Case Report

Bull horn injury to chest–management and review of literature

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Introduction

Bull horn injuries are common accidents in rural India, where people make their living rearing the livestock for domestic and farming purposes. These domestic animals can cause serious injuries by their various appendages, especially horns. Bullfighting[1] is a very popular sport throughout Spain and in some parts of Latin America. It is also common in Southern India (*Jallikattu* in Tamilnadu). There are only few reports of bull horn injuries in literature. Unfortunately, these injuries are infrequently reported and evidence-based practice is lacking in this area. We hereby report a rare case of bull horn injury in a 58-year-old farmer causing hemothorax and its management.

Case report

A 58year old, ASA grade 1 male patient and a farmer by profession, presented with thoracic trauma due to bull horn injury. He was hit by a domestic bull on the right-side of his chest, while working in his fields. The patient was brought to our emergency department with chief complaints of breathing difficulty and pain in the right side of his chest. He was conscious, oriented, responding to commands and moving all four limbs. His vital parameters were as follows:- Heart rate-90 beats/minute; Blood Pressure- 140/90 mmHg; Spo2- 98% on Room air; and Respiratory rate-35 breaths/min. On physical examination, a 10×3cm area of contusion over the anterior chest wall was visible. On palpation, subcutaneous emphysema was present and a structural defect around the 5th and 6th ribs on the right side was appreciated, with paradoxical movement of the injured segment. A clinical diagnosis of flail chest was made. On percussion, a dull note was noted on the right basal area. On chest auscultation, air entry on the right basal area was less than on the left. Following advanced trauma life support (ATLS) principles, immediate supplemental oxygen was given via face mask @10 liters/minute along with cervical collar. Chest X-Ray was done in the RR (Resuscitation Room), which showed right lower zone opacity (Figure 1) and FAST scan (Focused Assessment Sonography in Trauma) of the chest was positive.

A provisional diagnosis of right hemothorax was made and a # 32 Fr (French) intercostal drainage tube was inserted in the 4th-5th intercostal space on the right side. Nearly, 250 ml of frank blood was evacuated. Two-wide bore cannula were secured, warm isotonic crystalloid infusions started, and blood sample sent for investigations and grouping-cross matching. Intravenous broad-spectrum antibiotics and intramuscular tetanus-toxoid (TT) were also administered. A decision to insert thoracic epidural catheter was taken after patient stabilization and informed patient consent, in-order-to control severe pain resulting from rib fractures. Thoracic epidural analgesia (TEA) was started after test dose, with a bolus of 8 ml of 0.125% Bupivacaine Hydrochloride, followed by continuous, titrated infusion of 0.0625% Bupivacaine along with opioid (fentanyl citrate 1microgram/ml). Daily, serial x-rays were done to look for the resolution of hemothorax. After clinical resolution of hemothorax, chest drain was clamped and then, removed. All vital parameters and investigations were within normal limits. Incentive spirometry and intensive chest physiotherapy was started under adequate analgesia. The patient was later shifted to the ward in a stable condition after removal of chest drain and epidural catheter.

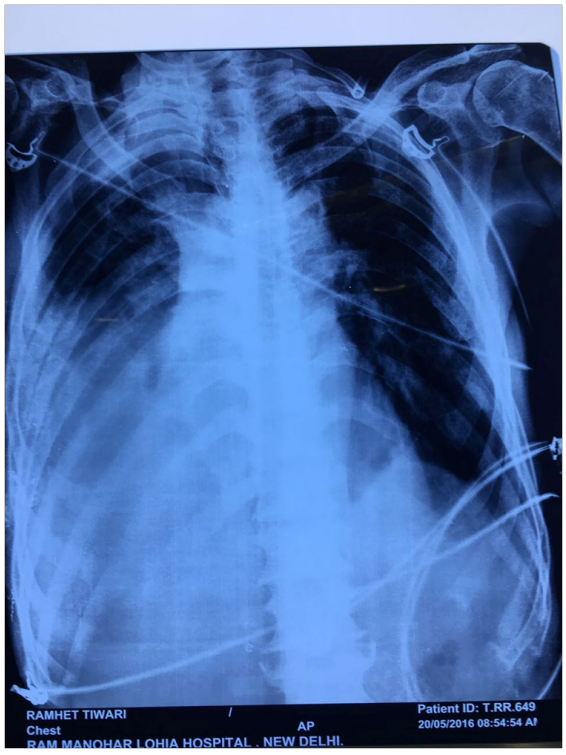

Figure 1 Photo showing the chest X-ray of the patient post-bull-horn injury.

Discussion

The bull is not a normally aggressive animal, and may be domesticated. However, aggressive behavior may be displayed for no apparent reason.[2] Bull horn injuries have not been regularly documented in the literature. The mechanism of injury allows understanding of the complex wound patterns seen due to interaction of multiple distinct forces and the fact that the horn of the attacking animal follows a semicircular path sideways or upwards.[3,4]

Bull horn wounds are usually penetrating and cause contusions. They have the following special characteristics: the entry point being small and corresponding with a gap in the aponeurosis. Wounds are often contaminated with multiple foreign bodies such as cloth fragments, dirt and horn chips.[5] The most common site of injury in bull horn cases is the abdomen and perineal region. The less common sites are chest and extremities. The reason for perineal involvement is its anatomical configuration. Injuries involving the perineal region pose a great challenge in the management due to poorly understood anatomy, difficulty in accessing the injury site and the possibility of torrential pelvic bleeding or hematoma formation. Abdominal injuries have been documented as being most common on the right side of the abdomen. Isolated damage to the intestine may be seen in 10% of cases.[6] The predominance of injury to the right side of the abdomen may be because the patient turns the right side of his body towards the animal to use his right arm in self-defense. The skin of the abdomen or perineum lies tangentially to the semi-circular movement of the tip of the horn, so a relatively superficial laceration is inflicted leaving deeper structures intact.[7] In one case report, the bull horn entered the skin at the level of the inguinal ligament and, after traversing the muscular layers, exited 15 cm away, without injuring the peritoneum or tearing the intervening skin. In many instances, impact by the bull or other cattle involves the thoracic region of the body. Atri and Mehdiratta[8] in an analysis of 154 civilian chest injuries, reported six cases from bullhorns, with three cases of right and left side each constituting about 4%. According to other researchers and the present case report, chest injuries are in the form of multiple rib fractures and penetrating injuries involving lungs. Hemo-pneumothorax is a common accompaniment. Involvement of extremities is an uncommon finding in such an impact by the bull.

Management

The vital step is to detect and manage the life-threatening injuries first. Advanced trauma life support (ATLS) guidelines should be strictly adhered to. Prompt insertion of a chest tube is important for thoracic trauma causing hemo-pnuemothorax in all cases. Traditional wound management consists of irrigation, debridement of de-vitalized tissue, drainage and hemostasis. Historically, wounds have been left open or partially open, along with treatment by broad-spectrum antibiotics. Documented complications have included cutaneous necrosis in large wounds, seromas, superficial phlebitis, pneumothoraces, pneumonia and lung atelectasis and evisceration through the horn opening.[9] Trauma to the anus, rectum and large bowel by the horns lead to higher morbidity due to fecal contamination. Pain relief is central to the management of flail chest.[10] Insertion of thoracic epidural and continuous TEA helped in early recovery of our patient.

Conclusion

The new knowledge gained from this case report and review of literature is that one must look for and aggressively manage chest injuries after any encounter with bulls, especially in the geriatric population. Bull horn injury presents as a variety of bizarre and complex wounds. Familiarity with these lesions is important in areas where cattle are reared or where bullfighting is practiced. Because of their unique characteristics, they deserve a special mention in cases of trauma and wound management. Although bull horn wounds are severe, their prognosis is good, with few complications and a mortality rate of less than 1%. Following the basic ATLS principles can improve the overall patient outcome.

Acknowledgments

None.

Conflicts of interest

Authors declare that there is no conflict of interest.

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