

# Electrical Injury and Ocular Complications: A Case Report

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High voltage electrical injury may result in various ocular complications. These are particularly more common if the injury occurs over scalp. Electrical injury induced cataract is usually bilateral though cases of unilateral cataract have also been reported. We report a case of high voltage electrical injury in a 60 years old male resulting in anisocoria, iritis, bilateral cataract and optic atrophy. Patient underwent manual small incision cataract surgery (MSICS) with posterior chamber intraocular lens implantation in both eyes with poor visual recovery. Fundoscopy revealed bilateral optic atrophy. This case highlights that in spite of a good extracapsular cataract extraction with intraocular lens implantation, the final visual outcome will depend on other ocular damage due to electric current.

**Key words:** Electrical injury, iritis, cataract, optic atrophy.

**E**lectrical injury may cause various ocular complications without major damage to other organs of the body. Electrical voltage ranging from 220 to 50 000, can lead to cataract formation in 5% to 20% of cases.<sup>1</sup> A detailed ocular examination should be performed at presentation or as soon as practical for documentation. The final visual outcome after cataract surgery depends on other ocular complications caused by electric current<sup>2</sup>. We report a case of electrical injury induced cataract with other ocular complications developing after exposure to electric current.

## CASE REPORT

A 60 years old male complained of painless progressive diminution of vision in both eyes for the preceding 1 month. There was history of unconsciousness with burn of scalp, face, back and legs following high voltage electrical injury (12000 volts) about two months back for which he was admitted in hospital and was treated conservatively.

Ocular examination revealed visual acuity of perception of light (PL + VE) with accurate projection of rays in both eyes. There was ciliary congestion and sluggishly reacting pupil in both eyes (BE) with anisocoria. Slit lamp examination revealed advanced

immature cataract in BE (Fig. 1). Left eye (LE) pupil was irregular with posterior synechiae extending from 9-12 o'clock. The intraocular pressure was 21 mm Hg in both eyes. The posterior segment was normal on B-scan ultrasonography in both eyes. General physical examination showed non-healing scalp wound which was about 10 cm × 4 cm in size (Fig. 2). Face, back and legs showed healed lesion of burn injury.

On the basis of history and clinical examination a diagnosis of bilateral electric cataract with anisocoria and resolving iritis was made. Patient underwent small incision cataract surgery with posterior chamber intraocular lens implantation in BE at an interval of one week. Postoperatively corrected visual acuity was 6/24 in right eye and 6/60 in left eye. Fundus examination revealed marked pallor of the disc (LE > RE) with normal cup: disc ratio (Fig. 3). Macula showed dull reflex in BE with retinal pigment epithelial defects. Fundus fluorescein angiography was within normal limit.

## DISCUSSION

Ocular complications from electrical burn injuries are not very common. Anterior segment involvement in the form of corneal burn, anisocoria, acute bilateral iritis has been reported. Posterior segment

complications like vitreous hemorrhage or vascular occlusion, retinal detachment, macular cyst, macular hole, optic neuropathy, papillopathy, papilledema, optic atrophy has been reported.<sup>3</sup>



**Fig. 1:** Bilateral electric cataract with posterior synechiae in the left eye



**Fig.2:** Electrical injury induced non-healing scalp wound.



**Fig. 3:** Bilateral disc pallor.

The anterior segment complications are considered to be due to secondary to heat, as well as

electrical injury. Posterior segment changes are thought to be caused by the passage of electrical current.<sup>4</sup>

Lenticular opacities following electrical trauma usually occur with a latency period varying from immediately after injury to a few years.<sup>5</sup> The closer the point of contact of the current to the eye, the greater the chance of cataract formation. The crystalline lens is a good conductor of electric current because of its high water content. Electrical injury seems to change the capsular permeability directly or indirectly<sup>6</sup>. Typical electric cataract starts as snowflake-like anterior subcapsular lens opacities which we missed, as our case presented with advanced stage of cataract. Bouzalis DT et al reviewed one hundred fifty- nine patients with high voltage electrical injuries, out of which two had recurrent iritis, eight had cataracts, two had macular holes, and one had central retinal artery occlusion.<sup>7</sup>

In our case, we presume that bilateral cataract, iritis, optic atrophy was all caused by high voltage electrical current (12,000 volt). Poor visual recovery post operatively is related to optic neuropathy induced by electrical injury. Most of the ocular changes occur immediately after injury, but some late changes may also occur days to years after a severe electrical injury. High - voltage injury patients usually present with severe burns requiring prolonged hospitalization. Referral to an ophthalmologist and careful follow-up is recommended in all cases of ocular / scalp electrical injuries.

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