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Cervical Medulloblastoma mimicking a nerve sheath tumour in a child: A rare extracranial presentation

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ABSTRACT

Medulloblastoma is the most common malignant pediatric brain tumour, accounting for nearly 20% of all childhood intracranial neoplasms. It is classified as an embryonal tumour and most commonly arises in the cerebellar vermis or hemispheres of children.[1] The 2021 World Health Organisation (WHO) classification recognises medulloblastoma as a molecularly heterogeneous entity with distinct clinical and prognostic implications.[1,3]

Primary extracranial or spinal medulloblastomas are exceedingly rare, with only isolated case reports and small series described in the literature.[4-6] Cervical spinal presentation without intracranial disease is particularly uncommon and often leads to diagnostic confusion.[7]

Keywords
medulloblastoma,
schwannoma,
cervical spine

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CASE REPORT

An 8-year-old male child presented with a progressively enlarging swelling over the posterior aspect of the neck for several months. The swelling was associated with difficulty in walking and gradually progressive weakness involving all four limbs. (Figure 1) There was no history of trauma, fever, or constitutional symptoms.

On neurological examination, the child had features of spastic quadriparesis with motor weakness in all four limbs. Sensory examination was limited due to poor cooperation. Cranial nerve examination was unremarkable. Bladder and bowel functions were preserved.

Magnetic resonance imaging (MRI) of the cervical spine revealed a large, well-defined posterior cervical mass with intraspinal extension causing significant compression of the cervical spinal cord. (Figure 2A–C). The lesion appeared extramedullary and was radiologically suggestive of a cervical nerve sheath tumor, likely a schwannoma.

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The patient was planned for surgical excision. Intraoperatively, a well-encapsulated, moderately vascular tumor was identified in the posterior cervical region with extension into the spinal canal. (Figure 3). Gross total excision of the tumor was achieved with adequate decompression of the spinal cord.

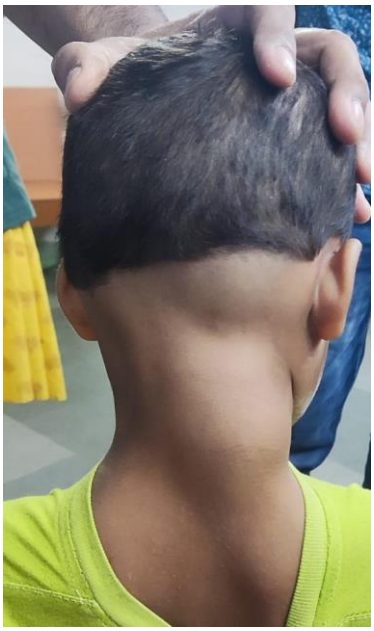

Figure 1. Preoperative clinical photograph showing a large posterior cervical swelling.

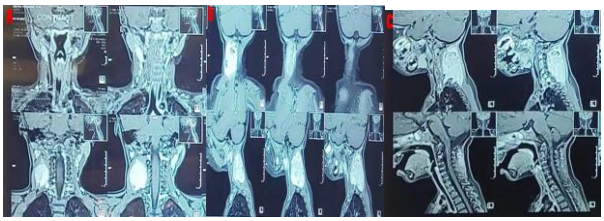

Figure 2 A-C. Preoperative MRI cervical spine showing a well-defined posterior cervical mass with intraspinal extension causing significant spinal cord compression.

The patient was extubated on table and had had an uneventful postoperative course.Postoperatively, there was significant neurological improvement with gradual recovery of motor power in all four limbs. The postoperative wound healed well (**Figure 4**).

Histopathological examination surprisingly revealed features consistent with medulloblastoma, showing sheets of small round blue cells with hyperchromatic nuclei and high mitotic activity.

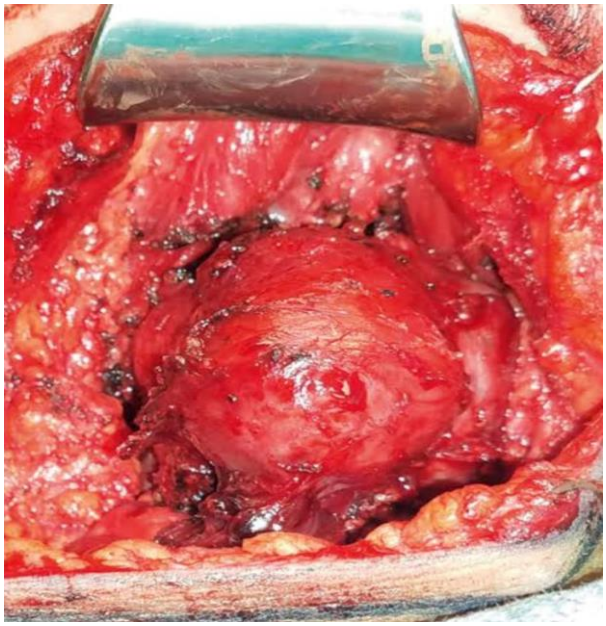

Figure 3. Intraoperative photograph showing exposure of the cervical tumor.

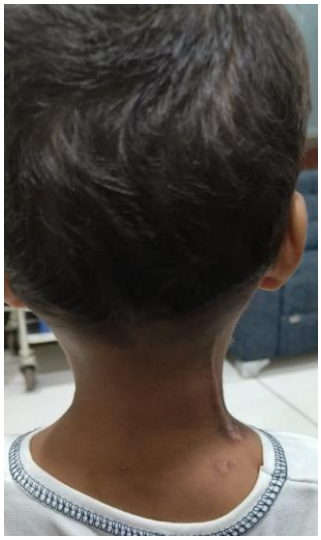

Figure 4. Postoperative clinical photograph showing healed surgical scar over the posterior cervical region.

Discussion

Medulloblastomas occurring outside the posterior fossa are rare and their pathogenesis remains poorly understood. Several hypotheses have been proposed, including malignant transformation of ectopic embryonal cell rests, aberrant migration of neuroectodermal cells, or differentiation from pluripotent mesenchymal cells.[4,5,8]

Spinal medulloblastomas are more commonly encountered as cerebrospinal fluid drop metastases

from intracranial primaries. However, primary spinal medulloblastomas without cranial involvement have been reported in children, though infrequently.[4,8,9]

Radiologically, these tumors may mimic benign lesions such as schwannomas or neurofibromas, especially when presenting as well-defined extramedullary masses in the cervical region.[7,10] This radiological overlap explains the initial diagnosis of a nerve sheath tumor in the present case.

Surgical decompression remains the primary modality for symptomatic relief and tissue diagnosis. Early intervention has been shown to result in significant neurological recovery, even in aggressive tumors such as medulloblastoma.[9,12] Given the malignant nature of the disease, adjuvant radiotherapy and chemotherapy are recommended following histopathological confirmation.[2,12]

Conclusion

Medulloblastoma should be considered in the differential diagnosis of intradural extramedullary cervical spine tumors, despite its extreme rarity at this location. Imaging characteristics alone may be misleading, and only histopathology can confirm the diagnosis. This case highlights that even classic-appearing schwannomas can turn out to be malignant embryonal tumors. Early recognition and appropriate therapy are essential for a favorable outcome.

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