Síndrome de Horner, da Suspeição, à Confirmação Diagnóstica e Tratamento

Horner Syndrome, from Suspicion to Diagnosis Confirmation and Treatment

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Resumo:

A síndrome de Horner (SH) é caracterizado por ptose, miose e anidrose, devido à interrupção da via do oculossimpático ao longo dos segmentos cefálico, ocular ou cervical. Este caso refere-se a um homem de 53 anos com queixas de cefaleia frontal com 1 semana de evolução, ptose direita e anisocoria. À admissão, a tomografia computorizada crânio-encefálica e dos vasos supra-aórticos com angiografia excluiu evento isquémico, hemorrágico ou disseção carotídea. Ao terceiro teste da apraclonidina, 8 dias após a admissão, foi confirmado SH. Posteriormente realizou ressonância magnética crânio-encefálica que revelou disseção carotídea no segmento cervical da artéria carótida interna direita. Foi instituída anti-agregação simples e anti-dislipidemico. Após 3 meses, objetivou-se resolução da disseção. Neste caso enfatizamos o papel fundamental do teste da apraclonidina na abordagem desta síndrome neurológica e salientamos que uma abordagem terapêutica conservadora permitiu a resolução do caso e minimizou a iatrogenia causada.

Palavras-chave: Dissecação da Artéria Carótida Interna; Síndrome de Horner/diagnóstico; Síndrome de Horner/therapy.

Abstract:

Horner syndrome (HS) is characterized by ptosis, miosis and anhidrosis, due to an interruption of the oculosympathetic pathway along the cephalic, ocular or neck segments. This clinical case reports a 53-year-old man with a one week history of frontal headache, right ptosis and anisocoria. Cerebral and supra-aortic vessels angio-computed tomography was performed, excluding an acute ischemic or hemorrhagic event and carotid dissection. At the third apraclonidine test attempt, 8 days after admission, HS was confirmed. Then a cranioencephalic angio-magnetic resonance imaging was performed, revealing carotid dissection. The patient was proposed to initiate antiplatelet and antilipidemic therapy. After three months, he presented extracranial carotid dissection resolution. In this case, we emphasize the role of the apraclonidine test in this neurologic syndrome approach, and a conservative therapeutic approach allowed not only case resolution, but also iatrogenic mitigation.

Keywords: Carotid Artery, Internal, Dissection; Horner Syndrome/diagnosis; Horner Syndrome/therapy.

Introduction

Horner syndrome is a classical neurologic syndrome typically characterized by unilateral minor upper eyelid ptosis (1-2 mm), miosis and anhidrosis, due to an interruption of the oculosympathetic pathway.[1] This is a three-neuron chain, the first-order neuron (central) descends caudally from the hypothalamus and through the spinal cord; the second-order neuron (pre-ganglionic) travels from the sympathetic trunk, through the brachial plexus and over the lung apex, and then ascends to the superior cervical ganglion (near the angle of the mandible and the bifurcation of the common carotid artery); the third-order neuron (post-ganglionic) travels with the carotid artery into the cavernous sinus, traversing the orbit to innervate the iris dilator and Müller muscle, responsible for a minor portion of the upper lid elevation an lower lid retraction. Besides subtle symptoms, this syndrome could be associated with potentially life-threatening lesions, such as central nervous system tumors, central hemorrhage or stroke, demyelination, arterial dissection, and breast or lung tumors, for example. According to the literature, lesions occur mainly at pre or post-ganglionic neurons, however a significant percentage of Horner syndrome is of unknown cause.[2]

The clinical history is crucial to understand the lesion's etiology or location, helping to guide the clinical investigation. There are useful pharmacologic tests to confirm Horner syndrome's presence, particularly in subtle symptomatic clinical cases. Apraclonidine is the most used one, inducing reversal of anisocoria and pupil dilation due to the upregulation of the α-1 adrenergic postsynaptic receptors in patients with Horner syndrome.[3]

Case Report

A 53-year-old man developed a bilateral frontotemporal headache associated with photophobia and nausea for

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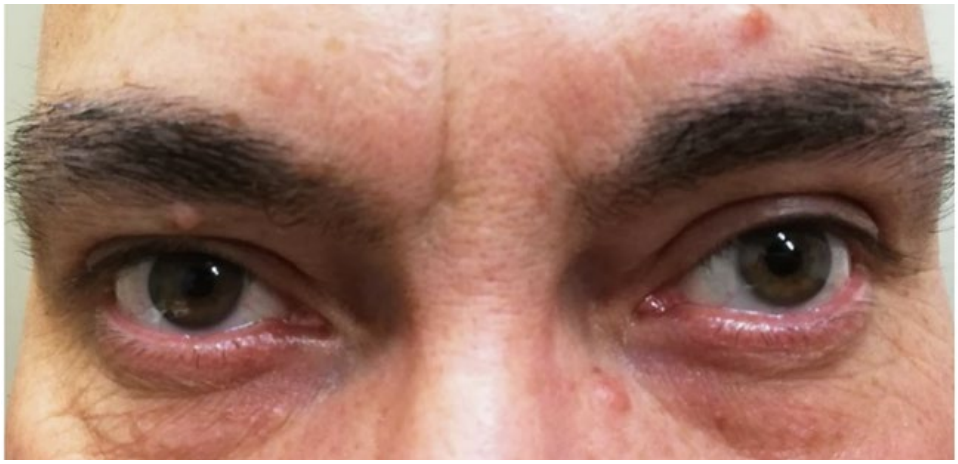

Figure 1: The patient presented 1 mm right ptosis and slight anisocoria in room light at hospital admission.

a week. Besides some pain relief with non-steroidal anti-inflammatory drugs, the patient noticed asymmetrical right ptosis and anisocoria (Fig. 1), with no visual disturbance, being admitted to the emergency department. His past medical history included cervical degenerative pathology which had been evaluated by orthopedics and had no surgical indication. No other relevant past medical history.

At hospital admission, he presented a blood pressure of 144/72 mmHg, a heart rate of 68 beats per minute, apyretic, and pulse oximetry of 98% at FiO2 21%. Regarding neurologic examination, right miosis and 1 mm upper lid ptosis were observed, with no other deficits (Fig. 1).

A blood sample was collected, with no significant alterations (Table 1). Cerebral and supraaortic vessels

Table 1: Blood analysis results.

EVALUATED PARAMETER	RESULT	REFERENCE VALUES
Hemoglobin	14.0	14.0 – 18.0 (g/dL)
Mean corpuscular volume	84.3	83 – 103 (fL)
Mean corpuscular hemoglobin	26.6	28 – 34 (pg)
Mean corpuscular hemoglobin concentration	31.6	32.0 – 36.0 (g/dL)
White blood cells	4.5	4.8 – 10.8 (x 103/µL)
Neutrophils	2.5	1.8 – 7.7 (X 103/ µL)
Eosinophils	0.1	0.00 – 0.49 (x 103/µL)
Basophils	0.0	0.0 – 0.1 (x 103/µL)
Lymphocytes	1.4	1.0 – 4.8 (x 103/µL)
Monocytes	0.5	0.12 – 0.80 (x 103/µL)
Platelets	161	150 – 350 (x 103/ µL)
C-reactive protein	1.5	<3.0 (mg/L)
Urea	47	15 – 39 (mg/dL)
Creatinine	1.01	0.70 – 1.30 (mg/dL)
Sodium	142	135 – 146 (meq/L)
Potassium	5.33	3.5 – 5.1 (meq/L)
Aspartate aminotransferase	19	12 – 40 (UI/L)
Alanine aminotransferase	17	7 – 40 (UI/L)
Lactate dehydrogenase	258	120 – 246 (UI/L)
Erythrocyte sedimentation rate	10	0 – 12 mm

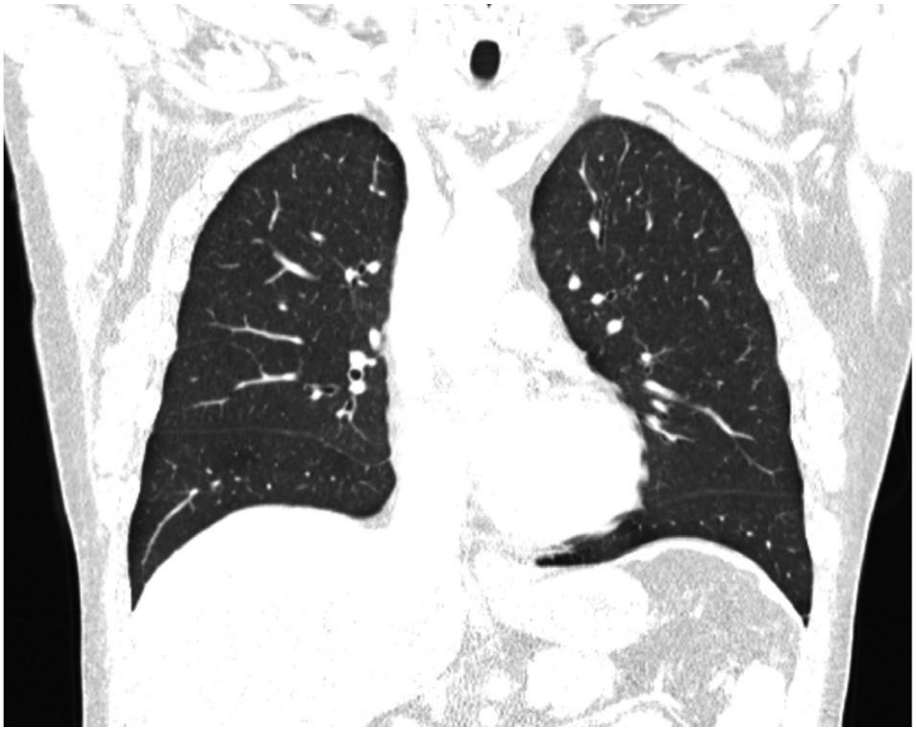

Figure 2: Thoracic CT excluded Pancoast syndrome.

angio-computed tomography (CT) was performed, excluding an acute ischemic or hemorrhagic event and carotid dissection, identifying no significant atherosclerosis at the carotid bifurcation.

He was admitted to the Internal Medicine unit to complete clinical investigation. The laboratory studies revealed dyslipidemia, with low-density lipoproteins (LDL) of 206 mg/dL to a considered goal of 116 mg/dL, according with his cardiovascular risk.

The patient was also evaluated by Ophthalmology, which excluded visual disturbance or diplopia, and confirmed right upper lid ptosis with ipsilateral reverse lower lid ptosis, as well as anisocoria (with the ptotic eye having the smaller pupil), more prominent in the dark. At the time of the first evaluation, because it was not available at the hospital pharmacy, apraclonidine 0.5% was ordered to perform the pharmacologic test.

Meanwhile, cranioencephalic angio-magnetic resonance imaging (MRI) was scheduled and thoracic CT was performed, revealing no pulmonary mass, excluding Pancoast syndrome (Fig. 2).

In the second evaluation by Ophthalmology, 3 days after admission, the apraclonidine 0.5% test was performed revealing a negative result, so it was scheduled 3 days later. At that time, ptosis reversed, but the anisocoria remained. At the third apraclonidine attempt, 8 days after admission, the patient presented a positive test, with reversion of ptosis and anisocoria, confirming Horner syndrome.

Cranioencephalic angio-MRI was performed, excluding ischemic lesions in cerebral parenchyma and revealing an intramural hematoma in the cervical segment of the right internal carotid with 3.2 cm of extension, suggesting carotid dissection. It represented a lumen reduction inferior to 40% (Fig. 3).

During hospitalization time, headache intensity decreased, improving with paracetamol. Facing MRI result, the patient was asked one more time about neck hyperextension situations, remembering a car crash of low kinetics two weeks before hospital admission.

After right internal carotid dissection diagnosis, the patient was discharged with a balanced diet recommendation and antiplatelet treatment with acetylsalicylic acid 100 mg and antilipidemic therapy with atorvastatin 20 mg once daily.

Three months after hospital discharge, a cranioencephalic angio-MRI was repeated, showing dissection resolution (Fig. 4).

Discussion

Despite being described as a triad, ptosis and miosis are far more common than anhidrosis.[1] These three symptoms do not always appear together, which means that Horner syndrome identification is more difficult. Particularly in third-order neuron lesions, anhidrosis is not a prominent factor.[4] Clinical suspicion should be very high because these symptoms can be very subtle. It can be helpful to observe the pupil's behavior to room light modification.[5] The anisocoria is more prominent in the dark, indicating pathology of the pupillary dilator. The smaller pupil takes a longer time to dilate when a bright source of light is moved away from the eye. This phenomenon is called dilation lag and is present in this clinical case.

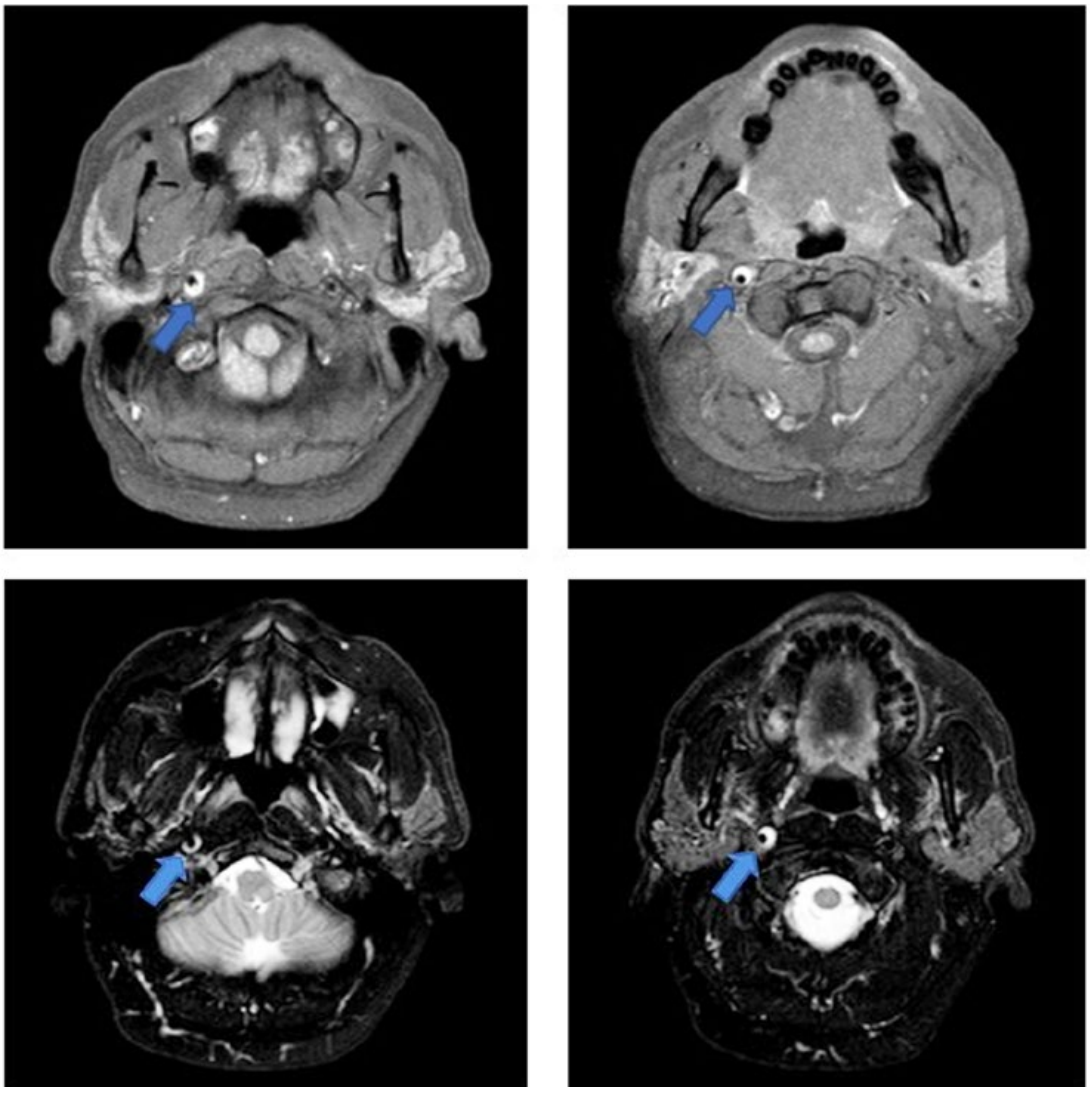

Figure 3: Cranioencephalic angio-magnetic resonance revealing dissection of the right internal carotid artery.

As mentioned before, pharmacologic tests can be useful in clinical investigation. Three different tests are described in the literature: apraclonidine, cocaine and hydroxyamphetamine. The apraclonidine test requires upregulation of the α-1 adrenergic postsynaptic receptors in patients with Horner syndrome, so it can provide false negative results in acute cases. In acute cases, false-negative test results may occur because the alpha1-receptor upregulation on which the effect of apraclonidine depends may take 1 to 2 weeks.[6] It is thought reliable within 2 weeks after clinical onset.[6] In this case, the patient omitted the car crash at the beginning, but the upregulation of the α-1 adrenergic postsynaptic receptors was observed three weeks after the traumatic event.

The cocaine test increases the degree of anisocoria by blocking the reuptake of norepinephrine at the sympathetic nerve synapse and causing pupillary dilation in eyes with intact sympathetic innervation. It was used in the previous decade, however it is still preferred in acute cases.[7] The hydroxyamphetamine test can be useful to distinguish between pre and post-ganglionic lesions.[8] According to the literature, in what concerns these three options, apraclonidine is the easier-to-use and more reliable test.

Cervical trauma was identified in 40% of the extracranial carotid dissections,[9] and Horner syndrome occurs in 25% of the cases.[10] There is no evidence of significant differences between MRI and angio-CT techniques in carotid dissection diagnosis.[11] In this case, MRI was not available for emergency service, that's why a CT scan was the first choice at admission, however the image was not clear and carotid dissection was not identified in the first place, being diagnosed later by MRI. Both techniques excluded an ischemic event.

Extracranial carotid dissection is an important cause of stroke, particularly in young people. A randomized trial published in 2015, found no difference between anticoagulation and antiplatelet for preventing stroke in patients with extracranial carotid dissection, and only one major bleeding event occurred in the anticoagulation group, so there is no more

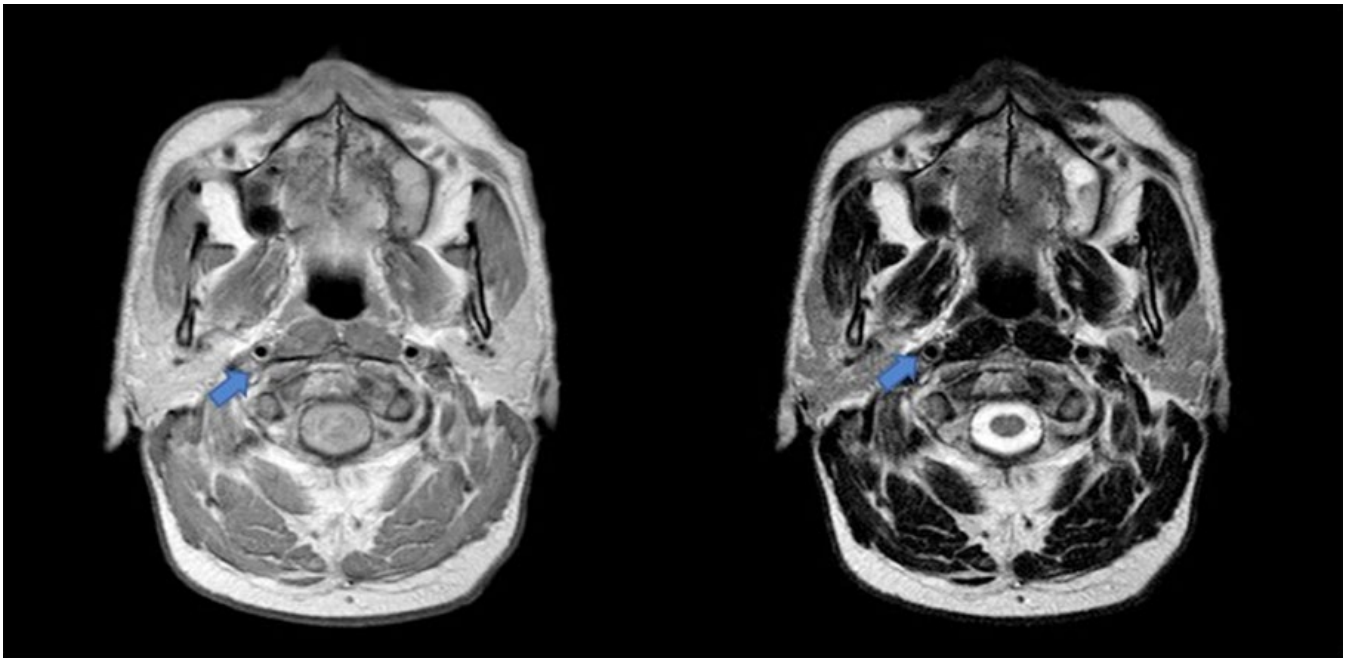

Figure 4: Intramural hematoma resolution in cranioencephalic angio-magnetic resonance after 3 months.

effective or safer treatment for cervical carotid dissection.[12,13]

Regarding antiplatelet therapy, there is no clear evidence comparing mono and dual therapy.[12,14] According to this data, and because of no evidence of an ischemic event in the MRI, it was decided to initiate antiplatelet monotherapy with acetylsalicylic acid 100 mg, to prevent ischemic stroke and minimize haemorrhagic risk. According to the literature, the majority of carotid dissections undergo recanalization in the first six months after the initial event.[15]

Conclusion

Although carotid dissection was not identified on admission, the suspicion of Horner's syndrome was important to pursue the etiological investigation. The clinical suspicion which was confirmed on the eighth day by the apraclonidine test, highlights the role of this drug in the management of this neurological syndrome.

A conservative therapeutic approach allowed not only case resolution, but also iatrogenic reduction by reducing bleeding risk. ■

Apresentações prévias

Este caso foi previamente apresentado sob a forma de comunicação oral no 28º Congresso Nacional de Medicina Interna.

Declaração de Contribuição

MC – Elaboração do artigo, recolha de dados e revisão da literatura
AIS – Revisão da literatura e do artigo
JP – Recolha de dados e revisão do artigo
FG, JC – Revisão do artigo
Todos os autores aprovaram a versão final a ser publicada.

Contributorship Statement

MC - Drafting the article, data collection and literature review
AIS - Literature review and article
JP - Data collection and article revision
FG, JC - Revising the article
All authros approved the final version to be published

Responsabilidades Éticas

Conflitos de Interesse: Os autores declaram a inexistência de conflitos de interesse na realização do presente trabalho.
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