

Case Report

Polytrauma Due to Blast Injury

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Submitted: 09 July 2015

Accepted: 28 March 2016

Published: 30 March 2016

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Keywords

- Batteries
- Children
- Colonic perforation
- Corneal laceration

Abstract

Batteries are an integral part of modern lifestyle. There is little awareness about their disposal. Apart from being an environmental hazard, in the hands of children these can be potentially catastrophic. We describe a case of blast injury due to battery explosion with discussion regarding their safe disposal.

INTRODUCTION

Blast injuries are commonly encountered in war zones and areas prone to terrorist activities. In civilian states, they usually occur due to accidental explosions or battery blasts. A 9 year boy presented to us with severe blast injuries secondary to battery explosion. We would like to highlight the dangers of improper battery disposal.

CASE PRESENTATION

A nine years old boy was referred with history of injuries due to accidental battery explosion, 48 hours back. Patient was conscious and had tachycardia. He had injuries over the face, left eye (Corneal Laceration), both upper and lower limbs and a penetrating wound 2cm X 2 cm, irregular with ragged edges in the left hypochondriac region with signs of peritonitis. There was no evidence of any chest, head or spinal trauma. Routine blood investigations were within normal limits. CT scan abdomen was suggestive of bowel perforation with collection in the peritoneum. At exploration, a small 0.5cm X 0.5cm perforation of the transverse colon was found. Rest of the bowel was healthy. Peritoneal toilet followed by primary repair of the perforation with an omental patch was done. Simultaneously the corneal laceration was managed by a team of ophthalmologists; corneal toilet with primary suturing was done. Post operative recovery was uneventful. On follow up, patient lost vision in the left eye secondary to infection.

DISCUSSION

Batteries are a part of modern life used in various gadgets like watches, remotes, toys etc. They are universally used in every household the world over and thus are easily accessible to children. Children are curious by nature and in their hands these batteries can be catastrophic as highlighted by the case discussed above.

In developing countries like India, there is no general awareness regarding battery disposal. The batteries are often disposed indiscriminately in the common public garbage bins or worse, on the streets. Burning of garbage is a common practice in cities. Sometimes children light small fires as mischief, putting

used batteries in these fires can be disastrous as these are inflammable and lead to blasts.

Batteries can also be ingested by children, a common scenario, in which case they cause florid acute and chronic manifestations.

Blast injuries can be classified into four types; primary, secondary, tertiary, and quaternary. Primary Blast Injury is injury caused as a direct effect of overpressure caused by the blast wave itself passing through the tissues. Secondary blast injury is caused by fragments propelled by the explosion. These penetrating injuries are more identifiable. Tertiary injuries are those injuries caused by displacement of the victim's body and



Figure 1 Injury marks on the Face.



Figure 2 Corneal Laceration of the Left eye.



Figure 3 Penetrating abdominal wound – left hypochondriac region.



Figure 4 Injuries on the upper extremity.



Figure 5 Injuries over the lower extremity.

are the result of impact on a surface such as fractures, traumatic brain injury, or abrasions. Quaternary injuries are burns and inhalation caused by the blast itself [1,2]. Blast injuries caused by battery explosions are generally low pressure blasts, and lack the typical overpressure wave [1].

Blasts lead to a myriad of injuries involving various systems in the body. The commonly affected systems are Lungs and the respiratory system, Gastrointestinal system, Cardiovascular system, Ocular and Auditory systems.

Gastrointestinal injuries occur when the pressure wave passes from the tissues to the gas filled spaces causing micro vascular damage and tearing [1]. The terminal ileum and caecum are commonly affected [3]. Solid organ rupture is less common. The presentation may be immediate within hours or sometimes delayed by days [4]. Ocular injuries occur in upto 10% of cases and can include globe rupture [5].

Most of the batteries contain Lead, Zinc, Cadmium, Nickel etc. All of these metals are highly toxic to the environment if not contained adequately [6].

Public awareness regarding battery disposal is very important in preventing such catastrophies. According to Battery Management and Handling Rules 2011 it is the cumulative responsibility of the dealer, recycler and the consumer to ensure proper disposal of these batteries [7].

The authors would like to highlight that batteries are very dangerous and can lead to significant morbidity. As responsible adults it is our moral and social responsibility to dispose batteries adequately. This is necessary to keep the population safe and the environment healthy and free from toxic waste.

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Cite this article

Vikrant VK, Sandlas G, Shah H, Peswani D (2016) Polytrauma Due to Blast Injury. *Ann Pediatr Child Health* 4(1): 1096.