PAINFUL INCOMPLETE THIRD-NERVE PALSy CAUSED BY AN INTERNAL CAROTID-COMMUNICATING POSTERIOR ARTERY ANEURYSM

PARÁLISIS DOLORosa INCOMPLETA DEL III NERVIO CAUSADA POR UN ANEURISMA DE LA CARÓTIDA INTERNA-COMUNICANTE POSTERIOR

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ABSTRACT

Clinical case: A 38-year-old woman presented acute-onset, painful incomplete third-nerve palsy caused by an internal carotid-posterior communicating artery (IC-PC) aneurysm. We describe the differential diagnosis with Tolosa-Hunt syndrome and the results after endovascular treatment.

Discussion: The presence of pupil-sparing third-nerve palsy may not exclude the presence of an IC-PC aneurysm and orbital magnetic resonance imaging and/or computed tomography imaging must be performed in these cases. The prompt recovery after endovascular treatment is consistent with previous reports (Arch Soc Esp Oftalmol 2009; 84: 43-46).

Key words: Painful incomplete third-nerve palsy, carotid-posterior communicating artery aneurysm, Tolosa-Hunt, MRI, CAT, embolization.

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RESUMEN

Caso clínico: Mujer de 38 años que presentó de forma aguda una parálisis incompleta y dolorosa del III par causada por un aneurisma de la carótida interna-comunicante posterior (CI-CP). Describimos el diagnóstico diferencial con el Síndrome Tolosa-Hunt y los resultados tras tratamiento endovascular.

Discusión: La presencia de una parálisis del III par sin afectación pupilar no excluye la presencia de un aneurisma de la CI-CP. La realización de una resonancia nuclear magnética orbitaria y/o angio-tomografía axial computarizada es obligada en estos casos. La rápida recuperación tras tratamiento endovascular es consistente con otros trabajos previos.

Palabras clave: Parálisis dolorosa incompleta del III nervio, Tolosa-Hunt, aneurisma de la carótida interna-comunicante posterior, RNM, angioTAC, embolización.
INTRODUCTION

Aneurysms are the most frequent cause of involvement of the third-nerve to the sub-arachnoid level. The clinical presentation can include the onset of acute peri-ocular pain, ptosis, limitation of adduction, depression and elevation of the eye with dilated pupil (1).

In adults, a painful eye palsy with affected pupil could be the result of the growth of an intra-cranial aneurysm and is a sign of alarm of this vascular malformation. The rupture of an aneurysm determines a sudden sub-arachnoid hemorrhage with a high rate of morbidity and mortality. Neuro-radiological diagnostic and endovascular treatment can prevent this catastrophic outcome (2).

CASE REPORT

A 38-year old woman who exhibited headache and left peri-orbitary pain with one week of evolution and diplopia the last 24 hours. The motor exploration revealed paresia of the superior and internal muscles and moderate ptosis in the left eye, without any other ocular or neurological findings. The cranial Nuclear Magnetic Resonance (NMR) gave normal results. A Tolosa-Hunt syndrome was diagnosed and treatment was established with corticoids. Two days later, the painful ophthalmoplegyc persisted and the patient began to refer diminished near visual acuity. The exploration revealed left midriasis. An orbital NMR was performed which showed in T2 a partially thrombosed aneurysm of the carotid-posterior communicating artery (IC-PC). The computerized axial angio-tomography (angio-CAT) revealed a multi-lobulled left IC-PC aneurysm of 10x5 mm (fig. 1). A brain angiography and embolization were carried out (fig. 2), with the aneurysm being completely filled in with Hydrocoil (MicroVention, Aliso Viejo, CA) Cerecyte® (Micrus, Sunnyvale, CA). The pupil size returned to normal and the ptosis and adduction improved completely two weeks after embolization. Eight months after the treatment, the patient exhibited a slight deficit in elevation but without referring diplopia.

DISCUSSION

The existence of third pair palsy secondary to a posterior carotid-posterior communicating artery aneurysm has been described (1). When the pupil is not involved, the most common cause of this palsy is vascular, with frequent diabetes. The injury is confined to the internal part of the nerve, respecting the pupil-motor fibers in the periphery. In contrast, when the pupil is involved, the most frequent cause

Fig. 1: A: Nuclear Magnetic Resonance (NMR) T2 (3D reconstruction) showing the aneurysm of the thrombosed carotid-posterior communicating artery (IC-PIP). B: Left IC-PC aneurysm demonstrated by computerized axial angiotomography.
is an aneurysm which compresses the nerve. However, the isolated compression of the lower portion of the nerve does not affect the pupil-motor fibers located in the upper portion. The pupil may be respected initially but the efferent pathway is eventually affected, causing midriasis (3).

An intact IC-PC aneurysm, associated or not to oculomotor palsy, may cause orbital pain as a symptom of alarm prior to rupture. A frontal-orbital pain can be the result of the distortion of the fibers derived from the ophthalmic division of the fifth nerve pair, when the growth of the aneurysm affects the third pair itself. Previous studies confirm that the absence of headache and/or ocular pain, or the presence of third nerve pair palsy without involvement of the pupil, as in our case, may not exclude the presence of an IC-PC aneurysm (1,3).

The Tolosa-Hunt syndrome is a painful ophthalmoplegia characterized by a recurring unilateral pain, ipsilateral oculo-motor palsy and rapid response to corticoids. It begins with a non-specific inflammation of the cavernous sinus or the orbitary apex. La Mantia et al observed that the third nerve pair is the most frequently affected pair in this syndrome, with about one third of cases exhibiting normal NMR (5).

Our patient exhibited an incomplete painful palsy, without initial involvement of the pupil and normal cranial NMR. In the absence of other pathological data, the Tolosa-Hunt syndrome was diagnosed, establishing treatment with corticoids. The orbitary NMR and angio-CAT scan were performed after observing the late pupil involvement and the absence of response to the treatment. In this way, the presence of a left side IC-PC aneurysm was detected.

In the presence of an incomplete palsy of the third nerve pair without pupil involvement, the patient must be checked daily during the first week. The presence of an aneurysm must be suspected in patients in the age bracket of 20-50 and without other vascular risk factors. Brain angiography has been suggested as a routine exploration method in patients with third pair palsy. However, said test could be associated to a brain vascular accident rate of 0.6-5%, particularly in elderly patients with high vascular risk. The La angio-CAT scan and angio-NMR have been documented as diagnostic methods in patients with third nerve pair palsy, as well as due to their capacity to detect aneurysms having a size of 3mm or larger. Wong et al concluded that, as a first line of research, angio-CAT scan is sufficient to detect compressive aneurysms and can detect other structural injuries. Patients with angio-CAT scans of low quality or showing an aneurysm which requires embolization will also require a brain angiography (3).

Embolization reduces the pulsatility of the aneurysm, which could be more relevant in the resolution of the third nerve pair palsy than the anatomic release of the nerve after the surgical extraction of the aneurysm (4).

In our case, the prompt recovery of a third nerve pair palsy is consistent with previous publications suggesting a faster resolution of the deficits by means of endovascular treatment (2).
REFERENCES


