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Original Research Paper

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MOBILE BLAST INJURY IN EYE

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ABSTRACT With advancing technology, use of mobile phones has become a routine. Indiscriminate use of mobile phones, poor quality equipment, mishandling has resulted in an increased number of blast cases. We feel mobile blast injury is emerging as a new mode of ocular trauma ranging from corneal burn to open globe injury. Here we present 2 cases of BOMBILE. Prevention is always better by observing mobile safety guidelines.

KEYWORDS : Mobile Blast Injury

INTRODUCTION:

Mobile blast injuries are increasing in recent times. Reports are coming from many places of mobile phones suddenly exploding in the hand or in the pocket or after receiving a call, causing disastrous consequences on the patient, family members and society both physically and psychologically. This increase in incidence in recent times is attributed mostly to the usage of cheap, low-quality phone and battery as well as the use of the mobile phone while charging. There are nonchargeable batteries (alkaline batteries, nickel, cadmium batteries) and chargeable batteries (Lithium batteries, lead acid batteries). Lithium ion batteries are the types used in almost all smartphones and electronics.[1] Engineers use lithium because it is light and can hold a lot of energy. Batteries can explode when they are charged too much or too fast, shoddy manufacturing of devices, overheating etc.[2,3,4] Mobile battery blast is a highly underestimated aetiology for severe ocular morbidity.

We present 3 cases of mobile blast injury that came to us from sep 2018 to aug 2019

CASE 1:

A 29-year-old man sustained injury to both eyes due to mobile phone battery blast while using the device while being charged. At presentation, his RE had open globe injury with limbal laceration from 3-5 o' clock and uveal tissue prolapse (Figure 1). On LE, he had central horizontal corneal tear and uveal tissue prolapse (Figure 2). There were charring and few burn injuries of lid and adnexa. On examination, his vision was perception of light (PL) with inaccurate projection of rays in BES. Corneal tear repair was done in BES, after a through exploration and taking care of the uveal tissue. After 15 days of follow up, B-scan of BES revealed no foreign bodies in posterior segment. After 3 months of follow up, vision in the RE was Hand Movements (HM) with inaccurate projection of rays, and LE PL+ve with inaccurate projection of rays.

FIGURE 1 (RE)

FIGURE 2 (LE)

CASE 2:

A 7-year-old male presented with pain, burning sensation and watering from both the eyes, following a smartphone battery blast. He was playing games when the mobile was in charge. His presenting visual acuity was 20/40 and 20/60 in right eye and left eye (LE), respectively. Examination revealed charred lashes, multiple soot particles embedded over conjunctiva, there was no limbal ischemia. The eyes were washed with copious ringer lactate and the debris were carefully removed under slit lamp and eyes were re-examined. Fluorescein staining showed superficial corneal epithelial defects. Posterior segments and intraocular pressures were normal, with no intraocular foreign bodies. He also had fracture of right forearm, for which he underwent treatment. Topical preservative free lubricants, broad-spectrum antibacterial agent, and cycloplegic agent, were prescribed along with systemic nonsteroidal anti-inflammatory drug for pain relief. The healing of epithelial defects started next day and was complete by the 3rd day. Inflammation subsided in 1 week with good final outcome in both eyes unaided visual acuity 20/20.

FIGURE 3

DISSCUSION:

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.[4] Inside the main line of defence 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[5]. Zieker AW et al., reported a case about corneal injury due to watch battery explosion.[6] The present data on ocular injury by mobile blast is insufficient. Few case reports published from India had presented good outcome on timely and proper management of cases. A case report from India published by Narang et al [7] has reported grade 1 ocular surface burn with multiple soot particles over cornea and conjunctiva with charred eye. Similar ocular injuries due to mobile blast were reported by Ohri et al[8] Data present on morbidity due to mobile blast is underestimated as reported cases from India. had presented good outcome on timely and proper management of cases. A case series from India reporting severe ocular morbidity due to globe rupture with resultant vision of perception of light. Only 1 of the 4 eyes could attain the visual acuity of counting finger at 4 feet in the series. [9]Our cases were comparable with moderate visual outcome.

CONCLUSION:

We think, mobile blast injury is emerging as a new mode of ocular injury and can cause fatal blinding complications.

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