Original Research Article

Institutional experience of bullock cart and bull gore injuries in children

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Abstract

Background: Bullock cart and bull gore injuries are among the commonest accidents in rural India, where people make their living rearing the livestock. The injuries sustained are penetrating injuries caused by horns of the animals and blunt injuries sustained by bullock carts usually on chest and abdomen. The condition is usually associated with high mortality and morbidity due to multiple injuries. **Aim of the study:** To study the incidence of trauma in children due to bullock cart injuries and bull gore injuries referred to a tertiary care centre from January 2013 to June 2015. **Materials and Methods:** All children who presented with history of trauma due to bull gore and bullock cart injuries during the study period were admitted and managed in the department of paediatric surgery. Routine and specific investigations were done. They were managed according to the injuries sustained. **Results:** A total of 12 children were admitted with bullock cart or bull gore injuries during the study period. The patient age ranged from 2 to 11 years and there were 5 male and 7 female patients. Solid organ injuries were seen in seven cases, hollow viscus injury was seen in 2 cases. There was one case each of hemothorax; and pneumothorax with surgical emphysema. There was one case of diaphragmatic injury. Exploratory laparotomy and closure of hollow viscus perforation was done for the two cases. Intercostal drainage was done for hemothorax and pneumothorax patients. Solid organ injuries were managed conservatively. There was no mortality. **Conclusion:** Bullock cart and bull gore injuries are common in rural India. The lack of tertiary peadiatriccentres at district level delays the management. We propose early referral and thorough evaluation of these patients with CT or MRI and also keep in mind the late onset of complications that may arise due to blunt trauma.
Key Word: Bull gore injuries in paediatric age, Blunt trauma in children, Injuries in rural India.

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INTRODUCTION

Bull horn injuries are very frequent, especially in areas with a strong bullfighting tradition - professional oramateur all over the world and especially in countries like Spain and Latin countries. In India especially in rural areas bulls, buffaloes and cows are used for domestic and farming purposes.[1] Hence, in rural India, bull horn injuries are common as an occupational hazard. Also these injuries are frequent during a few particular festivals like Muttu Pongal, celebrated in Southern states of India.[2] Though domesticated sometimes the behaviour of these animals is unpredictable. In rural India as farming and animal husbandry are main occupations many times children are also involved in work related to these animals such as cleaning, feeding, farm work, milking of cows, etc. Children are more vulnerable to injuries caused by these animals due to their tender age and also maybe as children may not be able to recognize the restless behaviour of bovine animals which can signal danger and potential of being attacked. Moreover, most of the bull attacks are unprovoked which is all the more risky for children. In the present paper we have made an attempt to look at the nature of bull attack and bullock

cart injuries in paediatric age group that were managed in our hospital.

MATERIALS AND METHODS

The present study was a prospective study carried out in the department of paediatric surgery at Niloufer Hospital for Women and Children, Hyderabad, Telangana, India. This study was done over a period of two and half years from January 2013 to June 2015. All the children who presented with history of trauma due to bull gore and bullock cart injuries during the study period were admitted and managed in the department of paediatric surgery. Detailed clinical history was taken from the patients and parents. Complete physical examination was done and the extent and nature of injuries were noted. Routine investigations like complete blood picture, urine analysis, blood group, erythrocyte sedimentation rate, blood glucose, etc were done. Liver and renal function tests were done in solid organ injuries and wherever required. Imaging studies of X-rays, Ultrasound, computed tomography (CT scans) and magnetic resonance imaging (MRI scans) were done as per indication. Emergency IVP was done in wherever renal trauma was suspected. The patients were managed according to the injuries sustained.

OBSERVATIONS AND RESULTS

A total of 12 patients were admitted in the study period with history of bullock cart and bull gore injuries. The patient age ranged from 2 to 11 years. There were 5 male and 7 female patients and the male to female ratio was 0.71:1. Solid organ injuries were seen in seven cases, hollow viscus injury was seen in 2 cases. There was one case each of hemothorax; and pneumothorax with surgical emphysema. There was one case of diaphragmatic injury. Exploratory laparotomy and closure of hollow viscus perforation was done for the two cases. Intercostal drainage was done for hemothorax and pneumothorax patients. Solid organ injuries were managed operatively and conservatively as per the nature of injury. There was no mortality.

Table 1: Age And Gender Distribution Of Cases

Age in years	No. Of cases (m/f)	Total	Percent (%)
2-6	2/3	5	41.6%
7-11	3/4	7	58.3%
Total	5/7	12	100%

Cause of injury: There were five cases each due to buffalo stampede and bullock cart injuries and two cases due to bull gore injuries.

Table 2: Predominant organ involved in injury

Organ injured	No. of cases	Percent (%)
Solid organ injury	7	58.3%
Hollow viscus perforation	2	16.6%
Hemothorax	1	8.3%
Pneumothorax with surgical emphysema	1	8.3%
Diaphragmatic injury	1	8.3%
Total	12	100%

The above table shows predominant organs involved by injury. The patient with diaphragmatic injury also had minor liver injury and the patient with hemothorax had superficial lung laceration and the above groups are not mutually exclusive. Among the solid organ injuries, liver injuries were 3, splenic injuries were 2, kidney and pancreatic injury were seen in 1 case each. Among the 3 liver injuries one had liver laceration that was sutured and the other two were of blunt trauma, which were managed conservatively. The hollow viscus perforations were seen in duodenum and ileum in one case each that required simple closure in two layers.

DISCUSSION

Bull gore injuries and injuries due to bovine cattle are very common in rural India as most of the rural population follows livestock rearing as the main occupation. These injuries can range from minor injuries to severe fatal polytraumas. The injuries can be penetrating type caused by the animal horns or could be blunt injuries to chest, abdomen, and perineal region, spine or rib fractures and long bone fractures.[3] Bull horn injuries are defined as lesions resulting from collision with the horns of a bull/cow. These injuries are common in rural areas where oxen are frequently used for ploughing the fields and various other domestic works. Bull horn injuries are common in villages and rural areas as compared to the urban areas.[4] Agricultural activities and cattle rearing is integral part of rural population of India. Most of the time people sustain injury while giving care, feeding, milking, farming, practicing bull fight etc. Extreme care should be taken while involvement in such activities.[2] Dogan *et al*[5] in a study of injuries in animal husbandry concluded that bull gore injuries are the most common ones. Apart from the farmers, other people who work with the animals including veterinarians, butchers, workers in zoos and circuses are all at high risk of bull gore.[6] In the present study there were two cases of hollow viscus perforation by bull gore injuries. In both the cases the child and the parents informed that the attack by the bull was unprovoked and the animal had got agitated without any apparent cause. Kulloli *et al*[7] studied 15 cases of adult bull gore injuries and observed that in all the 15 cases the injuries were unprovoked and had occurred as a

result of the animal becoming aggressive all of a sudden. Bull gore injuries distinguish themselves from other penetrating injuries due to some special characteristics such as muscular tearing, several wound paths, introduction of foreign bodies, discrepancy between the apparent and actual wounds and massive inoculation of germs.Prolapse of the intestine through the abdominal wall is more common than perforations whereas in gunshot injuries, perforations are more common.[7] The patterns of injuries sustained by the victim vary depending on the height of the victim, and that of the bull, and position of the animal and the victim at the time of the attack by the bull. In adults the most frequent sites are abdomen, perineum, pelvis, chest, and upper limbs. The largest series of bull goring injuries are from Spain and Latin America, due to the practice of bull fighting events. This type of injuries are mostly provoked injuries occurring in adults and are usually extensive and more severe and are much different from the injuries in the Indian rural scenario.[7] The injuries in indian context occur more commonly on the abdomen and perineum.[8] The anatomy of the perineal region is complex, and visualization and access to various structures in the region is difficult.[9] Rarer sites that can be affected are the orbit, palate etc. Singh *et al*[10] have reported a case of bull horn injury to the orbit where blowout fracture of the orbital floor with displacement of the orbit in the maxillary antrum was seen. In this case the injury was caused by the impaction of the metal horn cover of the bull. Nazima Bai *et al*[11] have also reported ocular injury following bull horn attack. Pandey *et al*[2] have reported an unusual case of bull gore injury causing isolated large palatal laceration requiring emergency reconstruction. Kulkarni *et al*[12] reported two cases of bull gore injuries in women involving large tears in the lateral vaginal walls along with a vulval hematoma in one case. Both cases presented with torrential bleeding and required urgent surgical intervention. Priyadarshi *et al*[13] have reported 12 cases of women with lower genitourinary trauma due to bull/cow goring. Chandrashekhar *et al* [14] reported a bull gore injury in a full term pregnant woman who sustained two rents on the anterior aspect of uterus and subdiaphgramatic rents. Fortunately the perinatal outcome was good in this case due to timely management. Panchappa *et al*[15] in their study on cut-throat injuries reported that 7.84% of cut-throat injuries in their patients were attributed to bull goring. Borse *et al*[16] reported a case where evisceration of small intestine through thigh was seen in a bull gore injury. One case of evisceration of small intestine through the femoral triangle is reported by Shashirekha *et al*.[17] An unusual case of isolated femoral vein injury after bull gore attack has been reported by Basbug *et al*.[18] In the present study, there were seven cases of abdominal injuries. The frequency of injuries over the abdomen in other studies has been reported as 11.3%[19] and 3.7%.[20]Abdominal injuries can be abdominal wall perforations, and internalhemorrhages and mesenteric and hollow viscus lacerations/perforations.[5] Visceral injuries involving spleen and more frequently liver being situated on right region of body are commonly encountered. Christian *et al*[21] in their retrospective study observed that not all patients of penetrating bull gore injuries require formal exploratory laparotomy. They recommended that penetrating abdominal bull-gore injuries can be managed safely by a policy of selective conservatism, and that formal laparotomy should be reserved for specific clinical indications. Delayed complications have been reported in bull horn injuries such as anovaginal fistula and urethrorectal fistula in perineal injuries causing morbidity to the patient in terms of physical, mental, social, and economical suffering.[7] Also Nabi *et al*[22] reported a case of inter costodiaphragmatic hernia secondary to a forgotten bull gore injury that developed after three months. Hence through initial evaluation and also follow up is important for such cases.

CONCLUSION

Bullock cart and bull gore injuries are common in rural India. The lack of tertiary paediatric centres at district level delays the management. We propose early referral and thorough evaluation of these patients with CT or MRI and also keep in mind the late onset of complications that may arise due to blunt trauma. Creating greater awareness in the public regarding these injuries and early referral will help to save lives.

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