# *Clinical Case Report*

## Horner syndrome and VI nerve paresis as a diagnostic clue to a hidden lesion

JEYANTH ROSE, PUSHPA JACOB, TRIPTI JACOB

**ABSTRACT**

**A 33-year-old man treated elsewhere for an isolated VI cranial nerve paresis underwent an attempted transnasal biopsy of a large space-occupying lesion in the cavernous sinus and petrous apex seen on a CT scan. During the procedure, he developed severe bleeding and hypovolaemic shock. When he came to us 2 years later, he had Horner syndrome along with a mild VI nerve paresis that aided in localizing the lesion to the carotid canal and the posterior cavernous sinus. Digital subtraction angiography revealed a large internal carotid artery aneurysm of the laceral and petrous segments within the carotid canal, mushrooming into the posterior cavernous sinus.**

Natl Med J India 2010;23:344–5

INTRODUCTION

Post-ganglionic Horner syndrome presents with mild ptosis and anisocoria that is more prominent in the dark. It signifies damage to the postganglionic sympathetic trunk.

Anisocoria in the dark is a difficult sign to elicit in Asian eyes considering the pigmented iris that masks the pupil. Without a high index of suspicion it can easily be missed. Anatomical and aetiological localization is a crucial aspect of diagnosis in neuro-ophthalmology. We encountered a patient with a combination of Horner syndrome and abducens nerve paresis, which enabled us to localize the misdiagnosed lesion.

THE CASE

A 33-year-old man residing in a neighbouring country, with no contributory medical illnesses, presented with complaints of diplopia and headache for 2 years. At the onset 2 years ago, he was found to have a right isolated VI cranial nerve palsy. A CT scan showed a large space-occupying lesion in the cavernous sinus and petrous apex. A transnasal biopsy was done following which he had severe bleeding, hypovolaemic shock and almost died.

On examination, his vision was 6/6 in both eyes. He had mild ptosis in the right eye (Fig. 1) and abduction restriction of –1. Anisocoria was prominent in the dark, the right pupil being the smaller one. Examination of the anterior segment and fundus was normal, as well as that of the left eye. Visual fields and audiometry were normal. Diplopia charting showed crossed horizontal diplopia in right gaze alone. Systemic examination was normal.

CT scan (Fig. 2) and MRI showed a large, well-defined, lobulated, mixed signal intensity mass with its epicentre at the right petrous apex. The lesion had caused marked pressure expansion or lytic defect with a thin peripheral shell of bone. It extended to the right side of the upper and lower clivus, projecting into the sphenoid sinus anteriorly, prepontine cistern posteriorly and temporal lobe laterally. As the clinical indicators did not correlate with these imaging findings, a digital subtraction angiography (DSA) was done (Fig. 3). This showed tortuosity, dilatation and irregularity of the petrous and laceral part of the internal carotid artery (ICA). The dilated segment did not correspond in size to the lesion seen on MRI, which was much larger.

DISCUSSION

The combination of abducens nerve palsy and ipsilateral Horner syndrome is rare. Anatomical and aetiological localization is

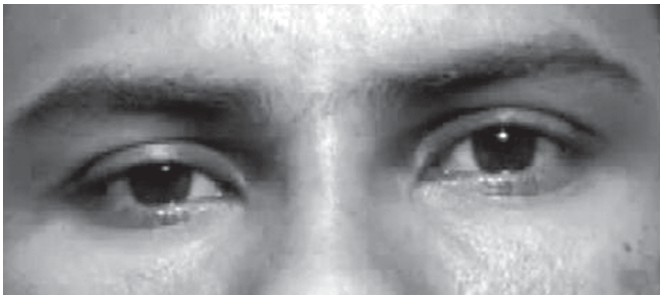

FIG 1. Mild ptosis right eye, anisocoria inconspicuous in Asian eyes

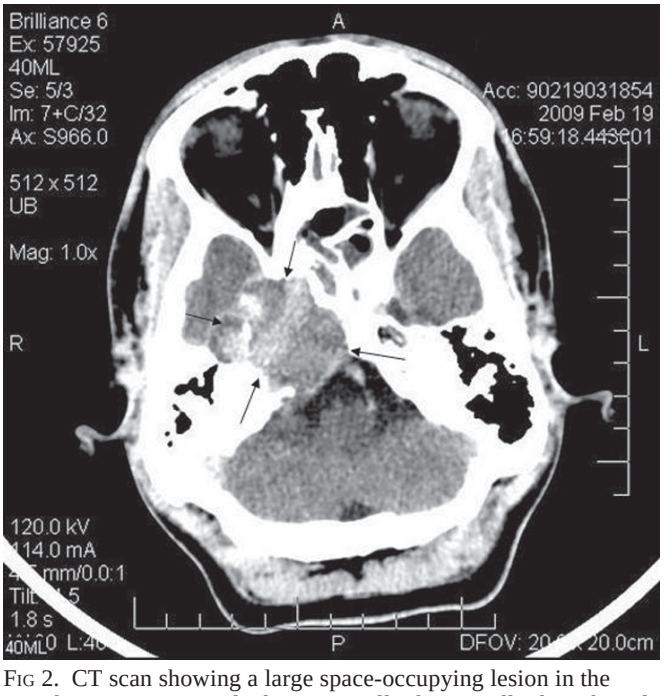


FIG 2. CT scan showing a large space-occupying lesion in the right petrous apex, which was actually the partially thrombosed wall of the giant aneurysm within the carotid canal

Schell Eye Hospital, Arni Road, Christian Medical College and Hospital, Vellore 632001, Tamil Nadu, India

JEYANTH ROSE, PUSHPA JACOB Department of Ophthalmology

TRIPTI JACOB Department of Anatomy

Correspondence to JEYANTH ROSE; *jeyanthrose@hotmail.com*

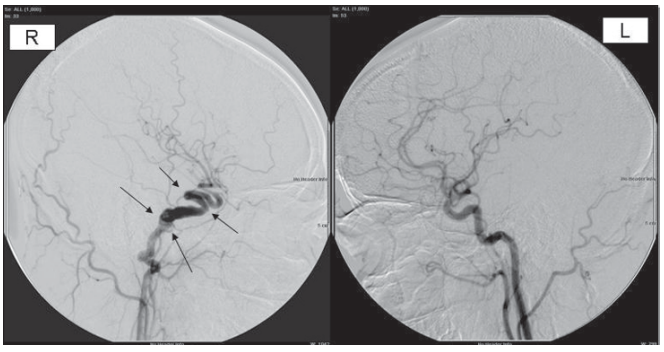


FIG 3. Digital subtraction angiography showing an irregularly dilated, tortuous petrous and laceral segment of the internal carotid artery (ICA) on the right side and normal ICA calibre on the left side.

crucial in making a diagnosis in neuro-ophthalmology.

The ICA travels through the intraosseous carotid canal, enters the foramen lacerum through its posterior wall and passes superomedially to the cavernous sinus. The abducens nerve exits at the pontomedullary junction, ascends on the clivus, pierces the dura, passes inferior to the petroclinoid ligament (Dorellos canal) and enters the posterior part of the cavernous sinus where it crosses the ICA laterally.[1]

The sympathetic plexus surrounds the ICA through its entire course. The mere proximity of the abducens nerve to the ICA can produce Horner syndrome and VI nerve paresis. However, there is evidence to show that sympathetic twigs can also accompany the VI nerve for short distances in the cavernous sinus.[2]

Neither abducens nerve palsy nor Horner syndrome has prompt localizing value. However, when both are present, it is important to determine the site of the lesion. This anatomical site could be the posterior cavernous sinus or the carotid canal. The clinical combination has several reported causes, which include metastatic carcinoma from the breast and parotid, carcinoma of the epipharynx, meningioma, extension of a chordoma, intracavernous ICA aneurysm, a carotid–cavernous fistula, head trauma, cryptococcal meningitis and sphenoidal cyst.[3–11]

The large lobulated lesion with the epicentre at the right petrous apex as seen on MRI and CT scan, if truly located in the cavernous sinus, would cause a prominent VI nerve palsy and multiple other cranial nerve palsies, since cranial nerves III, IV, VI and V2 are in close proximity. The subtle nature of the VI nerve paresis with Horner syndrome made us postulate that this lesion was actually below the level of the foramen lacerum, mushrooming into the posterior cavernous sinus and producing a mild VI nerve paresis.

Thus, the possibility of an ICA aneurysm was suspected and a DSA showed tortuosity and irregular dilatation of the petrous and laceral part of the ICA, confirming the diagnosis of an intrapetrosal ICA aneurysm.

The space-occupying lesion seen on CT and MRI was much larger than the dilated lumen of the aneurysm as seen on angiography. Thrombosed aneurysms can show heterogeneous signals on CT and MRI that can mimic space-occupying lesions.[12] The large lesion seen on CT scan (Fig. 2) was probably the partially thrombosed sac of the aneurysm. The patient was advised balloon catheterization and coiling of the intracranial aneurysm, but wished to get the procedure done after 3 months.

Horner syndrome presents with no symptoms and inconspicuous signs. Without a high index of suspicion, it can be easily missed in Asian eyes. The sympathetic nerves are the closest relation to the ICA and it is important to suspect an ICA aneurysm or dissection when they are involved. The presence of Horner syndrome and mild VI nerve paresis with no other neurological signs or cranial nerve involvement almost localizes the disease to an intrapetrosal carotid artery aneurysm.

## REFERENCES

1 Hollinshead WH. The cranium. In: Hollinshead WH (ed). *Anatomy for surgeons. Vol. 1: The head and neck.* New York:Hoeber-Harper; 1958:59, 85–6.
2 Sunderland S, Hughes ES. The pupillo-constrictor pathway and the nerves to the ocular muscles in man. *Brain* 1946;**69:**301–9.
3 Abad JM, Alvarez F, Blazquez MG. An unrecognized neurological syndrome: Sixth-nerve palsy and Horner's syndrome due to traumatic intracavernous carotid aneurysm. *Surg Neurol* 1981;**16:**140–4.
4 Abad Rico JM, Alvarez Ruiz F, Muñoz J, Pérez Higueras A, Garía Blázquez M. [A little recognized neurological syndrome: Paralysis of the 6th pair and Bernard–Horner syndrome caused by traumatic intracavernous lesions]. *Rev Clin Esp* 1982;**165:**135–40.
5 Gutman I, Levartovski S, Goldhammer Y, Tadmor R, Findler G. Sixth nerve palsy and unilateral Horner's syndrome. *Ophthalmology* 1986;**93:**913–16.
6 Hartmann B, Kremer I, Gutman I, Krakowski D, Kam J. Cavernous sinus infection manifested by Horner's syndrome and ipsilateral sixth nerve palsy. *J Clin Neuroophthalmol* 1987;**7:**223–6.
7 Striph GG, Burde RM. Abducens nerve palsy and Horner's syndrome revisited. *Neuroophthalmology* 1988;**8:**13–17.
8 Tola-Arribas MA, Zarco-Tejada JM, Marco-Llorente J. [Horner's syndrome secondary to ophthalmic herpes zoster]. *Rev Neurol* 1997;**25:**1922–4.
9 Silva MN, Saeki N, Hirai S, Yamaura A. Unusual cranial nerve palsy caused by cavernous sinus aneurysms. Clinical and anatomical considerations reviewed. *Surg Neurol* 1999;**52:**143–8.
10 Parkinson D. Horner's syndrome and sixth nerve palsy. *Surg Neurol* 2000;**53:**94–5.
11 Pandey PK, Garg D, Bhatia A, Jain V. Horner's syndrome and sixth nerve palsy due to herpes zoster ophthalmicus arteritis. *Eye (Lond)* 2005;**19:**224–6.
12 Kurokawa R, Kuroshima Y, Yoshida K, Kawase T. Spontaneous thrombosis of intracavernous internal carotid artery aneurysm and parent artery occlusion in patients with positive balloon test occlusion—two case reports. *Neurologia Medico-Chirurgica* 2001;**41:**436–41.