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Cerebral Astroblastoma

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Abstract:

Background: Astroblastomas are rare glial tumors occuring in the supratentorial region of the brain. They constitute of 0.45%-2.8% of primary glial tumors. *Case Report:* A 21 year old male patient presented with tumor in the left frontal region which was totally excised. Microscopic examination showed features of low grade astroblastoma. *Conclusion:* Astroblastomas are rare glial tumors which need to be differentiated from ependymoma, papillary meningioma and glioblastoma with focal astroblastic pattern and IHC helps in diagnosis. The treatment advocated for low grade tumors is radical surgical excision.

Key words: Ependymoma, Glioma, Meningeal Neoplasms, Meningioma, Brain.

Introduction

Astroblastoma is a rare glial tumor comprising of 0.45%-2.8% of primary glial tumors [3]. These tumors were first described by Bailey and Cushing and later charecterized by Bailey and Busy [3]. These tumors share features of both astrocytomas and ependymomas. They are classified under neuroepithelial tumors [1].

Case Report

A 21 year old male patient presented with progressive headache, diplopia and later developed 6th nerve palsy. Previous medical history was unremarkable. Routine laboratory investigations were normal. Cranio CT scan revealed a large (4 cm/ 5 cm) well circumscribed cortically based mass with moderate to significant contrast enhancement in the left anterior frontal lobe. The lesion was predominantly solid with multiple cystic areas giving a characteristic bubbly appearance [Fig.1]. There was however no perilesional edema. The image morphology was considered to be more characteristic for astroblastoma, craniotomy was performed and the tumor was excised in toto.

Gross examination showed multiple grey white bits measuring 4 cm. Microscopic examination showed tumor cells which were elongated and arranged around blood vessels with broad cytoplasmic process extending on to the blood vessels [Fig2a,b]. Perivascular hyalinization was observed. The cytoplasmic processes were shorter and stouter when compared with ependymal

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rossettes. There was no evidence of necrosis, vascular endothelial proiliferation or mitotic activity. IHC showed positivity to GFAP and vimentin [Fig.2c,d] and was negative for EMA. A diagnosis of low grade astroblastoma was made. Follow-up of the patient showed that he was symptom free one year after surgery.

Discussion

The age distribution of astroblastomas is bimodal generally occurring both from 5 to 10 years of age and 21 to 30 years of age [2]. But they can occur in persons of any age being more common in children and young adults [4]. There is no sex

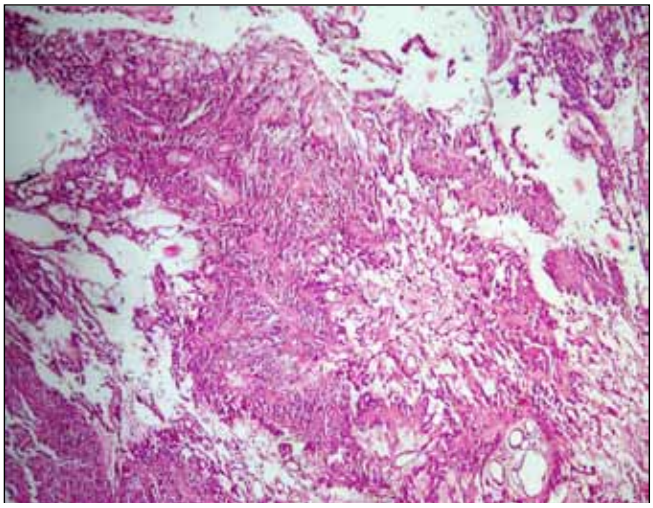

Fig.1: Schematic diagram of low power view of the tumor showing pseudo-papillary patterns.

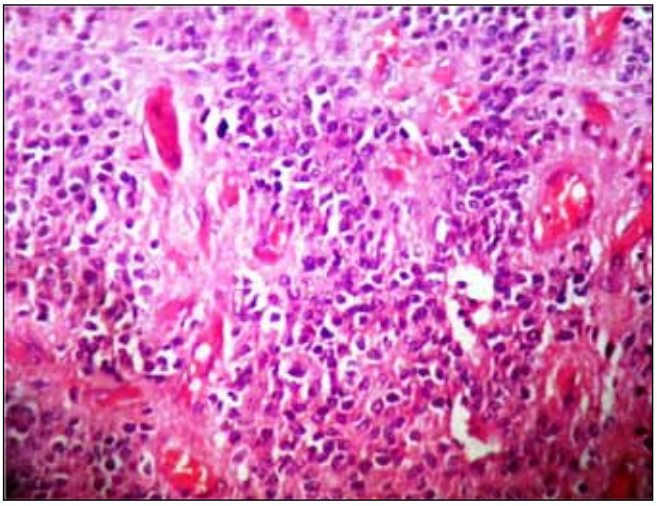

Fig.2: Schematic diagram of high power view of the tumor.

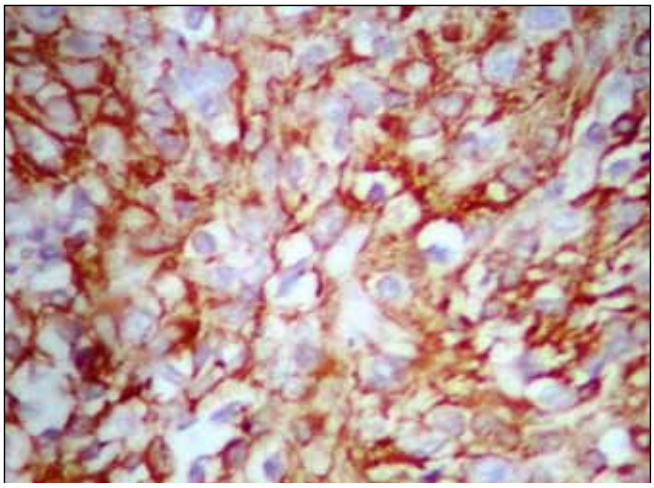

Fig.3: Schematic diagram of GFAP positivity.

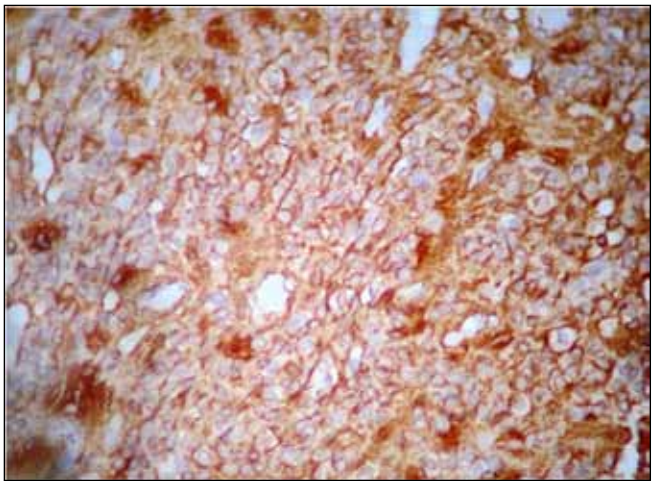

Fig.4: Schematic diagram of vimentin positivity.

predilection but according to Brat *et al*. there is a female preponderance [2]. Asroblastomas usually occur in superficial cerebral cortex but can extend to subarachanoid space [5]. MRI shows both cystic and solid components with solid component showing a bubbly appearance [3].

Histologically, astroblastomas and ependymomas show perivascular pseudo-rossettes with broad tapering cellular processes extending on to central blood vessel and perivascular hyalinization. Astroblastomas are divided into low and high grade tumors depending on the presence of mitosis, vascular endothelial proliferation and pseudo-pallisading necrosis. Our case was classified as low grade astroblastoma due to absence of all these factors. High grade tumors are difficult to be differentiated from glioblastomas. Cases of astroblastomas are known to be capable of getting converted to glioblastoma and gliosarcoma [1].

The differential diagnosis considered was ependymoma, papillary meningioma and glioblastoma with focal astroblastic pattern [2]. The cells of astroblastoma have short stumpy cytoplasmic processes whereas the cells of ependymoma have long cytoplasmic process. Astroblastomas are positive for GFAP and S-100 and negative for EMA while ependymomas are positive for EMA also [4]. Papillary meningiomas are negative for GFAP and positive for vimentin. Glioblastomas may show focal astroblastic pattern. Adequate sampling show areas of glioblastoma. In our case, the tumor cells showed broad cytoplasmic processes, perivascular hyalinization, positivity for GFAP and S-100 and negativity for EMA thus confirming the diagnosis of astroblastoma.

The treatment advocated for astroblastoma's include radical surgical resection and in cases where complete excision is not possible, chemotherapy followed by radiotherapy is advocated [6]. Cases of high grade astroblastomas are supposed respond better to radiotherapy when compared to low grade tumors. The prognosis of astroblastomas is also dependent on complete surgical excision. The role of chemotherapy is still debatable according to some authors. This case has been presented for its rarity.

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