CASE REPORT

ABSENT MECKEL'S CAVE ON MRI, IN A CLINICALLY DIAGNOSED CASE OF TRIGEMINAL NEURALGIA. A VERY RARE CASE REPORT

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ABSTRACT

Trigeminal neuralgia is a very painful condition in the sensory distribution of the trigeminal nerve and most common cause is compression of the cisternal segment of the trigeminal nerve by a vessel, usually an artery. However a number of additional pathologies may affect the trigeminal nerve anywhere along its course from origin to the most peripheral branches and may cause severe facial pain. We present a case of 35-year-old female who came with complaints of pain and numbness on right side of the face of 3 week duration. Clinical diagnosis of trigeminal neuralgia was made. However MRI did not revealed any vascular compression except a tiny vessel was seen to be touching only the superior surface of right trigeminal nerve in its cisternal segment. Another MRI finding was absence of Meckel's cave on right side which is also a rare cause of patient's symptoms. To our knowledge very few cases of absent Meckel's cave have been reported so for.[1]

Key words: Trigeminal Neuralgias, Neuralgic Facial Pain, Meckel's cave, Gasserian Ganglion.

Introduction

Meckel's cave is a CSF filled dural sheath of the Gasserian Ganglion and is located in the posterior inferior aspectof the cavernous sinus in the medial part of the middle cranial fossa and is continuous with the subarachnoid space of the basal cisterns.[2] It is very small and complex structure and surrounded by many important neurological structures. Many conditions can affect this region such as schwannoma, meningioma, pituitary macro adenoma, metastasis, epidermoid cyst, lipoma, mucormycosis and absence of Meckel's cave itself. So MRI evaluation with fine cuts through Meckel's cave is important in diagnosis of medically intractable trigeminal neuralgia.[2] Our case is of 35-year-old female who presented with complaints of pain and numbness on right side of the face without imaging evidence of any vascular compression. However there was ipsilateral absence of Meckel's cave on MRI which is a very rare cause of trigeminal neuralgia.

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Case Report

We present a case of 35 year old female who came to neuromedicine OPD with complaints of pain and numbness on right side of face in the distribution of trigeminal nerve. The pain was episodic but severe in intensity and stabbing and electric shock like in character. It was triggered mostly by talking or chewing. She was unable to brush her teeth. The pain was refractory to medical therapy and her base-line and autoimmune workup was unremarkable. So she underwent an MRI brain on trigeminal neuralgia protocol in which no any vascular compression was noted except a tiny vessel which was seen to be touching only the superior surface of right trigeminal nerve in its cisternal segment. The most striking finding on her MRI was non visualization of ipsilateral Meckel's cave which may be hypoplastic and is one of the possible and rare cause of trigeminal neuralgia. No any other mass lesion was seen. Another incidental finding on MRI was empty sella turcica.

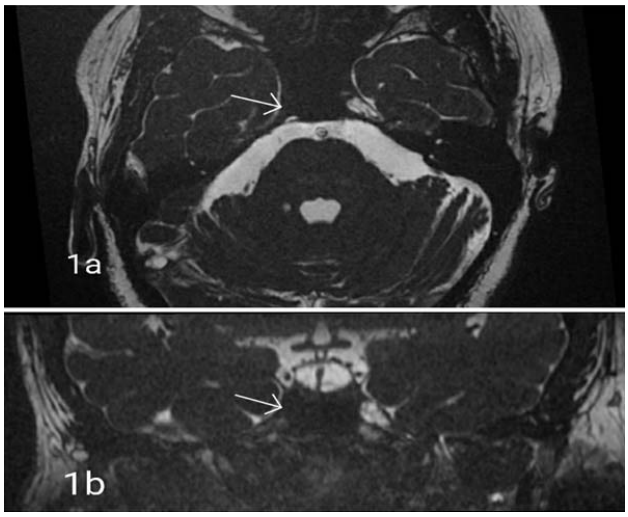

Figure 1a & b: T2W axial and coronal FIESTA images show absent Meckel's cave on right side.

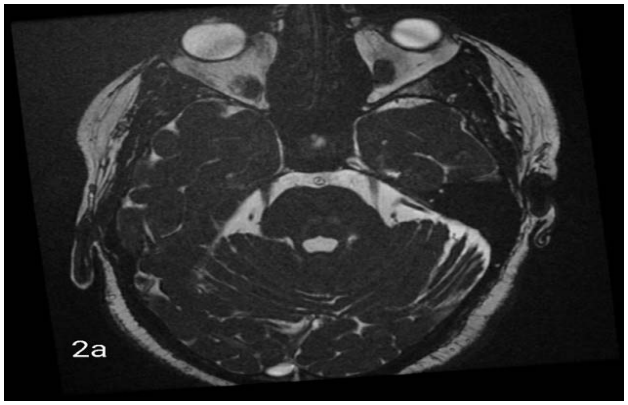

Figure 2: Shows normal origins and cisternal segments of trigeminal nerves bilaterally on axial T2W FIESTA image.

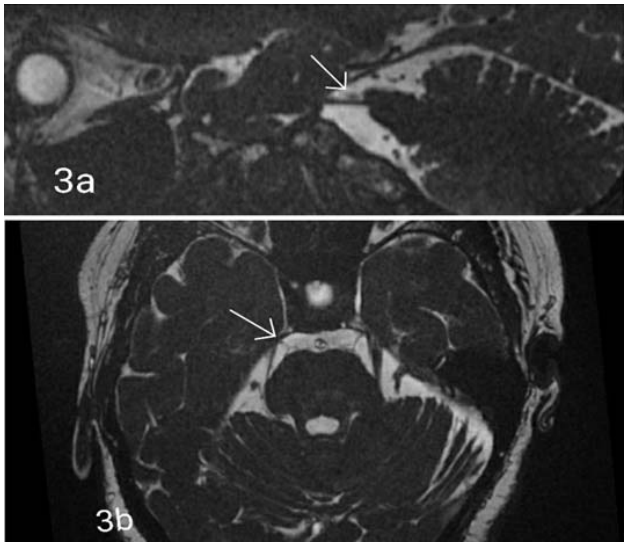

Figure 3a & b: T2W sagittal and axial FIESTA images show only tiny vessel touching the superior surface of cisternal segment of right trigeminal nerve.

Figure 4: T2W sagittal image shows incidental finding of empty sellaturcica.

Discussion

Trigeminal Neuralgia also called tic douloureux is a painful condition involving V2, V3, and sometimes the V1 division of the trigeminal nerve.[3] It is most common cause of sharp facial pain experienced by human being. In most of the cases it is unilateral and usually on right side.[4] The pain is usually triggered by talking, drinking, eating and brushing teeth. Mostly the pain is episodic and there is spontaneous relief among episodes. It is frequently caused by vascular compression of the cisternal segment of fifth cranial nerve, usually by the superior cerebellar artery, anterior inferior cerebellar artery, basilar artery and sometimes vertebral artery.[3] Mass lesions including venous compression, neoplasm, aneurysm, and vascular malformation can cause trigeminal neuralgia through compression of the origin of the trigeminal nerve. Compression at other points along the course of trigeminal nerve may also cause similar symptoms. Our case was a very rare case in which there was absence of ipsilateral Meckel's cave which is also a potential cause of facial pain in the distribution of trigeminal nerve. A very few cases of absent Meckel's cave have been reported up till now.[1]

Meckel's cave is a CSF filled dural sheath of the trigeminal ganglion and is located in the posterior inferior aspect of the cavernous sinus in the medial

part of the middle cranial fossa and is continuous with the subarachnoid space of the basal cisterns-via porus trigeminus. The ophthalmic and the maxillary division of trigeminal nerve enter the cavernous sinus anterior to the Meckel's cave and the mandibular divisions of trigeminal nerve extends inferolaterally and exits the skull base through the foramen ovale without entering the cavernous sinus.[5] Currently the assessment of fine anatomical details of this region and the detection of pathologies at the level of Meckel's cave has become much easier with the use of MR imaging than before. It helps inaccurate analysis of Meckel's cave anomalies and detecting small tumors, after administration of Gadolinium-contrast. That's why MRI is investigation of choice in assessing Meckel's cave pathologies using axial, sagittal, and coronal views.[2]

The exact cause of absence of Meckel's cave is unclear. Despite of apparent absence of CSF space, the nerve roots between the pons and Meckel's cave are symmetric and without any gross abnormality. It is unclear whether this anatomic anomaly is congenital or acquired, however one possibility of this absence could have arisen from a previous compressive lesion in this region, such as an arachnoid cyst, which could have self-resolved and left no evidence of its presence.[1]

Conclusion

Although trigeminal neuralgia is a clinical diagnosis and the most common cause is neurovascular conflict affecting the cisternal segment of trigeminal nerve, MRI should always be done to delineate other causes, which may occur anywhere from the brainstem to the extracranial space, as in our case which reveals a very rare and potential cause of trigeminal neuralgia.

Conflict of Interest: None to declare

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