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SINO-ORBITAL FOREIGN BODY: A CASE REPORT.

Ophthalmology

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ABSTRACT

Intra orbital foreign bodies, caused usually by penetrating trauma, present with varying mechanisms of injury, some are limited to the orbit while others can penetrate the surrounding sinuses, sphenoid bone and can even reach the intracranial structures. The detection of foreign bodies by radiological scans like X ray and CT scan poses a great challenge to the treating physician as in many cases the penetrating material is wood, plastic or glass, all of which are difficult to visualize on these scans. We report one such case of penetrating injury where the foreign body has penetrated the medial wall of orbit and entered the ethmoidal sinus, the distal end of which remained stuck in the orbit. Immediate surgical intervention becomes essential and multi disciplinary among broad specialities plays a vital role in removal of foreign bodies in such cases.

KEYWORDS

sino-orbital, foreign body, orbital trauma

CASE REPORT:

A 65 year-old man had a fall while walking on a farm and crashed into a wooden stake. Patient presented 5 days after the incident, complaining of pain, discharge and bleeding from a wound near the medial canthus of right eye. Ocular examination revealed a lacerated wound over medial canthus with lower canalicular tear resulting in traumatic eversion of lower lid, with bleeding and discharge from the wound. Visual acuity was 6/6 (20/20) in both eyes with normal reaction of pupil to direct and indirect light. Fundus examination of both eyes was unremarkable, ocular movements were free and full range. CT scan revealed a well-defined peripherally enhancing collection in the left anterior frontal lobe measuring 1x1.5x1cms. Fracture was noted in the right lamina papyracea and cribriform plate, along with formation of a linear track with air foci along anterior ethmoid cells to the right peri orbital region. Fat stranding was noted surrounding the right medial rectus muscle. Rest of the extraocular muscles were normal. Patient was admitted for surgical intervention and was commenced on intravenous Ceftriaxone 1g daily with topical moxifloxacin 4 times a day. Under general anaesthesia, nasal endoscopy was done where foreign body was visualized coming from the right orbit into the ethmoidal region through lamina papyracea. It was removed externally from the medial canthus. The retrieved foreign body was found to be a wooden particle of size 1.5x0.5x0.5cms. Endoscopy was followed by lower lid canalicular tear repair in the same sitting. Postoperatively the patient was started on moxifloxacin eye drops four times a day. An uneventful recovery was observed.

Clinical Images:

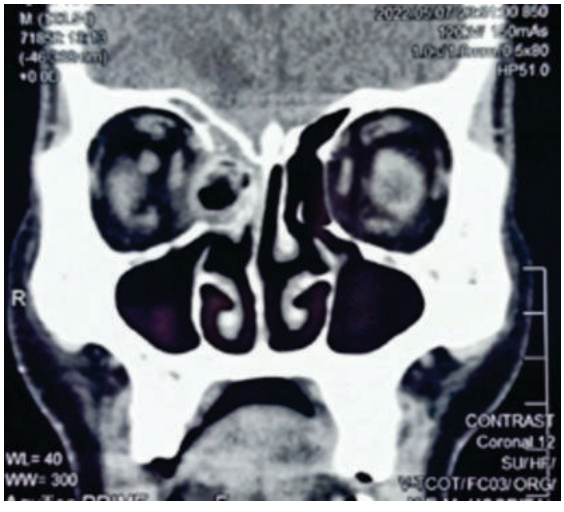

Image 1: CT Scan Showing Air Foci In Right Ethmoidal And Peri-orbital Region

Image 2: wooden foreign body removed from medial canthal approach

Image3: Right Eye Showing Entry Wound At Medial Canthus With Traumatic Eversion Of Lower Eyelid.

DISCUSSION:

In this case, the patient suffered penetrating trauma to his face as he tripped and fell down in a wooden stack. In CT scan the wooden foreign body was identified as air. Review of previous reports on orbital foreign bodies suggests that wood, particularly dry wood, is not detected on plain x-rays or CT scans unless it is associated with a radiopaque substance such as metallic paint(Weisman et al., 1983), or a foreign-body granuloma has developed(Grove, 1982).The experimental study of Hansen et al. shows that the CT appearance of wood can vary considerably.(Hansen et al., 1988) Myllylä et al reported that the CT scan did not detect intra orbital wood in their two patients. They noted that wood ranged from -618 to +23 Hounsfield Units (units of density relative to an assigned air density value of 0)(Myllylä et al., 1987). Hence, wood could easily be mistaken for air,

particularly in the presence of fractures and sinus communication. Beth F. Green et al have reported cases in which wooden orbital foreign bodies were identified as air on X rays and CT scans. As the suspected foreign body was a wooden particle in their cases, they proceeded with an MRI which showed a low intensity lesion, well delineated from surrounding structures. Magnetic resonance imaging depends on the density of protons in the tissue and their relaxation times. These properties of wood are dissimilar enough from those of the soft tissue to allow differentiation. Thus MRI can be done in cases where a orbital penetration by a wooden particle is suspected and CT scan has not shown a foreign body.(Green et al., 1990)

The nature of foreign bodies penetrating the orbit could range from common objects like glass, wood or metal to uncommon objects like pencil tip fragments or vegetative matter. Amin Nasr et al, in their report, have reported foreign bodies identified as thorn of an aloe plant and cotton fibres within granulomatous reaction.(Nasr et al., 1999) Some foreign bodies, such as metal fragments and glass, cause little inflammatory reaction within the orbital soft tissues and therefore may be considered inert when lying within the orbit. Foreign bodies of organic nature, however, usually induce acute reaction as well as chronic sequelae after a prolonged period of time. Retained organic foreign bodies are capable of causing purulent inflammation, abscess formation, gangrene, tetanus, as well as chronic pathologies including granulomatous tissue reaction, fistula formation, osteomyelitis.(Nasr et al., 1999)

In our case, the foreign body penetrated the orbit through medial canthus, and got lodged halfway in the ethmoidal sinus breaching the lamina papyracea in its way, while its distal end remained stuck in the orbit. Detailed history taking is important to understand the mechanism of injury in any case where a projectile foreign body is suspected. Common modes of injuries are motor vehicle accidents, shootings, children playing/falling onto an object, industrial accidents, assault, gardening, etc.(Fulcher et al., 2002) Macie Finkelstein has reported a case of injury to the eye with a ball bearing that ricocheted off a rock.(Finkelstein et al., 1997) J. Zentner et all have reported a case in which a foreign body identified as wood had penetrated the lateral and lower aspect of the right orbit and was deflected toward the superior orbital fissure by the medial bony structures beneath the optic canal. A trans-ethmoidal approach failed to retrieve the foreign body, so the authors proceeded with an extradural approach to explore the superior orbital fissure, which was successful.(Zentner et al., 1991) Hence, it is important to co relate the mechanism of injury with the radiological scans before intervention. Surgical approach should be tailored according to the individual situation.

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