MEDICINE

OCCURRENCE OF SMALL RUMINANT LAMENESS IN MAIDUGURI AND ITS ENVIRONS

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Abstract
A study to investigate the occurrence of difference foot conditions in small ruminants in Maiduguri and its environs was undertaken. A total of 611 sheep from 22 flocks and 223 goats from 15 flocks were investigated. 43 (7.2%) sheep had lameness due to various foot conditions while none of the goats investigated had lameness. Majorities (62.8%) of the sheep affected were within the ages of 1 and 3 years old and more females (53.5%) were affected than males (46.5%). Sheep particularly the Balami breed were mostly affected (51.16%). It was more frequent in semi-intensively managed than in intensively managed flocks. Therefore, the intensive system of management with improved nutrition to reduce the occurrence of small ruminant lameness is recommended.

Key words: Lameness, Small ruminants, Occurrence, Maiduguri

Introduction

Nigeria has abundant livestock resources with an estimated total livestock population of 52.4 million, of which sheep and goat (small ruminants) constitute 25.4 million and 26.5 million respectively. About sixty percent of small ruminant population is concentrated in North-eastern part of Nigeria (Ajayi *et al.*, 1987, Ameh *et al.*, 19980) and are primarily kept (Lamorde *et al.*, 1987; Devendra and Mcleroy, 1987).
While organized modern livestock management techniques are already in use in developed countries Winter (2006), traditional husbandry is the prevailing method of raising small ruminants in Nigeria. Lameness results in significant reduction in productivity of these livestock (Clarence *et al.*, 1991) Locomotory soundness is therefore mandatory for effective grazing and reproductive performance in all classes of livestock (Egwu *et al.*, 1994).
According to Winter (2006), the mostly common site of lameness in adult sheep is the foot, though important systemic disease such as foot and mouth and blue tongue also cause lameness. Winter (2004a) also suggested other common causes to include soil balling, interdigital hyperplasia, toe granuloma, laminitis and sepsis of the pedal joint (Winter, 2004a). Correct diagnosis is of key importance in order to implement correct treatment and control measure (Winter, 2004b).
Despite the importance of lameness to small ruminant production (Greenough, 1972; Gyang, 1986), lameness is sheep and goat has received little attention as compared to other livestock species. This paper therefore, examines the occurrence and implications of lameness in small ruminants in Maiduguri and its environs.

Materials and Methods

Study Area
The study was carried out in Maiduguri, Borno State, Nigeria. Maiduguri is within the arid sahel region which has a short wet season (July – September) and long dry season (October - June) (Khalil, 1974). The study was carried out between July and December 2004.

Study flocks
A total of 22 flocks sheep and 15 flocks of goat consisting of 61 sheep and 223 goats respectively were used in this investigation. The sheep ;and goat flocks were of both sexes and ages ranging from less than 1 year to more than 5 years. Various breeds and cross-breeds of intensively and semi intensively managed sheep (Yankasa, Uda, Balami and Sudanese "Baluchi") and goats (Borno red, Borno white, Kano brown) owned by both private individuals (mostly small-holders) and government institutions were studied.

Data analysis

The data obtained were analysed using simple percentages and presented in tabular form.

Results

A total of 611 sheep from 22 flocks and 223 goats from 15 flocks were surveyed in this study. 43 (7.29%) of the sheep had lameness due to various foot condition s (Table 1) while none of the goats gad any lameness. Majority (79.1%) of the affected sheep were from semi intensively managed flocks while the remaining 20.9% were from intensively managed flock (Table 2). Lameness that originated from nutritional factors (rickets) were found to be most frequently encountered 14 (37.55%) in the sheep flocks studied, followed by occurrence of lameness in sheep were found to be higher (65.11%) and cracked hoofs 5 (11.65%). The occurrence of lameness in sheep were found to be higher (65.11%) in animals within the ages of 1 and 3 years (20.p93%) than in animals above 3 years or less than 1 year (13.95%). Also the condition was found to affect higher percentage of females (55.5%) than males (46.5%).
Meanwhile, higher percentage (51.16%) of Balami breed was affected followed by Yankasa (25.58%) while Uda was the least affected (4.65%). 8 (18.67%) Baluchi crosses were found to be affected with lameness (Table 1). Direct purchases from markets, gifts, inheritance or a combination of two or all of those were reported to be the sources of the flocks.

Table 1: Frequency of different foot conditions in a total of 611 sheep in relation to age and sex in Maiduguri and its environs

Foot condition	Number affected (%)	Age (years)			Sex	
		0 -< 1	1 - <3	3 - > 3	Male	Female
Bent leg (Rickets)	14(32.55)	2	11	1	6	8
Fracture	8 (18.67)	4	4	0	0	2
Interdigital pouch infection	1 (2.23)	0	1	0	1	0
Arthritis	2 (4.26)	0	0	2	2	0
Laminitis	2 (4.65)	0	1	1	0	2
Paresis	1 (2.23)	0	1	0	0	1
Overgrown hoof	5 (11.62)	0	0	5	3	2
Dermatitis	3 (6.91)	0	3	0	1	2
Laceration	1 (2.23)	0	1	0	1	0
Cracked hoof	5 (11.65)	0	5	0	4	1
Foot rot	1 (2.23)	0	1	2	5	4
Total	43 (100)	6 (13.95)	28 (65.11)	9 (20.93)	20 (46.51)	23 (53.48)

Table 2: Frequency of different foot conditions in sheep in relation to breed management system in Maiduguri and its environs

Foot condition	Number affected (%)	Management system		Breeds			
		Intensive (%)	Semi intensive (%)	Uda (%)	Balami (%)	Yankasa (%)	Baluchi (%)
Bent legs	14 (32.55)	8 (18.67)	6 (13,95)	0	0	6	8
Fracture	8 (18.67)	0(0)	8 (18.67)	1	4	3	0
Interdigital pouch infection	1 (2.23)	0 (0)	1 (2.23)	0	1	0	0
Arthiritis	2 (4.65)	0 (0)	2(4.65)	0	2	0	0
Laminitis	2 (4.65)	0 (0)	2 (4.65)	0	1	1	0
Paresis	1 (2.23)	1 (2.23)	0 (0)	0	1	0	0
Overgrown hoof	5 (11.62)	0 (0)	5 (1.62)	0	5	0	0
Dermatitis	3 (6.91)	0 (0)	3 (6.91)	0	2	1	0
Laceration	1 (2.23)	0 (0)	1 (2.23)	0	1	0	0
Cracked hoof	5 (11.65)	0 (0)	5 (11.65)	-	5	0	0
Foot rot	1 (2.23)	0 (0)	1 (2.23)	1	0	0	0
Total	43	9 (20.92)	34 (79.08)	2 (4.65)	22 (51.16)	11 (25.58)	8 (18.67)

Discussion

The result of this investigation showed moderate occurrence of lameness in sheep in Maiduguri and its environs. The occurrence of this condition was more frequently encountered in sheep than in goats and females were found to be most affected than males.

Majority of the flocks were semi intensively managed. This is primarily because the expensive nature of the intensive system of management as majority of flocks owners are small scale farmers. The management system as observed in the study contributes considerably to the occurrence of lameness in sheep. More lame conditions as a result of nutritional deficiency were observed in sheep. This could be due to the fact that during confinement in the intensive system of management, the sheep may be fed with formulations deficient in calcium, phosphorus or vitamin D, which may lead to osteomalacia/osteoporosis and susceptibility to bone deformities and or fractures.

The characteristic short rainfall, long dry season tough rugged terrain and pricking or abrasive vegetation especially in wet conditions in which these animals need to cover in search of food in semi intensively managed flocks predisposes them to lameness due to interdigital pouch infection and other food conditions as observed in this study. Similar wetness, unkept hoof, penetrating injuries, factures, inflammation of anatomical structures and glands are reported to be predisposing factors to lameness in sheep (Egwu, 1994; Winter, 2006). The Balami ;breed was the most affected with lameness probably because it is the predominant breed kept by flocks owners due to their high market value and better adaptation to environment and resistance to diseases (Ameh *et al.*, 1998). Meanwhile, all the goats flocks surveyed were semi intensively managed and none had foot problems. This may be due to their hardy nature, relative phobia for rain and wet environment and feeding behaviour. West (1983) however reported that the chances of mechanical injury and foreign body penetration in the feet of goats are increased while they stand on two hind limbs. Such posture is said to contribute in the incidence of lameness in the forelimb of goats as compared to hind limbs (Mgasa and Ambjeg, 1993).

The major foot conditions observed in this study were linked to nutritional deficiency, fracture, interdigital pouch infection, arthritis, wounds and lacerations, dermatitis, foot rot, cracked hoof, paresis and overgrown hoof which agrees with the findings of Winter, (2006). The high occurrence of fracture in the semi intensively managed flocks observed in ,this study were mostly due to automobile accidents as similarly reported by Abdurahman *et al.*, (2006). Overgrown hoof may be due to the softness or lack of

friction of the soil in areas where the small ruminants are confined or where they roam about. When sheep are grazed or kept on continuous wet environment, it may lead to softening of the horny tissue of the claws; this stimulates destruction of the hoofs, breakage and fissure of horny tissue exposing the sensitive lamina and foot rot (Akenovo, 1985; West, 1989; Winter, 2004a; Winter, 2004b; Winter, 2006). This could explain why no incidence lameness in goats was recorded in this study, as goats tend to avoid wetness by finding shelter during rain and they try to climb on any platform to avoid wet environment. Goats are also easily ,and quickly disposed off (salvaged or slaughtered) whenever lameness is noticed, and hence the absence of lameness in the populations sampled.

The result of this study vis-à-vis the effect of lameness on the overall small ruminant production and welfare concerns makes it imperative to minimize its incidence in flocks of sheep and goats especially in Borno State. It was observed that most flocks were semi intensively managed and animals with foot conditions especially fractures were managed/treated using traditional methods largely due of economic reasons.

In conclusion, it is evident that lameness constitute a major problems to small ruminant production in Borno State and Nigeria as a whole. Therefore, to avoid losses due to lameness in sheep and goats in Borno State, improved management system; particularly the intensive system of management, routine prophylactic measures such as hoof trimming, hoof paring, foot bathing and grazing on safe filed should be \provided. Prompt detection and treatment of foot diseases and public enlightenment to educate farmers on the implications of lameness, is imperative. Special attention must also be given to the nutrition of small ruminants especially sheep in intensively managed flocks.

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