentric glioma: our experience in 25 patients and critical review of the literature. Neurosurg Rev. 2003; 26: 275–279