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Role of dental examination in identifying internal carotid artery dissection presenting with Horner's syndrome: A case report

(Papel del examen dental en la identificación de la disección de la arteria carótida interna que se presenta con el síndrome de Horner: Informe de un caso)

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Abstract(english)

Headache, localized cerebral ischemia, and oculosympathetic paresis are hallmark features of Horner's syndrome, which may arise secondary to internal carotid artery dissection (ICAD)—a rare but potentially life-threatening condition. Prompt and accurate diagnosis is critical to alleviate symptoms and prevent serious neurological sequelae such as ischemic stroke. Dentists, often being the first professionals consulted for orofacial pain, play an important role in recognizing atypical presentations that may mimic common dental pathologies. We present the case of a patient with painful partial Horner's syndrome secondary to ICAD, in whom timely dental referral facilitated early detection and intervention, ultimately averting a potentially fatal ischemic event. This case underscores the importance of vigilance among dental practitioners in identifying red flag symptoms, emphasizing their role in early diagnosis and prevention of life-threatening complications.

Keywords(english)

carotid artery dissection, Horner's syndrome, dentist.

Resumen(español)

El dolor de cabeza, la isquemia cerebral localizada y la paresia oculosimpática son características distintivas del síndrome de Horner, que puede surgir como consecuencia de una disección de la arteria carótida interna (DACI), una afección poco frecuente pero potencialmente mortal. Un diagnóstico rápido y preciso es fundamental para aliviar los síntomas y prevenir secuelas neurológicas graves, como el accidente cerebrovascular isquémico. Los odontólogos, que suelen ser los primeros profesionales consultados por dolor orofacial, desempeñan un papel importante en el reconocimiento de presentaciones atípicas que pueden simular patologías dentales comunes. Presentamos el caso de un paciente con síndrome de Horner parcial doloroso secundario a DACI, en quien la derivación oportuna al odontólogo facilitó la detección e intervención tempranas, evitando así un evento isquémico potencialmente fatal. Este caso subraya la importancia de la vigilancia por parte

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de los odontólogos para identificar los síntomas de alarma, enfatizando su papel en el diagnóstico precoz y la prevención de complicaciones potencialmente mortales.

Palabras clave(español)

disección de la arteria carótida, síndrome de Horner, odontólogo.

Introduction

Horner's syndrome (HS) was first described by François Pourfour du Petit in 1727 and later named after the Swiss ophthalmologist Johann Friedrich Horner in 1869 [1,2]. It results from disruption of the oculosympathetic pathway, producing a characteristic constellation of clinical features, including unilateral ptosis, ipsilateral miosis with normal pupillary light reactivity, and, in some cases, ipsilateral facial anhidrosis [3]. Since general practitioners are often the first point of contact, and because the condition may mimic pain associated with dental abscesses in the mandibular region, dentists frequently play a pivotal role in its early recognition. Given that the orofacial region falls within the primary domain of dental practice, dentists with specialized training in orofacial pathoses are well-positioned to apply their clinical skills in history-taking and diagnosis. This expertise enables them to manage straightforward orofacial pain cases and appropriately refer complex cases to medical specialists when necessary [4].

Although Horner's syndrome is an uncommon manifestation of internal carotid artery dissection (ICAD), early recognition is critical, as timely initiation of treatment can prevent devastating neurological complications such as embolic stroke, aneurysmal rupture, or even death. Therefore, it is imperative that dental practitioners remain vigilant to the signs and symptoms of HS, as they may be instrumental in facilitating early diagnosis. The present case highlights how a timely dental examination identified a patient with ICAD on the verge of ischemic stroke, thereby averting a potentially fatal outcome. This underscores the importance of dental evaluation in systemic disease recognition and reinforces the crucial role of dentists in safeguarding patient health and saving lives.

Case report

A male patient presented to the hospital with a chief complaint of headache and pain localized to the right side of the face and neck, radiating posterior to the right eye. He was employed in heavy construction work and reported daily consumption of approximately five units of alcohol, though he denied smoking. His medical history was significant for hypertension secondary to polycystic kidney disease, for which he was receiving ramipril (2.5 mg) and dual antiplatelet therapy.

On clinical examination, the patient reported persistent right-sided facial and cervical pain radiating to the periorbital region. There was no clinical evidence of connective tissue disorder. To exclude odontogenic pathology as a possible source of pain, he was referred to the dental unit. Intraoral examination revealed intact dentition with multiple restorative fillings in the upper and lower posterior teeth, minimal attrition of the mandibular posterior teeth, and mild gingivitis. No signs of dental abscess or other intraoral pathology were observed. Intraoral periapical radiographs further confirmed the absence of periapical pathology or dental sepsis (Figure 1). Temporomandibular joint examination was unremarkable.

However, additional examination revealed right-sided partial ptosis, ipsilateral miosis, mild enophthalmos, and facial anhidrosis—clinical features consistent with oculosympathetic palsy (Horner's syndrome) (Figure 2).

Magnetic Resonance Imaging (MRI) of the brain was performed to evaluate the cause of the patient's right-sided neck and facial pain. The MRI revealed no evidence of acute ischemic stroke or intracranial pathology, and no abnormalities were detected in the right carotid artery. However, Magnetic Resonance Angiography (MRA) of the carotid vessels demonstrated a focal dissection of the right internal carotid artery, characterized by luminal irregularity and narrowing, which correlated with the patient's presenting symptoms of pain and oculosympathetic palsy.



Figure 1. Intraoral radiographs demonstrated the presence of restorative fillings in the teeth with no radiographic evidence of dental sepsis.

The patient and his spouse were counseled regarding the findings, with emphasis on the typically self-limiting nature of carotid artery dissection. They were advised to continue the dual antiplatelet therapy already prescribed for his underlying hypertension and polycystic kidney disease. The patient was placed under close clinical surveillance with scheduled follow-up imaging. At the three-month review, the patient reported significant improvement in pain and partial resolution of oculosympathetic symptoms. Follow-up MRA demonstrated interval healing of the arterial wall with improved luminal patency. At six months, the patient remained asymptomatic, with no new neurological deficits, and was advised to maintain long-term secondary prevention measures.

Discussion

Horner's syndrome, or oculosympathetic paresis, is characterized by the clinical triad of ipsilateral ptosis, miosis, and anhidrosis. It results from disruption of the sympathetic pathway, which extends from the hypothalamus to the eye through three orders of neurons. Lesions at any level of this pathway may produce the syndrome [5]. While various etiologies have been described—including neoplasms, vascular malformations, trauma, and iatrogenic causes—internal carotid artery dissection (ICAD) represents one of the most serious and potentially life-threatening underlying conditions.

Recent studies emphasize that painful Horner's syndrome should be regarded as a red flag for ICAD until proven otherwise. Headache and neck pain are among the most common presenting symptoms of ICAD, reported in 68–92% of cases, and often radiate to the orofacial region [5]. These pain patterns can mimic odontogenic or temporomandibular disorders, leading patients to first consult dental practitioners. This overlap highlights the unique role of dentists in detecting ICAD at an early stage. Dentists are specifically trained in orofacial anatomy, pain mechanisms, and differential diagnosis of orofacial pain,



Figure 2. Clinical view.

enabling them to distinguish between common odontogenic causes and atypical presentations that may indicate vascular pathology [6].

In the present case, referral for suspected dental sepsis ultimately led to the recognition of Horner's syndrome during dental evaluation. This underscores the importance of thorough extraoral examination, particularly when pain is disproportionate to dental findings or associated with autonomic or neurological signs. Incorporating red-flag training into dental curricula and continuing education programs could strengthen early recognition of ICAD and related conditions in routine practice.

Patient history also plays a crucial role in ICAD risk assessment. Our patient had hypertension secondary to autosomal dominant polycystic kidney disease (ADPKD) and consumed alcohol daily. ADPKD is associated not only with renal cyst formation but also with vascular abnormalities due to impaired vessel wall integrity, predisposing patients to aneurysms, hypertension, and potentially arterial dissections [7]. Hypertension is an established risk factor for ICAD, as it increases shear stress on already vulnerable vessels [CCJM, 2017]. While the relationship between alcohol consumption and ICAD is less well established, chronic intake may indirectly contribute by exacerbating hypertension and vascular stress.

Prognosis in ICAD depends on early recognition and treatment. MRI combined with MR angiography (MRA) is the imaging modality of choice, offering high sensitivity for vessel wall abnormalities and luminal changes. Antithrombotic therapy for 3–6 months remains the standard of care, with most patients showing substantial or complete recovery within this period. Studies indicate that up to 85–90% of patients experience resolution of symptoms, and mortality is <5% when ischemic complications are avoided [5].

This case highlights the importance of interdisciplinary collaboration in the management of atypical orofacial pain. Dentists, often the first point of contact for patients with facial pain, play a pivotal role in identifying systemic diseases with craniofacial manifestations. By recognizing the clinical features of painful Horner's syndrome and initiating timely referral, dental practitioners can directly contribute to stroke prevention and improved patient outcomes.

In conclusion, Dentists are often the first point of consultation for conditions affecting the oral and maxillofacial region. Consequently, they play a critical role in recognizing potentially serious pathologies that may initially present with orofacial symptoms. A meticulous evaluation of the patient's medical history, combined with careful attention to presenting complaints, is essential for early detection of such conditions. Internal carotid artery dissection (ICAD), if left untreated, carries a substantial risk of severe complications, including ischemic stroke. Therefore, maintaining a high index of suspicion, supported by a thorough ophthalmologic assessment, is imperative in suspected cases. Moreover, a sound understanding of the anatomical basis of Horner's syndrome is invaluable in localizing the lesion. Timely recognition facilitates early initiation of appropriate treatment, thereby significantly reducing the likelihood of life-threatening outcomes associated with carotid artery dissection.

Conflictos de interés

Los autores declaran no tener ningún conflicto.

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