SHORT COMMUNICATION

Retrospective Study of Horn Cancer in Cattle

Harshad A. Dave[1], Jignesh V. Vadalia[1]*, Arshi A. Vagh[2], Raghuvir H. Bhatt[3], Vaibhav D. Dodia[3]

Abstract

This retrospective study was carried out to evaluate the incidence of horn cancer in cattle presented at the Veterinary Clinical Complex of the College at Junagadh (Gujarat, India) over a three-year period (January 2021 to December 2023). During the study period, 30,664 cases were registered across all species, with 5,975 cases involving cattle across various clinical disciplines. Among that 2,405 cases (40.25%) were categorized as surgical, among which 149 cases (6.19%) were diagnosed and treated for horn cancer. The highest incidence of horn cancer was found in the age group 6 to 10 years (52.35 %), followed by 11 to 15 years (39.60 %), 16 to 20 years (4.03 %), 21 to 25 years (2.01 %), and 0 to 5 years (2.01 %). Horn cancer was observed more in males (Bullocks 91/93 and Bulls 2/93) than in females (56/149). A breed-wise higher incidence was observed in Gir cattle (39.60 %), followed by Kankrej cattle (36.91 %) and non-descript cattle (23.49 %). There was an almost similar involvement of the left (49.66 %) side and right-side horn (50.33 %).

Key words: Age, Breed, Cattle, Horn cancer, Retrospective analysis.

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Introduction

India's cattle are renowned for their exceptional genetic diversity and hold a vital role in the agricultural economy of the country. Cattle horns have a key breed characteristic and also act as natural weapons during competitive interactions (Hamdi *et al.,* 2013). However, horn cancer has emerged as a significant health issue, affecting cattle productivity and well-being (Bamne *et al.,* 2007). Though the exact cause is unknown, factors such as hormonal imbalance, irritation, horn shaping, painting and prolonged exposure to actinic rays are believed to contribute (Udharwar *et al.,* 2008). Symptoms include head shaking, tilting, nasal discharge, warmth at the horn base and eventual sloughing in advanced stages (Chauhan, 2019). Diagnosis is based on clinical history, with horn amputation as the primary treatment.

Retrospective studies on horn cancer in cattle enable a comprehensive analysis of clinical data, contributing to the refinement of diagnostic protocols as well as therapeutic and surgical treatments for more effective disease management. Such studies identify the associated risk factors of the malady, facilitating the development of preventive measures and strategies for early intervention. Hence, this retrospective study on horn cancer in cattle was conducted in the Saurashtra region of Gujarat.

Materials and Methods

A retrospective study was conducted at the Veterinary Clinical Complex, Kamdhenu University, Junagadh (India), from January 2021 to December 2023. Over these three years, a total of 30,664 cases were recorded across various animal species, with 149 cases specifically involving horn cancer in cattle. The study analyzed the clinical details of these cases, focusing on factors such as age, breed, sex and the side of the affected horn. The data were categorized into different age groups (0-5, 5-10, 10-15, 16-20, and 21-25 years), sex (male and female), and breed (Gir, Kankrej and non-descript). Additionally, the cases were classified based on whether the left or right horn was affected. The data was analysed using descriptive statistics to find out the percent prevalence of the condition with respect to various risk factors considered.

Results and Discussion

During the study, out of a total of 30,664 cases registered covering all the clinical disciplines, 5,975 cases were seen in cattle. Among these, 40.25 % (2,405/5,975) cases were of

[1]Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Junagadh-362 001, Gujarat, India.

[2]Department of Veterinary Medicine, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Junagadh-362 001, Gujarat, India.

[3]Veterinary Clinical Complex, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Junagadh-362 001, Gujarat, India.

Corresponding Author: Dr. Jignesh V. Vadalia, Assistant Professor & Head, Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Kamdhenu University, Anand-388 001, India. e-mail: jignesh.vadalia@kamdhenuuni.edu.in

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surgical and 149/2405 (6.19 %) cases were specifically of horn cancer in cattle.

In the majority of horn cases various clinical signs found were tilting of the horn, bloody nasal discharge from affected side, shaking of head, dull sound on percussion of horn, protruded growth at base of horn in later stage and slough off the horn base in last stage (Fig. 1)

Age-wise Distribution of Horn Cancer

In the study, highest incidence of horn cancer was found in the cattle of age group 6 to 10 years (52.35 %), followed by 11 to 15 years (39.60 %), 16 to 20 years (4.03 %), 21 to 25 years (2.01 %), and up to 5 years (2.01 %)(Table 1). Similarly, Naik *et al.* (1969) observed higher incidence in age group 8 to 10 years. Kaul and Kalra (1973) reported a 90.8% incidence in the 5 to 10 years age group. Joshi *et al.* (2009) observed a higher prevalence rate in age group between 7 to 10 years (72.22%) followed by 10 to 12 years (16.66%) and 5 to 6 years (11.11%). Chauhan (2019) seen a higher incidence in the age group between 6 to 10 years (70%) followed by 30 % cases in age between 10 to 15 years. Mahla *et al.* (2021) observed 100 % occurrence in age group between 6 to 10 years.

Table 1: Age-wise distribution of horn cancer in cattle (n=149)

Age groups (years)	0-5	6-10	11-15	16-20	21-25	Overall
No. of cases	3	78	59	6	3	149
Percentage	2.01	52.35	39.6	4.03	2.01	100.00

The higher incidence observed in the age group between 6 to 10 years might be due to several factors. The disease develops slowly, with a long incubation period, appearing in adulthood. During this time, animals in their prime working years face physical stress and repeated trauma of yoke bar to the horn, which can lead to cancer. Prolonged exposure to irritants, like injuries from yokes or handling, causes chronic tissue damage. Aging further weakens tissues around the horn base, increasing vulnerability to abnormal cell growth.

Sex-wise Distribution of Horn Cancer

During this retrospective study, cases of horn cancer were reported more in castrated males/bullocks (91/149 cases, 61.08%) and less in females (56/149 cases, 37.58 %) followed by intact males/bulls (2/149 cases, 1.34 %). Similarly, Kaul and Kalra (1973) observed a higher prevalence rate in bullocks (52%) followed by 20.4% in cows. Joshi *et al.* (2009) reported a higher occurrence of horn cancer in males, with 15 out of 18 cases (83.33%). Jaiswal *et al.* (2014) observed 9 out of 10 cases (90%) in bullocks, with only one case in a female. Kalim *et al.* (2021) also found a similar occurrence, among 30 cases exclusively in bullocks. While, Kumar (2022) found no variation in the occurrence of horn cancer based on the animal's sex, observing an equal distribution of cases between males and females.

This study suggested that the incidence of horn cancer in bullocks might be higher due to hormonal imbalances resulting from castration. Additionally, repeated friction and injuries at the base of the horns, caused by the use of moving yokes and harnesses, contribute to favourable conditions for cancer development over a time. Other factors include the use of lead-based paints on the horns and a history of trauma, often followed by open surgical wounds.

Breed-wise Distribution of Horn Cancer

In the present study, breed-wise distribution showed a higher incidence of horn cancer in Gir cattle (59/149 cases, 39.60 %), followed by Kankrej cattle (55/149 cases, 36.91 %) and non-descript cattle (35/149 cases, 23.49 %). while Joshi (1983) recorded the highest prevalence in Kankrej cattle (72.24%), followed by the Gir breed (24.54%) and non-descript cattle (1.22%) in Gujarat. Joshi *et al.* (2009) observed a similar trend in Gujarat, with Kankrej cattle accounting for 88.89% of cases (16/18) and Gir cattle for 11.11% (2/18). Chauhan (2019) also reported a higher incidence in Kankrej cattle (65%), followed by the Gir breed (30%) and non-descript cattle (5%). This was mainly due to prevalent popular breed in different regions of Gujarat.

The higher incidence of horn cancer in Gir and Kankrej breeds was likely due to their large, prominent horns. Earlier studies reported a higher prevalence in Kankrej cattle but in this study higher cases were found in the Gir breed from the same region, may due to shift of breed population. This shift might be attributed to Junagadh and its surrounding areas being the native tract of the Gir breed, where farmers primarily use them for both milk production and draught purposes. Additionally, these breeds are predominantly

Fig. 1: Clinical signs of horn cancer

raised in regions with intense sunlight, such as Gujarat and Rajasthan, where prolonged UV exposure increases the risk of development of horn cancer.

Side of the Horn Involved

In the present study, no difference was observed in the occurrence of horn cancer based on the affected side. Out of 149 cases, 74 (49.66 %) involved the left horn, while 75 (50.33 %) were associated with the right horn. Gholve (2002) observed no major difference in involvement of either the left or right horn, in horn cancer. Similarly, Panchal *et al*. (2024) reported a nearly equal distribution, with 27 cases in the left horn and 25 in the right, out of 52 total cases. In contrast to the present study, Udharwar (2004) found that the left horn was more frequently affected, with 8 out of 12 cases involving the left horn, compared to 4 cases in the right horn. Similarly, Chauhan (2019) reported a higher incidence of 60% occurring on the left side and the 40% on the right horn. There is no specific reason behind the involvement of the horn side in the development of the horn cancer, but factors such as restraint or tethering can cause repetitive stress on one side and environmental exposure, such as sunlight, chemicals or injuries may affect one horn more during livestock management practices.

Based on findings, the study conclude that, the Gir breed and castrated male cattle around 6 to 10 years of age group are more affected with horn cancer than females with similar involvement of the left and right-side horns.

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