

INCIDENCE, PAIN ASSESSMENT AND MANAGEMENT OF HORN AFFECTIONS IN BUFFALOES

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ABSTARCT

Pre and post operative pain in animals suffering with horn affection should be attended to relieve stress on the animal as it may affect its production. The incidence and, pain evaluation was studied. Out of 126 cases 76 (60.3%), 26 (20.16%), 14 (11.11%), 9 (7.14) and 1 (0.79%) were fractures, avulsion, septic horn, overgrown horns and horn cancer respectively. The incidence of horn affections were 62 (49.2%) 55 (43.7%) and 9 (7.1%) right, left and both horn affections. The common pain symptoms like restlessness, twitching of ears, shaking of head, bruxism, rubbing against fixed objects, pawing at the affected site and evading the affected site were observed in horn affections. Conservative and surgical Management of various affections of horn in buffaloes was recorded and discussed.

Keywords: incidence, pain symptoms, horn affections, buffaloes

INTRODUCTION

Horns of buffaloes are massive, angular and well developed with a wider base as compared to cattle. The thickness of the horn shell increases towards apex until it becomes solid. The corium is traversed by numerous blood vessels. The horn is prone to various affections like avulsion, fracture, overgrowth, sepsis, fissures and cancer. Pre and post operative pain in animals suffering with horn affection should be attended to relieve stress on the animal as it may affect its production. Most of these affections do not respond to the routine medical management and demand amputation of the horn (Sreenu and Kumar, 2006). This Paper reports about the incidence, pain symptoms and management of various horn affections in buffaloes.

MATERIALS AND METHODS

The overall incidence of horn affections in buffaloes was recorded in terms of number of cases presented to the Department of Veterinary

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Surgery and Radiology, NTR College of Veterinary Science, Gannavaram, Andhra Pradesh, India over a period of one and a half years i.e. January 2010 to August 2011 with available and relevant technical records. The various ailments, particular to horn affections were tabulated and incidence of the each affection was noticed to arrive in terms of percentages. The clinical signs of the various horn affections, side of horn affected and parity were recorded. The various affections associated with horn in buffaloes were recorded and the pain exhibited by the animals with a particular affection was evaluated using pain score system modified as per the procedure (appendix) of Holton *et al.* (2001). The horn affections recorded were treated with appropriate method and discussed.

RESULTS AND DISCUSSION

Incidence

Out of 126 cases of horn affections 76 (60.3%), 26 (20.16%), 14 (11.11%), 9 (7.14) and 1 (0.79%) were fractures, avulsion, septic horn, overgrown horns and horn cancer respectively. The site of fracture was at tip, middle, lower third and base in 8 (10.5%), 11 (14.5%), 22 (30%) and 35 (46%) respectively out of 76 cases of fracture.

Out of 126 cases 62 (49.2%) 55 (43.7%) and 9 (7.1%) were right, left and both horn affections. In avulsion cases 13 (50%) and 13 (50%) were on right and left side. Among the fracture cases 40 (52.6%) and 36 (47.4%) were right and left affections. Out of 14 cases of septic horn 6 (42.9%) and 8 (57.1%) were right and left horn affections. The over grown horns reported in the present study were bilateral in 100 percent of the cases. In one buffalo with horn cancer it was observed to be a left horn affection.

In the present study higher incidence of fractures was recorded followed by avulsion, septic horn, overgrown horns and a case of cancer. The higher incidence of fractures was in accordance with the observations of Shivaprakash *et al.* (2007), Salgar (2008) and Mistry (2009) while Sreenu and Kumar (2006) and Mahida *et al.* (2009) reported higher incidence of Avulsion. The higher incidence of fractures among horn affections in the present study might be due to vigorous and infighting nature of buffaloes. The site of fracture was at tip, middle, lower third and base. The higher incidence of fractures at the base was more due to curly horns in buffaloes of this region which are mostly graded murrha and its crosses, which might be locked during fighting. The incidence of right side horns affection was more compared to the left in the present study. Similar observations were also made by Sreenu and Kumar (2006). On the contrary, Deshpande (1983) recorded involvement of left horn more than that of the right. Mahida *et al.* (2009) observed highest overgrown horns/ misshapen horns followed by avulsion of the horn. The avulsion of the horn was noticed to be the major affection of the horn in Surti buffaloes whereas the Mehsana buffaloes had more incidence of the overgrown horns misshapen horns. Naik *et al.*, 1969; Kaul and Kalra, 1973 and Somvanshi, 1991 stated that incidence of horn cancer is a rare condition in buffaloes. Only one case was observed in the present study and it is in accordance with Kumar and Tilagar (2000) who recorded a bilateral squamous cell carcinoma of the horn, while Salgar (2008) reported that four Mehsani buffaloes suffered from horn cancer. Damodaran and parthasarathy (1979) reported a case of neoplastic growth in a murrha buffalo bull. The observations suggestive of a very distinct animal husbandry practices followed in the area where in the livestock owners are not interested in

rearing the male as all the cases studied during the present study were only the female buffaloes.

Pain symptoms

The pain symptoms exhibited by the buffaloes with horn affections were given in Table 1.

Avulsion of the horn: The prominent pain symptom observed in the buffaloes suffering with Avulsion of the horn included restlessness (87.5%) followed by twitching of ears (75%), decreased appetite and water intake (75%), rubbing the affected part against fixed objects (37.5%), and piloerection (37.5%) while all the animals tried to evade aside on palpation of affected area. The symptoms like dilatation of pupil, abnormal posture and bruxism were not observed with any animal.

Fracture of the horn: The symptom observed in the buffaloes suffering with fracture of the of the horn included pilo erection , dilatation of pupil, restlessness, twitching of ears/shaking of head, bruxism , rubbing of the affected part against fixed objects, tries to evade aside on palpation of affected area and decreased appetite and water intake.

The pain reflexes varied with the site of the fracture. The symptoms like animal trying to evade the side on palpation of affected area in 100 percent and twitching of ears/shaking of head in 50 percent of the buffaloes were seen when the fracture was at the tip.

The symptoms like animal trying to evade the side on palpation of affected area (100%), rubbing of the affected part against fixed objects (66.66%), twitching of ears/shaking of head (66.66%) and restlessness (33.33%) were noticed in buffaloes suffering with the fracture of the horn at its middle third.

The buffaloes affected with fracture of

the horn at its lower third showed pain symptoms like animal trying to evade aside on palpation of affected area (100%), rubbing of the affected part against fixed objects (71.42%), twitching of ears/shaking of head (71.42%) , restlessness (42.85%) bruxism (28.57%) and decreased appetite and water intake (28.57%).

The symptoms like animal trying to evade the side on palpation of affected area (84.61%), rubbing of the affected part against fixed objects (76.92%), twitching of ears/shaking of head (76.92%) and restlessness (61.53%) decreased appetite and water intake (30.76%) and bruxism (23.07%) were observed in buffaloes suffering with the fracture of the horn at its base. The symptom like pilo erection was noticed in only one buffalo (7.69%) when the fracture was at the base of the horn.

Septic horn: The symptoms like twitching of ears/shaking of head (100%) rubbing of the affected part against fixed objects (100%), animal tries to evade the side on palpation of affected area (75%), restlessness (50%) decreased appetite and water intake (50%) and bruxism (25%) were observed in buffaloes suffering with septic horn.

Over grown horn: The prominent pain symptom observed with over grown horn in all buffaloes was animal trying to evade the side on palpation of affected area.

Horn Cancer: The symptoms like twitching of ears/shaking of head (100%) rubbing of the affected part against fixed objects (100%), animal tries to evade the side on palpation of affected area (100%) and restlessness (100%) were observed in buffaloes suffering with horn cancer.

Pain score index and grading In avulsion cases the average pain score index was 12.00 ± 0.46 and the pain was graded as severe. The average pain score index was 3.50 ± 0.50 , 6.67 ± 0.88 ,

7.14±0.34 and 6.54±0.31 in the fracture at the tip, middle third, lower third and base of the horn respectively. The pain was graded as moderate in all the fractures while the average pain score index in septic horn was 9.40±1.03 and the pain was graded as moderate. The average pain score index in over grown horn cases was 2.50±0.50 and the pain was graded as low. In the horn cancer case the average pain score index was 11.00±0.00 and the pain was graded as severe.

In the present study the pain symptoms observed in the buffaloes suffering from horn affections includes restlessness, rubbing the affected part against fixed objects, twitching of ears/shaking of head, decreased appetite and water intake, trying to evade the side on palpation of affected area, dilatation of pupil, bruxism and pilo erection. The findings are in partial agreement with the report of George (2003). The pain symptoms are much in avulsion and cancer which might be due to the exposed corium considered to be the sensitive part of the horn. The pain reflexes varied with the site of the fracture. The symptoms observed with other conditions are specific to the problem. Assessment of individual animal behavioral changes in response to pain is very subjective and can be influenced by differences in individual perception and interpretation.

According to the pain score index recorded, severe pain scores were noticed in avulsion followed by horn cancer, septic horn and fractures with moderate pain which might be due to sudden exposure of the core in avulsions and induration of the animal for slow growing cancer. The average pain score index in over grown horn cases was graded as low as this is not a serious pathological problem. The behavioral changes observed due to pain were more in the cancer followed by avulsion which indicates more distress to animal in these

conditions and is also supported through the changes in biochemical parameters. Sandford *et al.* (1986) also stated that behavior was commonly used to recognize and assess the pain and distress in animals. Anil *et al.* (2002) mentioned that behavior was a more sensitive indicator of pain than other physiological measures. According to Broom (2000) pain is an aversive feeling or sensation associated with actual or potential tissue damage and resulting in physiologic, neuroendocrine, and behavioral changes that are indicative of a stress response.

MANAGEMENT OF HORN AFFECTIONS

The animals brought for treatment were evaluated to adopt treatment options. The animals with avulsion showed loss of outer shell (Figure 1) with severe excitement or resistance on touching, fracture at tip (Figure 2), middle (Figure 3), lower third (Figure 4) and base (Figure 5) and few cases were fractures with discharging pus (Figure 6). A case of horn cancer (Figure 7) and few cases were overgrown horns causing pressure necrosis at the back of the poll region (Figure 8) where the horn touches the skin was observed in the present study.

Avulsion of the horn

All the buffaloes with avulsions were treated as outpatient cases by applying tincture benzoin seal over the core of the horn after thorough irrigation with 1: 5,000 potassium permanganate under surface analgesia with 4% Lignocaine Hydrochloride.

Fracture of the horn

The fracture cases at the tip were treated

by applying Zinc oxide paste and bandage as conservative therapy. In cases which had complete fracture at middle or last third or the base of the horn exposing the communication of frontal sinus amputation was carried out. Two case of the chronic fractures showed deep fissure and were effectively treated with packing off the cavity area with Zinc oxide and wax (Figure 9). Due to anatomical peculiarity of the buffaloes the horns with incomplete fractures were also amputated to avoid unnecessary complications (Figure 10). Two cases with both fracture and avulsions were also amputated (Figure 11 and Figure 12).

Septic horn

Animals with septic horn (Figure 13) were given prophylactic antibiotic therapy with 5g of streptopenicillin for a period of 5 days along with antiseptic bandage using tincture benzoin so as to maintain antibiotic levels at the time of surgery and also to curtail the production of pus at the operative site. None of these four cases showed any postoperative sepsis or wound dehiscence which suggested that the adopted therapy yielded good results.

Over grown horn

The overgrown horns were noted to cause varying degrees of damage ranging from simple discomfort to severe degree punctured wounds on the frontal, occipital or cervical regions based on the shape of the horn and angle of curvature and duration of contact (Figure 14). In some cases suppuration was also recorded as complications of soft tissue damage due to the overgrown horns. Trimming of overgrown horns was done at a point just above the junction of upper and middle third using a hack saw without reaching the core. This was followed by treatment of the damaged soft

tissues with antiseptic dressing using povidone iodine.

Horn cancer

A case of horn cancer was recorded in a buffalo during the period of study which had a history of fracture at the base, one and half a month earlier. It was treated by horn amputation. In this case there were discharges from the nostrils varying from frank blood in the initial days to mucoid and purulent discharges in later stages. The management of horn affections vary depending on the affection. The conditions reported under present study were managed with appropriate measures. All cases of avulsion were successfully treated on outpatient basis, by spraying 4% lignocaine spray as surface analgesic and applying tincture benzoin seal over the stump of the horn after thorough irrigation with mild antiseptics like (1: 5,000) potassium permanganate as reported by Sreenu and Kumar (2006). Verma and Kumar (1999) treated avulsion of horn by covering it with an antiseptic dressing with pine tar and carbolic acid in oil soaked bandage and the authors opined that the avulsion of horn was not a serious condition except that there was profuse bleeding. The response was good in the present study as the tincture benzoin has the properties of adhesiveness, antiseptic and styptic. In the present study treatment was given by spraying 4% lignocaine spray as surface analgesic effectively abolished the pain as evidenced by the absence of pain symptoms. Verma and Kumar (1999) opined that cornual nerve block should be performed before treating avulsion of horn to avoid pain.

The fracture cases at the tip were treated by packing off the cavity area with Zinc oxide as means of conservative therapy. In cases that deserved surgery, amputation by flap/modified flap



Figure 1. Avulsion of horn in a buffalo. Note the exposed core.



Figure 2. Fracture at the tip of the horn in a buffalo.



Figure 3. Fracture at the middle third of horn in a buffalo.



Figure 4. Fracture at the lower third of horn in a buffalo.



Figure 5. Fracture at the base of the horn in a buffalo.



Figure 6. Septic horn discharging thick pus in a buffalo.



Figure 7. Cancerous growth at the base of the horn in a buffalo.



Figure 8. Overgrown horns causing pressure necrosis at the occipital region in a buffalo.



Figure 9. Deep fissure as a sequelae to fracture of the horn in a buffalo.



Figure 10. incomplete fracture in a buffalo.



Figure 11. An old fracture of the horn at its lower third along with avulsed horn in a buffalo.



Figure 12. A recent fracture of the horn at its lower third along with avulsed horn in a buffalo.



Figure 13. Septic horn showing pus discharge from the base of the horn in a buffalo.



Figure 14. Punctured wounds at occipital region due to over grown horns in a buffalo.

method was carried out. Balappanavar (2005) used bamboo sticks as external splints for stabilization of the fractured horn at the base with intact skin. The normal horn was used to stabilize the fractured horn in a criss cross pattern using splints. Sreenu and Kumar (2006) treated horn fractures effectively by flap method of amputation of horn whereas Patil *et al.* (2007) treated a case of horn fracture using external splints using iron bars, rings, nuts and bolts. The treatment options followed in cattle to treat fractures such as application of plaster of paris bandage with or without splints, usage of aluminium wire were not practicable due to anatomical variations of the horn in buffaloes as suggested by Sreenu and Kumar (2006). Animals with septic horn were given prophylactic antibiotic therapy with 5g of streptopenicillin for a period of 5 to 7 days in addition to antibiotic bandage so as to maintain antibiotic levels at the time of surgery and also to curtail suppuration at the operative site if they warrant amputation. This procedure was also followed by Sreenu and Kumar (2006) and Mahida *et al.* (2009). Mistry (2009) observed leucocytosis in septic horn of buffaloes which could be attributed to the trauma and inflammation.

The overgrown horns were noted to cause varying degrees of damage ranging from simple

discomfort to severe degree punctured wounds on the frontal, occipital or cervical regions based on the shape of the horn and angle of curvature and duration of contact. In some cases suppuration was also recorded as complications of soft tissue damage due to the overgrown horns. In the present study, trimming of overgrown horns was done at a point just above the junction of upper and middle third using a hack saw without exposing the core. This was followed by treatment of the damaged soft tissues with routine antiseptic dressing using povidone iodine. Oheme and Prier (1974) opined that trimming of horn in bovine practice was essential in case of its excess growth otherwise it causes pressure sore of the head as well as obstruction in vision. Sreenu and Kumar (2006) suggested sawing the curved portion of the horn without touching the corium.

A case of horn cancer, recorded in the present study was treated by horn amputation by flap method as reported by Angelo and Das (1970). Kumar and Thilagar (2000) who reported a case of bilateral horn cancer in a buffalo mentioned that the incidence of horn cancer was rare in buffaloes. Various authors worked to treat horn cancer in bovine with use of 5% liquor formaldehyde after amputation in cattle (Pandya,1932), flap method of

APPENDIX**Multidimensional pain scale for assessing pain in horn affections in buffaloes**

Details of animal:

Case No: Species: Breed: Sex: Calvings:

Case History:

Clinical examination:

Pain scale:

				Score
Objective assessment	A) Physiological	Dilatation of pupil	Yes:1 No:0	
		Piloerection	Yes:1 No:0	
		Respiratory rate	Within reference range : 0 Above the reference range : 0	
		Heart rate	Within reference range : 0 Above the reference range : 0	
		Temperature	Within reference range : 0 Above the reference range : 0	
	B) Behavioral	Posture	Normal:0 Rigid:1 Arched back:2 Any abnormal:3	
		Behavior patterns	Comfortable: 0 Restlessness:1 Twitching of ears/Shaking of head: 2 Bruxism: 3 Rubbing against fixed objects:4 Pawing at the site: 5	
		Vocalization	Absent:0 Bellow/grunt:1	
		Mental state	Change in mental state: yes:1 No:0	
		Evoked behavior	No reaction on palpation of area:0 Trying to evade aside:1	
		Activity	Appetite Normal: 0 Reduced: 1 Absent: 2 Water intake Normal: 0 Reduced: 1 Absent: 2	
		Total pain index	1-5 Low pain	
			6-10 Moderate pain	
	>10 severe			
	C) Biochemical	Plasma cortisol C-reactive protein		

amputation (Angelo and Das, 1970), radiotherapy after horn amputation (Joslin, 1972), flap method of horn amputation following triphining of frontal sinus (Mohanty *et al.*, 1972), administration of autogenous vaccine (Pachauri and Singh, 1978), flap method of horn amputation using wire saw (Kumar and Thilagar, 2000), flap method (Yadav *et al.*, 2002) amputation of horn by rising ventral flap after resection of horn (Sreenu and Kumar 2006) and modified flap method horn amputation (Mahida *et al.*, 2010).

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