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(CASE REPORT)

Occipital condyle fracture with unilateral collet-Sicard Syndrome

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Abstract

Background: Occipital condylar fractures (OCF) are uncommon injuries usually resulting from high-energy blunt trauma. They have been under-diagnosed. Posttraumatic unilateral paralysis of the last four cranial nerves, known as collet-Sicard syndrome, is rare following OCF.

Aim: To report a case of OCF with unilateral Collet-Sicard syndrome.

Case report: A 42-year-old man was admitted after being involved in a car accident with left collet-Sicard syndrome due to OCF. A brief review of the literature on OCF associated with lower cranial nerve palsy is reported.

Conclusion: Emergency doctors and neurosurgeons must be aware of the OCF with lower cranial palsy, to not be misdiagnosed.

Keywords: Road traffic accident; Unilateral Collet-Sicard-Syndrome; CT scan; Occipital condyle fracture; Conservative treatment

1. Introduction

Occipital condylar fractures (OCF) are uncommon injuries usually resulting from high-energy blunt trauma. OCFs are rare lesions at the craniovertebral junction. It is often related to high-energy traumatic injuries and shows diverse clinical presentations [1-4].

Lower cranial nerve palsy is a rare condition with numerous causes, usually non-traumatic. In the literature, it has been described only a few times after trauma, mostly accompanied by an OCF [5-7]. Occipital condyles are in close relationship with the hypoglossal canal and the jugular foramen, which includes the cranial nerves IX, X, and XI.

Unilateral paralysis of the last four cranial nerves (IX-XII) is referred to as the "Collet-Sicard syndrome"[1]. Cranial nerve palsies may result from nerve compression, nerve stretching, or nerve rootlet avulsion. OCF is a rare injury that can be easily overlooked.

A case of OCF with unilateral lower cranial nerve palsy is reported.

2. Case report

A 42-year-old man presented to the emergency room following a road traffic accident. He was hemodynamically stable. The Glasgow coma score was at 12. Brain computed tomography scan (CT) showed no intracranial contusion or hemorrhage. He was admitted for surveillance. 3 days later he presented difficulty in deglutition with slurred speech,

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hoarse voice and difficulty swallowing his saliva following his voice was hoarse with a nasal twang. His neurological exam was normal. A left vocal cord paralysis was noted during indirect laryngoscopy. He needs a nasogastric tube probe (**Figure 1**). Brain cranio-cervical junction CT scan in the bone window showed a fracture in the left occipital condyle (**Figure 2**). The patient was conservatively managed with a nasogastric tube and a halo brace, with specialized reeducation. After six months he was unremarkable. Some moderated muscle atrophy persists in this left shoulder.

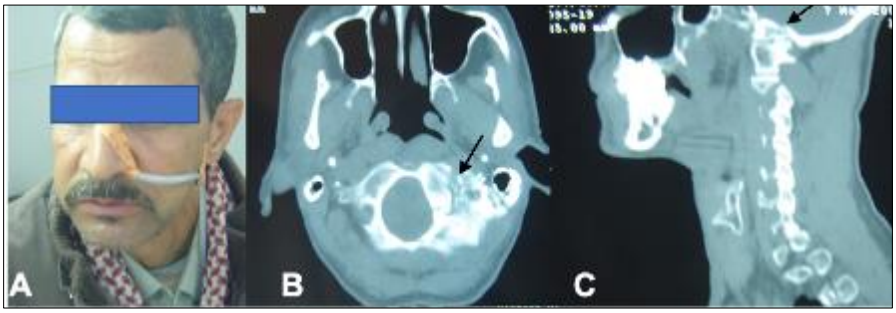

Figure 1 (A) Photo of a patient with left a nasogastric tube. (B) Axial CT scan in bone windows and sagittal view (C) showing left occipital condyle fracture. Posttraumatic left occipital condyle fracture with unilateral Collet-Sicard syndrome

3. Discussion

Our patient presented the "Collet-Sicard syndrome" with OCF. The diagnosis was misdiagnosed at the emergency evaluation event of neck pain. The onset was delayed on the third day. A craniocervical junction CT scan in the bone window showed the OCF. These findings are very rare [3,8-10]. OCFs can sometimes be under-diagnosed in emergency room admission.

OCFs are uncommon injuries sustained in high-speed motor vehicle accidents or in a fall from a great height, relatively uncommon. The most common causes mostly occur in the setting of high-energy trauma, motor vehicle collision (most common), and falls from significant height reported, but uncommon in pedestrian trauma and assault. OCF may occur as an isolated injury or with additional skeletal injuries may be bilateral [8].

Lower cranial nerve palsy as a manifestation of OCF is very rare and only a rare case was reported. Occipital condyles are in close relationship with the hypoglossal canal. A syndrome consisting of unilateral lesions of the last four cranial nerves was first described by Collet and Sicard and is now called the Collet-Sicard syndrome [1,6,10]. Collet-Sicard syndrome is common in cases of avulsion OCF, compressing on cranial nerves IX, X, XI, and XII, which results in hoarseness, dysphagia, and weakness of shoulder muscles [1].

Epidemiology, OCFs are rare injuries with an incidence of 0.4% among trauma patients [3]. Mechanism: OCFs may result from blunt high-energy trauma to the head/neck, especially. Each occipital condyle articulates along a shallow groove atop each lateral mass of C1 (atlas). This articulation is directly stabilized by: atlanto-occipital joint capsule alar ligaments (dens to each occipital condyle). The condyles are perforated by the hypoglossal nerves, and the jugular foramen lies laterally. The foramen contains the jugular vein and the cranial nerves IX, X, and XI, which can be injured in 33 to 63% of the cases.

OCF can cause nerve palsies, most of which are of late onset, probably due to fragment migration and callus formation. Cranial nerve palsies may result from nerve compression, nerve stretching, or nerve rootlet avulsion [4,7,11,12].

Clinically: Symptoms indicative of OCF in individuals with cervico-occipital junction injuries included neck pain, swelling, cranial nerve palsy, and posterior pharyngeal wall swelling. A high suspicion should be maintained in patients presenting after blunt trauma with any of the following [3,6], loss of consciousness, occipital or neck pain (responsive patients) [13,14].

Collet-Sicard syndrome is common in cases of avulsion OCF, compressing on cranial nerves IX, X, XI, and XII, which results in hoarseness, dysphagia, and weakness of shoulder muscles [4]. Occipital condyles also have a vital anatomical relationship to the brain stem and vascular structures.

The classification system widely used for describing OCF is the Anderson and Montesano system [1,2,9]. However, as it is purely descriptive, a more clinically oriented classification has been proposed that incorporates magnetic resonance imaging (MRI) findings and suggested management [2,15]. OCF injuries were classified in consonance with Anderson and Montesano and Tuli et al. classification of OCF, but we did not correlate it with the outcome [2,15]. OCFs are classified based on mechanism. Type I and II fractures are stable, whereas type III fractures can be unstable due to a high rate of disruption of the alar ligament.

Radiographic features: Before the advent of CT, OCF was solely a postmortem diagnosis. Diagnostic imaging included radiographs, CT scans, MRI, and functional radiographs to assess cervical stability [7]. Nowadays, CT is well-established in the diagnostic. OCF are rarely evident by X-rays so CT is the best modality for identifying an OCF. Fractures are best visualized on coronal and sagittal reformatted images [4]. MRI is commonly performed after a CT scan if the injury is initially identified. The primary purpose is to exclude spinal cord injury, although other specific indications include: evaluation for suspected major ligamentous injury, surgical treatment planning in the setting of known instability, and high-suspicion patients who cannot be reliably examined within 48 hours: even with initial normal CT [4,6,8,15].

Treatment and prognosis: OCF often heals quite well with conservative therapy and physiotherapy and a nasogastric tube for 2 or three months. Patients with respiratory distress may need tracheostomy [4,6,7]. Recovery is slow and residual neurologic deficits may persist for a long time. A hard collar may be needed for 3 months with physiotherapy and ENT team medical following. In the absence of obvious instability ligament disruption, most OCFs are managed non-operatively with external stabilization. Conservative therapy, e.g., nasogastric tube feeding, prophylactic antibiotics, and physiotherapy. Isolated unstable fractures may be treated by posterior occipito-cervical fusion [10,11-17].

4. Conclusion

OCFs are uncommon injuries usually resulting from high-energy blunt trauma. Collet-Sicard syndrome is common in cases of OCF, compressing on cranial nerves IX, X, XI, and XII. Early detection of this syndrome may be difficult in patients with head injuries because of their altered state of consciousness. The craniocervical area must be screened by CT scan in bone view for potential OCF in the emergency room. Familiarity with the types of OCFs, as well as their mechanisms of injury and clinical manifestation, is essential for emergency doctors and neurosurgeons to not be misdiagnosed.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no conflicts of interest.

Statement of informed consent

The patient and his family gave his informed consent and verbal permission to publish his case.

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