

A Rural case of bull horn injury: Presentation with a rare complication

Likhita Shaik^{1*}, Shruti Nelekar², Dhiraj Thambde³

¹⁻³Medical Student, Ashwini Rural Medical College Hospital and Research Centre, Maharashtra, India

*Corresponding Author: Likhita Shaik

Email: likhi.siri@gmail.com

Abstract

Rearing bulls and other livestock is a common sight in India, so are the injuries associated with such animals. The mechanism of injury can aid a surgeon to diagnosing the structures involved in the injury and hence treat it systematically within the golden period. Assessment of the co morbid conditions and personal history should also be kept in mind while making a differential so as to prevent the further complications. Our case presented with a bull horn injury which was complicated by aortic dissection and further led to ischemic bowel and sepsis. The delay in diagnosis and non availability of the effective medical services at rural health care further adds to the perplexity of the situation, thus increasing the rates of morbidity and mortality.

Keywords: Bull horn, Goring, Mechanism, Vascular, Aortic dissection, Transesophageal, Echocardiography, Aortic root dilation, Bowel ischemia, Splenic flexure, Comorbidities.

Introduction

In rural India, bull is very useful animal for domestic and farming purpose. This domestic animal has caused some shockingly dangerous injuries by accidental bull horn injury. Bullfighting is very popular throughout Spain though it is not seen in India, but occasional reports are there about bull horn injuries.¹ Bull horn injuries though not so commonly seen in cities, are commonly observed in rural areas. The bull horn injuries are different in many ways from other casualties e.g., blunt injuries, stab injuries, road traffic accidents, etc.² In addition to the world-famous encierros of the San Fermin festivities, the region of Navarra features a myriad of bull events in every town, with wild cows being used more commonly in small towns.^{3,4} The most common site of injury in bull gore cases is the abdomen and perineal region.⁵ Here we report a case of penetrating bull horn injury with rare presentation having vascular tear and profuse blood loss requiring emergency surgical treatment within the golden period of an hour.

Case Report

A 25 year old male presented to casualty with a stab injury by a bull horn after 45 minutes. The patient was brought to the hospital by his parents who described the injury as a violent attack of a bull from behind while he was working in their field. His vitals were: BP: 80/60mmHg; Pulse: 120/min; Temp: 100.2 C; RR: 26/min. The patient was in severe pain and was bleeding profusely. His mucous membranes were dry and all signs of shock and impending sepsis were present. On examination there was a mass coming out through the abdominal tear in the right iliac region associated with profuse bleeding. The mass was estimated to be loops of intestine. No other major injuries were found except some minor bruises over his extremities. The patient was well oriented to time place and person. Examination of all other systems was normal. After admission emergency resuscitation was done with Normal saline and ringer lactate. 2 units of whole blood concentrates were given and his initial position was stabilized. Patient was

posted for emergency exploratory Laparotomy. There was no evidence of any bowel injury. Mesenteric tear and two large retroperitoneal hematomas were found. The posterior peritoneal wall was opened, hematomas were resected and the peritoneal cavity was irrigated and suctioned. A wide search for the bleeding vessels concluded bleeding from the left iliac vein. The vein was clamped and primarily repaired with proline 5.0. Drains were put and when the abdomen was ready to be closed, the blood pressure began to fall further. The patient began to complain of severe back pain. Active search for the bleeders was again resumed but in vain. A differential diagnosis of ischemic Pancreatitis, sepsis and Vertebral fracture were made. The abdomen was closed and CT scan of the abdomen was done which revealed ruled out all the differentials. A new finding of a double lumen of the aorta was seen. An emergency Transesophageal echocardiography was needed to confirm the diagnosis of Aortic dissection. The patient was shifted to a tertiary care because of the lack of services at our hospital. Transesophageal echocardiography confirmed the dissection level at the abdominal aorta and the patient was posted for repair. Due the delay in the repair which was complicated by severe hypotension, the patient landed in ischemic colitis at the splenic flexure just after the repair. The Abdomen was opened again only to find necrotic loop of the bowel which was resected and anastomosis was done. The patient was stabilized by intravenous fluids and prophylactic antibiotics. A retrospective cardiac examination and investigations were performed to evaluate for the cause of aortic dissection. Echocardiography revealed the dilation of aortic root. History also revealed substance abuse since the past 8 years which also could be attributable to the cause of aortic dissection.



Fig. 1: showing mass protruding from abdomen

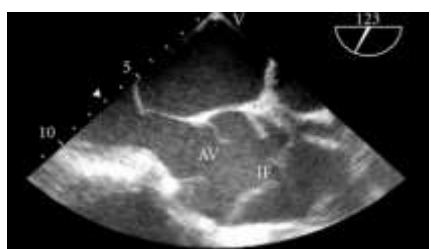


Fig. 2: showing aortic ring dilation and dissection by Trans esophageal echocardiography(TEE)

Discussion

Pelvic –abdominal injuries caused by goring are serious lesions requiring rapid diagnosis and urgent treatment in the context of patient’s life. Despite their rate is low among all injuries, bull gorings tend to be fatal. Major vascular injuries to the limbs caused by this type of penetrating traumas often involve the arteries.^{6,7} People whose occupation is animal husbandry may be the target of such an attack and may be severely injured or killed while tending to large animals.⁸⁺ Bullfighting and bull-running provoke aggressive behavior. Bullhorn injuries and its unique mechanisms have been documented in details. Understanding this mechanism of injury due to the interaction of multiple distinct forces allows handling different complex wound patterns⁹ As the matador or victim stand in front of the attacking animal, the horn of the bull follows a semicircular path sideways and upwards.¹⁰ The depth of the wound is dependent on the penetration force of the bull’s horn into the body and the animal’s body weight and strength.¹¹ The surgeon should be suspicious of underlying injuries that cannot be seen initially because of high kinetic energy transformed into the potential energy.^{9,10} In addition, the victim’s body weight exerts an equal oppositional force as his body is lifted and suspended by the bull’s horns. As the animal attempts to disengage the person’s body, a rotational movement occurs because of an unstable balance depending on the center of gravity. This rotational movement during goring is called “rag-doll” and “spinning top” appearance.⁹ In bull gore during bullfighting, lower leg and the thigh injuries account 50% of all wounds.¹⁰ Major vessels can be lacerated because of the rotational movement of the bull’s head leading to a retraction in the media and intimal layers of the vasculature. This may further trigger the Virchow’s triad that slows the bleeding.¹² The second common site of goring is the perineum. Scrotal avulsion and anal destruction often need surgical reconstruction.¹³ Abdominal injuries constitute the third common injury site and have been

documented most commonly on the right side. But here we report a case of injury to the left iliac vein complicated by aortic dissection and bowel ischemia. Thus the myriad of presentation and diagnosis of the three diseases is rare in the history and has never been reported in the literature.

Conclusion

In conclusion, bull gore injuries exhibit bizarre and complex wounds that require a prompt identification and exploration. Understanding the mechanism and the nature of bull gores enables the surgeon to handle adequately such atypical injuries for better outcomes. Presence of co morbid conditions along with the presentation should not be neglected because of the complications which might prove fatal. In addition to that, caution is needed for the people having close contact and working with bulls and other animals that may cause injury. The risk may be reduced by using restraints and barriers with appropriate housing and confining structures. Dehorning may also be applied as a precaution to prevent bull gore injuries.

Conflict of Interest: None.

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