Vestibular schwannoma and tuberculoma occurring In collision in the posterior fossa: A case report

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A B S T R A C T

INTRODUCTION: Though acoustic schwannoma is the most common primary tumour in the cerebellopontine angle, its occurrence with tuberculoma has never been reported.

PRESENTATION OF CASE: A case of a vestibular schwannoma and tuberculoma occurring as collision tumors in the posterior fossa in a 46 years old female is reported. She presented with chronic raised intracranial pressure manifesting as headache, occasional diplopia, speech disturbance, and unsteady gait. Magnetic resonance imaging of the brain demonstrated a vestibular schwannoma and tuberculoma in the right cerebello-pontine angle. The lesions were resected through retro sigmoid route. The caudal mass was vestibular schwannoma while the rostral and medial portion was tuberculosis.

DISCUSSION: The occurrence of a vestibular schwannoma and tuberculosis in collision has hitherto never been reported. The pathogenesis, surgical challenges and management of such a rare entity is discussed and the relevant literature is briefly reviewed.

CONCLUSION: The association of vestibular schwannoma and tuberculosis is rare. Surgical excision of lesions occurring in collision can be formidable. They require careful planning and strategy.

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1. Introduction

Multiple primary intracranial neoplasms of the same histology are seen routinely in neurosurgical practice but those of varying histology are rarely encountered. It is well known that the phakomatoses, especially neurofibromatosis and tuberous sclerosis, are associated with an increased incidence of multiple tumors of both similar and differing histology [1]. Intracranial tumors in ‘collision’ are described in literature [2–10]. However, a combination of intracranial tumor and a chronic inflammatory granuloma has never been reported.

2. Presentation of case

A 46 year-old female presented with progressively worsening hearing on the right side, intermittent headaches and diplopia for the past 3 years and imbalance while walking for the past 5–6 months. She was bedridden since 15 days. She was unable to walk and requires support. There was no history of unconsciousness, convulsions or sphincteric complaints. There was no trauma or fever. There were no clinical features suggestive of neurofibromatosis. She had abdominal tuberculosis 10 years ago for which took full course of recommended antitubercular therapy. On examination, she was conscious, disoriented but obeyed all commands. Vision was apparently normal. She has bilateral sixth nerve paresis and right sensorineural deafness. Gag was normal. There was no motor deficit. She had right cerebellar signs. MR imaging of the brain showed a large right heterogeneously enhancing CP angle tumor, iso to hypointense T1 and mildly iso to hyperintense on T2-weighted images suggestive of a vestibular schwannoma. The internal acoustic meatus (IAM) was not significantly widened and there was mild to moderate brainstem compression and moderate supratentorial hydrocephalus. A second lesion was seen in the right cerebellum in close proximity to the middle cerebellar peduncle. It was hypointense on T2 MR imaging, peripherally enhancing with central area of necrosis and associated with extensive perifocal cerebellar edema suggestive of tuberculoma. There was similar small peripherally enhancing lesion in the pons as well. (Fig. 1A and B) She underwent a right retro sigmoid cranietomy. The cerebellum was bulging and slackened after CSF drainage from the cisterna magna. The caudal vestibular schwannoma was excised primarily. It was entirely solid, yellowish-gray, firm and vascular. The cranial nerves including seventh–eighth complex were preserved by intraarachnoidal microsurgical dissection. The tumor had not significantly widened the IAM. There were extensive arachnoidal adhesions of the tumor with the brainstem, cerebellum and nerves. Radical excision of the lesion was performed. Subsequently the intraaxial lesion was approached. A small corticectomy was performed over the right cerebellum and the lesion was encountered
at depth of 2 cm. It was hard, gritty, avascular and well capsulated. The lesion appeared to be a tuberculoma and it was meticulously separated from the surrounding gliotic cerebellar tissue. A thin rim of gliosis separated this lesion from the lesion in right cerebello-pontine angle. The lesion was seen to extend into the middle cerebellar peduncle. A safe maximal excision was performed. Histological examination of the caudal and rostral lesions revealed a vestibular schwannoma and tuberculoma respectively. The patient received antitubercular chemotherapy and was serially monitored using MR imaging at 3–6 months interval. At follow-up after 3 years, the patient is well and has no neurological deficit. She is leading an active and independent life. At follow-up MR imaging after 3 years showed minimal stable residue in the right middle cerebellar peduncle. The lesion in the pons has considerably reduced in size. There is no mass effect. The vestibular schwannoma has been completely resected (Fig. 1C and D).

3. Discussion

Acoustic schwannoma is the most common primary tumour in the cerebello-pontine angle accounting for 80–90% of all cerebello-pontine tumors followed by meningioma (5–10%) and epidermoid tumor (5%) [2]. The occurrence of acoustic schwannoma in ‘collision’ with a meningioma, epidermoid cyst and arachnoid cyst has been reported in literature [3–6]. Goodman et al. have reported a case of acoustic schwannoma and epidermoid tumor occurring as a single cerebello-pontine angle mass [5]. Kitaoka et al. reported a coexistence of basal epidermoid tumor and a dumbbell trigeminal neurinoma [7]. Few other cases of different collision tumors in the posterior fossa have been reported [8–10]. The coexistence of schwannoma and tuberculoma in the posterior fossa has not been hitherto reported. Apart from the rarity of such an occurrence, the diagnosis and surgical management in this situation is challenging. Ours is the first reported combination of a vestibular schwannoma and cerebellar tuberculoma. The diagnosis of these lesions could be established preoperatively with reasonable certainty due to detailed MR imaging sequences. The caudal mass was suggestive of a vestibular schwannoma due to presence of sensorineural deafness and characteristic radiological features including extension of the tumor in the internal acoustic meatus. The cerebellar enhancing lesion was suggestive of tuberculoma since the lesion was hypo intense on T2 weighted MR images and
the patient had past history of abdominal tuberculosis. The importance of detailed MR imaging cannot be underestimated as proven in this case. The location of the lesions in close proximity to each other presented certain surgical challenges. MR imaging and diagnosis has immensely helped to plan the surgical approach. The two lesions were of diverse nature, one being a benign tumor and other a chronic inflammatory pathology. The vestibular schwannoma was situated in the cerebello-pontine angle while the tuberculoma was located in the right cerebellum encroaching on the middle cerebellar peduncle and cerebello-pontine angle. In addition, the cerebellum was severely edematous causing further crowding in the cerebello-pontine angle and posing difficulty in retraction of the cerebellum. These lesions were separated by a thin rim of gliotic tissue. It was decided to remove the vestibular schwannoma initially since the tumor was situated caudally and also to prevent potential contamination of the subarachnoid space due to tuberculous infection. The drainage of CSF from the cisterna magna helped to relax the cerebellum and aid in excision of the vestibular schwannoma through inferior cerebello-pontine angle. A safe maximal excision of the tuberculoma is advocated to prevent any additional neurological deficit. There were extensive arachnoidal inflammatory adhesions to the brainstem and middle cerebellar peduncle. The residual chronic inflammatory lesion could be controlled with antitubercular chemotherapy.

In endemic regions, tuberculomas is known to coexist with other primary tumors of central nervous system. The simultaneous occurrence of vestibular schwannoma and tuberculoma in the posterior fossa appears coincidental. It can be presumed that the vestibular schwannoma was present earlier due to chronic symptomatology and the tuberculoma might have developed later which aggravated the neurological condition. However, both lesions were fairly large in size at diagnosis. In addition, chronic inflammation caused dense adhesions between the schwannoma, cerebellum, the brain stem and the cranial nerves. A careful and detailed neuroimaging in patients with intracranial lesions occurring in collision is recommended. There could be a relative discrepancy in the clinical and radiographic profile which may alert the clinician to the possibility of this combination.

4. Conclusion

The association of vestibular schwannoma and tuberculoma is rare. Surgical excision of lesions occurring in collision can be formidable. They require careful planning and strategy. There should be a heightened clinical suspicion and radiological awareness whenever such a lesion is encountered, especially for patients residing in regions endemic for tuberculosis.

Conflict of interest

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Ethical approval

Not needed for this case.

Consent

Consent obtained from the patient.

Author contribution

All the authors have contributed equally.

Guarantor

Dr. Dattatraya Muzumdar.

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