

## Original Article

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## Animal Injuries; a Case Series of Bull Induced Injuries in India

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### Abstract

**Introduction:** Bull injuries are common in India. An injury by a bull is more common in rural and agriculture dependent regions of the country. The incident causing injury by a bull can be sports related or work related. Work related injuries are almost mostly seen in farmers.

**Case presentation:** We would like to present six cases of bull injury over a period of three years who reported to our EM. All six patients were admitted. Five out of six patients survived the hospital stay.

**Conclusion:** Trauma sustained due to being hit by a large animal should be treated akin to a high velocity trauma and such a patient definitely warrants a period of observation even if the injuries are not life threatening. A high index of suspicion is needed for suspecting occult injuries. Fluid resuscitation and age of the patient are important considerations.

**Key words:** Animals; Animal Culling; Cattle; Multiple Trauma

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### INTRODUCTION

Bull injuries are common in India. An injury by a bull is more common in rural and agriculture dependent regions of the country (1). The incident causing injury by a bull can be sports related or work related. Work related injuries are mostly seen in farmers. However, workers involved in animal husbandry and butchers are also at risk. Sports related bull injuries are also seen in India but less reported. This is so because bull sports are not widely prevalent in our diverse culture (2). Here we report 6 cases of bull injuries as an excuse to discuss on this topic.

### CASE PRESENTATION

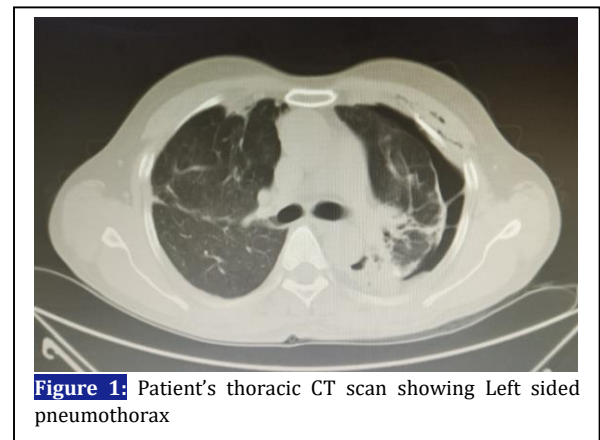
#### Case 1

A 60-year-old farmer was brought to emergency department (ED) with history of being hit by a bull while working on the field. The site of impact was the chest as described by his relatives. He complained of pain and discomfort over his chest. No signs and symptoms suggestive of head, extremity or abdominal trauma were present. The patient's vital signs including oxygen saturation were well within normal limits. However systemic examination revealed reduced air entry on the left side with crepitus over the left upper and anterior chest. Pelvic compression was negative and chest compression was positive. The patient underwent chest computed tomography (CT) scan (Figure 1).

Injuries sustained:

- Left pneumothorax with partial collapse of underlying lung.
- Fracture of anterior end of left third rib
- Abrasion near left side chest below clavicle.

The patient was managed conservatively with antibiotics and analgesics; his stay during the hospital was uneventful. He was discharged on sixth day and was advised to follow up if any new complaints developed.



**Figure 1:** Patient's thoracic CT scan showing Left sided pneumothorax

#### Case 2

A 45-year-old male domestic worker in a cattle farm was brought to ED with history of being attacked by a bull while he was working following

which he sustained injuries over his chest. There was no history of loss of consciousness, vomiting, epistaxis, convulsions, visual disturbance or power loss. Patient was vitally stable on arrival. Systemic examination findings were normal. Although the chest compression test was positive there were no injuries in the chest X-ray and CT scan.

Injuries sustained:

- Abrasions over:
  - Right side of chest,
  - Right elbow,
  - Right zygomatic region,
  - Multiple abrasions over the back

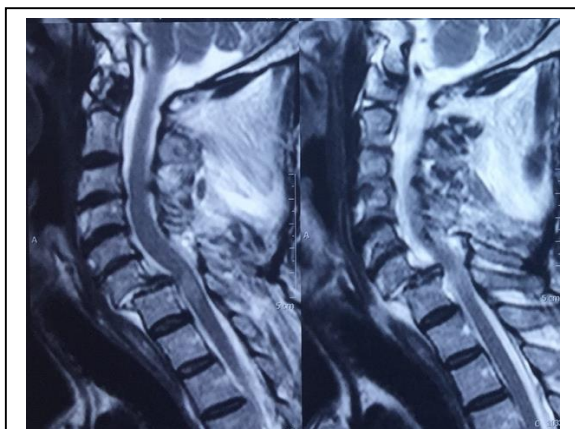
The patient was admitted for observation and discharged on the 2<sup>nd</sup> day of uneventful hospital stay.

**Case 3**

A 65-year-old male farmer was hit by a bull from behind while he was sitting on the ground doing some work. He had complaint of loss of sensation and loss of power over the lower limbs with bilateral upper limb pain and paresthesia. He was taken to a local private clinic and a hard-cervical collar was applied, the patient was then taken up for spinal MRI where it was suggestive of Anterolisthesis of cervical spine and cord compression (Figure 2) after which he was referred to our center in view of neurosurgical management. On arrival the patient was vitally stable, alert, with bilateral lower limb paresis and upper limb power 3/5 and loss of sensation in all four limbs. Patient was admitted in the intensive care unit (ICU) for observation and a cervical skeletal traction was applied.

Injuries sustained:

- Grade II anterolisthesis of C6 over C7 with interlocking of bilateral facets
- Mildly displaced fracture of C5 vertebrae, both the lamina of C6 vertebrae, right inferior



**Figure 2:** Sagittal view of patient's cervical MRI showing C6-C7 anterolisthesis

articular facet of C6 vertebrae

- Spinal cord edema.

The patient was taken up for cord decompression and fixation of C5-C6 fracture where dura was decompressed, and a standalone titanium cage was inserted and fixed. However unfortunately while recuperating the patient progressively developed ventilator associated pneumonia and expired on 10<sup>th</sup> postoperative day.

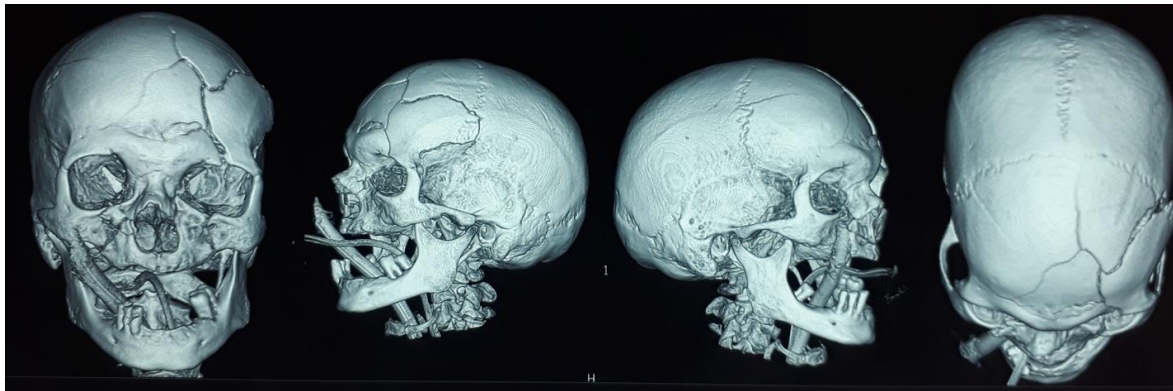
**Case 4**

A 52-year-old male presented to us after having been attacked by a bull while he was alone possibly feeding the bull. He was brought to ED after having been intubated outside at a private clinic. Multiple abrasions on the face, chemosis over the left eye, swollen face and bilateral racoon eye gave an impression that the trauma was sustained predominantly over the face. The history given by the accompanying doctor stated that the patient was intubated on account of low Glasgow coma scale (GCS). Also, that following the trauma the patient had three episodes of hematemesis, nasal bleed and one episode of aspiration. Air entry in the chest was bilaterally equal and heart sounds were normal. Abdomen was not distended, and bowel sounds were present. The left pupil was dilated and fixed while the right pupillary response was normal. The patient underwent brain CT scan (Figure 3, 4).

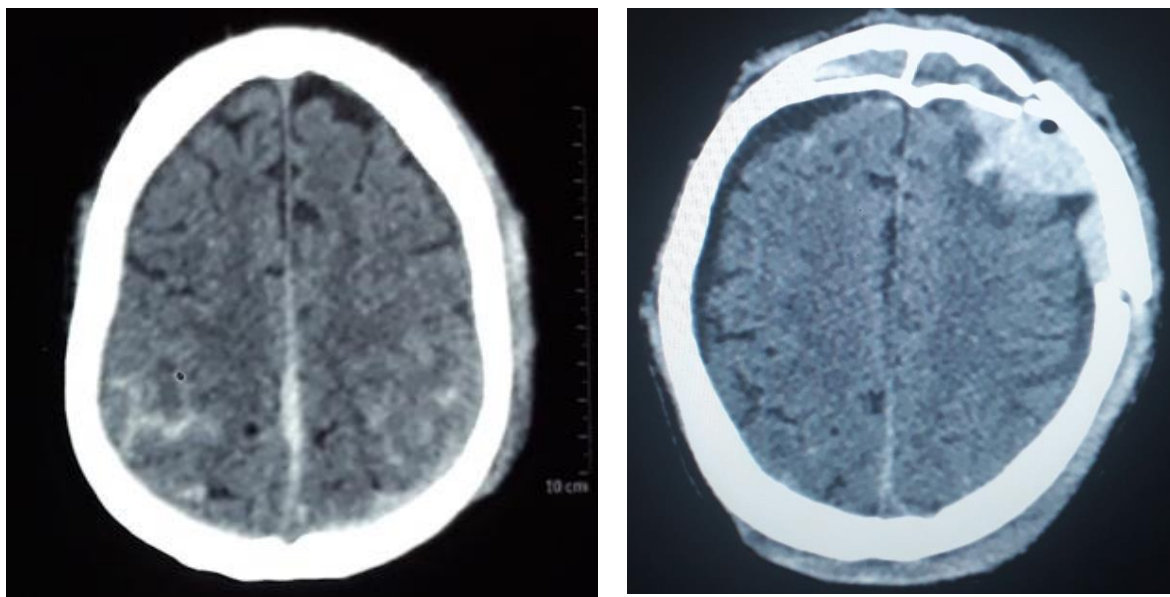
Injuries sustained:

- Fracture of 4th, 5th, 6th, 7th and 9th ribs on the left side.
- Impacted fracture of left clavicle.
- Fracture of the right transverse process of C7.
- Fracture of spinous process of C3 and C4.
- Comminuted fracture in the body and spinous process of C5 and C6.
- Comminuted fractures in Left frontal bone, parietal bone and zygomatic process of the temporal bone.
- Mildly displaced fracture of greater wing of sphenoid.
- Nasal bone fracture
- Haemo sinus in maxillary, sphenoid and ethmoid sinus.
- Two extra dural hematomas in left frontal region.
- Sub arachnoid haemorrhages in parietooccipital regions.
- Intraventricular bleeds in both occipital horns of lateral ventricle.
- Left eye has ecchymosis, subconjunctival haemorrhage and lens dislocation.

He was managed conservatively. His stay during



**Figure 3:** Patient's 3D reconstruction skull CT scan



**Figure 4:** Axial views of patient's brain CT scan showing sub-arachnoid hemorrhage, pneumocephalus and epidural hematoma

the hospital was uneventful and was discharged on 16th day and asked to follow up in the out-patient department for any complaints.

#### Case 5

A 55-year-old male was brought to ED with a history of being gored by a bull while feeding it. The bull was not provoked, and it suddenly attacked the farmer using its horns after which it was subdued by others at the site of incident. The patient was vitally stable, and the local examination revealed a punctured wound in the right lumbar region. The vitals were stable, and no life-threatening injuries were recorded in the primary assessment. Systemic examination did not reveal any positive finding in the chest and the bowel sounds were present. Radiological examinations were normal.

Injuries sustained:

- Punctured wound piercing the external oblique, internal oblique and the transversus

abdominis muscle.

The patient was admitted, and the wound was sutured in layers. After three days of admission and uneventful recovery the patient was discharged.

#### Case 6

A 70-year-old tailor was attacked by an unprovoked bull on the street. Upon presentation the patient had complaint of pain in hip on the right side, pain and swelling over the right wrist, inability to walk and bear weight. The patient was a diabetic, hypertensive and a known case of ischaemic heart disease. Blood pressure was elevated on presentation. Radiological investigations ruled out any head trauma, chest trauma and abdomino-pelvic injuries.

Injuries sustained:

- Fracture of distal end of radius and styloid process of the ulna.
- Intertrochanteric fracture of the right femur.

The patient was subsequently taken up for operative intervention and discharged after a protracted stay of 26 days in the hospital.

#### DISCUSSION

The bull normally a docile and easily domesticated animal, may become aggressive for no apparent reason (3, 4). The attack by a bull can cause either a blunt trauma or a penetrating trauma (due to horns) which is also known as bull gore. Blunt trauma is far more common than penetrating trauma (4). The most common mechanism of injury sustained while handling bulls is kicking, a fact that we observed in four of our patients (5).

Other means of trauma would be head butting, contact by body of the bull and trampling. The mean age of the patient injured by a bull was 57.8 years in our case series and five of six were farmers and all males. Murphy et al reports the mean age to be 49.3 years, a majority of patients were farmers in that study (5). Dogan et al has reported the average age of 60.3 with six out of thirty victims to be females (6). It can be understood that the patient would usually be an elderly male unlike the most common cause of trauma i.e. in road traffic accidents whereby a young male is the most common profile of the patient.

Trauma sustained due to being hit by a large animal should be treated akin to a high velocity trauma and such a patient definitely warrants a period of observation even if the injuries are not life threatening (5, 9, 10). A high index of suspicion is needed for suspecting occult injuries. Fluid resuscitation and age of the patient are important considerations.

Our study of just 6 cases shows that head, C- spine and thorax are more commonly involved in bull injuries than abdomen and extremities. A previous Indian study done in 1977 reported abdomen to be the most common site of injury (4). In 2008 a case series of 30 patients notes chest and abdomen injuries to be more common than head injuries (6). Murphy et al has stated fractures to be the most common bull related injury, an observation that has also been noted amongst the rodeo bull riders of Canada (5, 7). Another study done from India states that bull injuries are the second most common cause of a flail chest after road traffic

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accidents (8). As noted that animal handlers and farmers are a definite risk for such accidents, it would be advised that they use special protective gear especially helmets for protection (6). Disbudding and dehorning has also been suggested although it must be pointed out that gore injuries are far less common than the blunt trauma sustained and such a precautionary measure would definitely elicit a response from animal rights groups (1, 4).

The victim of a bull injury is usually the one who has a considerable experience in handling livestock and cattle (11). Studying animal behavior and understanding the cattle's flight, vision, hearing and senses would definitely help in reducing such instances amongst cattle handlers (12). In Sweden a registry that documents animal injuries can determine the relevant context, mechanism and the post incident morbidity along with the burden on healthcare is present (13). Such a registry is absent in most countries of the world but would be a great resource to evidence based medicine and real world data studies.

#### CONCLUSIONS

Trauma sustained due to being hit by a large animal should be treated akin to a high velocity trauma and such a patient definitely warrants a period of observation even if the injuries are not life threatening. A high index of suspicion is needed for suspecting occult injuries. Fluid resuscitation and age of the patient are important considerations.

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#### AUTHORS' CONTRIBUTION

All the authors met the standards of authorship based on the recommendations of the International Committee of Medical Journal Editors.

#### CONFLICT OF INTEREST

None declared.

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