

# Ocular Chemical Injury from Occupational Accident

Oseni TIA<sup>1,\*</sup>, Odewale MA<sup>1</sup>, Ovienra WA<sup>2</sup>

*1 Department of Family Medicine, Irrua Specialist Teaching Hospital, Irrua, Edo State, Nigeria;*

*2 Department of Ophthalmology, Irrua Specialist Teaching Hospital, Irrua, Edo State, Nigeria.*

\*Corresponding author. Tel: +2348058910141; Email: [tijanioseni@gmail.com](mailto:tijanioseni@gmail.com)

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## Case Report

### Abstract

**Introduction:** Ocular chemical injury can lead to visual loss or significant visual impairment. Use of safety devices such as protective goggles during work is key in the prevention of eye injury from occupational hazard. This case report highlights the importance of the use of protective clothing and device during work.

**Case report:** Presented was Mr EO, a 37 year old mechanic who presented on account of injury to both eyes following battery explosion and was managed for bilateral chemical conjunctivitis and left keratitis without adverse sequelae.

**Conclusion:** The case highlights the importance of protective device during work to protect vital organs of the body.

**Keywords:** Chemical; Conjunctivitis; Keratitis; Occupation; Hazard

### 1. Introduction

Ocular injury is commonly due to occupational hazards [1,2]. It is a major cause of preventable blindness worldwide leading to reduced manpower, monetary and time loss in addition to sufferings, visual impairment and in some cases visual loss [2,3]. Occupational exposure to chemical irritants is common [4-6].

This report highlights a case of ocular injury as a result of spillage of battery content into both eyes of an automobile electrician during work. It brings to fore the importance of use of safety device and appropriate clothing during work to protect vital organs of the body.

### 2. Case Report

He was Mr EO, a 37 year old automobile mechanic who resided in Irrua, Edo State. He was Esan and Christian.

He presented to the accident and emergency unit of the hospital with complaints of redness of both eyes of two hours duration. Patient was apparently seeing well with both eyes until two hours prior to presentation when, while working on a car, the

battery of the car exploded spilling the battery fluid into both of his eyes leading to redness. There was associated pain, tearing, photophobia and foreign body sensation in the eyes in addition to a blur in his vision. There was no history of seeing halos, floaters or flashes of light. There was no history of aspiration or ingestion of the acid or loss of consciousness. Patient does not use protective eye goggles or other protective materials during work.

Following the accident patient irrigated both eyes with water and thereafter presented to the hospital as he was scared of a possible consequence of going blind believing that car batteries contained acid.

There was no past history of ocular injuries and no history of use of glasses either for distant or near work. He was not a known hypertensive, diabetic, asthmatic or sickle cell disease patient. He had no known drug allergy.

Patient had secondary level of education and was married in a monogamous setting to a 33 year old hair dresser also with secondary level of education. They had two children; a male and a female age 5 and 2 years respectively and lived in a two-room apartment. Patient did not smoke but drank alcohol occasionally.

Examination findings revealed a young man in painful ocular Examination findings revealed a young man in painful ocular distress, afebrile, not pale, anicteric, not dehydrated. His Visual Acuity (VA) was 6/6 in both eyes. There was bilateral eyelid oedema, copious tearing (lacrimation) with conjunctival injection with slight chemosis. Although both corneas appear clear, there was left corneal staining with fluorescein dye on the left eye only. The anterior chamber was clear and deep. Pupils were normal in size, round, central and bilaterally reactive to light. The crystalline lenses were clear but fundoscopy was deferred due to non-cooperation of the patient on account of ocular painful distress which was worse with light (photophobia).

Pulse Rate was 80 bpm, regular and normal volume, blood pressure was 130/80 mm Hg and first and second hearts sounds only were heard. Respiratory Rate was 20 cpm and breath sounds were vesicular. Abdomen was full, moved with respiration with no tenderness, masses, organomegaly or ascites. Central nervous system was grossly normal.

A diagnosis of bilateral Chemical Conjunctivitis and left Keratitis following a car battery explosion was made.

Both eyes were copiously irrigated with 2 L of normal saline, patient admitted into the ward and commenced on the following medications: Bilateral hourly Ofloxacin eye drops and Chloramphenicol ointment nocte. Initial bilateral hourly instillation of Mydriacyl eye drops until pupillary dilatation (mydriasis) and thereafter reduced to three times daily to sustain mydriasis. Tabs Cataflam 50 mg twice daily and tabs vitamin C 200 mg thrice daily.

He was also given a stat dose of left Sub-conjunctival Gentamicin 20 mg and Ceftazidime 100 mg on account of the left keratitis.

Patients' condition improved and by the third day on admission, VA remained 6/6, lid oedema, lacrimation and conjunctival injection markedly subsided with left corneal staining completely negative. He was also able to tolerate funduscopy which revealed a normal disc and retinal findings.

He was counselled on the need to always wear protective glasses and clothing during work to reduce exposure to harmful chemicals and objects and discharged home to be followed up on outpatient clinic basis.

Patient had two follow up visits at one week and five weeks post discharge respectively. Both visits were uneventful. He had full restoration of visual function and was able to carry on with his normal work. He now used protective goggles at work.

### 3. Discussion

Ocular injury is commonly due to occupational hazards [1,2]. It is a major cause of preventable blindness worldwide leading to reduced manpower, monetary and time loss in addition to sufferings, visual impairment and in some cases visual loss [2,3]. Occupational exposure to chemical irritants is common [4-6]. A study done in Warri among Petroleum Industry workers revealed that symptoms of ocular irritation were very common among the study group due to increased exposure to irritant chemicals [2]. Most cases of chemical burns occur during work [1].

Ocular injuries commonly affect both eyes in the majority of cases [5]. Mr EO had bilateral eye injury. Young adult males are commonly affected by ocular injuries from occupational exposure and occupational hazards generally [5,7]. This is due to increased activity by males compared to females and due to more males engaging in jobs where they are more exposed to injuries [5,8]. Ocular injury from occupational hazard occur more in the productive age group making its effects deleterious to not just the individual, but to his family and larger society [3].

Chemical burns to the eye forms a major part of ocular emergencies [5,9]. They vary in severity from mild

chemical burn to severe sight threatening injuries. Acid burns are usually confined to the ocular surface while alkali burns are usually more penetrating damaging deeper structures [5]. The index patient may have suffered acid burns from battery explosion as the injuries sustained were restricted to both conjunctivae and left superficial cornea (epithelial erosion) with no associated damage to deeper structures. However, worthy of note is fact that there are more alkaline than acid car batteries in Nigeria. Therefore the possibility of a very mild alkaline ocular injury cannot be completely ruled out as litmus papers were not available for pH evaluation as at the time of management of this patient.

Injuries from chemical burns require rapid treatment. The first step is copious irrigation with normal saline or any available physiological intravenous infusion or sterile water or fluid [1]. Mr. EO received copious irrigation with normal saline followed by topical ocular antibiotics to prevent secondary bacterial infection.

Vision is a critical aspect of our life. We need functional eyes for survival in our environment and in the pursuits of our daily livelihood [1,4]. Its importance therefore cannot be overemphasized. Thus appropriate steps must be taken to protect the eyes during work. Such measures include the use of protective devices including goggles, safety glasses and face shields [4,10]. Health education and enlightenment from professionals particularly family physicians should be directed to members of the public on the need to adopt safety measures in workplace with a view to preventing or at most minimising occupational eye injuries.

### 4. Conclusion

The case highlights the importance of protective device during work to protect vital organs of the body.

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