

A Rare Entity in Emergency Department: Trapdoor Fracture

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Abstract

Trapdoor fracture also known as, 'White-eyed blowout fracture' is generally seen among pediatric patients with orbital floor blowout fracture. It is presented as "open door fracture" in adults because of the mineralized, fragile orbital bones. An 11-year-old boy was admitted to the emergency department (ED) because of falling and hitting his on the occipital region. His main complaint was diplopia. He did not have nausea or pain. No visible lesion detected on his head. When the orbital CT scan was examined carefully, a fracture of the right orbital floor and herniation of orbital soft tissue was noticed. The patient was transferred to the plastic surgery department for surgical intervention. Even though there is no direct trauma, or visible pathology around orbital region, emergency physicians should keep in mind trapdoor fracture, especially in pediatric patients with head trauma.

Keywords: Diplopia, emergency medicine, trapdoor fracture, trauma

Introduction

Trapdoor fracture also known as, 'White-eyed blowout fracture' is generally seen among pediatric patients with orbital floor blowout fracture. It is presented as "open door fracture" in adults because of the mineralized, fragile orbital bones. The part of the fractured bone dose not replace, so no muscle or soft tissue entraps. Because children have elastic, cancellous bone, an increased intraorbital pressure displaces a part of bone that immediately replace to its main position. At the same time usually the inferior rectus muscle and the inferior oblique muscle entrap and it causes diplopia and limited ocular motility without periorbital oedema, ecchymosis or hemorrhage.(1,2) Because of lack of external symptoms, emergency physicians may often misdiagnose this pathology .

Case Report

An 11-year-old boy was admitted to the emergency department (ED) because of falling and hitting his on the occipital region. His main complaint was diplopia. He did not have nausea or pain. No visible lesion detected on his head. On the neurological examination; it was noticed that, the patient had limited upward movement in his right

eye (Figure 1). Because of diplopia, a non-contrast cranial computerized tomography (CT) was requested. There wasn't detected any fracture on the occipital bone and any intracranial hemorrhage or herniation. The patient was consulted to the neurological surgeon. But the consultant physician did not determine any neurosurgical pathology. There was not any oedema, ecchymosis or hemorrhage around or on his orbital region. When the orbital CT scan was examined carefully, a fracture of the right orbital floor and herniation of orbital soft tissue was noticed (Figure 2,3). When we detailed the anamnesis, the patient said that; one of his friends fell onto his right eye with his ankle during playing football. The patient was diagnosed with 'trapdoor fracture' and immediately consulted to ophtalmology and plastic surgery departments. The patient was transferred to the plastic surgery department for surgical intervention.



Figure 1. Restricted upward movement of right eye

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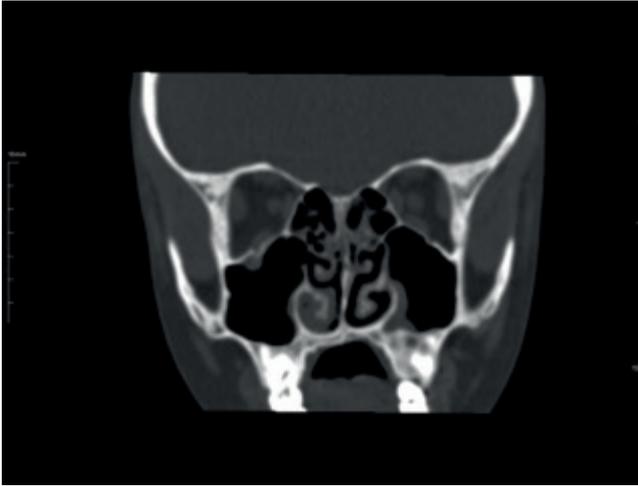


Figure 2. Coronal view of computed tomography. Right orbital floor fracture with entrapment (arrow)

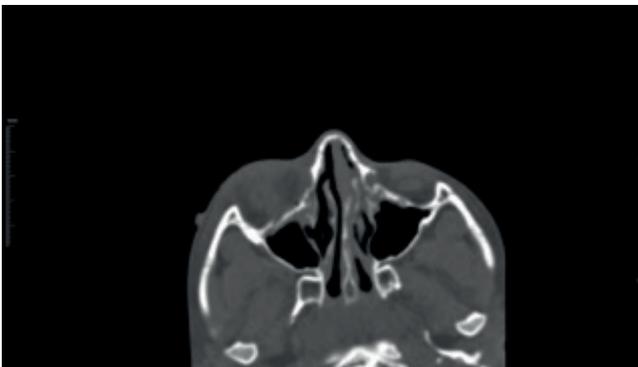


Figure 3. Axial view of computed tomography. Right orbital floor fracture (arrow)

Discussion

The term ‘‘white-eyed blowout fracture’’ has been firstly used by Jordan and colleagues to identify this typical presentation of blowout fracture: diplopia and limited ocular motility without evidence of trauma (3). Due to the oculocardiac reflex that is triggered by orbital floor fracture, syncope, nausea, vomiting and bradycardia can be seen. Limited ocular motility and diplopia are the frequent clinical findings in lots of the studies (4). Motility is usually limited in both the direction toward and opposite the fracture. The limitation opposite entrapped muscle is in most cases significantly more limited (5,6). In another study the most common clinical findings were ocular motility restriction (81%) followed by diplopia (62%), enophthalmos (48%), eyelid ecchymosis (42%), and ptosis (25%). Of the 42 children with ocular motility restriction, 32 (76%) had diplopia (7). And early surgical intervention within 48 hours of diagnosis is suggested in many studies for a successful recovery (8). In a study conducted by Gerbino and et al. In all 24 patients, surgery was undertaken as soon as possible after patient presentation (ie, within 12 hours of presentation); thus, the time between the occurrence of the trauma and surgery was

related to the timing of the presentation (9). In the cases with trapdoor fracture and restricted ocular movement, early intervention was associated with better postoperative function. It is thus recommended that the symptomatic trapdoor orbit fracture be considered an urgent indication for surgical intervention. Practitioners therefore must have a high index of suspicion for these injuries (10). Therefore, to pay attention to the trapdoor fracture and do a comprehensive ocular examination is suggested in all pediatric cases of head trauma in emergency room. Early diagnosis and surgery is taught to lead a good prognosis and less complications.

Conclusion

Even though there is no direct trauma, or visible pathology around orbital region, emergency physicians should keep in mind trapdoor fracture, especially in pediatric patients with head trauma.

Declaration of patient consent

We certify that we have obtained all appropriate patient consent forms. Patient’s father has given the consent for the child’s images and other clinical information to be reported in the journal.

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