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CASE ARTICLE

Phthisis Bulbi Due to Ocular Trauma: A Single Case Report

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ABSTRACT

A phthisis bulbi is a small, shrunken, non-functional eye. The affected eye may have partial vision retained in some cases; though blindness with this disorder is very common. In phthisis bulbi, the eye has a scary and shrunken appearance. Phthisis bulbi occurs as a result of trauma (commonly in case of perforating wound), accident, exposure to the radiation, tumour, eye infection or inflammation. The severity of the disorder depends upon the type and depth of injury. Scleral perforation is a very serious condition of ocular injury which leads to pthisis bulbi within a few hours. The damage to structures within the eye from any of the above mentioned causes can eventually lead to eye atrophy i.e. shrinking. In this case report a young man came with a perforating eye injury caused by a sharpened bamboo stick with lacerations around his right eye. Due to severe inflammation the ocular adnexa like sclera, cornea, conjunctiva, iris, cilliary body etc got necrosed. Eyeball became shrunkened and soft with loss of vision.

Keywords*: Phthisis bulbi, perforating wound, vision, blindness*

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INTRODUCTION

The eye is the organ through which an organism acquires knowledge of its surrounding environment by virtue of light reflected from or emitted by the objects within the environment. It is the photoreceptor organ which with other types of receptors allows the organism to react and understand the world around it. The human visual apparatus includes the eyeball or globe and ancillary structures such as lids and the muscles that control the eye movement. The eye is protected from mechanical injury by being enclosed in a socket, or orbit which is made up of several bones of the skull to form a four sided pyramid. Though the bony orbit provides excellent protection for the eye from blunt injury, yet the protection is not adequate. Perforating injury from glass, sharp metal fragments etc are always serious.[1] The injury may involve lids, lacrimal apparatus, bony orbit, the adjacent structures, the eye ball and the visual pathway. The visual loss is pronounced in penetrating injuries of the eye. The cornea bears the main brunt and lacerations of this result in iris prolapse, endophthalmitis and even phthisis bulbi. Lens changes, retinal detachment, macular and optic nerve damage are more common with blunt injury.[2] *Phthisis bulbi* implies, in clinical terminology, a shrunken globe, usually from ceased aqueous humor formation (phthisis meaning "wasting away"). The intraocular pressure approaches 0 mm Hg. As a consequence, the cornea becomes distorted and can develop edema and scarring, and the lens develops cataracts. Both seem to occur due to the lack of nutrition by the aqueous. In addition, edema can develop in the macula and the optic nerve head and vision suffers accordingly. Finally, cyclitic membranes and proliferative vitreal retinopathy can

develop, resulting in total retinal detachment and scar formation. The cause of phthisis is often uveitis, either long-term or following trauma, surgery, or end-stage, heavily treated glaucoma.[3]

CASE REPORT

A twenty-three year old agricultural worker from rural area came to an eye O.P.D.with a history of perforating injury to the right eye by a sharpened bamboo stick stabbed by a neighbourhood person due to some quarrel between them. He was brought by his relative to the O.P.D. 6-7 hours after the injury.

Figure 1 Picture showing hyphaema with scleral perforation

On examination lacerated wounds were seen around his right eye. His cornea became sluggish with little perforation. Hyphaema was seen in the anterior chamber, iris became inflamed but difficult to examine due to hyphaema, scleral perforation was seen, eye lid was also lacerated, intra –ocular pressure became lower than normal but it was difficult to examine properly due to the very painful condition. Immediately after routine examination the patient was taken to the eye O.T for repair of the wounds. Then the patient was admitted in the eye ward with full treatment like injectable antibiotic, anti-inflammatory drugs, vitamins, minerals etc. He was examined regularly after the operation. The vision of his injured eye gradually came down to P.L (Perception of light) -negative. The vision of the left eye was normal-6/6. After 10 days, his eye became soft and shrunken with grayish appearance and it developed to pthisis bulbi of the right eye.

PATHO-PHYSIOLOGY

The physiological function of the ocular adnexa as well as the intra orbital structure is always affected by trauma. The physiological alteration is determined by the severity of trauma and to restore the anatomical and physiological function of the ocular structure is the main aim of management of all cases of ocular injuries. Approximately 66% of the penetrating eye injuries are through the cornea, 10% are through sclera and the remainder through the limbal area. Small puncture or linear laceration may be self sealing and large compound laceration may be leaking with incarceration of tissues. Post traumatic uveitis may occur due to retention of foreign bodies, incarceration of uveal tissues, irritation by lens matter, haemorrhage and shallow anterior chamber. It may give rise to secondary glaucoma, plastic iridocyclitis, and shrinkage of the globe leading to phthisis bulbi and blind eye.

DISCUSSION

Despite anatomical and physiological natural protection afforded to the eye, injuries of the eye leading to blindness of various degrees ranging from little deterioration of vision to permanent blindness are quite common.[4] The extent of injuries depends on the nature of trauma, extent of damage to the intraocular structures, presence of intraocular foreign bodies and the site of injury.[5] Grin et al categorized various types of injuries into four groups – extra ocular, ocular, intra ocular and orbital fracture. Ocular injuries made up the majority of injuries (82%) which included both perforating (34.5%) and non-perforating (50%) injuries.[6] Moreira et al found that most common injuries were chemical and thermal burns (24%) followed by corneal abrasion (21.9%), perforation of the globe (6.2%), subconjunctival hemorrhage (4.8%) and hyphaema (4.8%), iridodialysis accounted for 0.7%. They also found superficial corneal foreign body 3.4%, corneal delamination 1.4%, lid echymosis 3.1%, traumatic cataract 0.7%, intra ocular foreign body 0.7%. After a minimum follow up of 4 months they found that out of 38 severely injured eyes 8 (21.05%) developed traumatic cataract and 5 (13.16%) developed phthisis bulbi.[7] Rapoport et al found in their study that out of 1127 injured eyes , the reason for severe visual outcome were 2% due to phthisis bulbi.[8] Sharma et al in his study on penetrating ocular injuries found that visual acuity was severely impaired in majority of the eyes and 2% of the eyes developed phthisis bulbi.[9] According to Coskun M et al, after penetrating eye injuries, visual prognosis and development of phthisis

bulbi are affected significantly by the factors including anatomic localization, size of the injury, associated anterior or posterior segment pathologies, and endophthalmitis secondary to the trauma.[10]

CONCLUSION

Ocular injuries may occur in all age groups but complications are more common in children and illiterate population due to lack of awareness which may lead to permanent blindness. In this case report, the patient was a young adult who sustained injury due to violence. He came for medical consultation with an ophthalmologist after 6–7 hours due to which the ocular tissues got infected leading to development of endophthalmitis and finally to phthisis bulbi. Early consultation with an eye specialist enhance the possibility of controlling the ocular morbidity. Visual impairment following ocular injury is a complex multistructural involvement which requires specialized ophthalmic training to develop the excellence for corrective and reparative ocular surgeries.

Conflict of interest: None

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