

Horner's syndrome associated with carotid artery dissection – a case report from a dentists' perspective

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Σύνδρομο Horner σχετιζόμενο με διαχωρισμό καρωτιδικής αρτηρίας – Αναφορά περίπτωσης

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Case Report
Αναφορά περιστατικού

SUMMARY: Headache, localised cerebral ischemia and oculosympathetic paresis are common symptoms (Horner syndrome). Horner syndrome is likely to be caused by an internal carotid dissection, which is a dangerous but uncommon condition. Accurate diagnosis is essential for alleviating symptoms and avoiding potentially fatal consequences. Dentists are typically the first professionals who are approached to treat ailments within the oral and maxillofacial region. Therefore, they should be well-equipped in detecting suspicious lesions during routine clinical practice. Here, we present a case of a patient with painful partial Horner's Syndrome due to internal carotid artery dissection who was at the risk of an ischemic stroke but was detected early by the dentist on referral and emphasize on the importance of earlier diagnosis which could be life-saving.

KEY WORDS: carotid artery dissection, Horner's syndrome, dentist

ΠΕΡΙΛΗΨΗ: Το σύνδρομο Horner χαρακτηρίζεται από την τριάδα πονοκέφαλος, εντοπισμένη εγκεφαλική ισχαιμία και οφθαλμοσυμπαθητική πάρεση. Το σύνδρομο Horner είναι πιθανό να προκαλείται από διαχωρισμό της έσω καρωτίδας, η οποία είναι μια επικίνδυνη αλλά ασυνήθιστη κατάσταση. Η ακριβής διάγνωση είναι απαραίτητη για την ανακούφιση των συμπτωμάτων και την αποφυγή δυνητικά θανατηφόρων συνεπειών. Οι οδοντίατροι είναι συνήθως οι πρώτοι επαγγελματίες που προσεγγίζονται για τη θεραπεία παθήσεων στη στοματική και γναθοπροσωπική περιοχή. Επομένως, θα πρέπει να είναι καλά καταρτισμένοι για την ανίχνευση ύποπτων βλαβών κατά τη συνήθη κλινική πρακτική. Εδώ, παρουσιάζουμε μια περίπτωση ασθενούς με επώδυνο μερικό σύνδρομο Horner λόγω διαχωρισμού της έσω καρωτίδας, ο οποίος κινδύνευε για ισχαιμικό εγκεφαλικό επεισόδιο αλλά εντοπίστηκε έγκαιρα από τον οδοντίατρο κατόπιν παραπομπής και τονίζουμε τη σημασία της έγκαιρης διάγνωσης που θα μπορούσε να είναι η κρίσιμη.

ΛΕΞΕΙΣ ΚΛΕΙΔΙΑ: διαχωρισμός καρωτιδικής αρτηρίας, σύνδρομο Horner, οδοντίατρος

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INTRODUCTION

Homer syndrome (HS) was first described by Francois Pourfour du Petit in 1727 but was named after a Swiss ophthalmologist Johann Friedrich Homer in 1869 [1, 2]. Homer syndrome occurs due to the disruption of oculosympathetic innervation to the eye gives rise to a myriad of symptoms such as unilateral ptosis, an ipsilateral miotic but normally reactive pupil, and in some cases, ipsilateral facial anhidrosis [3]. General Practitioners come into contact with the patients first. It often mimicks pain due to dental abscess in the mandibular region so, Dentists are always at the forefront since these symptoms occur in the orofacial region which is a speciality for dentists as their main profession specializes in this area. It has been shown that dentists who receive clinical training and specialize in treating orofacial pathoses are more likely to confidently use the acquired history-taking abilities in their general clinical practice. Hence, they are able to diagnose and manage simple OFP cases and recognize complex OFP cases to properly refer them to healthcare professionals with more extensive training when appropriate [4] [Gonzalez YM, Mohl ND. Care of patients with temporomandibular disorders: an educational challenge. *J Orofac Pain.* 2002; 16(3): 200-206.] Although Homer's syndrome is an uncommon presentation of internal carotid artery dissection, it is important to recognize it at an early stage, as the proper initiation of the treatment would potentially avoid devastating neurological sequelae like embolic strokes, aneurysmal rupture, and death. It is imperative that all of the dental physicians are aware of the signs and symptoms associated with Homer's syndrome as they might be crucial for early diagnosis. As we present in this case, a patient who was on the brink of suffering an ischemic stroke due to a carotid artery dissection was saved from the fatal event owing to a timely dental examination and we emphasize the importance of dental examination and the role of dentists in diagnosing such conditions and save valuable life.

CASE REPORT

A Male Caucasian reported to the hospital with a chief complaint of headache, pain involving the right side of his face and right neck region which also seemed to radiate behind the right eye. He was employed in heavy construction work and has no habit of smoking although he consumed 5 units of alcohol on a daily basis. Medical history revealed him to be on medication of ramipril 2.5 mg and dual antiplatelet drugs for hypertension caused by the polycystic kidney disease respectively. On clinical examination, he was found to have headache and pain involving the right side of his face and radiating towards the right neck and behind the right eye with no evidence of connective tissue disorder. To rule out any source of dental abscess, he was referred to the dental

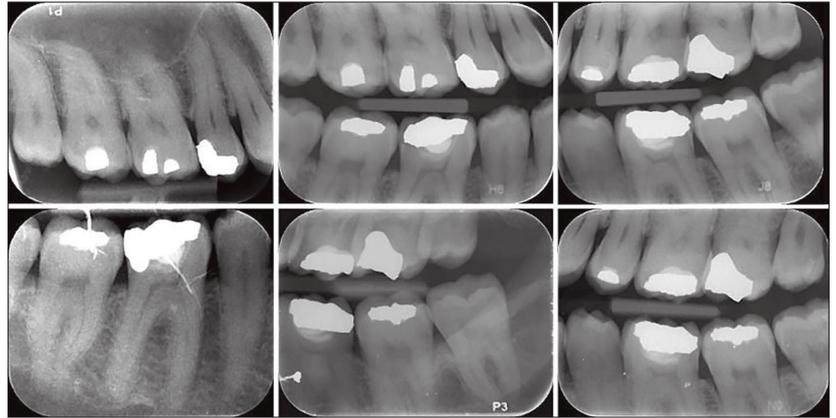


Fig. 1: Intraoral radiographs revealing no evidence of dental sepsis and restorative fillings of the teeth.

unit. On dental examination, there was no abnormalities pertaining to the dentition and other structure of oral cavity. Restorative fillings were found in the upper and lower posterior teeth. Lower posterior teeth showed minimal attrition and mild gingivitis. Intraoral periapical radiographs taken revealed no significant ailments of any evidence of dental sepsis (Figure 1). Temporomandibular joint examination revealed no abnormalities and there were no significant ailments involving the teeth or any other parts of the oral cavity however, he was found to present with ptosis of his right eye, anhidrosis, miosis of the right eye and mild enophthalmos. All signs pointing towards a definitive diagnosis of Homer's syndrome (Figure 2 and 3).

The pain on the neck and facial regions suggested a suspicion of a carotid artery dissection on the basis of which an MRI (Magnetic Resonance Imaging) was taken, which revealed no signs of stroke or any right carotid artery dissection. The MRA (Magnetic Resonance Angiography) of the carotid artery exhibited dissection of right carotid artery which would explain the pain along with Homer's syndrome. The patient and his spouse were informed about self-resolving nature of the condition with the MRA images and was asked to continue the dual antiplatelet therapy that the patient was already on. He is placed under regular surveillance and is due for a review in 3 months.

DISCUSSION

Homer's syndrome or oculosympathetic paresis, is characterised by a triad of ptosis, miosis, and anhidrosis on the affected side. These classic findings can be caused by disruption caused by an injury in the sympathetic nervous system which travels a long and winding course from the hypothalamus as first, second and third order neurons. As a result, when sympathetic innervation to these areas is disrupted, Homer syndrome manifests as ipsilateral miosis, mild ptosis, and anhidrosis [4, 5].



Fig. 2



Fig. 3

Horner's syndrome could arise as a result of neoplasm, haemorrhage, infarction, compression of cervical sympathetic chain, pathologies involving hypothalamus, brainstem and spinal cord, arteritis of ICA, Intra oral trauma [6], inferior alveolar nerve block [7], connective tissue disorders, or internal carotid artery dissections are examples of aetiologies that range from benign to life-threatening [8]. Although it is associated with many complications, one of the life-threatening complications associated with syndrome is the Internal Carotid Artery Dissection (ICAD). Homer syndrome associated with 58% of internal carotid artery dissections as a result of ischemia or stretching of the trigeminal pain fibres surrounding the carotid arteries, most patients suffer neck, facial, and head pain ipsilateral to the lesion [9]. This classic sign was very familiar with our case, as the patient presented with pain involving the right side of his head, face and neck.

Internal carotid artery dissection is one potentially life-threatening cause to rule out as it carries a substantial risk of disabling stroke and is often overlooked [10]. Ipsilateral cervical discomfort, affects one-quarter of patients, and headache, affects two-thirds of patients, are the most prevalent symptoms of carotid artery dissection. ICAD usually occurs in the extracranial carotid segment; fewer than 10% of dissections occur intracranially [11, 12]. In the present case, the General Practitioner concluded that pain could have originated as a result of dental sepsis and referred to the dental unit. But it was on dental examination, that it was found the potential signs of Horner's syndrome after ruling out any dental ailments.

The incidence of ICAD is estimated to be 2.6–3.0 per 100,000. Only two-thirds of patients will experience focal symptoms of cerebral or retinal ischemia, prompting an ophthalmological or medical assessment [12]. Males and females have comparable rates of incidence, albeit females are 5 years younger when dissected. Although spontaneous ICAD accounts for only 2% of all ischemic

strokes, it has been found to be substantially more common in the young to middle-aged population, accounting for 10–25% of such occurrences [13]. In 70 percent of cases, the average age of onset is 37.8–44 years [14]. The most prevalent ICAD symptom is a headache and neck pain that often imitates the pain caused by dental sepsis in 68–92 percent of individuals [15].

Any delay in the initiation of treatment could have resulted in stroke of the patient. Moreover, many researchers suggested an association between poor oral health, infections, and chronic systemic diseases such as ischemic stroke [16]. The perception of having risk factors to stroke and the knowledge of these factors are associated with better control of comorbidities and better adherence to preventive therapy after stroke [17]. In our case, due to the aptly timed dental examination, all the symptoms were pointing towards Horner's syndrome with possible carotid dissection due to the facial and neck pain was identified and was immediately conveyed to the general practitioners following which the patient was admitted in the emergency ward and treatment was undertaken, potentially thwarting a ischemic stroke attack.

Understanding chronic pain etiology and treatment has been highly challenging for all health fields. The identification of risk factors for the transition from acute to chronic pain, the avoidance of unnecessary treatments, and the possible implementation of early interventions have been highlighted as critical steps to abate chronic pain onset and progression, including orofacial pain. More number of dentists are aware of treatment and diagnosis of stroke whereas the percentage is less when it comes to knowledge and awareness about risk factors and symptoms of stroke. Since stroke is a medical emergency and the symptoms occurs suddenly which requires immediate hospitalization. Considerable education is needed to increase awareness in modern concepts of particularly about risk factors and warning signs. It is important to diagnose dissection because antico-

agulation can prevent carotid thrombosis and embolism. The treatment advocated for dissection is anticoagulation for 3–6 months which was done in our case with regular review of the lesion with MRI. After three months if vessel wall abnormalities are still present; antiplatelet medication is started [5]. Surgical treatment, such as balloon dilation or stenting, may be explored if anticoagulant medication fails to cure symptoms of ischemia [5, 18]. Within three months, most people observe a difference. The prognosis is determined on the degree of ischemia present prior to therapy. ICAD has a very varied prognosis. When diagnosed and treated earlier, the resolution is significant. There is a mortality rate of less than 5%. 85–90% of patients will have complete relief in 3–6 months, and 95% of people with adequate therapy will have their headaches resolved. Recurrent symptomatic ICAD is infrequent (only 2% in the first month) and usually arises in a different artery. Painful Horner syndrome should alert clinicians to the possibility of a silent carotid dissection until proven otherwise. Magnetic resonance imaging and angiography scan of the head and neck is the imaging modality of choice to look for dissection. The author also stresses the fact even when referred for a dental examination by the General Practitioner, it is imperative and becomes the duty of the dentist to rule out medical problems

CONCLUSION

Dentists are frequently the first professionals consulted when problems with the oral and maxillofacial region arise. As a result, during ordinary clinical practise, they should be well-equipped to recognise worrisome lesions. A detailed and meticulous investigation of the patient's medical history and pay attention to the presenting symptoms as doctors. ICAD, if not treated, can have serious effects, such as stroke. A high index of suspicion and a thorough and extensive ophthalmologic examination are required. Understanding the fundamental anatomy of HS aids in locating the lesion. Early detection aids in the rapid commencement of treatment, reducing the risk of life-threatening consequences from carotid artery dissection [19].

ABBREVIATION

HS – Horner's Syndrome
 CAD – Carotid Artery Dissection
 MRI – Magnetic Resonance Imaging
 MRA – Magnetic Resonance Angiogram
 ICAD – Internal Carotid Artery Dissection

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