Multifocal Glioblastoma Multiforme

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ABSTRACT

Multicentric gliomas are uncommon lesions but a fascinating clinical and scientific issue. Current opinion ranges from rejection of surgical treatment to its recommendation. We report a case of young adult who presented with one episode of generalized tonic clonic seizures and mild weakness of right hand. Imaging findings were suggestive multiple lesions in the left temporo-parietal area. Surgical decompression was performed for the larger lesion and histopathology was suggestive of glioblastoma multiforme. Based on these findings a diagnosis of multifocal glioblasotma was made. Patient was submitted for radiotherapy. In patients with multiple lesions tissue analysis is critical for treatment planning and to determine the prognosis.

Key words: *Glioblastoma, multicentric glioma, multifocal glioma, multiple cerebral lesions*

Multifokal Glioblastoma Multiforme

ÖZET

Multisentrik gliomalar nadir lezyonlardır. Bu konuda görüşler cerrahi tedaviden tavsiyelere kafdar değişebilir. Biz sağ elinde hafif zayıflık olan ve yaygın tonik klonik nöbetleri olan genç bir hastayı sunduk. Görüntüleme bulguları sol temporo-pariyatal bölgede multipl lezyonları gösteriyordu.cerrahi olarak dekopmresyon tercih edildi. Çıkarılan büyük parçanın patoloji sonucu glioblastoma multiforme geldi.Tüm bulgular incelendiğinde multifokal glioblastoma tanısı konuldu. Hastaya radyoterapi uygulandı. Multifokal lezyonları olan hastalarda tedavi planlama yapmak için doku analizi gereklidir.

Anahtar kelimeler: *Glioblastoma, multisentrik glioma, multifokal glioma, multipl serabral lezyonlar*

INTRODUCTION

Multiple intracranial lesions represent a diagnostic dilemma and commonly represent metastases, lympho¬ma, infections and vascular or demyelinating disease. Multicentric gliomas are uncommon lesions but a fascinating clinical and scientific issue (1,2). The rate of true multicentricity in gliomas is defined as lesions with no gross or microscopic linkage and based on necropsy stud¬ies has been reported at 2% to 10% (3). On CT scan there incidence is reported as 2.5% (4). The clinical presentation and radiographic appearance of multicentric gliomas can mimic metastatic and other lesions radiographically; however the treatment of these two disease entities is considerably different (2). Therefore, it becomes impera¬tive to determine the histology of one of the lesions in the presence of multiple lesions on radiographic imag¬ing and in the absence of a known systemic malignancy (4). We discuss a case of multicentric glioblastoma multi¬forme (GBM) and review the relevant literature.

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CASE

A 38 years right handed man from costal area of rural south India presented with the history of one episode of generalized tonic clonic seizures one month back. Following recovery he noticed slurring of speech and weakness of right upper limb, that gradually recovered over a period of two days. He was complaining of giddiness since than. There was no history of headache, blur-ring of vision, fever or any other illness in the past. He was not a smoker or alcoholic. His general and systemic examinations were normal. On neurological examination he had mild weakness of right hand grip and plantars were extensor. Cranial nerves examination was normal. All blood investigations were normal. Chest X-Ray and ultrasound abdomen was normal. CT scan plain and con¬trast studies showed predominantly isodense lesion with mild hyperdense periphery left temporo-parietal lobe and another lesion behind this in high parietal lobe with peri-lesional oedema and mass effect. The large lesion was enhancing with contrast on periphery and other lesion showed mild enhancement. He was further investigated with MRI that showed two lesions isointense on T1W images becoming hyperintense on T2W images and remained hyperintense on FLAIR images with peri-lesional oedema and mass effect (Figure 1 and 2). He underwent left temporo-parietal craniotomy and decompression of the larger lesion. The lesion was identified with color changes and abnormal vessels on the cortical surface and change in cortical consistency on palpation. A small 0.5x0.5 corticectomy was performed and a grayish, soft suckable, moderately vascular tumor with abnormal vessels and necrotic material was identified and it was decompressed under micro¬scope. Following surgery patient recovered without any deficits. Post-operative CT scan showed good decompres¬sion of the larger lesion. Histopathology of the tumor tissue showed increased cellularity with nuclear and cellular atypia, pleomorphism and mitotic activity. It also showed areas of necrosis suggestive of glioblastoma multiforme. Patient was submitted for radiotherapy and doing well at follow up.

DISCUSSION

Multiple malignant gliomas are interesting yet uncom¬mon clinical entities (5). These lesions can be divided into two groups multicentric and multifocal. Multifocal gliomas are de¬fined as the lesions result from dissemination or growth by an established route, spread via commissural or other pathways, (i.e. corpus callosum, fornix, internal capsule, or massa intermedia), or spread via cerebrospinal fluid channels or local metastases (6). On the contrary multi- centric gliomas are widely separated lesions in different lobes or hemispheres that can not be attributed to the pathways just mentioned. These can also be separated by time of occurrence (6). Present case is an example of multifocal GBM present at the same time. Multifocal glio¬mas, according to the classification of Budka, are grouped into four categories: diffuse, multiple, multicentric, and multiple-organ (7). Pathogenesis of multicentric gliomas is not well understood and mny hy-potheses have been proposed to explain their multicentricity. Tumor dissemination via CSF pathways has been proposed as another reason for multicentric gliomas (1). Glioblastoma is the most fre¬quent histotype of multicentric glioma but more benign glial neoplasms including astrocytoma and ependymoma have also been reported as multicentric (2,8). The histopathological features of multicentric GBM include nuclear and cellular atypia and pleomorphism, dedifferentiation, mitotic activity, increased cellularity, and endothelial proliferation (9). In our case also the histopathology was suggestive of high grade ma¬lignancy (i.e. GBM). It is difficult to differentiate neuroradiologically among gliomas, lymphomas, and other ma¬lignant intracranial malignancies (10). As in present case multiple glioblastomas are hypo- or isodense on plain CT scan. They are usually hypo- or isointense on T1-weighted images and hyperintense on T2-weighted images remains hyerintense on FLAIR images. These lesions enhances strongly after contrast administration in a heterogeneous or ring-like manner both on CT and MRI scan. Meningeal or ventricular enhancement, suggestive of a possible way of dissemination, is rare. It may be associated with moder¬ate oedema and mass effect (11). There was no evidence of meningeal or ventricular enhancement in present case owever there was presence of associated cerebral oede-ma. Other associated features include tumor heterogene¬ity, hemorrhages, poor delineation, flow voids and large tumor size. Presence of mass effect, edema and large tumor size will differentiation between low-grade and high grade gliomas, whereas ring-enhancement and the presence of cyst or necrosis are characteristic for glio¬blastomas (9,12). Management of patients with multicentric gliomas is controversial and management ranges from rejection of surgical treatment to its recommendation. Surgical intervention and tumor decompression has a significant impact on longer

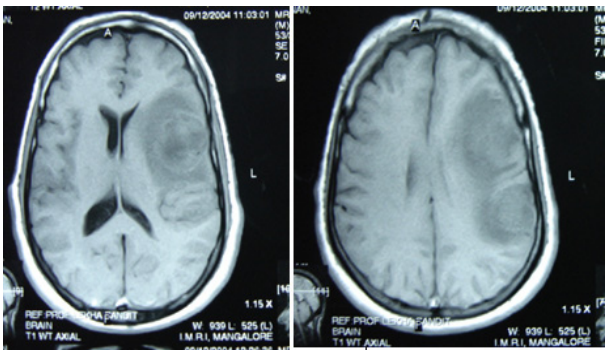

Figure 1. *MRI T1W images showing lesions are isointense to brain parenchyma*

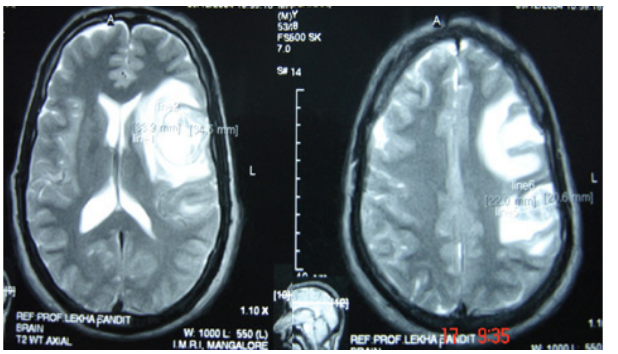

Figure 2*. MRI T2W images showing that lesions are becoming hyperintense*

and better survival and also facilitates histopathological analysis and grading of tumor (1,2). However some authors recommend bi¬opsy as the first step, believing that extensive resec¬tion increases the risk of haemorrhage and neurologi¬cal deficit without influencing survival (13). We per-formed open surgical decompression of the larger lesion to improve the neurological deficits and also to get tissue for hisological diagnosis. Though the prognosis of glioblastomas remains unfavorable, but it should be emphasized that the diagnosis of multifocal (as in present case) rather than multiple glioma leads to a more aggres¬sive therapy, ensuring longer survival (2,8).

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