

TRIGEMINAL NEURALGIA DUE TO COMPRESSIVE BASILAR ARTERY

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Key-word: Nerves, trigeminal

Background: A 55-year-old male patient is referred for a left-sided trigeminal neuralgia. CT scan followed by MRI and angiography of the brain are performed.

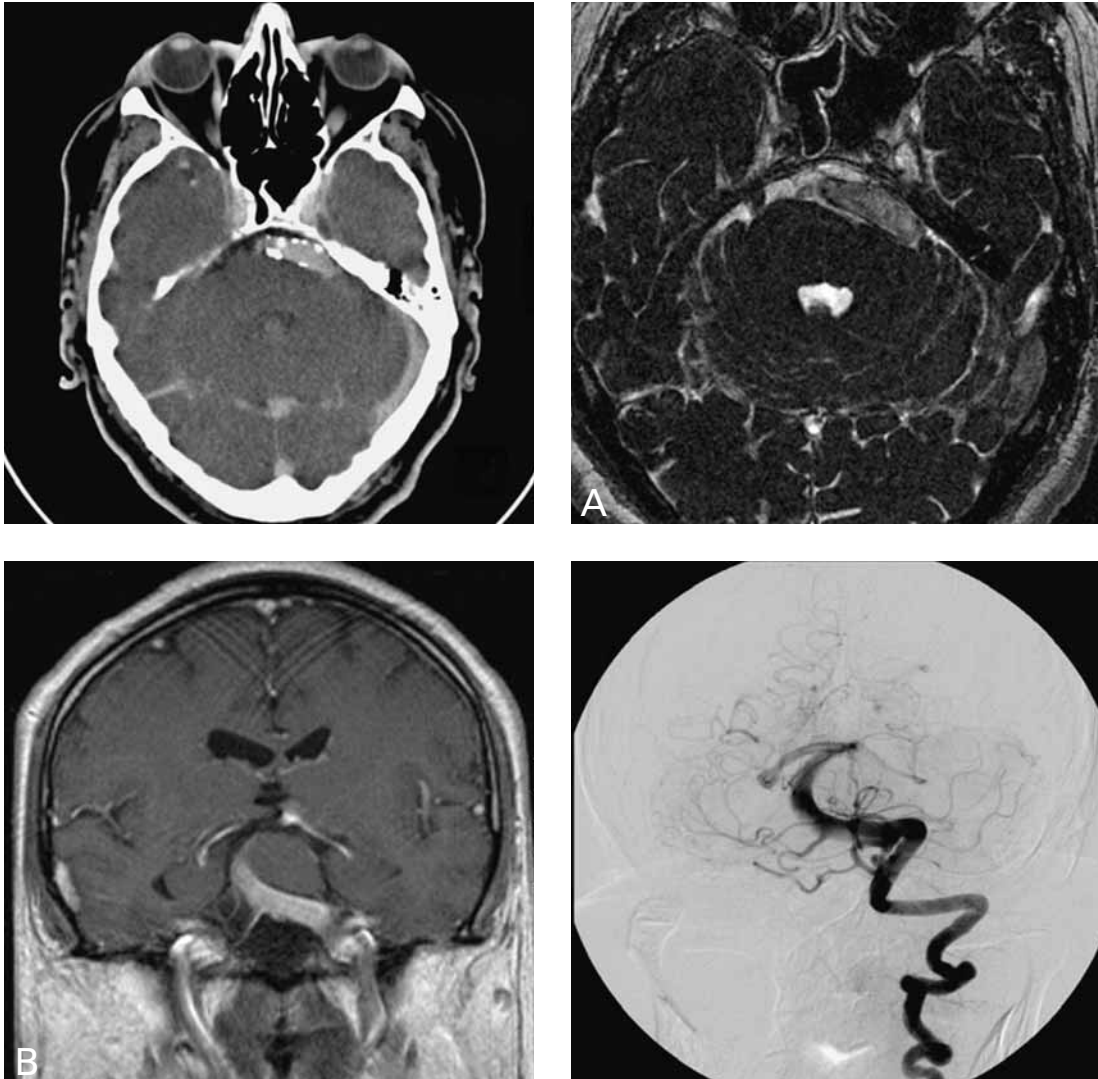


Fig.

1	2A
2B	3

Work-up

On axial contrast-enhanced CT scan at the level of the posterior fossa (Fig. 1), a calcified contrast enhancing tubular structure is seen in the left cerebellopontine angle, compatible with a widened and elongated basilar artery. Extrinsic impression on the left ventrolateral part of the pons is noted..

MRI of the brain (Fig. 2) is performed. On axial gradient echo T2-WI (CISS: constructive interference in steady state) at the level of the trigeminal nerve (A) the left trigeminal nerve is compressed and displaced by the elongated basilar artery and the right trigeminal nerve is seen in a normal position. Contrast-enhanced SE T1-WI in the coronal plane (B) demonstrates the elongation and curved aspect of the basilar artery.

Angiography (Fig. 3) shows marked elongation and curved aspect of the basilar artery.

Radiological diagnosis

CT and MRI demonstrate direct *compression of the trigeminal nerve* by a dolichobasilar artery.

Discussion

Trigeminal neuralgia, also known as “tic douloureux”, is a sudden and lancinating pain usually lasting for a few seconds and that is confined to the distribution of one or more of the branches of the trigeminal nerve on one side of the face. It has an incidence of approximately 4 per 100,000. The exact pathophysiology is not known, but demyelination leading to uncontrolled firing of fibers of the trigeminal nerve is a probable cause. A central mechanism is also possible but poorly understood. Common causes include vascular compression at the root entry zone, posterior fossa tumor, or multiple sclerosis within the brain stem. Most commonly the superior cerebellar artery is the culprit causing the compression but other posterior fossa vessels may also do so. Treatment consists of medication in the first place. Only patients

with pain refractory to medical management can be referred for surgical decompression of the nerve as was the case for our patient.

MRI is the imaging modality of choice when trigeminal nerve pathology is suspected. Most lesions are readily recognizable if appropriate imaging sequences are performed. Routine cranial MRI sequences augmented by a three-dimensional gradient echo sequence such as FISP (fast imaging with steady state precession) three-dimensional CISS sequence (constructive interference in steady state) with MPR (multiplanar reconstruction) are sufficient to demonstrate most pathological processes involving trigeminal nerve compression. Intravenous gadolinium-contrast occasionally provides additional diagnostic information. Since the trigeminal nerve is often involved in generalized neurological conditions such as cerebrovascular disease and primary demyelination, which are multifocal in nature, it is essential that the whole brain is imaged to ensure that all significant pathology is detected.

Bibliography

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