
INCIDENCE OF HOOF LESIONS IN DAIRY CATTLE - A PROSPECTIVE STUDY

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ABSTRACT

A study was conducted to identify and classify the common hoof affections causing lameness in cattle reared under intensive or semi intensive system. Out of the 500 dairy cows examined, 150 cows with mild to severe lameness, wounds and hair loss at pressure points of limbs and animals with excessively overgrown hooves formed subjects of the study. The most common hoof affections observed were overgrown hoof, heel horn erosion, double sole, white line disease interdigital hyperplasia, sole haemorrhage and sole ulcer followed by interdigital phlegmon, digital dermatitis, horizontal horn fissure, corkscrew claw, interdigital dermatitis, thin sole, bulb ulcer, axial horn fissure, vertical horn fissure, foreign body penetrations in to sole, maggot wound, toe fracture, sole abscess, toe ulcer, toe necrosis, coronary abscess and white line abscess.

Keywords: Hoof affections, Hoof lesions, Dairy cattle

INTRODUCTION

Dairy farming, the major animal husbandry practice in Kerala, is the main livelihood of small scale farmers having two to three cows which are reared in stall fed or zero grazing system. Introduction of cross breeding to increase productivity of the cow, has led to an increase in the incidence of diseases like mastitis, ketosis, lameness and other reproductive diseases. Besides mastitis and infertility, lameness is considered the most important reason for culling of dairy cows (Kossaibati and Esslemond, 1997). In the present scenario, where high producing dairy cows are reared under stall fed conditions without proper exercise and locomotion, the incidence of lameness and other related issues are aggravated. Lack of land for grazing forced majority of dairy farmers to rear the cows in a zero grazing system in which the cows are not allowed to walk or have a minimum exercise. This has led to an increase in the incidence of hoof affections in dairy cattle.

Hence the study was undertaken to identify and classify common hoof affections causing lameness in dairy cattle.

MATERIALS AND METHODS

The study was conducted in 150 dairy cattle which were reared under intensive or semi-intensive system by small to medium scale farmers in different parts of Kerala.

RESULTS AND DISCUSSION

Of the 150 cows studied, 23 were crossbred Jersey and 127 were crossbred Holstein Friesian. The breed wise prevalence of hoof affections revealed highest occurrence in Holstein Friesian crossbred cows followed by Jersey crossbreds. Similar to findings of Amory *et al.* (2008), high yielding cows were more affected. More number of crossbred Holstein Friesian in the study may also be because of the preference of dairy farmers for high yielding cows. Incidence of the lesions were lowest in younger animals (1st lactation) (19.3 per cent) when compared to old animals at second to sixth lactation (80.7 per cent). Highest incidence of hoof disorders were noticed in animals at their third lactation (34.21 per cent). These findings are in accordance with the findings of Bagate (2012). All the cases had a history of varying duration from one week to two

years. The initial treatment included use of non-steroidal anti-inflammatory drugs, foot bath and antibiotics for two to three days. Treatment of most of the cases were delayed due to poor knowledge of farmers about the consequences of hoof affections (Leach *et al.*, 2010) and unavailability of veterinarians with proper infrastructure for hoof treatment.

All the cows under study were reared in intensive or semi-intensive system. Among this, 68.42 per cent of the cows were reared in intensive system and rest of them (31.59 per cent) were in semi-intensive system. Intensive system of rearing is more because of lack of grazing land. Frequent washing or wetting of floor were noticed in all the cases. 75.44 per cent of the animal's hooves were washed three to four times a day. One among the main reason for poor hoof health may be the over wetting. Philip (2018) observed that wet and unhygienic condition of barn floor increases the level of moisture in hooves and these softened hooves are more prone to traumatic injuries. Higher percentage of the cows (92.11 per cent) were maintained on rubber mats and the rest (7.89 per cent) were on concrete floor. Majority of the dairy farmers were aware about the risk of higher incidence of hoof affections when reared on concrete floors when compared to rubber floors (Fjeldaas *et al.*, 2011).

Table 1. Incidence of hoof disorders

Hoof Lesions	Type	Forelimb		Hindlimb		Total No. of incidence
		LC	MC	LC	MC	
Corkscrew claw (CC)	Non-Infectious	None	None	10	None	10
Double sole (DS)	Non-Infectious	None	None	24	4	28
Overgrown hoof	Non-Infectious	26		210		236
Axial horn fissure (HFA)	Non-Infectious	1	2	None	1	4
Horizontal horn fissure (HFH)	Non-Infectious	None	None	8	3	11
Vertical horn fissure (HFV)	Non-Infectious	None	None	4	None	4
Inter-digital hyperplasia (IH)	Non-Infectious	2		18		20
Scissor claws (SC)	Non-Infectious	None		2		2
Sole haemorrhage diffused (SHD)	Non-Infectious	None	None	4	2	6
Sole haemorrhage circumscribed (SHC)	Non-Infectious	None	None	11	3	14
Sole ulcer (SU)	Non-Infectious	None	2	13	4	19
Bulb ulcer (BU)	Non-Infectious	1	None	2	2	5
Toe fracture	Non-Infectious	None	None	3	None	3
Toe ulcer (TU)	Non-Infectious	None	None	1	None	1
Toe necrosis	Non-Infectious	None	None	1	None	1
Thin sole (TS)	Non-Infectious	None	None	10		10
White line fissure (WLF)	Non-Infectious	None	None	16	5	21
White line haemorrhage	Non-Infectious	None	None	6	2	8
White line ulcer	Non-Infectious	None	None	6	None	6
Foreign body penetration in sole	Non-Infectious	None	None	4		4
Maggot wound	Non-Infectious	None		4		4
Inter-digital phlegmon (IP)	Infectious lesions	6		10		16
Digital dermatitis (DD)	Infectious lesions	1		10		11
Interdigital/ superficial dermatitis (ID)	Infectious lesions	None		10		10
Heel horn erosion (HHE)	Infectious lesions	None		93		93
Coronary Abscess	Non-infectious lesions	None	None	1	None	1
Punctured Sole and Pus (Sole abscess)	Non-infectious lesions	None	None	2	None	2
White line abscess (WLA)	Non-infectious lesions	None	None	1	None	1

Hence they accepted the use of rubber mats for high producing dairy cows. Less rate of hoof wear on rubber mats may be the reason for overgrown hooves in most of the animals. Rubber flooring for dairy cows concealed the presence of hoof lesions at the subclinical stage where lameness was absent (Sadiq *et al.*, 2017)

In the 150 animals studied, 551 different types of hoof lesions were observed. The lesions observed and its incidence is tabulated in the table 1. More than one affections were identified from one claw in almost all the animals. The incidence of different lesions in hooves, interdigital space and coronary band included 9.24

per cent double soles, 1.32 per cent axial horn fissures, 3.63 per cent horizontal horn fissures, 1.32 per cent vertical horn fissures, 6.6 percent interdigital hyperplasia, 6.6 per cent sole haemorrhages, 6.27 per cent sole ulcers, 1.65 per cent bulb ulcers, 0.99 per cent toe fractures, 0.33 per cent toe ulcer, 0.33 per cent toe necrosis, 3.3 per cent thin soles, 6.93 per cent white line fissures, 2.64 per cent white line haemorrhages, 1.98 per cent white line ulcers, 1.32 per cent foreign body penetrations in to sole, 1.32 per cent maggot wounds, 5.28 per cent interdigital phlegmons, 3.63 per cent digital dermatitis, 3.3 per cent interdigital dermatitis, 30.69 per cent heel horn erosions, 0.33 per cent coronary abscess, 0.66 per cent sole abscesses and 0.33 per cent white line abscess. Almost similar observations as Sogstad *et al.* (2007) were made in case of heel horn erosion (26.4 per cent) and white line fissure (7.8 per cent), but different observations in case of incidence of sole haemorrhage (16.3 per cent), white line haemorrhages (10.9 per cent) and sole ulcers (2.8 per cent). Observation on incidence in the study was contradictory with the findings of Shearer (1997) and Green *et al.* (2014). In the present study, incidence of hoof affections in hind limbs (92.48 per cent) was more when compared to forelimbs (7.52 per cent). This might be due to over wetting and unhygienic condition of hind foot due to

contamination with dung and urine. In case of forelimbs, incidence of the lesions were more on medial claw (66.67 per cent) when compared to lateral claw (33.33 per cent). In case of hind limbs, incidence of the lesions were more on lateral claw (79.84 per cent) when compared to medial claw (20.16 per cent). Incidence based on the anatomical area of affections was similar to the study conducted by Shearer (1997). Reason for the higher incidence of hoof affections on medial claw in case of forelimbs and lateral claw in case of hind limbs was due to the biomechanics of weight bearing and anatomical peculiarities. In forelimbs, medial claw carries more weight when compared to lateral claw and in hind limbs, lateral claw carries more weight than medial claw (Amstel and Shearer, 2006). In hind limbs higher incidence of sole ulcer was on lateral claw, this was due to pedal bone on lateral claw rest on sole in case of lateral claw and pedal bone is attached tightly to hoof wall in case of medial claw (Blowey, 1993).

SUMMARY

The study undertaken to identify and classify common hoof was conducted in 150 dairy cattle which were reared under intensive or semi-intensive system. Holstein Friesian crossbred cows followed by Jersey crossbreds were the most commonly affected cattle breeds. The main

reason for increase in hoof lesions was either ignorance or unawareness among the owners.

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