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Astrocytoma Mimicking a Collision Tumour of Astrocytoma-Meningioma - A Rare Interesting Morphological Phenomenon

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Abstract: ***Background: Astrocytoma and meningioma, being two of the most common tumours of glial cells and cells of leptomeninges respectively, are known to occur together in a pattern referred to as collision tumour. Being presented here is a case report of a unique tumour of astrocytes which presented with morphological features of both astrocytoma and meningioma mimicking a collision tumour of astrocytoma-meningioma, a rare interesting morphological phenomenon. Case report: The case being reported here is of a middle-aged male presenting with right-sided muscular weakness and frequent episodes of headache which on diagnostic image screening studies was diagnosed as a left parieto-occipital brain tumour. Microscopic examination of the resected lesion revealed an interesting and enigmatic morphological phenomenon which mimicked a collision tumour of astrocytoma and meningioma, though the conclusive diagnosis of the lesion was Astrocytoma, high grade (Glioblastomamultiforme) as revealed by ancillary studies such as immunohistochemistry. Conclusion: The current case report being presented here is of an astrocytoma which exhibited an enigmatic morphological phenomenon of having conventional microscopic features mimicking collision tumour of astrocytoma and meningioma which turned out, on immunohistochemical studies, to be a single high grade astrocytoma, a fact which has dire prognostic implications in terms of clinical management modalities of unwarranted additional two of the most common primary brain tumours. They are usually present as a solitary mass.It is rare to see the two conditions together. The usual way to confirm the presence of these two conditions is by histopathological examination and immunohistochemistry. Histopathological exam may usually be sufficient and may not warrant the requirement of an immunohistochemistry test. In cases where there is relevant doubt due to insufficient positive features on histopathological examination, the immunohistochemistry findings help in conclusive diagnosis of astrocytomas.***

Keywords: Astrocytoma, glioblastomamultiforme, meningioma, collision tumour

1. Introduction

1.1 Case Report

The case report being presented here is of a patient aged 52-year old male who presented with right-sided muscular weakness along with episodes of severe headache since three weeks. On various diagnostic images screening studies such as CT scan and MRI a clinical diagnosis of left-sided brain tumourin the parieto-occipital region was arrived at by the department of neurosurgery.

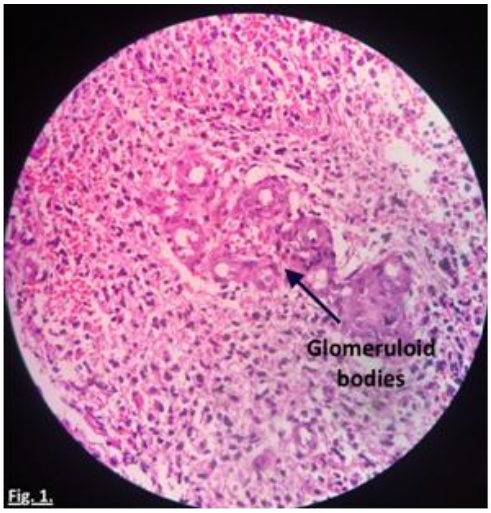
Neurosurgical intervention was undertaken to remove the tumour and the excised tumour was sent to histopathology laboratory for histopathological examination and other ancillary diagnostic procedures.

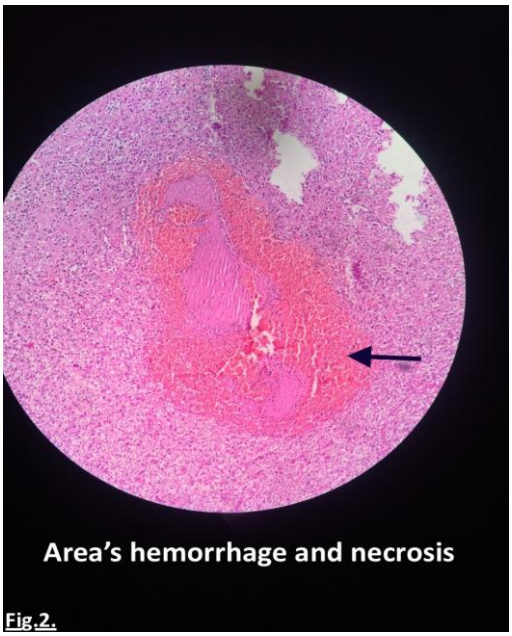
On gross examination, the specimen consisted of multiple, soft to firm, grey white to grey brown tissue fragments,largestof which measured 2cm in maximum dimension while the smallest measured 0.5cm in greatest dimension.

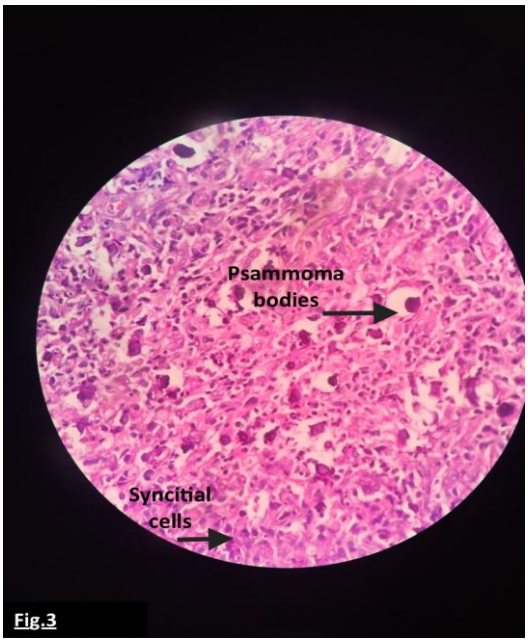
Microscopic examination reveals fragments of poorly circumscribed lesion composed of round topolygonal to ovoid cells with ample pale eosinophilic cytoplasm, which are arranged in diffuse sheets. At places, the cells show mild to moderate nuclear pleomorphism characterized by the presence of round to ovoid to spindled nuclei with inconspicuous nucleolus. Focal areas show markedanaplastic changes in the form of extensive nuclear pleomorphism along with presence of relatively large cells with enlarged bizzare nuclei and few multinucleate cells. Few scattered mitotic figures are also noted in relatively more cellular areas of the lesion. Also noted are focal confluent areas of necrosis reminiscent of palisading necrosis surrounded by densely scattered pleomorphic round to ovoid cells. Focal areas show sheets of round to polygonal cells arranged in variably formed whorl-like structures. Few scattered calcific spherules resembling psammoma bodies along with focal areas of endovascular proliferation with formation of tufts of vascular structures resembling glomerular bodies are also noted. On the basis of confounding histological features, a probable diagnosis of collision tumour of astrocytoma and meningioma of parieto-occipital region was made, which needed further confirmation with immunohistochemistry for conclusive diagnosis of the collision tumour.

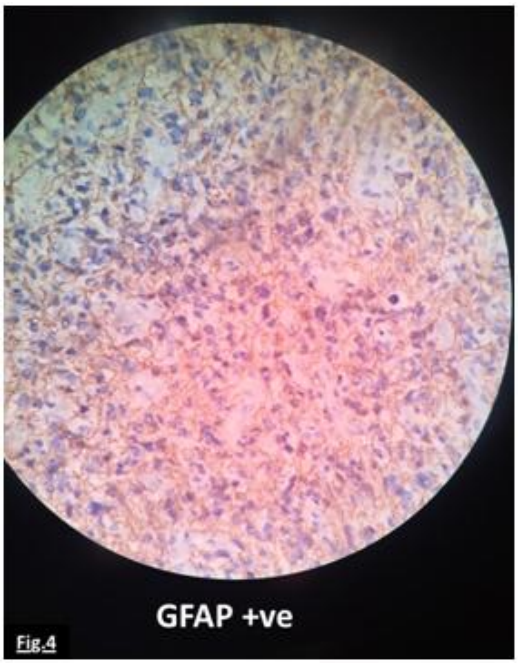
On immunohistochemical studies, the lesion showed diffuse positivity for Glial Fibrillary Acidic Protein (GFAP) and was negative for Epithelial Membrane Antigen (EMA).

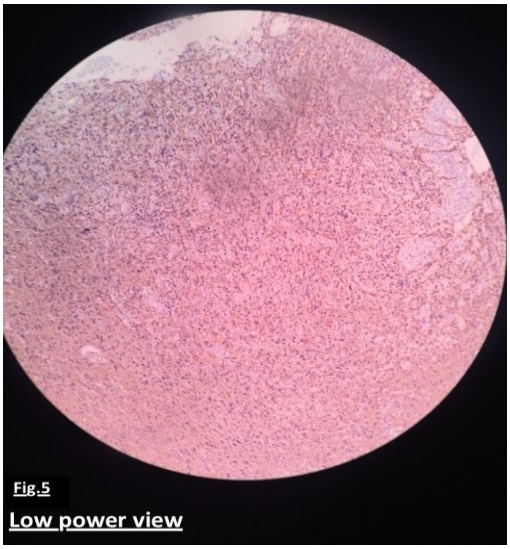
Finally, depending on histomorphological features and immunohistochemical findings, the diagnosis of astrocytoma, high grade (Glioblastomamultiforme), was made, which makes the lesion in context an interesting diagnostic entity inasmuch as the histological features presented a puzzling phenomenon which mimicked a collision tumour of astrocytoma and meningioma with duly formed calcific spherules resembling psammoma bodies.











2. Discussion

As lot of evidence existence in English medical literature collision tumours of central nervous system exists. Many cases of collision tumour of astrocytoma and meningioma have been reported [1]. Many authors have published cases of collision tumours in brain of mengingioma and usually the presence of simultaneous or even collision tumor in cases without Neurofibromatosis 2 or cranial radiotherapy is reported infrequently (1). Usually the pattern of a collision tumour occurs as one tumour appears first and the second one appears later mostly due to an external influence (2). When present together, the multiple tumours may be present near to each other or at a distance (3,6). In most cases, the diagnosis of the types of tumours present is post-operative (4). When two lesions are closely situated, the best approach is the remove both the lesions in a one stage operation (5). Epithelial membrane antigen (EMA) is expressed positive in most Meningioma cases and Glial fibrillary acidic protein (GFAP) is found positive in most cases of Astrocytoma (7).

3. Conclusion

We are presented here with a unique case of an astrocytoma mimicking a collision tumor of astrocytoma-meningioma, which was evasive on a morphological level. On further immunohistological investigations from a prognostic veiw point, it was found to be a single high grade astrocytoma. The result of which has direct ramifications on the mode of treatment for two such brain tumors. Therefore it is an important step in being able to provide appropriate treatment in accordance with the correct diagnosis, in the form of either straightforward excision and/or adjuvant therapy.

References

[1] Mohammad Reza Shahmohammadi, HamedJavadian, AsraAsgari, Reza JaliliKhoshnoud. Glioblastoma simultaneously present with adjacent meningioma: Case report. ICNSJ 2016; 3 (1):54-58
[2] Duoduo Zhang, Jinlu Yu, YunbaoGuo, Shujie Zhao, Guoguang Shao, and Haiyan Huang. An intraventricular meningioma and recurrent astrocytoma collision tumor: a case report and literature review. World J SurgOncol. 2015; 13: 37.
[3] AyfunHakan, SerdarArmagan, Fügen Vardar Aker, LeventÇelik. Meningioma and Glioblastoma Adjacent In the Brain. Turkish Neurosurgery '8: 57 - 60, 1998
[4] Shinsuke Suzuki, Ryuichi Katakura, Seiya Kato and Jiro Suzuki. Adjacent Meningioma and Astrocytoma in the Brain. Neurol Med Chir (Tokyo) 27, 325-328, 1987
[5] AihemaitiHasimu, Qiang Fu, Qingjiu Zhou, Shaoshan Li, Xiaofeng Zhu, Chen Liu, DangmurenJiafuGeng and Bo. Astrocytoma simultaneously present with Meningioma-a report of two cases and review of the literature. Chinese Neurosurgical Journal2016 2:9
[6] Bazowski P, Gamrot J, Rudnik A, Zralek C, Baron J: Two cases of coexistence of meningioma and glioma. NeurolNeurochir Pol 25: 400-404, 1991
[7] JunyangLi ,Weixing Hu , Zhihong Zhang , Dong Wei. Clinical and Pathological Studies of Meningioma-Glioma Mixed Tum or. Surgical Science, 2011, 2, 140-143