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BILATERAL ORBITO-OCULAR GUNSHOT INJURY IN A NIGERIAN MALE: CASE REPORT AND REVIEW OF LITERATURE
O. Fasina, FWACS, Department of ophthalmology, College of Medicine, University of Ibadan, Ibadan, Oyo State, Nigeria

BILATERAL ORBITO-OCULAR GUNSHOT INJURY IN A NIGERIAN MALE: CASE REPORT AND REVIEW OF LITERATURE

O. FASINA

SUMMARY

Orbito-ocular injuries with retained intra-orbital foreign bodies affecting both orbits are uncommon in civilian practice. This case report aims to highlight an unusual presentation of bilateral orbito-ocular injury with retained intra-orbital foreign bodies following accidental explosion of a locally fabricated dane gun.

A 30-year-old male presented with a five day history of bilateral orbito-ocular injury sustained following an explosion of a dane gun he was fabricating. There was immediate loss of vision in both eyes, and initial treatment was sought at a nearby private general medical clinic. Visual acuity at presentation was no perception of light and light perception with inaccurate projection in the right and left eye respectively, and he had an open wound over the left cheek with retained intra-orbital foreign bodies on plain radiographs. He subsequently underwent wound exploration and closure with removal of the foreign bodies. Vision however remained poor and he was lost to follow-up after being referred for vitreo-retinal consultation.

The attendant socio-economic impact on the individual and family following severe bilateral orbito-ocular injury could be enormous when it results in bilateral loss of vision in a young adult. Measures should thus be put in place to regulate the handling of firearms so as to possibly reduce the resultant morbidity from such injuries.

INTRODUCTION

Orbito-ocular injuries with retained intra-orbital foreign bodies (IOrbFBs) are relatively uncommon, and usually result from high velocity gunshot injuries, industrial accidents, or very rarely, road traffic and domestic accidents (1,2). Injuries from firearm explosions had been reported in literature, usually occurring during warfare, assault or armed robbery attacks3-6. They are however, commonly due to accidental backfiring of guns used during hunting, when they occur in civilian practice (3). One of the commonly used firearms for hunting locally is the dane gun, first introduced to Nigeria by the Danish nationals in the 15th century during the slave trade. Presently, it is fabricated locally, consisting of a narrow steel pipe strapped to a wooden frame, and a metallic burner covered with a flat copper cap screwed to its posterior end. Its central portion is embedded with explosives (4). A loose fitting or rusty burner may thus, act as a high velocity missile if it detaches during firing. Hence, orbito-ocular gunshot injuries are usually severe, and could result in globe perforation and orbital wall fracture with retained intraocular or intra-orbital foreign bodies (5,6). The injuries related to hunting are usually unilateral, with the right eye more commonly affected (4,5). A case of bilateral orbito-ocular injury due to accidental explosion of a dane gun, resulting in bilateral visual loss in a young Nigerian male is hereby presented.

CASE REPORT

A30-year-old security man and blacksmith presented to the Eye clinic of University College Hospital, Ibadan, Nigeria, five days after injuries sustained to both eyes from an explosion of a single-barreled dane gun he had just fabricated and was testing on the farm. He was hit in the face and both eyes by fragments of the exploded gun after he pulled the trigger. There was immediate loss of vision in both eyes, with associated pain and minimal bleeding from the facial wound and left nostril. Emergency treatment was given at a nearby private hospital where the wound was dressed and intravenous and oral drugs administered but no surgical exploration was carried out. He was on admission over the next five days before being referred to this facility.

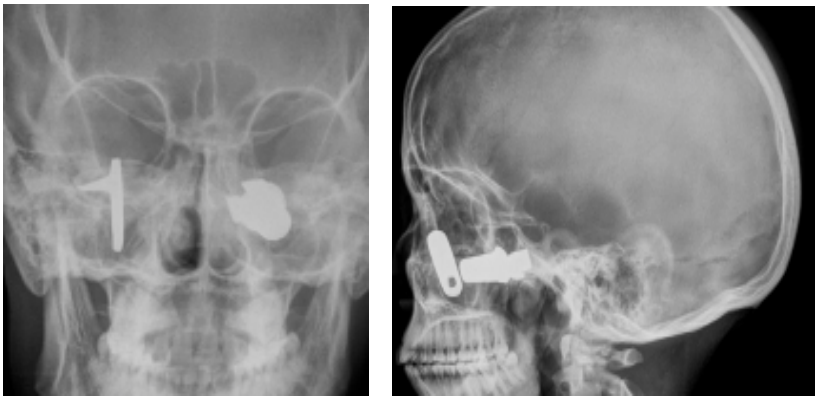
The visual acuity on presentation was no perception of light in right eye and perception of light with inaccurate projection in the temporal and superior quadrants in the left. There was periorbital edema and chemosis worse on the right side, an open globe injury on the right and avulsion injury over the left cheek about 6mm below the lid margin. Both

pupils were dilated, and not reactive, and there was a poor view of the posterior segments Figure 1.

Figure 1
Clinical picture of the 30-year-old Nigerian with bilateral orbito-ocular injury

Plain radiographs of the skull revealed bilateral radio-opaque intra-maxillary sinus foreign bodies (Figures 2a and 2b), and, he was subsequently scheduled for examination under anesthesia, removal of foreign bodies, repair of globe laceration and cheek wound after review by the otolaryngologist. He received tetanus prophylaxis, systemic antibiotics and steroids.

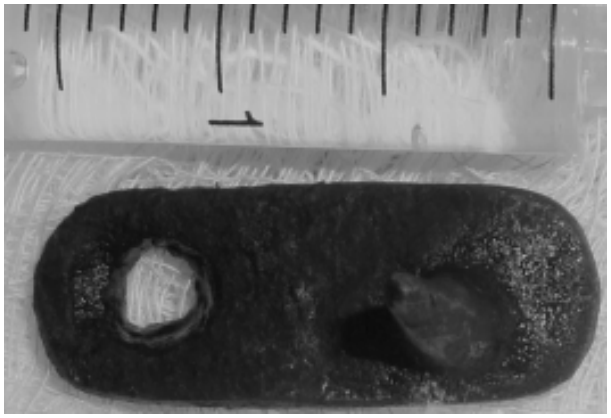
Figure 2a and 2b
Plain radiographs of the patient showing bilateral retained intra-orbital metallic foreign bodies



Intra-operative findings were an18mm curvilinear scleral laceration, 2mm below the inferior limbus with uveal prolapse, shallow anterior chamber with hyphema and hypotony of the right eye; while the anterior chamber was well formed in the left eye with a vitreous knuckle mixed with blood superiorly and vitreous hemorrhage.

The right maxillary foreign body was removed through inferior orbitotomy and the scleral laceration sutured with vicryl 6/0. It was a flat metallic foreign body measuring about 15 × 5 × 2mm extending from the orbital floor 15mm into the maxillary sinus (Figure 3).

Figure 3
Flat metallic foreign body of the right orbit



The left cheek wound defect measuring about 8x6mm was explored to the anterior wall of maxillary sinus and floor of the left orbit (Figure 4) and a fragmented, cylindrical foreign body was removed (Figure 5), and the wound sutured in layers with vicryl 6/0.

Figure 4
Clinical picture of the left cheek wound after debridement

Figure 5
Fragmented, cylindrical foreign body of the left orbit

He faired well post-operatively and was discharged to follow-up clinic after five days. At one month follow-up visit, the visual acuity remained the same and posterior segment examination of the left eye revealed commotio retinae. He then had pan retinal photocoagulation for the left eye but subsequently developed proliferative vitreo-retinopathy in the same eye and was referred for vitreo-retinal consultation and possible vitrectomy. The right eye gradually became pre-phthisical and he was eventually lost to follow-up.

DISCUSSION

The bilateral orbital involvement in this case is unusual and unique, and there are few reports of retained IOrbFBs involving both orbits in civilian practice (7). Accidental injuries from firearms are usually unilateral, as the victim aims with one eye before firing (5). Equally devastating, is the resultant bilateral visual loss in this young man and its attendant socio-economic impact on the family. The delay before his referral, also, could have contributed to the poor visual outcome. Although loss of vision in injuries with retained IOrbFBs is usually due to the initial trauma and may not be influenced by surgical intervention (1), early surgical repair of penetrating ocular injuries has been associated with a better visual outcome (8). Computed tomography (CT) scan is the standard diagnostic test in cases of retained IOrbFB (9), however, this could not be done due to the patient's poor financial status, and, we were able to localise the foreign bodies and appropriately plan for surgery with good plain radiographs. Surgical removal of IOrbFBs depends on the location and type of the foreign body, and, indications for their removal include superficial location, large size, impairment of ocular function, infection, persistent inflammation, and communication with intracranial cavity or paranasal sinuses (9,10).

Overall, the visual prognosis in orbito-ocular injuries from high velocity missiles at close range is poor, as in this patient. Hence, there is need for strict supervision and regulation of the manufacture and handling of firearms by standard regulatory bodies. Also, the use of appropriate protective eyewear during testing and handling of these weapons is encouraged as these may go a long way in reducing the accompanying morbidity associated with accidental discharges and explosions from firearms.

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