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Mydriasis Caused by Oculomotor Nerve Compression by the Tortuous Posterior Cerebral Artery (P2)

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Introduction:
It is well known that anisocoria is produced by an internal carotid-posterior communicating artery (ICPCom) aneurysm. We report a case of unilateral mydriasis without external ophthalmoplegia caused by the compression of the oculomotor nerve by a tortuous posterior cerebral artery (P2).

Methods:
Case presentation and review of the relevant literature

Results:
A 79-year-old woman noted several episodes of transient upper eye lid drooping that lasted for a few seconds 10 days prior to presentation at her local ophthalmologist. Mydriatic pupil was noted in the left eye (OS) and there was no constriction in response to a flash light in either direct or consensual ways. There were no limitations in the eye movements of either eye (OU). She was referred to us under a suspected diagnosis of tonic pupil OS. Her pupils showed 2 mm OD and 4 mm OS in bright room illumination. There was no difference in the position of the upper eye lid margin between the two eyes. Her extraocular movements were normal OU. Because of the history of episodic ptosis accompanied by an enlarged pupil, 3D-CT angiography were obtained and demonstrated a saccular aneurysm (2.4x3.9 mm) in the left ICPCom region. A frontotemporal craniotomy was performed to treat the aneurysm. It was found that the oculomotor nerve was not compressed by the aneurysm but that the nerve was compressed by the tortuous P2. By dissecting the arachnoid membrane surrounding the oculomotor nerve (the lilquest membrane), the oculomotor nerve was successfully decompressed, which subsequently resulted in restoring the size and function of the affected pupil.

Conclusion:
There was a previous case report describing congenital anomalous vascular compression of the oculomotor nerve was suggested to be the cause of mydriasis without ophthalmoplegia based on MRI findings (1). This is the first case that showed that anisocoria could be corrected by releasing the vascular compression.

References:

Key Words: Mydriasis without ophthalmoplegia, vascular compression of the oculomotor nerve, microvascular decompression

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