TANZANIA VETERINARY ASSOCIATION

PROCEEDING OF THE 35 SCIENTIFIC CONFERENCE OF THE TANZANIA VETERINARY ASSOCIATION HELD AT AICC ARUSHA, TANZANIA ON THE *5TH TO 7TH* DECEMBER, 2017

Volume 35 2017 ISSN 0856 - 1451

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Instruction to authors are provided on the inside of the back cover of every issue of the Tanzania Veterinary Journal

Publishers: Tanzanina Veterinary Association.

Prevalence of claw lesions in free range short horn cattle (zebu) in Kwimba district, Tanzania

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SUMMARY

Claw lesions are the problems which affect the hoofed animals and may or may not result into lameness. In cattle, this is a disease of economical importance as it affects the animal wellbeing as well as the economy of the farmer. The disease has been shown to affect animals kept in different production systems, although much information is available from the intensive dairy units and beef in feedlot systems. Limited studies have investigated the problems of claw lesions in cattle under pastoral and agro-pastoral systems in Tanzania. The present study was carried out to determine the prevalence and characteristics of claw lesions in the free range cattle in Nyambiti Village Kwimba district in Mwanza. The study was carried out during dry and rainy season between 2014 and 2015. A total of 19 households were selected for study whereby 367 cattle were examined. A total of 206 cattle were examined during dry season and 161 during rainy season. The overall prevalence of the claw lesions was 7.6%. During the dry season, 13 (6.3%) cattle had claw lesions while during rainy season 15 (9.3%) cattle had claw lesions. The observed lesions traumatic injury, claw abscess, hoof overgrowth, inward and outward curved claw, laminitis, hardened groove and swelling of the coronary area, foot rot, interdigital dermatitis, heel erosion and double sole. Most of the lesions were realized in cows which accounted for 71.4% of all lesions. Hind legs had most of the claw lesions (82.1%). It is concluded that claw lesion is a problem in free range short horn zebu hence the farmers should be given proper information and advices on the claw problems as to how it occurs and the associated effects as well as management on animals.

Keywords: Claws, Lesions, Free range, Zebu, Kwimba district

INTRODUCTION

Claw lesions are the problems which affect the claws in the legs of animals (cattle). The lesions can result in lameness although in some animals the sign of lameness is not obviously presented (Manske, 2002; Erin, 2004). Cattle shows the sign of lameness when there is a problem in any part of the limb but the mostly affected are the claws and the lesions which are normally reported on the claws are; sole erosion, interdigital dermatitis, claw/hoof overgrowth (Mpanduji *et al* 2012), flattened claw, sole ulcer, sole hemorrhage, white line disease, vertical fissure, axial fissure, corkscrew claw, toe ulcer or foreign body penetration. These lesions can be observed when the hooves are examined and more clearly after hoof trimming (Eric, 2004). The claw lesions have variable appearances and can be found at a range of sites including the classic site on the skin around the heel, under the heel horn, on the coronary band, on the skin between the claws, under the due claws as well as the pastern skin. Claw lesions and Bovine lameness are the function of multi factorial effects (Mpanduji *et al.*, 2012) in most of cattle in Tanzania as well as other countries. The lesions are of greatest importance in animal production as it become the great insult in productivity while most of farmers take negligence on it. These conditions appear in cattle following one or in combination of the factors such as, congenital anomalies, hereditary, nutritional factor, moisture, poor hygiene, infections as well as poor animal management. Claw lesions and lameness represents the major health problem in cattle and where the incidence is high it accounts for tremendous economic loss (Shear *et al.*, 2000). This condition affect the rate of production such as: milk production, meat production, growth rate, reduced farm activities, reduced fertility. Also it can cause prolonging in calving interval, weight loss, loss of animal (death of animal), cost of extra labor as well as veterinary expenses (Erin, 2004).

Kwimba district is among the areas with high number of small scale cattle farmers in Tanzania. Most of the cattle kept in Kwimba are the Tanzanian short horned zebu which is owned by agropastoralists and pastoralists. There have been no studies on livestock diseases that has conducted in Kwimba district regardless of the potentials the district has in terms of cattle. The purpose of this study was to investigate the claw lesions in free range short horn cattle (zebu) in Kwimba district, Mwanza region, Tanzania.

MATERIALS AND METHODS

Study area and animals

The study conducted in Mwanza region, Kwimba district in Nyambiti village. The sample animals were selected from various animal keepers in Nyambiti village during dry and rainy seasons. Kwimba district mostly keep local cattle (Tanzanian Short Horned Zebu). The cattle management system is extensive where cattle are grazed in natural pasture during the day time and are sent back in the kraal during the evening time. There are rare veterinary services offered to the animals. Hoof care also does not exist.

Sample size

The sample size obtained through the following formula:-

$$n = \frac{z2pq}{d2}$$

Where n = expected minimum sample size; z =confidence level; p=proportional of sample; d = degree of accuracy. So a sample size of 384 cattle was calculated. However 367 cattle were examined; 206 cattle during dry season and while during rainy season 161 animals were examined.

Selection of study animals and examination of the cattle for claw lesions

All the cattle keepers in Nyambiti village formed the study population. In each of the cattle keeper, about 10% of the cattle were randomly selected for examination of claw lesions. All animals in the selected herds were observed for the presence or absence of the claw lesions in which the animals were allowed to walk on the hard soil surface where the claw problem can easily be noted. Thereafter, selected animal was restrained by using a rope and where necessary the animal was casted down and well tied to minimize struggles. The leg was being washed with soapy water and a bristle brush up to the level of knee and hock joints. A detailed examination of the hoofs was performed and recorded all the claw lesions encountered as described by Mgasa, (1991) and Mpanduji *et al.* (2012).

RESULTS

General results

During this study, 206 cattle were examined during dry season and 161 cattle during the rainy season making a total of 367 cattle. The prevalence of claw lesions was 7.6%. During the dry season, 13 (6.3%) cattle had claw lesions while during rainy season 15 (9.3%) cattle had claw lesions (Table 1). The lesions seen during dry season were; traumatic injury, claw abscess, hoof overgrowth, inward and outward curved claw, laminitis, hardened groove and swelling of the coronary area (Figure 1 & 3). During the rainy season, the observed claw lesions were foot rot, interdigital dermatitis, laminitis, abscess, heel erosion and double sole. With foot rot and laminitis occurring in relatively more frequent (Table 1). During the rainy season, the animal house environment was always muddy (Figure 2).

Table 1. Claw lesions in adult cattle during dry and rainy seasons of 2014 and 2015 (n=367)

Lesions	Number (%) of claw lesions during		
	Dry season (n=206)	Rainy season (n=161)	Total
Foot rot	0 (0.0)	6 (3.7)	6 (1.6)
Laminitis	2 (1.0)	4 (2.5)	6 (1.6)
Abscess	1 (0.5)	1 (0.6)	2 (0.6)
Interdigital dermatitis	0 (0.0)	2 (1.2)	2 (0.6)
Traumatic injury	1 (0.5)	0 (0.0)	1 (0.3)
Hardship groove	2 (1.0)	0 (0.0)	2 (0.6)
Upward/inward curved claw	3 (1.5)	0 (0.0)	3 (0.8)
Heel erosion	1 (0.5)	1 (0.6)	1 90.3)
Swelling	2 (1.0)	0 (0.0)	2 (0.6)
Double sole	0 (0.0)	1 (0.6)	1 (0.3)
Claw overgrowth	1 (0.5)	0 (0.0)	1 (0.3)
Total affected	13 (6.3)	15 (9.3)	28 (7.6)

Figure 1. A photograph that show some of the lesions encountered during dry season (Left-trauma, right-horizontal claw fissure)

Figure 2. A photograph that show muddy animal house during the rainy season

Distribution of lesions according to sex

Most of the lesions were realized in female during both rainy and dry season accounted for 71.4% of all lesions (Table 2).

Table 2. Distribution of claw lesions in relation to sex

Lesions	Dry season		Rainy season		Total
	M	F	M	F	
Foot rot	0	0	2	4	6
Laminitis	1	0	2	3	6
Abscess	1	0	0	1	2
Interdigital dermatitis	0	0	0	2	2
Traumatic injury	0	1	0	0	1
Hardship groove	1	1	0	0	2
Upward/inward curved claw	0	3	0	0	3
Heel erosion	0	0	0	1	1
Swelling	1	0	0	1	2
Double sole	0	0	0	1	1
Claw overgrowth	0	1	0	1	0
Total affected	4	6	4	14	28

Distribution of claw lesions in relation to legs

The claw lesions encountered during examination were mostly localized on the hind legs and few of them were on the fore legs. The hind legs accounted for 23 (82.1%) of all the lesions (Table 3).

Table 3. Distribution of claw lesions in relation to legs

Lesions	Dry season		Rainy season		Total
	Fore leg	Hind leg	Fore leg	Hind leg	
Foot rot	0	0	3	3	6
Laminitis	0	2	0	4	6
Interdigital dermatitis	0	0	0	2	2
Traumatic injury	0	1	0	0	1
Digital abscess	0	1	0	1	2
Upward/inward curved claw	2	1	0	0	3
Heel erosion	0	0	0	1	1
Swelling	0	1	0	0	1
Double sole	0	0	0	1	1
Hardship groove	0	4	0	0	4
Claw overgrowth	0	1	0	0	1
Total	2	11	3	12	28

DISCUSSION

The claw lesions encountered in the free range short horn zebu in Nyambiti village during dry and wet seasons were traumatic injury on the claw, digital abscess, swelling on the leg, curved claws (upward and inwards), laminitis, horizontal claw fissures, foot rot, heel erosion, double sole and interdigital dermatitis. These lesions give the overall prevalence of 7.6% in which the dry season prevalence is 6.3% and the prevalence in wet seasons was 9.3%. Among the cattle identified with claw lesions during dry season were few animals which did show obvious lameness on walking and most of them did not show the signs of lameness. This may be due to the fact that the intensity of the lesions was not enough to progress the lesions into the stage of showing lameness (Manske, 2002).

The lesions encountered during rainy season were mostly associated by lameness (Mpanduji *et al*., 2012). This was due to the high intensity of the lesions which caused progression of the lesions into showing signs of lameness. Normally the lameness signs are shown when the animal is feeling pain on the leg. During rainy season the lesions were influenced by environmental conditions in which the rain caused the areas to be wet all the time which led to softening of the horny tissue of the hoof of animals. This stimulates destruction of hoofs, breakage and fissure of the horny tissue exposing the sensitive lamina and foot rot (Aliyu *et al.,* 2005). There were other lesions which did not show signs of lameness but were encountered during examination of other obvious lesions.

The study encountered that most of the claw lesions were localized in the hind legs than on the fore legs (Erin, 2004). The results from table 4 show that 28 legs had problems during the study and among which 23 were hind legs (82.1%). It was further suggested that there was no any claw problem in calves; all of the lesions were encountered on the adult cattle. This shows that the lesions are associated with the increase in age (Mishamo and Abebe, 2012). This suggests that the lesions observed were most probably contributed by the long walking distance on hard surface (Manske, 2002; Mpanduji *et al.*, 2012). More effects were realized in the hind legs possible possibly because the claws bear more weight of the particular animal as well as the activities. This also could be due to the weight bearing tendency of the animals on the hind legs in which the hind legs are the one carrying more weight in relation to fore legs.

From the results obtained during dry and rainy seasons show that there is an increase in the claw lesions as previously observed by Manske (2002). This can be due to the environments in which the animals are kept with the presence of rainfall which cause accumulation of mud in cow sheds and since the animals are kept on the same shade for the whole night, this which led to softening of the horny tissue of the hoof of animals. This stimulate

destruction of hoofs, breakage and fissure of the horny tissue exposing the sensitive lamina and foot rot, this corresponds with the study done by Aliyu *et al*. (2005). But also wet environment favors the growth of microbes which are responsible for causing some of these claw lesions.

Despite the fact that the environment is favoring the occurrence of the lesions but poor hoof care and animal management by the farmers also was suggested to be among of the factors associated in development of the lesions (Erin, 2004).

It is concluded that claw lesion is a big problem in free range short horn zebu kept in Kwimba district. This calls for the attention that farmers should be given proper information and advices on the claw problems as to how it occurs and the associated effects as well as management on animals.

ACKNOWLEDGEMENT

The authors are indebted to the Buhuri Livestock Training Agency (LITA) for their assistance and cooperation offered on all stages of this work. Mr. Nesphory Mwagala a field officer Nyambiti-kwimba and Mr. Gideon Nghungubaji a field officer Ngudu are thanked for the assistance in data collection. This study was funded by Higher Education Student Loans Board (HESLB).

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