

An unusual case of head injury by pressure cooker explosion

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Abstract

Traumatic brain injury due to explosion in a domestic setup is uncommon. A seemingly harmless pressure cooker commonly used in almost every Indian household may inflict serious injuries, comparable to those sustained in other blast injuries. This report discusses one such unusual case of head injury from pressure cooker blast.

Keywords: Traumatic Brain Injury, blast injury, domestic explosion injury, pressure cooker blast

Introduction

Traumatic brain injuries (TBI) from explosions are common in military personnel and have only rarely been reported in the civilian population ^[1]. However in the wake of increasing terrorism and use of a variety of explosive devices as well as use of technology in day to day activities, even civilians are exposed to blast injuries more so than ever; yet in a domestic setup TBI from pressure cooker explosion has rarely been reported. Interestingly enough, a recent series of devious use of cookers has also been seen with pressure cooker bombs being employed as improvised explosive devices (IED) by terrorist groups to create havoc from Mumbai to Boston. This report deals with an unusual head trauma in an adult due to an accidental pressure cooker explosion. To the

best of our knowledge, only one similar case has been reported in the past, in a one year old child^[2].

Case Report

A 24-year old male patient was brought to the emergency department with a head injury due to the accidental explosion of a pressure cooker. There was no history of loss of consciousness. However, he had had 2 episodes of vomiting and was bleeding from the nose. The patient also complained of headache and imbalance on standing. On examination, he was well oriented to time, place and person. The vitals were stable and the Glasgow Coma Scale score was E4V5M6, with no indication of any focal neurological deficit. Following initial management, imaging studies were done. The Head X-Ray was unremarkably normal while Computed tomography (CT) scans revealed a right frontal pneumocephalus (Figure 1). The initial concern was directed to manage these by antifibrinolytics and analgesics. The patient was kept under observation and managed conservatively. Headache and vomiting resolved over two days. Repeat CT scans on days 7 from the day of injury showed resolution of the right sided air pocket (Figure 2). He made an uneventful recovery and was subsequently discharged with prophylactic anti-epileptics for a month. Follow up visits

at 1 month and 6 months showed a completely normal head CT scan.

Discussion

Blast injuries cause injury either by physical trauma, chemical trauma or by blast waves. In the medical literature, accidental injury due to pressure cookers address mostly chemical injuries and burns [3, 4], ocular trauma [5-7] or transorbital craniocerebral penetrating injuries [3]. Pressure cookers have a metal interlocking lid to withstand great pressures, and a rubber lining to keep contents airtight. Further, a vent lets out steam to build a constant, useful pressure without which excessive pressure could lead to the cooker explosion. When boiling liquid is suddenly depressurised, the contained gases, including steam, rapidly expand. This cannot be called an actual combustion, but is a brisk, almost instantaneous expansion of gases. The steam so released can cause extensive burns and scalds [4, 8]. The cooker can be blown apart by expanding gases and shrapnel so generated may hit the subject standing within reach to cause fractures, blunt or penetrating trauma to the head, eye and rarely to the brain as has been reported previously [3, 5-8]. A similar report described by Calderon-Miranda *et al* [2], refers to a year old child who suffered from head trauma but recovered with residual right hemiparesis. In our case, the lid buckled (Figure 3) under rising pressure and launched to hit the patient's head resulting in a local wound and nosebleed. The complaints of headache and vomiting may be attributed to pneumocephalus seen on CT and the consequent raised intracranial tension.

Domestic blast injuries though rare, may have devastating consequences. Their rarity does not diminish the increased need to curb such injuries by ensuring complete safety of our domestic appliances.

Figure legends

Figure 1: Computed Tomography scan showing right-frontal pneumocephalus.

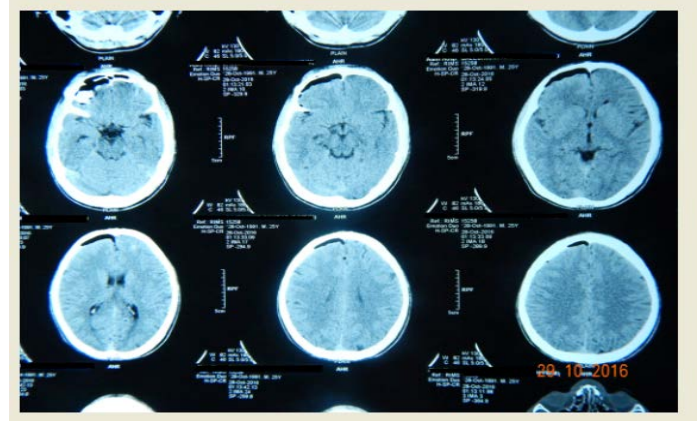


Figure 2: Computed Tomography scan showing normal brain tomography.

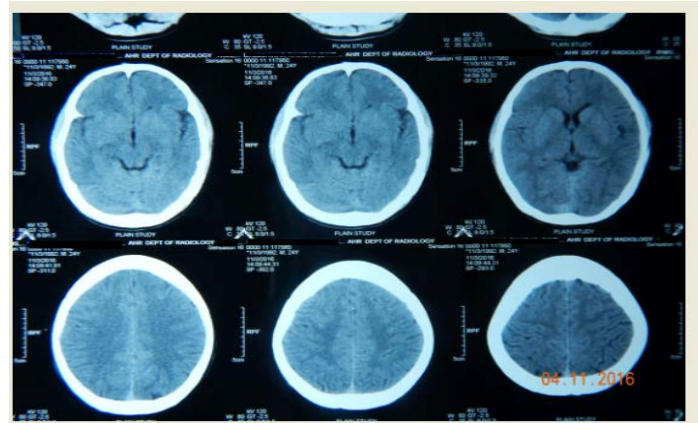


Figure 3: Photograph showing the buckled lid of the cooker.



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