CASE REPORT: TRICHOBEZOAR (HAIRBALL FORMATION) IN CALVES

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ABSTRACT: Trichobezoar is the hairball formation in an animal's stomach, most commonly found in the young animal due to ingestion of body hair. The Dairy farm located at Samrang under Bhutan Livestock Development Corporation Limited had recorded the mortality of 28 pre-weaned calves due to hairball formation in the rumen. The calves died with distinct symptoms such as high respiration, distended abdomen, off-feed, recumbent, and vomiting. During the post-mortem examination, the rumen was found with various sizes of hairballs and clumps of body hairs. Based on the information documented for four years from 2019-2022, it indicates that overcrowding, group housing, indoor feeding, and lack of fiber in the calf diet were the main causes of body licking, ingestion of body hair, and formation in the rumen. The intervention of efficient farm operation and management is suggested to reduce the risk of hairball formation in young calves. The findings from the present study did not address how each cause of body licking contributes to hairball formation in calves. Therefore, an in-depth and detailed study on each identified cause of body licking is recommended for future study.

Keywords: Body hair; calves; licking; mortality; trichobezoars.

1. INTRODUCTION

The Bezoar are foreign materials that are found in the stomach of the animals due to accumulation of undigestible materials such as food, medicine, hair, plastics, clothes and so on. According to (Kaya and Yaşar, n.d.) there are four types of bezoar which include phytobezoar, trichobezoar, lactobezoar and pharmacobezoar. Among all types of bezoars, Trichobezoars are commonly found in young animals even causing death. Trichobezoar (hair ball) is caused due to persistent licking and ingestion of body hair (Gonuguntla and Joshi 2009). The ingested hair is formed into spherical or oval bodies by rolling and churning movement of rumen and abomasum. Trichophagia is the ingestion of own's body hair or body licking of pen mates for grooming each other, or relaxation of sensation, which is the symptoms of nutrient deficiency such as Prosperous, iron, sodium, magnesium and vitamin B12 (Yüksek et al. n.d.) Ruminant are subject to be victims of trichobezoar as their nature of licking or grooming is the cause of ingestion of hair. Likewise, Dairy farm located at Samrang, had recorded the unusual cause of mortalities in twenty-eight pre-weaned jersey calves due to hairball formation in rumen causing huge loss to the company. The mortality in the calves can be used as an indicator of animal health and welfare in dairy farms (Ortiz-Pelaez et al. 2008; Roche et al. 2020). According to the Compton et al. (2017) the annual calf's mortality in dairy farms ranges from 5-11%. However, researcher also added that there is lack of records and reliable data on specific causes of mortalities in calves and which ultimately misguide the intervention from the management. Therefore, maintaining records on animal health, disease diagnosis and outlining of cause of death is necessary in livestock industry to make good intervention from animal health worker and to promote farm profitability by

Table 1: Mortality due to hairball formation

	2019		2020		2021		2022	
MONTHS	Calving	Mortality	Calving	Mortality	Calving	Mortality	Calving	Mortality
January	1		0		4		5	
February	2	0	1				1	
March	2	0	2		3		3	
April	3	0	5		1		10	
May	2		13		1		9	
June	6		14				9	
July	19		14	2			17	5
August	0	5	8	2	2		10	1
September	0		3	1	6		11	3
October	0		3	1	7		11	3
November	0		0		5		4	2
December	2	1	4	2	7		1	
Total	37	6	67	8	36	0	91	14

reducing the calf mortalities. The poor farm management practices and numerous disease cause death of calves among which respiratory disease, malnutrition and diarrhoea are the major cause of calf mortality (Windeyer et al. 2014). According to farm record, Samrang dairy farm has experienced the 12.07% of mortality due to hairball formation in the rumen, which is the unusual cause of mortality occurring in the Bhutan in dairy farm. Since, trichobezoar is the unusual and major cause of mortality of calves in Samrang Dairy farm, this study was undertaken to outline possible cause of hairball formation, sign & symptoms and measure to prevent reoccurrence in future.

2. MATERIALS AND METHODS

2.1 Study site

This study was carried out in the Samrang gewog under Samdrupjongkhar Dzongkhag in the integrated Livestock farm of Bhutan Livestock Development Corporation Limited. The farm has an approximately 800 area of land and its elevation ranges from 285-1200 m above sea level.

2.2 Methods

The parameters (calves' behaviours, sign and symptoms exhibited, health status) recording and observation have been done in daily basis by management staff of the farm. The sick calves have been observed closely and recorded all sign and symptoms exhibited by the animal. Post-mortem have been conducted soon after the death of animal and recorded all abnormalities and changes observed in the vital organs.

2.3 Case Report

The dairy farm located at Samrang has been recording unusual mortality cases (trichobezoar) in calves since 2019. Ever since the first trichobezoar had been recorded in the farm, such cases have been re-occurring with distinct signs and symptoms. The farm management have been closely observing and recording the signs and symptoms associated with the case. This observation was carried out for the period of four years. During this period, the post-mortem report revealed that 28 un-weaned calves have died due to trichobezoar (hair ball) formation in rumen.

Table 1 illustrate the comprehensive longitudinal analysis of calving and mortality rates in dairy calves due to hairball formation in rumen over a four-year period from 2019 to 2022. The study aimed to compared the calving pattern with mortalities and analysed to identify the potential cause for calves' mortalities. It is indicative from the table that calves'

mortality increases with the increase in calving pattern and mostly in monsoon season.

2.3.1 Clinical signs and symptoms

The trichobezoar are formed in the stomach of animal after ingestion of body hair and it is most commonly found in the young animal. According to findings of Murray et al. (2005) who have reported that prevalence of hairball in the young calves was 57.7 %. The trichobezoar infected pre-weaned calves with age between 30 to 80 days have exhibited various clinical signs and symptoms such as high respiration, rise in body temperature, recumbent, anorexia, absence of faeces, distended abdomen, low suckling reflex, emaciated body, diarrhoea, bloat and vomiting after 15- 30 minutes of milk ingestion. This findings is in agreement with (Belge et al. 2017.) who also recorded similar clinical sign and symptoms from trichobezoar infected calves. Further Knubben et al. (2005) also added that recurrent ruminal-tympany, abomasa-displacement, respiratory distress are the common signs of young ruminants caused by trichobezoars. The current finding is similar to the findings of Baillie and Anzuino (2006) who explained that during postmortem examination, rumen impacted with hairballs, leaving no space for food, which may be the reason for anoxia and weight loss.

2.3.2 Postmortem findings

The postmortem findings revealed mostly enlarged hemorrhagic heart, and enlarged cheesy lungs with some dark patches on it. The rumen of the calve were usually found filled with balls and clump of body hair along with frothy milk. In line with this finding (Mesaric and Modic 2007) also reported that in ruminant hair ball mostly occurs in the forestomaches and abomasums. The hairball found in the rumen varied with size and numbers in different calves. The highest number of hair ball found in one calf was recorded eight and largest size of hair ball recorded was 3cm x 5cm. In concurrence to the current findings (Pasha et al. 2016) also reported trichobezoar having 7 cm diameter occluding to the pylorus of abomasum and causing death to calves.

Figure 1: Hairball formation in rumen.

3. RESULTS AND DISCUSSION

The trichobezoar (hair ball) formation are most commonly recorded in young animal, it may be due to their suckling behaviors or milk sucking stage of animals leading to the licking body of pen mates and ingesting the body hair accidentally. According to Lorenz et al. (2011) housing environment and management practices have an influence on calf health and welfare, therefore calf housing should facilitate a comfortable environment which could contribute to a low morbidity and mortality. In addition, over four-year period it is also observed that most calves were found licking their pen- mates before and after milk feeding, it is indicative from this observation that group housing for un-weaned calves has high risk of ingesting the body hair. The current finding is in line with the findings of (Gonuguntla and Joshi, 2009) who pointed out that trichobezoar (hair ball) is caused due to persistent licking and ingestion of body hair

3.1 Possible cause of trichobezoar in calves

I. Over crowding
II. Group housing
III. Long indoor feeding
IV. Dampness of the shed

V. Lack of fiber as calves are not fed roughage

Based on the information documented at the farm for the period of four years, the findings revealed that there are four major possible causes of trichobezoar in pre-weaned calves. Based on Table 1, it indicates that with increase in the calving pattern the numbers of mortality due to hair ball formation had also increased. This could be attributed due to overcrowding and group housing owing to its limited individual housing system in the farm. The present finding is in line with the findings of (Lorenz et al. 2011) who pointed out that calf housed individually have grown significantly and are associated with low risk of disease. Further Marcé et al. (2010) who also explained that calf housed individually is directly linked to its improved growth and heath. Other reason could be, that mostly the mortality occurs in the peak monsoon season (June - August) which comprises of 53.5 % mortality in calves. The long indoor feeding and dampness of the shed, due to continuous heavy downpour in peak monsoons months, the calves did not have access to outside environment for the exercise. Some of these factors might have contributed to the increased body licking sensation which is composed with lack of minerals and vitamins in calf diet. The current findings is also concur with the result of Ravi et al. (2014) who explained the occurrence of trichobezoars due to stress factor such as malnutrition, lack of free movement and lack of exercise. (Abutarbush & Radostits, n.d) also mentioned that hair ball formation originate from persistent licking and the cause of licking in adult animal is due to skin disease characterized by body itching. Therefore, the above-mentioned causes have direct or indirect link with body licking and ingestion of body hair in the young pre-weaned calves.

3.2 Preventive measure

The following preventive measures are suggested to reduce the incidences of hairball formation in the calves;

I. Individual housing- keeping calves in an individual pen
II. Providing dry bedding material to keep the pen dry
III. Supplement minerals and vitamins in calf's diet

As Trichobezoar (hairball formation) in the young animal could be either due to inefficient farm management practices or due to nutrient deficiency, it can be prevented through devising scientific farm operational and management practices. One such intervention could be keeping the calves in individual pen thereby preventing them from licking pen mates and ingesting body hair. The other intervention suggested is to provide dry bedding materials for reducing the risk of getting disease. This approach may also help to reduce the grooming sensation, body itching and ultimately limiting calf from persistent body licking. More importantly, supplementation of vitamins and minerals in diet can prevent calf from deficiency diseases such as PICA which is main cause of hairball formation. According to (Yüksek et al. n.d.) pica, disorder in eating behaviours of animals will disappear if calves are supplemented with vitamins and mineral mixtures in their diet. Similarly, Fraser and Boom (1990) explained that PICA and depraved appetite has been associated with phosphorous deficiency. The management approach on maintaining the above measures can aids in reducing the incidence of hairball ball formation and mortality due to it.

4. CONCLUSION

This study was conducted at Samrang Dairy Farm under Bhutan Livestock Development Corporation, on the

concerning issue of trichobezoar (hairball) formation in calves, which has led to significant mortality rates over a four-year period. The findings highlight the importance of understanding the underlying causes, clinical signs, and preventive measures associated with this condition. Trichobezoar, predominantly found in young animals, is attributed to factors such as overcrowding, group housing, long indoor feeding, and dampness of the shed. The study reveals a correlation between increased calving patterns and mortality rates due to hairball formation, particularly evident during the peak monsoon season. This underscores the need for improved farm management practices, including individual housing for calves, provision of dry bedding materials, and supplementation of minerals and vitamins in their diet. In conclusion, addressing the issue of trichobezoar formation in calves requires a holistic approach involving both farm management practices and nutritional interventions. By prioritizing animal welfare and health, dairy farms can mitigate the risks associated with this condition, ultimately promoting sustainable and profitable livestock operations. The detailed study on the individual cause of trichobezoar in calves which was beyond the scope of the present research is recommended for future study to explore on how it contributes to the body licking and hairball formation in the rumen of calves.

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