



CASE REPORT

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A Case of Isolated Horner's Syndrome in Patient with Work Related Penetrating Neck Injury

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Abstract

Purpose: To present a work related penetrating neck injury that was referred to our department for Horner's Syndrome (HS).

Case Presentation: A 48-year-old male was referred to Ophthalmology department due to blurred vision in his left eye. In his medical history, he had a work related penetrating neck injury by a four cm metal of diamond cutting piece one year ago. On physical and ophthalmologic examination, ptosis and miosis were detected on his left eye.

Conclusion: Artery injuries should be kept in mind, if HS accompany a neck injury. To best of our knowledge our case report is the first occupational HS with a projectile object.

Keywords: Horner, ptosis, miosis, trauma, neck trauma

Introduction

Swiss ophthalmologist Johann Friedrich Horner described a neurological syndrome that present with miosis, ptosis and anhidrosis in 1869 (1). Horner's syndrome (HS) was clinically first described in humans by Selleck Hare in 1838 in a patient with brachial plexus tumor. However first traumatic ptosis and myosis was described by Weir Mitchell in 1864. This report was about a 24-year-old civil war soldier with a gunshot wound in

his neck (2). Traumatic causes are less frequent than idiopathic causes, tumors and postoperative ones. A recent study reported that the rate of traumatic Horner's syndrome is 2.5% of all patients (3). Most of the traumatic HS cases in the literature were related to neck and chest injuries. There are many serious injuries that can occur in this manner, including uncommon but often serious and sometimes fatal, head, neck and chest injuries or intraoral injuries (4-31) (Table1). Herein we present a case of a HS in a patient following work-related penetrating neck injury.

Case Presentation

A 48-year-old male was referred to Ophthalmology department due to blurred vision in his left eye. His complaints had started after he had work related penetrating neck injury. According to his medical history, he had a work related penetrating neck injury one year ago. A four cm metal of diamond cutting piece (Figure 1) had bounced from the machine and stuck into to the left side of his neck. On the direct radiography and computed tomography scan (Figure 2), there was a foreign body which is medially located to the carotis sheath. Neck dissection and foreign body removal procedure had been performed one year ago.

On physical and ophthalmologic examination, ptosis and miosis were detected on his left eye. On the right eye the patient had exotropia which he had long since



Figure 1: Foreign body that caused the injury



Figure 3: Left ptosis and miosis, right exotropia

(Figure 3). The best-corrected visual acuity was 6/6 in both eyes. A right eye slit lamp examination was normal. Slit lamp examination of the left eye revealed paracentrally located, visually insignificant corneal haze which is result of a previous occupational ocular trauma. Ocular motility evaluation revealed no limitation. Both direct and indirect light reflexes were normal. Left pupil was miotic and upper lid was in the upper border of pupil, in contrast to well positioned right upper lid (Figure 2). We revealed suppression on the right side in Worth 4 Dot suppression test. There was no scotoma or depression in visual field testing. We diagnosed the patient with HS depending on the patient's history and ocular findings. There was an improvement of ptosis after topical pseudoephedrine installation on the left eye, but miosis consisted. We recommended to patient a ptosis surgery with conjunctival approach however he refused the operation.



Figure 2: Direct radiographic view of the foreign body in the neck

Discussion

Horner's syndrome results from a lesion to the sympathetic pathways that supply the head and neck, including the oculosympathetic fibers. The most common identified aetiology of Horner's syndrome is malignant diseases (17% - 60%) and followed by iatrogenic and non-iatrogenic traumas (7.5% - 13%) (3,32). Iatrogenic causes of the Horner's syndrome include central venous access, thyroidectomy, sympathetic ganglion blockade, carotid endarterectomy, thoracic surgeries, chest tubes, and various surgeries of the neck (32-34). Non-iatrogenic traumas are also less than iatrogenic traumas (3). Traumatic causes of Horner's Syndrome include penetrating trauma, such as a stab or bullet wound, and blunt trauma of the neck and upper thorax. Table 1 shows several reports about traumatic HS, that have been accessed the full text studies by us (4-28).

Table 1 shows that most of the cases were happened in adult ages; and blunt traumas are more common than penetrating traumas. Motor vehicle accidents, assault and sport accidents are reasons of the most traumatic

Table 1: Several literature reports about Horner's Syndrome.

Study	Year	Age	Sex	Trauma site	Type of Injury	Cause of Trauma	Type of Trauma	Resolution of HS	Brown-Sequard Syndrome or Artery Injury
Bruce Chwatt RM et al. (4)	1980	7	M	Neck	Penetrating	Rifle Shot	Accidental	YES	
Liu GT et al. (5)	1992	7	M	Intraoral	Penetrating	Fall on a stick	Accidental	NO	
Scaglione M et al. (6)	1999	18	F	intraoral	Penetrating	Foreign body aspiration	Accidental	YES	
Schievink WI et al. (7)	1998	35	F	Neck	Blunt	Softball	Sport	NO	Carotid dissection
Matsumoto H et al.(8)	2000	37	M	Neck	Blunt	Compressive trauma to neck	Work Related	N/A	Carotid dissection
Garcis-Manzanes MD et al. (9)	2000	21	M	Neck	Penetrating	Screw-driver	Assault	YES	Brown-Sequard Syndrome
Edwards A et al. (10)	2001	26	M	Neck	Blunt	Spinal cord contusion	Motor Vehicle Accident	YES	Brown-Sequard Syndrome
Chan CC et al. (11)	2001	47	F	Neck	Blunt	Fall down from stairs	Accidental	N/A	Carotid dissection
Starr BE et al. (12)	2004	5	M	Neck	Blunt	Fall from bicycle	Sport	YES	
Ozel SK et al. (13)	2005	10	M	Chest	Blunt	First rib fracture	Motor Vehicle Accident	Partially	
Toledano R et al. (14)	2006	45	M	Intraoral	Penetrating	Gun Shot	Suicidal attempt	YES	
Aydin H et al. (15)	2006	47	F	Neck	Penetrating	Stabbing	Assault	NO	Vertebral artery injury
Paiva WS et al. (16)	2007	22	M	Chest	Blunt	Lung apex hematoma	Motor Vehicle Accident	YES	
Dubois-Marshall S et al. (17)	2010	25	M	Neck	Penetrating	Stabbing	Assault	NO	
Wessel MM et al. (18)	2011	46	F	Neck	Blunt	Snowboard accident	Sport	N/A	Carotid Pseudoaneurysm
Creavin ST et al. (19)	2012	31	F	Head	Blunt	Kick	Sport	NO	Carotid dissection
Muddalah A et al. (20)	2012	54	F	Neck	Blunt	Asphyxia/Strangulation	Accidental	NO	Carotid dissection
Ahmadi O et al. (21)	2013	47	M	Chest	Blunt	First rib fracture	Motor Vehicle Accident	Partially	
Kalanitzis G et al. (22)	2014	39	M	Neck	Blunt	Fall from Snowboard	Sport	YES	Carotid dissection
Sayan M et al. (23)	2014	18	M	Chest	Penetrating	Stabbing	Assault	NO	
Lin YC et al. (24)	2015	33	M	Chest	Blunt	First rib fracture	Motor Vehicle Accident	Partially	
Johnson S et al. (25)	2016	44	F	Neck	Penetrating	Stabbing	Assault	NO	Brown-Sequard Syndrome
Ofri A et al. (26)	2017	51	M	Chest	Blunt	First rib fracture	Motor Vehicle Accident	YES	
Garberi C et al. (27)	2018	49	M	Neck	Blunt	Hit the floor by blast effect	Work related	NO	Carotid dissection
Umana et al. (28)	2018	60	F	Neck	Blunt	Hit by a Wave	Sport	N/A	Carotid dissection
This Study	2019	48	M	Neck	Penetrating	Machine	Work Related	NO	

HS: Horner's Syndrome, M: Male, F: Female

HS cases. In English literature we have encountered only 2 cases that was related with work accident (8,24). However, both of them were blunt traumas. One was about the accidental neck compression and the other was about explosion of a tire (8,27). Our case report is about a work-related penetrating injury that was made by a projectile object. Most of the Horner's Syndromes secondary to a penetrating injury was a stabbing injury or made by a projectile object which were assault related (4-6,14,15,17,23, 25). In our case presentation there was a projectile object and the injury was occupational not an assault. Carotid artery dissection was not reported in our case. Probably stretching and contusion of perivascular tissue may result with HS. Arterial injuries or accompanying neurologic disorders may be found in most of the patients (7-11,15,18-20,22,25,27,28). Munera et al. reported that 17% of the penetrating neck injuries had arterial injuries (31) (Table 1). In our case we couldn't perform topical drop test. We diagnosed HS with ocular findings and well known history of injury. report patient did not have any additional injuries. It is possible that traumatic HS can be resolved totally or partially (4-28). In our patient it was permanent after 1 year.

As a conclusion, since neck isn't one of the well protected body part, it is prone to injuries. Various injuries of the neck may cause neurovascular damage and hence HS. Findings of HS should be evaluated and noted in patients with any neck injury. Artery injuries should be kept

in mind, if HS accompany a neck injury. If possible, to find out exact localization of neural injury, topical drop test can be used. To best of our knowledge our case report is the first occupational HS with a projectile object.

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