Injury Following Blast of Mobile Phone Battery
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ABSTRACT

With the technological improvements, humans encounter with equipments/devices in their routine life, especially automobile batteries, watch and mobile phone batteries. These devices transform chemical energy to electrical energy. Although blast injuries are common with war; cooking gas and firecracker, but in last couple of years mobile phone blast cases are coming up. On reviewing the literature, only few cases have been reported yet. We here report a case of mobile battery blast due to which he had oral and ocular injuries.

Keywords: Mobile phone, blast injury, Battery

1. INTRODUCTION

Indiscriminate usage of cellphones makes us vulnerable to the associated risks including accidental burns and blast injuries(1). Low-quality products and user negligence increase the risks(2). Lithium-ion batteries, commonly used to power devices such as laptops, cellphones, smart watches, and e-cigarettes are known explosion hazards(3,4). Explosions involving smartphone batteries are sparsely reported. Face and eyes are particularly prone to injury while using these phones.

2. CASE REPORT

A 15 years boy reported to dental OPD with history of blast of mobile phone battery when he was pulling out battery with his teeth. The patient complained of pain and redness of his mouth and difficulty in eating. He also complained of pain, redness, excessive watering and blurred vision in his right eye. Intra-oral examination revealed mild hyperaemia of soft palate and superficial ulceration of midline of palate. It also resulted in superficial tattooing of mucosa over maxillary tuberosity and posterior region of tongue along with depapillation of nearby areas of tongue (Fig1).

On Ocular examination best corrected visual acuity in right eye was 6/12 and in left eye it was normal. Topical anaesthetic to relieve pain was put into eyes to facilitate proper irrigation and patient co-operation. Affected eye was irrigated copiously, and the pH of the ocular surface was neutralized. After irrigation, a thorough eye examination was performed. There was diffuse epithelial keratitis. Double eversion of eyelids was done to look for any chemical residue (Fig-2).
Oral lesions were managed with anaesthetic gels containing metronidazole along with anaesthetic mouthwashes. He was given antioxidants to aid healing. For promoting ocular surface healing adequate lubricating eye drops hourly, ascorbate and therapeutic bandage contact was used. Prophylactic topical antibiotics was given during initial treatment stages to prevent infection. As chemical burns are painful due to ciliary spasm, cycloplegic agents was added. Patient was recovered after 7 days of treatment.

3. DISCUSSION

Lithium-ion batteries are incredibly efficient but have issues with heat. They stuff freakish amounts of energy in a tiny package. These batteries may overheat during charging leading to “thermal runaway,” an unregulated increase in internal battery temperature. Inside the main line of defense against short circuiting is a thin and porous slip of polypropylene that keeps the electrodes from touching. If that separator is breached, the electrodes come in contact, and things get very hot very quickly. The batteries are also filled with a flammable electrolyte, one that can combust when it heats up, then really get going once oxygen hits it. Thus The mechanism of injury from battery blast could be a combination of mechanical (battery pieces), thermal, and chemical injuries.

Zieker AW et al., reported a case about corneal injury due to watch battery explosion. Akinbade AO et al., reported orofacial soft tissue injury and mandible-maxilla fractures due to dry cell battery explosion. In our case patient punctured the lithium battery with his teeth, this led to sudden emission of smoke, flames, and soot particles, affecting his oral cavity as it was in his mouth and eyes, as he was removing. The exploded battery popped out of boy’s mouth resulted in burning of his mattress as well. But he was lucky to get only superficial burns.

4. CONCLUSION

Timely presentation and proper management of the ocular surface burns can salvage the vision. This case signifies the need to increase public awareness about the potential risks associated with cellphone use, to adopt safe practices as per recommendations from the manufacturers and to avoid counterfeit products, to avoid such accidents.
REFERENCES
