

Case reports

Hemifacial spasm in vertebrobasilar dolichoectasia

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Abstracts

Vascular compression of the facial nerve is a well recognized cause of hemifacial spasm (HFS). Magnetic resonance imaging (MRI) and magnetic resonance angiography (MRA) provide vascular and brain tissue diagnosis in a single non-invasive examination and should be recommended as primary neuroradiological procedure in HFS. We report a rare case of symptomatic HFS caused by a vertebrobasilar dolichoectasia. A 49-year-old woman experienced left hemifacial spasm for 10 months. MRI showed an enlarged vertebrobasilar dolichoectasia of the left vertebral artery which compressed the seventh cranial nerve at its exit from the caudal pons. MRI is essential in establishing the cause of HFS. Together with MR angiography it shows the correlation among the seventh cranial nerve, blood vessels and the structures of mid-brain. Vertebrobasilar dolichoectasia is just one of the blood vessel anomalies which causes HFS and which can be shown by MRI. HFS caused by vertebrobasilar dolichoectasia is quite rare.

Key words : Hemifacial spasm ; magnetic resonance imaging ; dolichoectasia.

Introduction

Hemifacial spasm (HFS) is a movement disorder characterised by involuntary paroxysmal facial movements that usually involve the orbicularis oculi and then spread to the other facial muscles. Vascular compression of the facial nerve is deemed to be the common cause of hemifacial spasm producing emphatic transmission. The offending vessels were the anterior inferior cerebellar artery (AICA), the posterior inferior cerebellar artery (PICA) or both the vertebral artery and PICA, and vertebral artery (1). Magnetic resonance imaging (MRI) and MR-angiography of the brain were performed in patients with HFS to assess the presence of an artery of the vertebrobasilar system compressing the root of the facial nerve (2). HFS caused by vertebral artery dolichoectasia is quite rare. Vertebrobasilar dolichoectasia is an anomaly which has been well-known since the earliest days of clinical neurology. In spite of this neither



FIG. 1. — Patient with HS (left musculus orbicularis oculi)

mechanism by which it is produced nor its clinical importance are fully defined. In most cases the subjacent arteriopathy is atherosclerotic. The clinical features are very varied and may be asymptomatic. Sometimes the clinical findings are due to compression of adjacent structures, basically the cranial nerves. HFS is the commonest finding (2-5). We show the possibilities of non-invasive MRI of the brain and MR angiography in diagnosing vertebrobasilar dolichoectasia which causes HFS.

Case report

A 49-year-old woman experienced left musculus orbicularis oculi spasms for 10 months. At first the spasms were rare, but became stronger at any physical or mental activity. Later they even occurred while the patient was resting. They were of greater intensity and were spreading to the whole muscle and all the muscles innervated by the seventh cranial nerve (Fig. 1).

Transcranial doppler sonography (TCD) of cranial blood vessels was normal. MRI of the brain was carried out on Shimadzu EPIOS 5 0.5T. It showed a slight dolichoectasia and tortuosity of the left vertebral artery which squeezes in the pons and the beginning of medulla oblongata on the left side. It continues in the basilar artery tortuosity placed very near the root of the left fifth cranial nerve. MRI angiography showed identical findings (Fig. 2, Fig. 3).

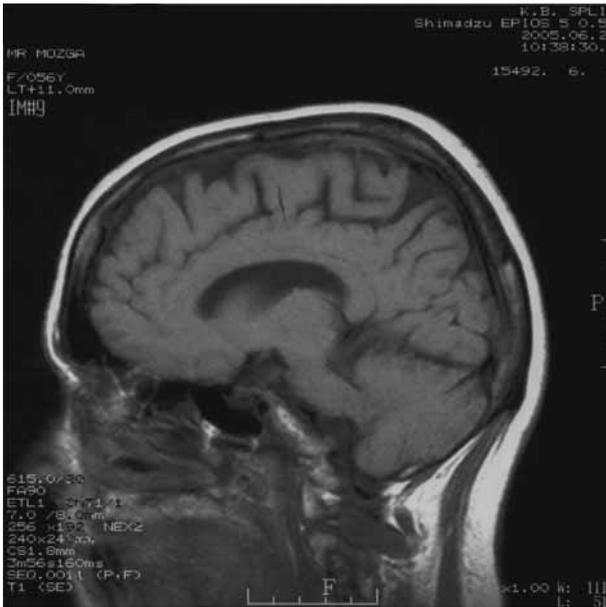


FIG. 2. — MRI (sagittal slice in T1) of dolichoectasia and the left vertebral artery tortuosity and basilar artery tortuosity.

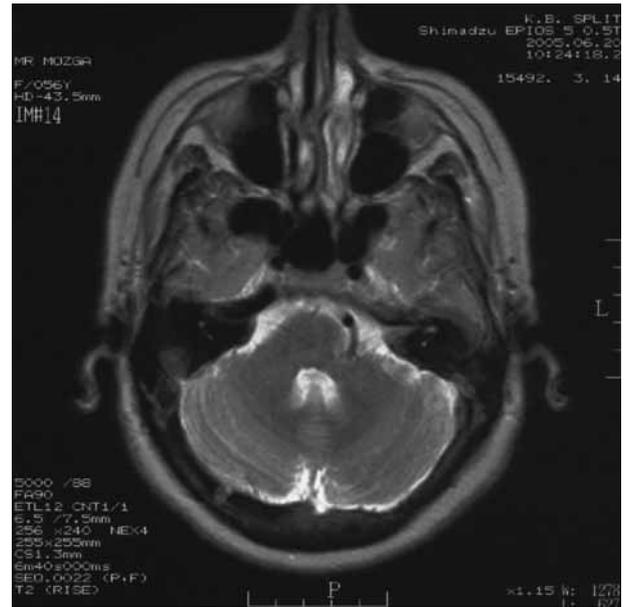


FIG. 3. — MRI (transversal slice in T2) of the left vertebral artery tortuosity and dolichoectasia and basilar artery tortuosity.

Discussion

HFS is a symptom complex comprising involuntary, painless spasms of the orbicularis muscle that may progress to involve all facial muscles. It is frequently the result of compression of the facial nerve at its root exit zone from the brain stem by vascular loops or aneurysms of PICA, AICA or vertebral artery (1, 2, 6). The paper describes rare cases of HFS caused by the vertebral artery aneurysm and the tentorial paramedian meningioma ipsilateral or contralateral. There is established the clinical-radiological correlation of the neurovascular contact of the facial nerve final stem with the HFS patients (7-10). HFS is related to vascular compression of the root entry zone of the facial nerve at the brainstem by elongated tortuous vessels of the vertebrobasilar arterial system (2, 3). HFS caused by vertebrobasilar dolichoectasia is quite rare. Very few cases of HFS caused by vertebral dolichoectasia are found in medical literature. Vertebral artery tortuosity and dolichoectasia can be shown by MRI with contrast. MRI not only excludes other etiologies such as tumor or arteriovenous malformation, but also demonstrates cranial nerve compression by ecstatic vertebral and basilar arteries. MR angiography is a non-invasive method that confirms the neurovascular contact (4, 5). In each HFS case MRI and MR angiography is to be made to show a possible neurovascular contact. Dolichoectasia is a rare atherosclerotic change of the vertebrobasilar blood vessels caused by neurovascular contact due to the enlarged lumen and tortuosity. The neurovascular contact of the vertebrobasilar dolichoectasia and the facial nerve in the studied case has manifested

an HFS. There are described particular cases of the vertebrobasilar dolichoectasia confirmed by MRI and MR angiography (3, 5, 11). Further study of vertebrobasilar dolichoectasia incidence with the HFS patients and possible asymptomatic forms is required. In conclusion, the HFS patients require a diagnostic treatment that include MRI of the brain and MR angiography. Neurovascular contact is the commonest cause of HFS, and vertebrobasilar dolichoectasia is a very rare form. Ipsilateral dolichoectasia with HFS indicates existence of a direct neurovascular contact, clearly shown by MRI and MR angiography.

REFERENCES

1. MONTANER J., ALVAREZ-SABIN J., ROVIRA A., MOLINA C., GRIVE E., CODINA A. Miquel Vertebrobasilar abnormalities in patients with hemifacial spasm: MR-angiography findings. *Rev. Neurol.*, 1999, **29** (8) : 700-3.
2. NIWA Y., SHIOTAM M., KARASAWA H., OHSETO K., NAGANUMA Y. Trigeminal neuralgia caused by tortuous vertebrobasilar system-the clinical and imaging features. *Rinsho Shinkeigaku*, 1997, **37** (3) : 191-7.
3. BAQUERO M., YAYA-HUAMAN R. Vertebrobasilar dolichoectasia. *Rev. Neurol.*, 1998, **26** (149) : 143-8.
4. BLANDINO A., VITA G., SALVI L., CHIRICO G., LONGO M., PANDOLLO I. Hemifacial spasm due to vertebrobasilar dolichoectasia. The magnetic resonance aspects in 2 cases. *Radiol. Med. (Torino)*, 1992, **83** (1-2) : 119-21.
5. RAHMAN E. A., TROBE J. B., GEBARSKI S. S. Hemifacial spasm caused by vertebral artery dolichoectasia. *Am. J. Ophthalmol.*, 2002, **133** (6) : 854-6.

6. SUTHIPONGCHAI S., CHAWALPARIT O., CHUROJANA A., POUNGVARIN N. Vascular loop compressing facial nerve in hemifacial spasm : demonstrated by 3D-phase contrast magnetic resonance angiography in 101 patients. *J. Med. Assoc. Thai.*, 2004, **87** (3) : 219-24.
7. MATSUMOTO K., KIMURA S., KAKITA K. Endovascular treatment of vertebral artery aneurysm manifesting as progressive hemifacial spasm. *Neurol. Med. Chir.*, 2005, **45** (7) : 360-2.
8. CANCELLI I., CECOTTI L., VALENTINIS L., BERGONZI P., GIGLI G. L. Hemifacial spasm due to a tentorial paramedian meningioma : a case report. *Neurol. Sci.*, 2005, **26** (1) : 3-4.
9. GOMEZ-PERALS L. F., ORTEGA-MARTINEZ M., FERNANDEZ-PORTALES I., CABEZUDO-ARTERO J. M. Hemifacial spasm as clinical presentation of the literature. *Neurocirugia (Astur)*, 2005, **16** (1) : 21-5.
10. TAN E. K., CHAN L. L. Clinico-radiologic correlation in unilateral and bilateral hemifacial spasm. *J. Neurol. Sci.*, 2004, **222** (1-2) : 59-64.
11. DELEU D., MESRAOUA B. Hemifacial spasm resulting from vertebral artery dolichoectasia. *Saudi Med. J.*, 2005, **26** (10) : 1640-2.

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