

Case Report

Collision tumour of cerebellopontine angle in a patient with no neurofibromatosis criteria: a rare, peculiar and interesting case

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ABSTRACT

The co-existence or concurrent occurrence of brain tumours having different histomorphological features, in the absence of neurofibromatosis central (NF2) or history of irradiation is very rare. Such co-existence of brain tumours with different histology are referred to as collision tumours, concomitant tumours or contiguous tumours. The patient had no history of Von Recklinghausen's disease nor had any personal or family history of phacomatoses, but, however, he had history of undergoing near total resection of left-sided vestibular schwannoma one year back. The simultaneous occurrence of meningioma and schwannoma is highly uncommon in cerebellopontine angle with only few published cases of co-existing meningioma and schwannoma in patients with no history of neurofibromatosis or other such phacomatoses, albeit this phenomenon of co-existence of these tumours is associated with neurofibromatosis 2 or other phacomatoses. It is also proposed that reactive meningotheelial hyperplasia adjacent to the main tumour could be responsible for the presence of meningotheelial component within schwannoma.

Keywords: Collision tumour, Cerebellopontine angle, Gross total excision, Meningioma, Schwannoma, Vestibular schwannoma

INTRODUCTION

The co-existence or concurrent occurrence of brain tumours having different histomorphological features, in the absence of neurofibromatosis central (NF2) or history of irradiation is very rare. Such co-existence of brain tumours with different histology are referred to as collision tumours, concomitant tumours or contiguous tumours. The co-existence of meningioma and schwannoma was described for the first time in 1938 by Cushing and Eisenhart.¹ After this, about a dozen cases of co-existence of meningioma and schwannoma have been reported in literature particularly in the backdrop of pre-existent neurofibromatosis 2, but, however, it is quite unique that very few cases have been reported in patients

with no history of pre-existent neurofibromatosis.² In this context, here is an interesting case report of a collision tumour in the cerebellopontine angle which has occurred in the backdrop of patient having neither any history of known phacomatoses nor any family history of Von Recklinghausen's disease or neurofibromatosis 2 or previous exposure to radiation which were spatially distinct in the form of meningioma and schwannoma but co-existed as single tumour fulfilling the Frassanito criteria of collision tumour.³

CASE REPORT

24-year-old male presented with history of walking difficulty and hearing loss from left ear since one month.

The patient had no history of Von Recklinghausen's disease nor had any personal or family history of phacomatoses, but, however, he had history of undergoing near total resection of left-sided vestibular schwannoma one year back. Detailed clinical examination and magnetic resonance imaging (MRI) studies revealed a large hyperdense enhancing lesion in the left cerebellopontine angle. The tumour was vascular and had attachments to 7th and 8th cranial nerve complex and to left postero-lateral duramater with broad base. The patient was operated and gross total excision of the tumour was done. Histopathology Laboratory received multiple tissue fragments which were grayish-brown in colour with soft to firm consistency. The frozen sections from the resected tissue revealed features of meningioma characterized by the presence of predominantly round to ovoid cells with round nuclei displaying no conspicuous nucleolus arranged in uniform sheets and syncytial clusters with focal poorly formed whorl-like arrangement. Focal areas showed congested blood vessels with some blood vessels showing vague concentration of round to ovoid cells around the blood vessels with occasional dispersed calcific spherules reminiscent of psammoma bodies. Further examination of other resected tissue fragments in permanent paraffin embedded histological sections revealed areas of co-existence of meningotheial cells arranged in uniform sheets with multiple focal syncytial areas which formed focal well-defined whorled pattern and contrasting areas of spindled cells arranged in biphasic hypercellular and hypocellular areas, often referred to in histopathology as Antoni A and Antoni B regions, the latter consisting of loose-textured areas with scattered stellate nuclei. Focal areas showed dense concentration of cells with palisading of slender wavy nuclei (Verocay bodies). Immunohistochemical studies revealed varying positivity for epithelial membrane antigen (EMA) in the areas of meningioma consisting predominantly of round cells arranged in sheets and in whorl-like nests while areas showing schwannoma were strongly positive for S-100.

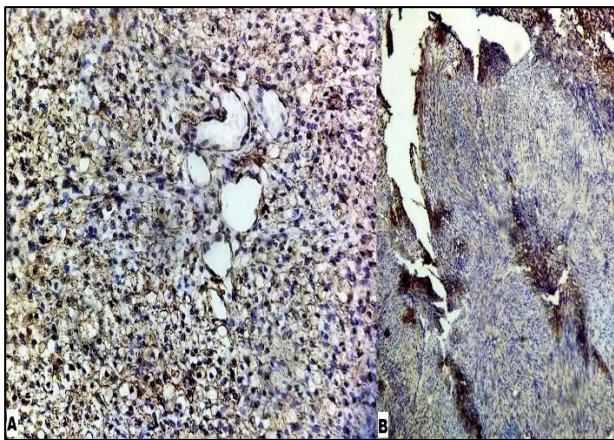


Figure 1: EMA stain for areas of meningioma (positive) and schwannoma (negative).

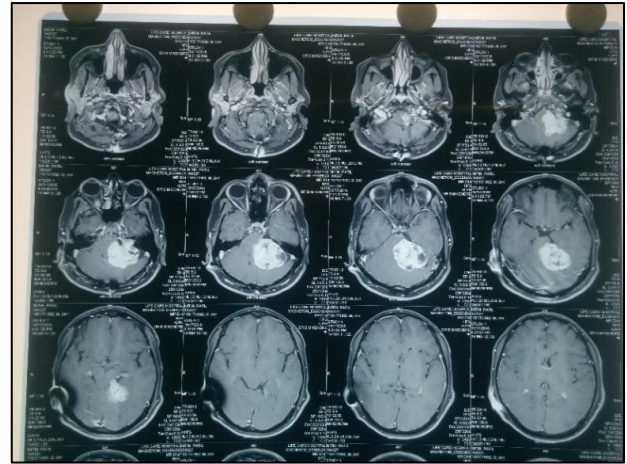


Figure 2: MRI-I.



Figure 3: MRI-II.

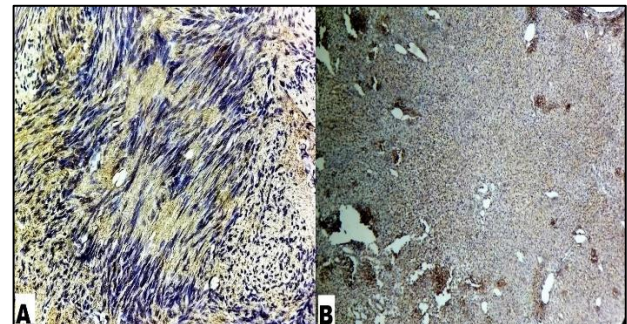


Figure 4: Schwannoma (strongly positive for S-100) and meningioma (weakly positive).

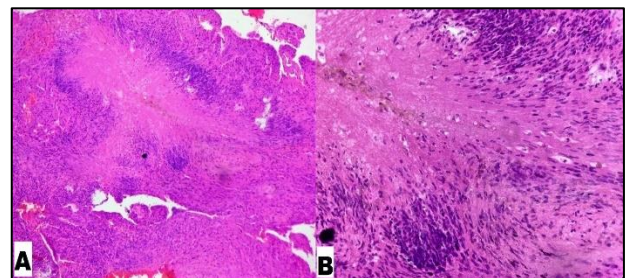


Figure 5: Schwannoma.

DISCUSSION

The simultaneous occurrence of meningioma and schwannoma is highly uncommon in cerebellopontine angle with only few published cases of co-existing meningioma and schwannoma in patients with no history of neurofibromatosis or other such phacomatoses, albeit this phenomenon of co-existence of these tumours is associated with neurofibromatosis 2 or other phacomatoses. The current case of collision tumour being presented here is one of those rare and uniquely interesting cases which occurred in a patient with no personal or family history of neurofibromatosis 2 and/or other phacomatoses nor patient having any history of having previous radiation. The co-existence of two histologically different tumours were often referred to by different names such as 'collision', 'concomitant' and 'contiguous' tumours. Frassanito et al reported spatial association of primary or metastatic tumours in cerebellopontine angle occurring simultaneously, which were referred to generically as 'simultaneous tumours' or 'collision tumours' making compartmentalization of these distinct nosologic entities difficult.³ The possible pathogenesis behind the occurrence of distinctly demarcated or intermingled components of schwannoma and meningioma tissue is not clear. The concurrent occurrence of two tumours in the same location might result from the simultaneous growth of two separate tumours, metaplastic changes in the original tumour leading to formation new tumours from the metaplastic areas or bidirectional differentiation of the same progenitor cell line into two neoplastic elements. Nevertheless, the evidence for the existence of common progenitor cell of both Schwann and meningotheial cell is strongly lacking. It is also proposed that reactive

meningotheial hyperplasia adjacent to the main tumour could be responsible for the presence of meningotheial component within schwannoma.⁴

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