

Transorbital injury with intra-ventricular hematoma and hydrocephalus.

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Citation

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Abstract

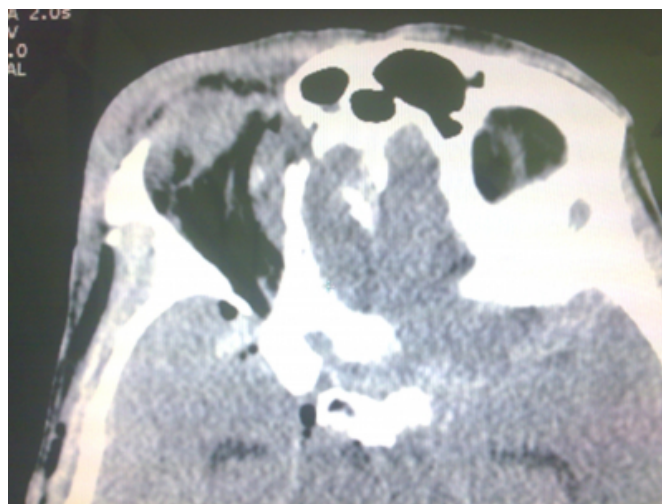
The eye may be injured by different types of objects that range from wooden sticks, wires, chopsticks and gunshots. The orbital roof is a relatively weak point in the anterior cranial fossa floor and hence there is high probability of intracranial injury in such injuries. A 50-year old male with history of fall onto a spike following which he developed orbito-cranial injury with subdural hematoma and intraventricular bleed is presented. We report this case as the uncommon finding of intracerebral hematoma and intraventricular component was present. We emphasize the fact that in penetrating orbital injuries even though the external injury may appear subtle a high suspicion of intracranial injury must be kept in view and the patient investigated for the latter. Early intervention by the ophthalmologist and the neurosurgeon can help to reduce morbidity and mortality in penetrating orbitocranial injuries.

CASE REPORT

A 50-year old male presented to the emergency after 12 hours of injury while ploughing the field. He had fallen onto a sharp metal spike which penetrated his right eye and entered 7 cm deep. The fellow villagers held his head and he was pulled away from the spike which was fixed to the ground. He complained of severe headache and pain in the right eye and was confused. On examination there was a small 2x3cm breach in the superior-medial aspect of the right orbit with fresh bleeding. The eyeball was intact with preserved vision but there was loss of medial and superior eyeball movement. Pupillary reflexes and fundus was normal. There was no cerebrospinal fluid (CSF) rhinorrhoea. The Glasgow Coma Score (GCS) was 12. Computed tomogram (CT) of the head and orbits was advised which revealed the injury had penetrated the medial wall of the right orbit and entered the brain through the anterior cranial fossa (Fig.1).

Figure 1

Figure 1. CT of the orbit showing fracture of the medial wall of the right orbit with air in the orbit and entering the anterior cranial fossa.



Fractures of the medial wall, anterior cranial fossa was present. There was associated blood in the anterior interhemispheric fissure, subdural and intraventricular extension with hydrocephalus (Fig.2 a,b). Pneumocephalus was present along with pockets of air in the orbit.

Figure 2

Figure 2. CT head showing blood in the anterior interhemispheric fissure, subarachnoid blood and intraventricular blood with hydrocephalus.

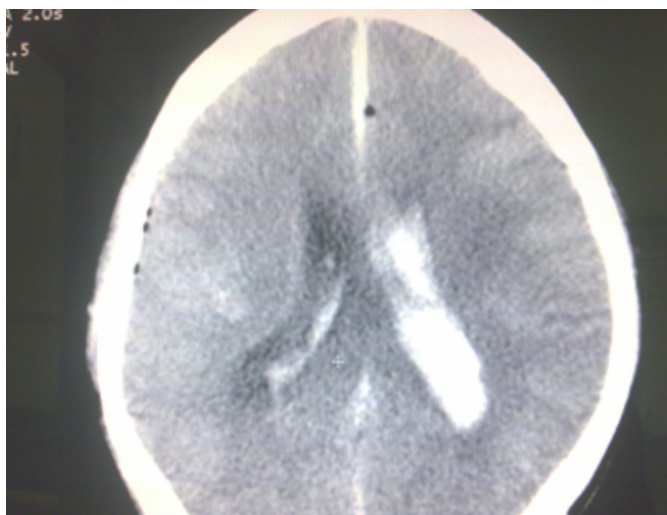
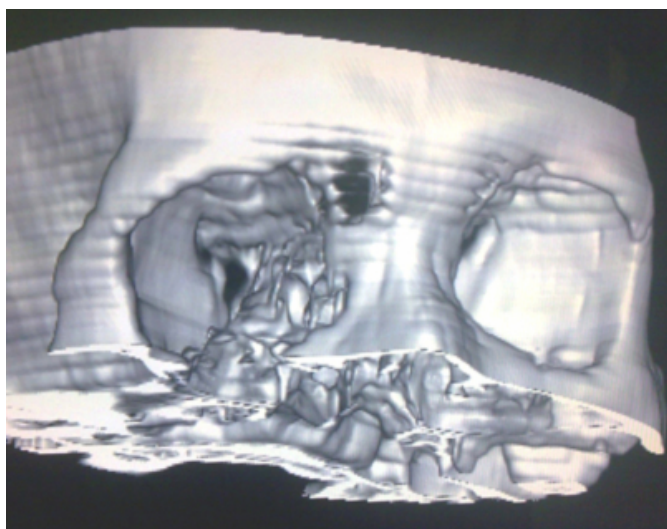


Figure 3

Figure 3. Three dimensional CT showing the defect in the medial wall of the right orbit.



The patient was taken for an emergency external ventricular drain insertion (EVD) and local eye wound debridement. Intraoperatively there was blood stained cerebrospinal fluid under pressure. The EVD height was gradually increased over a week and was then removed on the seventh post operative day after getting a repeat CT head which showed resolving hydrocephalus and intraventricular blood. The GCS improved to 15 on the fifth postoperative day. Eye examination revealed normal fundus, loss of medial rotation, adduction and vision limited to finger counting. He was continued on eye drop antibiotics and discharged on the 12th postoperative day. The vision has remained to finger

counting at one month follow-up with no peripheral field deficit.

DISCUSSION

The eye may be injured by different types of objects that range from wooden sticks, wires, chopsticks and gunshots.¹⁻³ The orbital roof is a relatively weak point in the anterior cranial fossa floor and hence there is high probability of intracranial injury in such injuries. On initial examination the wound may seem to be localized to the eye but further imaging with CT scan can reveal the intracranial injury in details. The intracranial injuries reported have ranged from intracerebral hematoma, visual pathway injury, sella injury and even abscess in retained cavity.^{4,5} A classification system based on the pathway of entry has also been proposed.⁶

We report this case as the uncommon finding of intracerebral hematoma with intraventricular extension and obstructive hydrocephalus was present. The partial loss of vision in this case was probably local contusion as the pupillary reflexes and fundoscopy was normal. Penetrating injuries around the orbit with normal eyeball can lead to the treatment being restricted to the eye alone. If vision is not severely compromised and the GCS is in the mild to moderate head injury range, intracranial injury may not be suspected and missed during initial examination. Hence we emphasize the fact that even though the external injury may appear subtle a high index of suspicion for intracranial injury must be kept in view in all cases of penetrating injuries around the orbit with low GCS, and the patient investigated appropriately. In cases with low GCS there is a high likelihood that intracerebral damage will be strikingly evident. Early intervention by the ophthalmologist and the neurosurgeon can help to reduce morbidity and mortality in penetrating orbitocranial injuries.

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