Fourth Nerve Paresis and Ipsilateral Horner's Syndrome: An Unusual Association

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ABSTRACT

Presence of a fourth nerve palsy and ipsilateral Horner's Syndrome (HS) is an exceptional association. A case of a 54 year-old patient with diplopia due to a fourth nerve palsy and acquired HS on the same is presented along with magnetic resonance images (MRI) revealing a mass in the right cavernous sinus. This new combination of ipsilateral signs is analyzed.

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Anisocoria; Horner's Syndrome; apraclonidine; cavernous sinus; fourth nerve palsy

Clinical correspondence (case report)

A 54-year-old woman presented with vertical diplopia and neck pain due to torticollis of recent onset. Over multiple examinations, performed on different days, mild ptosis was noted in her right eye, but the eye exhibited no weakness or daily variations, and the ice-pack test was repeatedly negative. In the primary gaze position, positive vertical deviation of six prismatic diopters was measured. No fusional amplitude was observed. Park's and Bielschowsky tests were positive for a fourth nerve palsy (Figure 1). Anisocoria was evident, with miosis in the right eye, increasing in the dark. Twenty minutes after apraclonidine 0.5% (Iopidine 0.5%™, ALCON, Fort Worth, Texas, USA) drops were instilled in both eyes; sympathetic denervation (Horner's Syndrome, HS) was evident on the right with lid ptosis reversion and mild mydriasis.¹ The rest of the patient's ocular exam was unremarkable. Laboratory testing (Acetylcholine receptor-AChR-antibodies) for myasthenia gravis was negative.

Old pictures from the patient's youth, spanning more than a decade, were negative for any evidence of HS (ptosis, miosis). Yearly follow-up for 19 years revealed no variations in HS or diplopia. Initial magnetic resonance imaging (MRI), performed 19 years earlier, revealed a mass in the cavernous sinus (CS), which was consistent with a meningioma of the lateral wall (Figure 2(a)). Now, 19 years later, an identical mass was observed in the same location (Figure 2(b)).

An anatomic relationship between the sympathetic plexus and the fourth cranial nerve has been described elsewhere.^{2,3} The lesion in the CS wall affected the fourth cranial nerve, and the presence of an ipsilateral HS could be explained by the damage this lesion caused through anastomotic communication with the sympathetic plexus.

Combined sixth nerve paresis and ipsilateral HS has previously been reported, and termed *Parkinson's Syndrome*⁴, referring to various clinical conditions involving the abducens nerve and the sympathetic plexus, with a lesion within the ipsilateral CS. Guy et al. described two patients with contralateral trochlear nerve paresis and ipsilateral HS. Both patients had brainstem lesions that affected both sympathetic pathways and the fourth nerve nucleus and fascicles, occurring before decussation to explain the contralateral manifestations.⁵

The association between a fourth nerve palsy and ipsilateral HS, with a CS lesion on the same side has previously been described in a case of Tolosa Hunt.⁶ Lesions within the CS should be considered in any patient who presents with a fourth cranial nerve palsy and ipsilateral HS.

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Figure 1. Fourth cranial nerve palsy and Horner's Syndrome (HS). (a) Right eye, ptosis and miosis in the primary gaze position. (b) With her head tilted towards the right shoulder (Bieschowsky's test), the patient's right eye deviates laterally and upward. (c) Overaction of the right inferior oblique when the same patient gazes left. (d) Reversal of miosis and ptosis 30 minutes after apraclonidine drop administration.

Figure 2. Magnetic resonance images of the cavernous sinus (CS). (a) A mass is observed in the right CS (white arrow). (b) Images obtained 19 years later reveal the same mass at the CS level (open arrow).

Conflict of interest

The author has no conflict of interest.

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