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Case Report Open Access

Wood Penetrating Orbital Injury: A Case Report

Rini Kusumawardhany*

Department of Ophthalmology, Universitas Wijaya Kusuma Surabaya, Surabaya, East Java, Indonesia

***Corresponding author:** Rini Kusumawardhany , Department of Ophthalmology , Universitas Wijaya Kusuma Surabaya, Surabaya, East Java, Indonesia, E-mail: rininugroho@gmail.com

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Abstract

The commonest cause of penetrating orbital injuries was stick/wood (41.2%). This is to report a case of wood penetrating orbital injury and its management.

A 55-years-old woman had wood penetrating injury on lower eyelid. She fell forward on corn stick, accidentally while farming. Visual acuity was 5/20; mild proptosis and chemosis. Restriction of downward and upward gaze (left eye). Head and orbita CT scan and eye ultrasound was normal. A 3, 6 cm wood chip was removed from the wound site, using clamp under general anesthesia. After wound debridement and exploration of foreign bodies and wound area was clean, then the orbicularis and skin are closed with 6-0 polyglactin suture. Post operation visual acuity was 5/9 and improvement in ocular motility restriction.

Penetrating or perforating injuries should be evaluated and treated immediately. Depending on the material causing the injury and location of entry, severe vision loss can occur. Systemic, topical antibiotics and tetanus toxoid injection was given to reduce the incidence of endophthalmitis, orbital cellulitis or panopthalmitis.

Keywords: Penetrating orbital injury; Stick/wood; Orbital cellulitis

Introduction

Intraorbital and periorbital foreign bodies may occur after direct trauma, metallic injuries, splinter injuries in woodworkers and occupational accidents, and may be responsible from one out of every 6 orbital injuries. Penetrating eye injury was common in children 0-16 y (42.5%) followed by adult's ≤ 30 y (41.6%). The commonest cause of penetrating ocular injuries was stick/wood (41.2%) [1,2]. Prompt detection and removal of the FBs within 48 hours and treatment with antibiotics can save vision and life [3,4].

Case Report

A 55-years-old woman had wood penetrating injury on medial left lower eyelid (Figure 1). She fell forward on corn stick, accidentally while farming a day before hospitalized. Visual acuity was 5/20. Anterior segment and pupillary reflect within normal limit. There was a mild proptosis and chemosis. Funduscopic examination revealed normal retina. Restriction of downward and upward gaze (left eye). Intraocular pressure was 17.3 mmHg. Elevated white blood cells (16×10^3 µL); Head and orbita CT scans (Figure 2) and eye ultrasound (Figure 3) was normal. There wasn't any neurological deficit, so we didn't need to suspect intracranial penetration in this orbital injury. The patient was hospitalized, moxifloxacin eye drops, gentamycin eye ointment and intravenous ceftriaxone 1 g q12 h was administered planned for exploration 6 hours after NPO (ensure nothing by mouth).

Figure 1: Wood penetrating injury on medial left lower eyelid with mild proptosis and chemosis.

Results

A 3, 6 cm wood splinter was removed from small laceration in left lower eyelid (Figure 4), using clamp under general anesthesia (Figure 5). After wound debridement, exploration of foreign bodies and

wound area was clean. Then the orbicularis and skin are closed with 6-0 polyglactin suture. Post operation day-3 visual acuity was 5/9 and improvement in ocular motility restriction (Figure 6). Leukocytes were normal. Canalicular examination with anel test was normal. No functional problems or wound healing complications developed during the postoperative period. Patient had no complaints at the follow-up visit performed 6-months later.

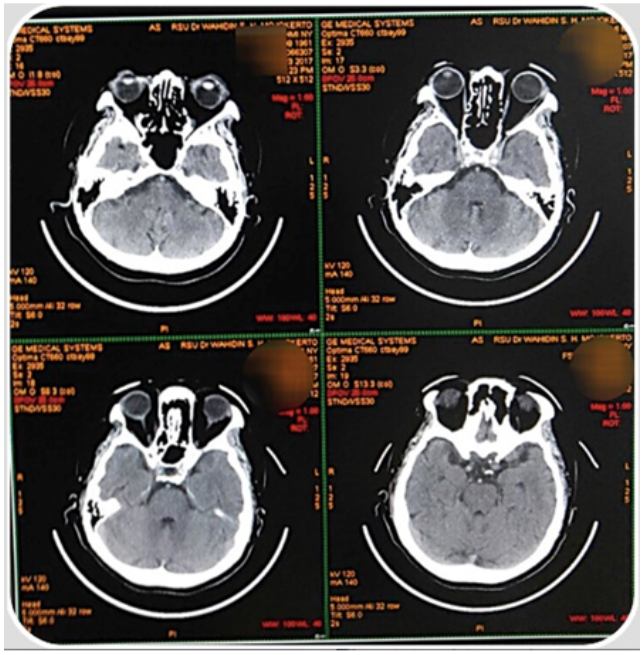

Figure 2: Normal head and orbital CT scan.

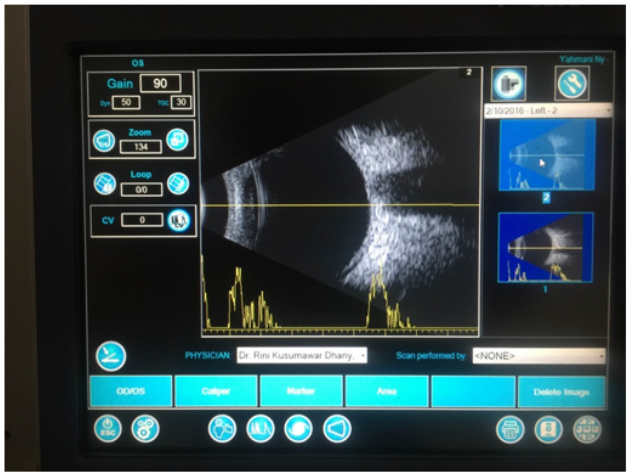

Figure 3: Normal eye ultrasound with clear vitreous and choroid retinal attached.

Figure 4: 3, 6 cm wood splinter penetrated to orbita.

Figure 5: Wood splinter was removed from small laceration in left lower eyelid, using clamp under general anesthesia.

Discussion

Intraocular Foreign Bodies (IOFBs) are commonly encountered in cases of penetrating ocular trauma. However, the lens is not commonly involved, and the incidence of intralenticular foreign bodies is only 5%-10% [2]. Accurate localization of IOFBs is essential to evaluate the severity of the ocular lesion and to determine further management. Computed tomography (CT) scanning, ultrasound biomicroscope (UBM), and B-scan ultrasonography are widely used procedures in the

assessment of IOFBs [5-7]. CT is considered the first-line imaging methodology, and the most sensitive method for characterizing ocular trauma in patients with a suspected IOFB [8].

Figure 6: Post operation day-3, down gaze improvement compares to ocular motility restriction before operation.

Administration of appropriate antibiotics is a key to successful treatment of orbital cellulitis after penetrating trauma. Intravitreal antibiotic penetration of systemic antibiotics with or without penetrating ocular injury varies depending on the antibiotic. For prevention or treatment of gram-positive-bacteria-causing endophthalmitis, intravitreal vancomycin is necessary and provides the most reliable coverage. Systemic ceftazidime can be used for many gram-negative bacteria, but intravitreal injection is recommended for better coverage, especially for more-potent organisms. Systemic moxifloxacin can be considered for most gram-positive and -negative infections due to its excellent intraocular penetration and broad coverage, but the patient's previous history of its topical use and increasing resistance patterns must be considered. Most cases of orbital cellulitis result from ethmoid sinusitis; in such cases, the initial antibiotics are chosen based on the most likely sinus pathogens, primarily *Streptococcus pneumoniae* and other *Streptococci*, *S. aureus*, *H. influenzae*, and non-spore-forming anaerobes [9]. The occurrence of methicillin-resistant *S. aureus* in orbital cellulitis is increasing, and empiric antimicrobial therapy should be directed against this organism if it is prevalent in the community. Infection due to methicillin-resistant *S. aureus* is best treated with vancomycin and clindamycin. Corticosteroids may be helpful, but they should not be started until after any surgery is performed and until the patient has been on appropriate antibiotics for 2-3 d [10].

Examination Protocols of Eye Injury at Ophthalmology

Department of Dr.Wahidin Soedirohusodo general hospital

- Make sure patient has been examined and cleared for life-threatening or systemic injuries.
- Do not remove any protruding foreign bodies until under controlled conditions in an OR.
- Avoid eye manipulation and put eye shield on after initial eye examination.
- **Begin IV antibiotics:** Ceftriaxone or Cefotaxime (15 mg/kg IV, maximum dose: 1.5 grams).
- Urgent surgical repair, ideally within 24 hours of injury: Preferred Imaging Modality is axial and coronal CT of the eye without contrast. CT is superior to ultrasound in determining location and size of IOFBs and requires no direct contact with eyelids or globe. CT is faster than MRI, has less motion artefact, and will not cause movement of metallic foreign bodies. Glass Injuries should be X-rayed if there is the possibility of retained glass. If glass fragments are present, the wound needs exploration.
- **Cleaning wounds:** Superficial wounds can be cleansed with saline or aqueous chlorhexidine. Deep wounds which require exploration should be anaesthetised first to allow more thorough cleaning. Foreign bodies must be removed. Thorough irrigation with saline under pressure (with a 19 Ga needle on a 10-20 ml syringe). Ragged wounds should trim edges of wound when necrotic is suspected or the viability is in doubt.

Conclusion

Penetrating or perforating injuries should be evaluated and treated immediately. Depending on the material causing the injury and location of entry, severe vision loss can occur. Systemic, topical antibiotics and tetanus toxoid injection was given to reduce the incidence of endophthalmitis, periorbital and orbital cellulitis or panopthalmitis.

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