



Case Report: Foramen Magnum Meningioma in a Patient with 29 Weeks of Gestation

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Received: December 22, 2021

Published: January 10, 2022

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Abstract

Meningiomas are central nervous system (CNS) tumors which are extra-axial and originates from the arachnoid cells of the dura matter. They have annual incidence of 6/100,000, most commonly they present during the fifth and sixth decades of life but rarely in childhood [1-3]. Meningiomas are usually benign, slow growing tumors that occur frequently in female gender and African ethnicity. The female/male ratio is 2:1 and the incidence of meningiomas in post-menopausal women treated with hormone replacement therapy has increased [3-5].

Keywords: Central Nervous System; Meningiomas; Pakistan

Case Description

A 35 years old female patient presented at 29 weeks of gestation to Ob/gyn OPD Kuwait Teaching Hospital, Peshawar, Pakistan. Patient presented with seven months history of posterior neck pain, numbness and tingling sensation on face with progressive weakness of all limbs followed by rotatory paralysis with left upper limb weakness followed by left lower limb weakness than right lower limb weakness followed by right upper limb weakness without bowel and bladder disturbances.

Unfortunately when she presented to us patient was completely bed ridden and developed dysphagia, dysarthria, shortness of breath, bowel and bladder disturbances like urgency and frequency. On neurological examination, patient was quadriparetic with muscle power of MRC grade 1 in all limbs along with wasting of intrinsic muscles of hand. There were exaggerated deep tendon reflexes with right planter mute and left planter up going. Hoffman sign was present bilaterally. Ankle clonus was present bilaterally.

Patient was admitted to ob/gyn ward HDU. Multidisciplinary team (MDT) Management was done in liaison with neurosurgical department. She was thoroughly assessed and symptomatic treatment was started. During stay at hospital on second day she developed premature rupture of membranes after which she went in spontaneous preterm labour and was successfully delivered through breech vaginal delivery after consent on November 4, 2021. Baby was admitted in NICU. Patient was stable postnatally so shifted to neurosurgical ward where successful craniotomy was done on November 13, 2021 and dramatically improved during stay at hospital. Her MRC scoring in the right upper and lower limb becomes 3 with improvement in swallowing and shortness of breath. As baby was admitted in NICU and successfully discharged after 3 weeks while patient was discharged after 2 weeks. On followup visit on December 20, 2021 patient's motor function were improved to an extent that she was fully mobilised without support and her routine household activities were restored.

Discussion

Foramen magnum meningiomas are slow growing tumors with indolent course. They present with quadriparesis, sensory abnormalities, ataxia and dysfunction of cranial nerves IX to XII. Our patient also presented with quadriparesis and sensory abnormalities. The classic presentation of FMM is initial weakness in the ipsilateral arm followed by ipsilateral leg, then contralateral leg and arm and also craniocervical junction compression⁷. Our patient also presented with severe posterior neck pain. Other signs that may include is wasting of intrinsic muscles of hands, sternocleidomastoid or trapezius muscle. Our patient had classical presentation of rotatory paralysis of limbs which was developed in a time period of 7 months. Our patient also developed bowel and bladder manifestation.

Foramen magnum meningioma (FMM) was first described in 1872. In 1922 first publication described the surgical removal [5]. The tumor is called foramen magnum meningioma if it originates in the region bounded anteriorly by the lower third of the clivus and the upper edge of the body of C2, laterally by the jugular tubercles and the upper aspect of the C1 laminae, posteriorly by the anterior edge of the squamous occipital bone and C2 spinous process. 90% of FMMs are located ventrally or ventrolaterally [4].

FMMs are usually intradural. 10% have an extradural extension and a few are completely extradural. Based on MRI examination, FMMs can be classified according to the insertion on the dura, so it is anterior if it arises bilaterally of the anterior midline, lateral if insertion is between the midline and the dentate ligament and postero-lateral if insertion is posterior to the dentate ligament. Anterior FMMs displace the neuroaxis posteriorly, lateral displace the neuroaxis postero-laterally and postero-lateral displace the neuroaxis ventrolaterally [8,9]. Extradural meningiomas at the foramen magnum are less common than intradural tumors. In toto removal of the tumor is very difficult due to their invasive nature [9]. If tumor originates below the vertebral artery (VA) cranial nerves are displaced cranially and if originates above the VA the cranial nerve goes in variable location so dissection must be carried out meticulously to prevent injury. Many recommend vascular imaging like CTA, MRA, or conventional angiography preoperatively to evaluate arterial feeders, venous drainage, and the extent of vascular involvement. In particular, defining the V3 and V4 segments of the vertebral artery along with the origin of the PICA will aid in operative planning and the avoidance of complications [9].

The incidence of atypical meningioma is 8% and it is on rise [10]. From the study of Pamir, *et al.* there were 22 cases of foramen magnum meningioma that were operated from January 1990 to 2003 and only one case of atypical meningioma among them [11]. The role of post operative radiation therapy for atypical meningioma is controversial. Further it is concluded that there is no difference between surgery with radiation when compare to surgery alone [10,12,13]. After gross total resection it is concluded from literature that radiotherapy has no role in atypical meningioma recurrence prevention [14-17].

Conclusion

Foramen magnum meningiomas is a rare disease. It presents with classical feature of rotatory paralysis. There is dramatic improvement in patient's condition after surgical decompression of foramen magnum. Typical meningiomas are the most commonly documented FMMs in the literature but atypical meningioma is also an entity that is rare and it should always be considered whenever histological diagnosis is concerned.

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