

Orbital trauma with a large plant foreign body: a case report

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Abstract

We report a case of a large plant foreign body in the orbit. The clinical materials, including ophthalmological examination, orbital computed tomography scan, magnetic resonance imaging were noted. A 30-year-old male presented to our hospital 6 h after a penetrating orbital injury in his left superior eyelid when he skidded from his motorcycle while riding. When the patient reported to us, he already had an inability to open his left eye and a continuous pain in the left orbit. On examination, there was a large plant foreign body penetrating the nasal orbital through the left upper eyelid. Orbital CT revealed a low density linear foreign body measuring 3.6 x 0.5 cm in the left orbit. An emergency operation was done to remove foreign body. The patient's visual acuity did not recover very well because of optic nerve injured. This case highlights careful surgical removal of the foreign body is the treatment of choice and all patients should have antibiotic therapy because of the high incidence of secondary orbital infections. The final outcome and prognosis depend greatly upon the composition and location of the foreign body and whether there is serious complication. (*Eye Science 2013; 28*:-)

Keywords: intra-orbital foreign body;orbital trauma;diagnosis;treatment;case report

Introduction

An intra-orbital foreign body (IFB) refers to an object that locates within the orbit but outside the ocular globe¹. Intra-orbital foreign bodies (IFBs) usually occur after a high-velocity injury such as a gunshot or motor vehicle collision. Although traffic accidents are a major factor of ocular and orbital trauma, IFB during these accidents is rare. An orbital foreign body may lead to variety of signs, symptoms

and clinical findings according to its size, location, velocity and composition². IFBs can be classified according to their composition into a) metallic such as steel; b) nonmetallic, which may be inorganic such as glass; c) organic such as wood or vegetable matter. In general, some small metal and glass foreign body are frequently encountered, well tolerated, and if not causing any symptoms or signs, may be left in situ, whereas organic matter like wood and vegetable matters are poorly tolerated and must be removed urgently as they serve as a nidus for orbital infection³. Young men are at higher risk for intraorbital foreign body than others⁴. Most common injury site is the superior orbit⁵. The patient may present with various complications like visual loss, extraocular muscle, eyelid motility problems, abscess, periorbital scar and optic neuropathy¹. Orbital injuries with a foreign body may result in severe structural and functional damage to the eye or orbital contents. The management and prognosis depend on the composition and location of the foreign body and whether there is serious complication. This paper presents a case of a large plant foreign body in the orbital region and discusses its diagnosis and treatment.

Case presentation

A 30-year-old male presented to our hospital 6 h after a penetrating orbital injury in his left superior eyelid when he skidded from his motorcycle while riding. When the patient reported to us, he already had an inability to open his left eye and a continuous pain in the left orbit. On examination, there was a large plant foreign body penetrating the nasal orbital through the left upper eyelid. (Figure 1) And the periorbital tissue was echymotic and edematous. Slit-lamp biomicroscope and funduscopy could not be

performed on the left eye due to swelling of the superior lid. The right eye was otherwise normal. An orbital and cranial computed tomography (CT) was performed to accurately locate the foreign body. The orbital CT revealed a low density linear foreign body measuring 3.6 x 0.5 cm in the left orbit. The medial rectus muscle was not disrupted and the globe was intact. The IFB was close to the optic nerve, but not having a direct injury to it. (Figure 2) The cranial CT was normal. He then underwent an emergency operation while under general anesthesia. The plant foreign body was removed completely with the help of an artery forceps from the medial wall of the orbit. It was sized about 6.5x0.5x0.5 cm. (Figure 3) Bacterial and fungal cultures was performed. The wound was copiously irrigated with diluted gentamicin solution and sutured in layers. A small drain was placed. After the surgery, the wound was pressured with bandage. The patient was discharged with tetanus prophylaxis and ceftriaxone in two gram, dexamethasone in ten milligram.



Figure 1 Penetrating intraorbital injury with a large plant foreign body

Postoperatively the patient persisted to have no light perception vision in the left eye and had the limitation extraocular motility. Slit-lamp examination showed conjunctival chemosis, corneal edema. Fundus examination revealed diffuse intraretinal hemorrhages, optic disc edema. A relative afferent pupillary defect was showed. Purulent fluid was drained from the wound. The bacterial culture revealed the growth of *Enterobacter cloacae* and *Streptococcus pneumoniae* and their sensitivity to ceftriaxone,

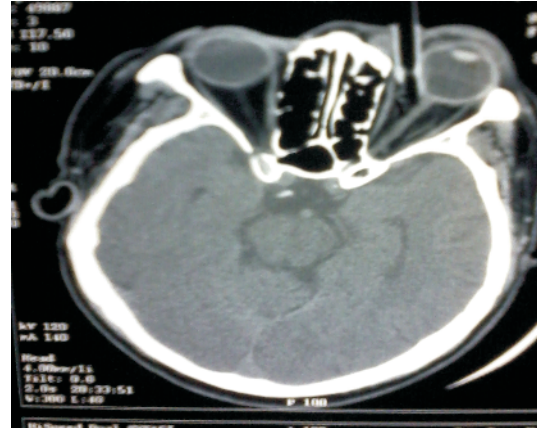


Figure 2 Computed tomography (CT) image of the orbits – Axial CT images through the orbits showing low density linear foreign body measuring 3.6x0.5 cm in the left superior orbit.



Figure 3 The plant foreign body sized about 6.5x0.5x0.5 cm.

imipenem, levofloxacin. One week later, a orbital MRI was underwent. It demonstrated retrobulbar hematoma, extraocular muscle and optic nerve was-injured. (Figure 4) Then we added the use of levofloxacin. On follow-up examination two weeks later, the patient's ocular motility returned to normal. Purulent fluid was more and more less. The patient's visual acuity was improved to light perception. One month later, the wound was healed, but the patient's visual acuity was still light perception.

Discussion

Unfortunately, trauma is still responsible for significant orbital morbidity. It was reported that most patients of monocular blindness in the United States were caused by serious eye injury⁶. Organic IFBs are often difficult to detect and locate through conven-

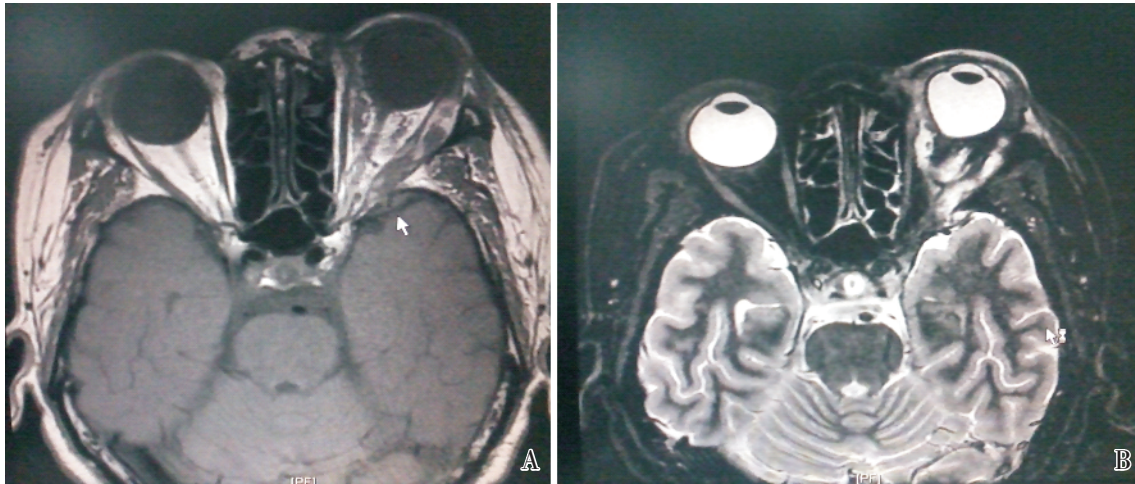


Figure 4 One week post-operatively, magnetic resonance imaging (MRI) of the orbits showing retrobulbar hematoma, extraocular muscle and optic nerve was injured.

tional diagnostic methods. Common symptoms and signs of retained IFBs include persistently red and irritated eye, diplopia, decreased visual acuity, localized pain, pressure or eyelid tightness, and disruption in ocular motility⁷.

There are many radiographic examinations to diagnose IFBs such as plain x-rays, computed tomography (CT) and magnetic resonance imaging (MRI). Plain X-ray is frequently the first additional exam to be requested due to its cost-effectiveness and accessibility. But it can't locate the foreign body precisely⁸. A CT scan is the standard diagnostic test. It is safe for the detection of metallic foreign bodies. Thin axial and coronal views of 1.0–1.5 mm cuts of the orbit are extremely useful to delineate the shape and for determining the composition of the foreign body⁹. MRI may be difficult to perform emergently; it is contraindicated if there is a possibility that a metallic IFB is present. But MRI is emphasized to diagnose intraorbital wooden foreign bodies.

Organic foreign bodies like wood have a much higher rate of potentially sight-threatening and life-threatening complications than nonorganic foreign bodies. Hence, surgical removal is recommended and appropriate antibiotic treatment as well as antitetanus prophylaxis is necessary. Anteriorly located foreign bodies can easily be removed, whereas foreign bodies located more posteriorly without any clinical features should be left where they are, as they have an increased risk of motility disturbance and optic neu-

ropathy after surgical removal. Some IFBs especially those with round and smooth surfaces can simply be removed from their tract, obviating the need for more sophisticated surgery¹. In this patient we decided to remove the IFB, because the foreign body was a very large plant object and may lead to optic nerve injury. Besides, the patient had foreign body located in his medial orbit that was demarcated clearly by CT scan of the orbit.

Although the intraorbital foreign body was completely removed, the patient had orbital compartment syndrome secondary to retrobulbar abscess and generalized tissue edema postoperatively. We had administered antibiotics, orbital infection could not be controlled effectively at first. It was due to the use of antibiotics improperly. After combination antibiotic using, orbital infection was under controlled. The orbital CT indicated that the optic nerve was stretched preoperatively. So the optic nerve injury resulted from indirect trauma. Then retrobulbar hematoma may increase the damage of optic nerve postoperatively. Consequently, the patient's visual acuity did not recover very well.

Conclusion

Management of orbital foreign bodies should include a detail history, thorough exam and CT imaging of the orbit. Careful surgical removal of the foreign body is the treatment of choice and all patients should have antibiotic therapy because of the high

incidence of secondary orbital infections. The final outcome and prognosis depend greatly upon the composition and location of the foreign body and whether there is serious complication.

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