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Original Research Paper

Radio Diagnosis

A RARE CASE OF FORAMEN MAGNUM MENINGIOMA: A CASE REPORT

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ABSTRACT Meningiomas at the level of foramen magnum are rare intracranial extra-axial tumors that commonly present with lower cranial nerve palsies and neurological deficits in the extremities. The presentation varies with extension and relation of the meningioma with the brainstem and cerebellum. Because of the rarity of the disease and with not so significant symptoms, diagnosis of the disease is usually delayed. We present a case of a foramen magnum meningioma with an insidious onset that was diagnosed and treated in our hospital.

KEYWORDS : Foramen magnum; Meningioma; extra-axial; intracranial tumors.

INTRODUCTION

Meningiomas are extra-axial tumors and represent the most common tumor of the meninges. They are a non-glial neoplasm that originates from the meningocytes or arachnoid cap cells of the meninges, and are located anywhere that meninges are found, and in some places where only rest cells are presumed to be located.

They comprise about 25% of all primary tumors of the central nervous system(CNS) and 15-20% of all intracranial tumors[1,2].Only 2.5% (range1.8-3.2%) arise at the foramen magnum level, but still meningiomas are the most commonly observed tumors of the foramen magnum, accounting for70% of cases [3-5]. Meningiomas arising in atypical locations could be easily mistaken for other lesions more commonly observed in those locations.

Clinical presentation usually includes lower cranial nerve palsies, motor/sensory neurological deficits and symptoms due to medulla oblongata compression.

Due to the rarity of the disease and its often insidious onset, patients are often misdiagnosed or develop severe neurological deficits until proper diagnosis and treatment can be established.

Case Report

A 65-year old female with history of upper back pain radiating to the right shoulder since 6 months presented to the department of neurology. On examination, she had no motor or sensory deficits except for the upper pack pain radiating to the right shoulder. She was advised Magnetic Resonance Imaging (MRI) of the cervical spine with whole spine screening and it revealed, a solitary well-defined intradural extra-medullary broad based dural lesion at the level of foramen magnum, along the anterior aspect of the cistern magna/anterior thecal sac.The lesion approximately measured about 1.7x2.2x2.6 cms (APxTRxCC).The lesion was iso-hyperintense on T2WI and iso-hypointense on T1WI. No demonstrable diffusion restriction. No evidence of intralesional calcification/hemorrhage. On post-contrast images, the lesion showed homogenous enhancement with characteristic dural tail sign. The lesion was broad based along the dura at the cistern magna/anterior thecal sac.The lesion was seen extending upto the inferior border of the basion of the occipital bone superiorly.The lesion was seen extending upto the inferior border of the posterior arch of the atlas inferiorly.Posteriorly, the lesion was seen compressing and displacing the medulla/spinal cord postero-laterally at that level with resultant minimal myelomalacic changes.

The case was referred to the neurosurgery and was posted for the sub-occipital craniotomy and C1 laminectomy for the excision of the lesion. The intra and post-operative period were uneventful. Histopathology revealed the WHO grade 1 meningioma.

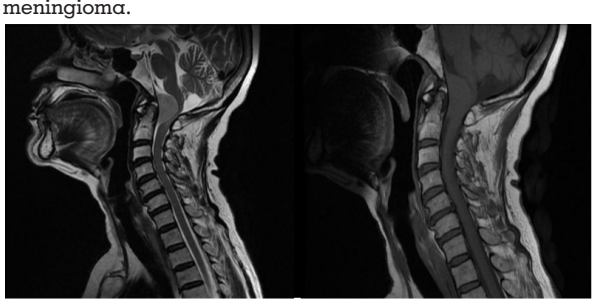

Figure 1: On sagittal non-contrast T2WI and T1WI MR images, the lesion appears iso-hyperintense on T2WI and isointense on T1WI.

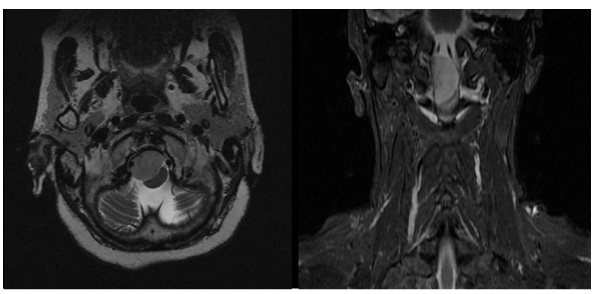

Figure 2: On axial non-contrast T2WI and coronal STIR MR images, the lesion appears iso-hyperintense on T2WI and hyperintense on STIR.

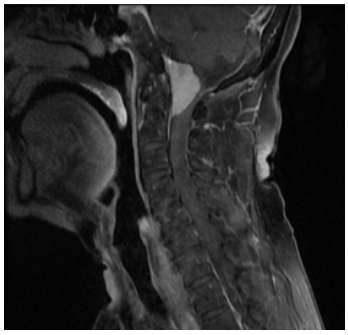

Figure 3: On sagittal gadolinium enhanced post-contrast T1 fat-sat image, the lesion shows homogenous enhancement with characteristic dural tail sign.

DISCUSSION:

Foramen magnum meningiomas are usually considered as the challenging tumors in regard to both their diagnosis and treatment. Due to their close proximity to the infratentorial neuroparenchyma (cerebellum and brainstem, particularly the medulla oblongata), the lower cranial nerves (IX, X, XI and XII cranial nerves) and the vertebral artery and branches, perfect surgical anatomy knowledge is necessary for the treating such cases [7].

Because of the slow-growing rate and their insidious clinical presentation, foramen magnum meningiomas at diagnosis are usually larger in size. Therefore, there is delay in the diagnosis of these tumors with a long interval of months between onset of symptoms and diagnosis [5,8].

Clinically differential diagnosis includes multiple sclerosis, amyotrophic lateral sclerosis, syringomyelia and cervical spondylosis [9, 10].

Radiological differential diagnosis include hemangiopericytoma, primary dural lymphoma, dural metastases, solitary fibrous tumor of the dura and meningeal melanocytoma.[11]

Early symptoms include occipital headache and upper cervical pain, often exacerbated by neck movement, due to compression of the upper cervical nerves that innervate the infratentorial duramater. Progression of the disease is characterized by development to unilateral arm motor and sensory deficits, which progress to the ipsilateral leg, then the contralateral leg and finally the contralateral arm. Early signs and symptoms of a foramen magnum meningioma might be missed and the progression of the disease can lead to severe and possibly permanent neurological deficits. Later findings include spastic quadriparesis and lower cranial nerve palsies. Terminal progression includes quadriplegia, inability to maintain airway protection with secondary pneumonitis, and finally respiratory arrest [5].

CONCLUSION

Foramen magnum meningiomas are rare intracranial extra-axial tumors which are usually characterized by insidious onset of symptoms. Due to their potential progression to severe and irreversible neurological deficits, physicians/ neurophysicians should be aware of its clinical presentation and suspect it when encountering patients with corresponding symptoms. It cannot be overemphasized that perfect knowledge of the surgical anatomy is a prerequisite for treating foramen magnum meningiomas.

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Conflicts of interest
There are no conflicts of interest.

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