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Original Research Article

Cattle Horn Injuries in Northern Benin

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Abstract: The aim of this study was to determine the epidemiological, diagnostic and therapeutic aspects of cattle horn injuries in Northern Benin. This was a retrospective study over a period of 10 years (from 1St January 2005 to 31St December 2014). It has taken into account all the patients admitted to the district hospital of Bembèrèkè with acute injury by cattle attack. Eighty four patient medical records were collected. The average age was 11.69 ± 4.5 years and children (the age group of 0-15 years) accounted for 82.1%. The most common site of injury was the abdomen with 52.4% followed by perineum, head and neck, 15.5% for each of them. About abdominal traumas (n=44), it was a penetrating wound in 21 patients (47.7%), abdominal blunt in 14 patients (31.8%) and a parietal wound in 9 patients (20.5%). The perineal injuries (n=13) involved a lacerated wound of the skin (6 patients), a scrotal wound (3 patients), an anorectal tear (3 patients) and a vulvo-vaginal wound (1 patient). Chest injuries (n=8) were in the form of blunt with rib fractures (6 patients) and penetrating injury with hemothorax (2 patients). The number of laparotomy was 29 (65.9%) and intra-abdominal visceral affection was demonstrated in 23 patients. Overall wound infection rate was 23.3% and hospital stay was 4.3 days ± 4.8 days. One patient died. Our study emphasizes the observation that oxen or cows although domestic animals, can induce severe injuries by goring as well as bulls. These injuries required an early treatment.
Keywords: cattle horn, injury, children, Northern Benin.

INTRODUCTION

Since antiquity, the bull has fascinated people. In 18th century, bullfighting was born in Spain, in which a man (the "Torero") confronts a bull in an arena. The danger comes from the fact that the man rubs up against such a powerful animal and the bullfighters pay a heavy tribute each year [1]. Pestan Tirado *et al*. [2] in Spain and Ryan Livingston *et al*. [3] in Australia reported various head, abdominal and thoracic traumas. Even if oxen and buffaloes are docile compared to bulls [4], in Africa, these same traumas are encountered. In view of the severity of the lesions we decided to undertake this study which is the first in Benin that investigates the subject. So the aim was to determine the epidemiological, diagnostic and therapeutic aspects of cattle horn injuries in Northern Benin.

PATIENTS AND METHODS

This investigation of cattle horn injuries was a retrospective study over a period of 10 years (from 1st January 2005 to 31st December 2014) that has been achieved at Bèmbèrèkè, a city in the north of Benin. It has taken into account all the patients admitted to the district hospital of Bèmbèrèkè with acute injury by cattle attack (oxen or cows).The studied variables were epidemiological, clinical and therapeutic. Collected data was entered into Epi info 7 and Excel 2010.

RESULTS

Epidemiological aspects

Eighty four medical records were collected. The mean age was 11.69 ± 4.5 years and children (the age group of 0-15 years) accounted for 82.1% of the study population (n= 69).

Diagnostic aspects

The majority of patients (85.7%) were admitted to hospital within 24 hours of trauma. The incident occurred during transhumance or livestock feeding for no apparent reason. The most common site of injury was the abdomen with 52.4% (n=44) followed by perineum, head and neck, 15.5% each (n=13). The table 1 shows the location of the traumatisms by cattle horn.

Table-1: Location of traumas by cattle horn

	No. of cases	Percentage (%)
Abdomen	44	52.4
Perineum	13	15.5
Head and neck	13	15.5
Chest	8	9.5
Limb	6	7.1
Total	**84**	**100**

About the abdominal traumas (n=44), it was a penetrating wound in 21 patients (47.7%), abdominal blunt in 14 patients (31.8%) and a parietal wound in 9 patients (20.5%). There were four patients with prolapse of bowel or omentum.

The perineal injuries (n=13) involve a lacerated wound of the skin (6 patients), a scrotal wound (3 patients), an anorectal tear (3 patients) and a vulvo-vaginal wound (1 patient). Chest injuries (n=8) were in the form of blunt with rib fractures (6 patients) and penetrating injury with hemothorax (2 patients). The figures 1 to 3 respectively show abdominal, perineal and cervical injuries due to cattle horn attack.

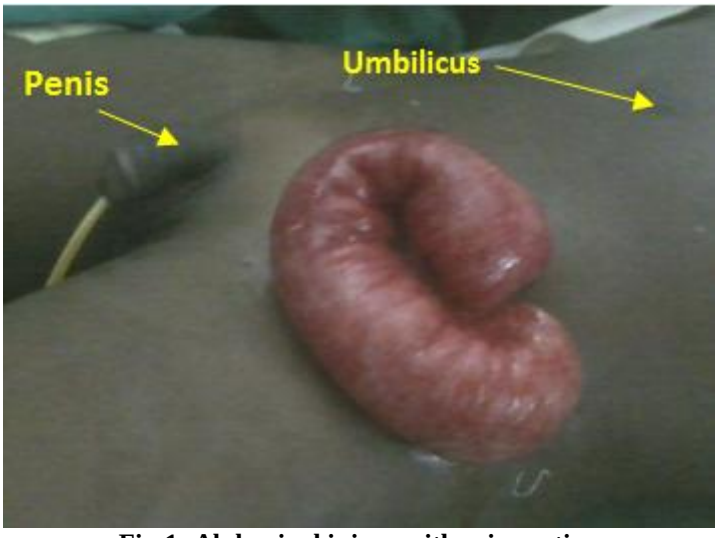

Fig-1: Abdominal injury with evisceration

Fig-2: Perineal injury with involvement of the anal canal

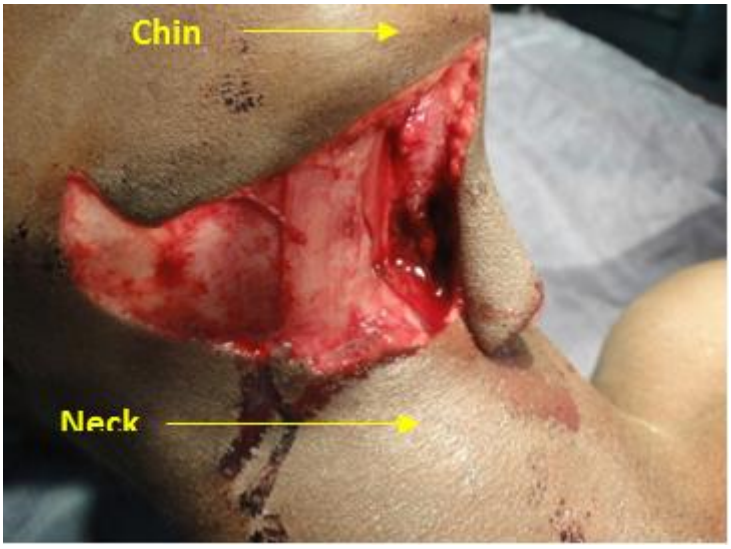

Fig-3: Cervical injury

Therapeutic aspects

In the case of abdominal injuries (n=44), the number of laparotomy was 29 (65.9%) and intra-abdominal visceral affection was demonstrated in 23 patients. A primary suturing over abdominal wall was performed in 9 patients (20.5%). There were 5 patients (11.4%) who presented with abdominal blunt but the monitoring was normal then there were no operating act.

The table 2 presents the management of abdominal, perineal and chest injuries. Lesions located at head, neck or limbs are treated by primary closure. In all cases, the wounds were cleaned with hydrogen peroxide and debrided and antibiotics were instituted including cephalosporins (third generation), metronidazole and sometimes aminoglycosides in addition (gentamicin).

Table-2: Management of abdominal, perineal and chest injuries

	No. of cases	Management
Abdominal injuries		
Perforation of small intestine	7	Primary closure
Perforation of large intestine	2	Primary repair and proximal colostomy
Mesenteric tear	3	Tear repair
Spleenic injury	3	splenectomy
Liver laceration	2	Packing or Surgicel absorbable hemostat
Perineal injuries		
Lacerated wound of the skin	6	Primary closure
Scrotal wound	3	Dressing and secondary closure
Ano-rectal tear	3	Primary repair and colostomy
Vulvo-vaginal wound	1	Primary closure
Chest injuries		
Rib fractures	6	Adhesive bandage
Hemothorax	2	Drainage

Overall wound infection rate was 23.3% and hospital stay was 4.3 days ± 4.8. One patient died. It was a patient with abdominal blunt that involves an acute generalized peritonitis. This death is assigned to the delay in admission (4 days) that leads to a multi visceral breakdown.

DISCUSSION

Bèmbèrèkè is a city in the north of Benin where farming and livestock rearing are much practiced. In this rural area many people are victims of cattle attack. Animal related injuries are frequently reported in countries where bulls are used for sporting events like in Spain and Australia [5, 6] or for domestic and farming purpose like in India villages [7]. Cattle horn injury is not uncommon and during a 10 years period, 84 patients were treated in our case. Gajbhiye AS *et al*. [8] have got 67 victims in 12 years. The average age of our patients was 11.69 ± 4.5 years and the vast majority was children (82.1%). The explanation could be in this area, children have very little schooling and therefore they are initiated at an early age into

livestock rearing. Male preponderance was seen and the male to female ratio was 6, which is upper to 4 of Gajbhiye AS *et al*. [8] in India and 3.8 of Ugboko *et al*. [9] in Nigeria.

In our study, the traumatism occurred during feeding and mostly during the transhumance. It is notified in the literature that the incident happened in villagers while tying or milking the cows or buffaloes [10] or people may be deliberately attacked by the bull [8]. For instance, Rani M et al.[11] report that in India, the bulls wander in the city, block traffic, defecate on roads and most importantly attack people and at the same time gore them to death. The mechanism of the traumatism has been well documented. Indeed the horn impact proceeds in two successive movements: deflection and extension [12]. There exist three types of lesions [2, 8]: the sideways thrust (varetazo) - where the horn thrusts the body tangentially causing only contusions, the jab (puntazo) - where the injury is caused by the tip of the horn and the goring (cornada) – which is a deep wound that affects fascia and muscle. When the animal tries to disengage its horn, the patient's weight additionally acting in the opposite direction predisposes to repeat penetration, and possibly multiple tracks as notified in the case reported by Padilla Fernandez B *et al*. [13]. The wounds produced are contusions, lacerations, penetration of body cavities [7].The real danger comes if the horn penetrates through the abdominal wall and goes into the peritoneal or retroperitoneal cavities [14, 15]. Indeed an injury to the aorta or vena cava would be immediately life-threatening.

The majority of our patients (85.7%) were admitted to hospital within 24 hours of trauma. Ayite et al. [16] at Togo have found 95.5 % while Kulkarni S et al. [17] have reported 100% of patients admitted within 12 hours. Indeed the violence of the trauma makes the victims guess the severity of the lesions then they understand they must go directly to a referral hospital. In bullfighting countries, still due to the emergency required by lesions, the arenas possess their own medical center with operating theatre. The bull surgeon on duty immediately intervenes in order to explore and make a primary hemostasia before referring the patient to the nearest specialized surgical center [1, 3]. The topographic distribution of the lesions varies from one region to another as shown in the table III but the injuries occur more commonly on the abdomen and perineum. Indeed although the abdominal body surface is the same as the one of the chest, the abdomen suffers more than any other site. The reason appears to be lack of bony shield on the abdomen allowing the horn hook to engage and penetrate [7].

Table-3: Topographic distribution of injuries by regions

	Most common injuries	**Other injuries**
Northern-Benin	**Abdomen (52.4%)**	**Perineum (15.5%), Head and neck (15.5%), Chest (9.5%) and Limb (7.1%)**
India [8]	Abdomen (53.7%)	Perineum, Back and Lower limb (11.9% each), Chest and Upper limb (4.5 %) head and neck (in that order)
Turkey [5]	**Abdomen (60.9%)**	**Chest (39.1%)**
Latin countries [12, 18]	Lower extremities (> 50%)	Perineum (7-10.5%)

In many studies like ours, the larger frequency of injuries is located on right side. The obvious explanation in our case could be that most of the people are right handed users and the animal stands on the right side and then the tip or body of the horn is close to the right side of the body. The other explanation in areas with a strong bullfighting tradition could be that the victim should turn the right side of the body in front of the animal to protect himself by using the right arm according to the self-defense [2].

We performed a systematic exploratory laparotomy in case of penetrating abdominal wound and the rate of white laparotomy was 20.7%. This rate is similar to the one of Dieng M *et al*. 24.6 [19] but clearly lower than the one of Ayite *et al*. 40.9% [16] or 52% of Gajbhiye AS *et al*. [8]. This interventionist attitude is discussed nowadays because it leads to a larger number of white laparotomies. But since there is massive inoculation of aerobic and anaerobic germs within the goring, we think it is indispensable to explore the abdomen and at least clean it if there are no lesions. Overall wound infection rate in our study was 23.3%. Gajbhiye AS *et al*. [8] have found 12.9%. This complication often required the patient to remain in hospital for several days longer than expected [3]. In our study the minimal hospital stay was 1 day and the maximum 34 days with average of 4.3 days ± 4.8. Livingston R *et al*. [3] and Kulkarni S *et al*. [17] reported respectively 2.2 and 11.8 days as average hospital stay.

CONCLUSION

Our study emphasizes the observation that oxen or cows although domestic animals, can induce severe injuries by goring as well as bulls. These injuries required an early treatment.

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