Research Article

A Retrospective Study of Small Ruminant Diseases Identified at the State Veterinary Hospital Maiduguri, Nigeria

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Abstract | A retrospective study was conducted to determine the distribution of diseases of sheep and goats encountered at the State Veterinary Hospital, Maiduguri, between the years 2009 to 2013. A total of 1298 cases were documented during the time period. Diseases occurrence was found to be higher in sheep (89.0%) than in goats (11.0%). The most frequent diseases of sheep were parasitic (34.5%), digestive (15.2%) and surgical conditions (13.2%). Similarly, infectious diseases (24.5%), parasitic diseases (21.7%) and surgical conditions (18.2%) were encountered in goats. Highest and lowest clinical cases were registered in the years 2009 and 2010, respectively. The study showed that the occurrence of diseases are similar in both species. It is recommended that animal owners and health service providers should make available necessary drugs and equipment in advance for the management of these frequent clinical diseases especially when the peak season for these disease approaches. Furthermore, animals should be immunized for the common diseases of small ruminants on periodical basis.

Keywords | Diseases, Goats, Helminthiasis, Maiduguri, Sheep

INTRODUCTION

Nigeria is blessed with abundant livestock resource (Aliyu et al., 2005). Livestock population in Nigeria was estimated at 70.5 million, of which sheep and goats constitute 31.3% and 48.9% respectively (Adebowale, 2012). About 60% of small ruminant population is concentrated in the North eastern part of Nigeria (Aliyu et al., 2005). Sheep and goat are known to serve as source of animal protein, skin, manure, income and some cultural values (Tefera et al., 2009). This economic importance is primarily associated with their small size, as it favor low investment, small risk of loss and their high reproductive efficiency (Omoike, 2006).

Factors affecting livestock production in sub Saharan countries includes diseases, poor management and lack of proper breeding policies (Adebowale, 2012). These have been observed as major constraints to livestock production in Nigeria (Ogbaje et al., 2012). Prevalence and intensi-

ty of pathogenic infections are often seasonal. This could be linked to changes in the host immunity or increase in the preponderance of either the pathogen or vector or both (Nelson et al., 2002). The knowledge of the pattern of disease occurrence is important as it suggests period of likely outbreak. It also helps in planning towards ensuring proper preventive measures (Thrusfield, 2005). This study was designed to determine the distribution and pattern of diseases of sheep and goat encountered at the State Veterinary Hospital Maiduguri, over a period of five years (2009-2013).

MATERIALS AND METHODS

STUDY AREA

The study was conducted in Maiduguri, the capital city of Borno State in the Northeastern terrace of Nigeria. The city lies on an altitude of 354m and is located between latitudes 10.2ºN and 13.4ºN and longitudes 9.8ºE and 14.4ºE. The

two dominant seasons are the wet (June to September) and the dry (October to May) seasons. Temperature ranges from 13-41ºC. Annual rainfall is at 9-198mm and sunshine of 7-9 hours/day. Relative humidity varies between 19 to 78% and remains at 45% during the wet season (Mayomi and Mohammed, 2014). The State Veterinary Hospital (also called the Sen. Ali Sherriff Veterinary Hospital) is located at the center of the city and is the only state owned veterinary hospital in Maiduguri. Sheep and goats in Maiduguri are kept under semi intensive management system.

Study Subjects and Case Definition

Sheep and goats presented for routine medical checks and those that were apparently sick form the study subjects. These cases were entered in a clinic case record book and was also utilized for the present study. The animals were examined by qualified veterinarians and diagnoses were made based on physical examinations and/or laboratory findings.

Data obtained from the clinical records were studied and analysed. Commonly encountered cases include: cases of poisoning, lameness, glaucoma, incoordination, dog bites, urinary tract infection and tumors and were taken as separate problems. Other cases were grouped into the following six major categories. Clinical cases of helminthiasis, tick infestation, coccidiosis, fleas, lousiness and mange were categorized into parasitic diseases. Cases of bloat, inappetence, stomatitis, constipation, diarrhea, ingestion of indigestible materials i.e. polythene bags, *Atresia ani*, and rectal prolapse were grouped as digestive diseases or disorders. Managing cases of overgrown hooves, dehoring, hernia, abscess, fractures or traumatic injuries are all categorized as surgical conditions. Cases of mastitis, listeriosis, cowdriosis, tetanus, metritis, footrot, arthritis, septicemia, PPR, Orf (contagious ecthyma), pneumonia and pox were grouped as cases of infectious diseases. Cases such as dystocia, vaginitis, vaginal prolapse, retained placenta, orchitis, still born, uterine prolapse and abortion were all categorized as reproductive diseases.

Statistical Analysis

The data generated were entered and managed in MS excel worksheet. The data were analysed and summarized in tables using descriptive statistics. The occurrence of disease diagnosed was calculated using percentages.

RESULTS

Out of 1298 cases of sheep and goats registered at the hospital, the highest (89.0%) were cases of sheep diseases comparing with goat diseases (11.0%; Table 1). When the year-wise distribution of goats diseases were done, the highest number 38 (26.6%) of goat diseases was recorded in the year 2010 while the lowest 17 (11.9%), was in the year 2009 (Table 2). Common clinical cases of goats includes helminthiasis (13.3%), traumatic injuries (9.1%), dog bites (6.3%) and mange (6.3%; Table 3). Similarly, when the distribution of diseases of sheep was observed, the highest 309 (26.8%) number of cases was registered in the year 2010 while the lowest 153 (13.2%) was also in the year 2009 (Table 4). Among the clinical cases encountered, helminthiasis (25.9%), mange (7.4%), bloat (6.7%) and diarrhoea (4.3%) were the most common reported cases of sheep (Table 5). When the hospital records were analyzed

Table 1: Specie and distribution of small ruminants encountered at the State Veterinary Hospital in Maiduguri, Nigeria during the years, 2009 to 2013

Specie	n	%
Goat	143	11.0
Sheep	1155	89.0
Total	1298	100

Table 2: Diseases of goats diagnosed at the State Veterinary Hospital Maiduguri during the years 2009 to 2013

Disease	2009	2010	2011	2012	2013	Total	%
Infectious diseases	1	9	7	10	8	35	24.5
Parasitic diseases	3	7	9	8	4	31	21.7
Surgical conditions	6	6	6	5	3	26	18.2
Digestive disorders	1	4	6	2	3	16	11.2
Reproductive diseases	2	4	1	3	2	12	8.4
Bites	0	3	0	4	2	9	6.3
Eye problems	1	3	1	1	1	7	4.9
Lameness	2	2	0	0	0	4	2.8
Metabolic diseases	0	0	0	1	0	1	0.7
Poisoning	1	0	0	0	0	1	0.7
Nervous disorders	0	0	0	1	0	1	0.7
Total	17	38	30	35	23	143	100

Table 3: Specific diseases of goats diagnosed at the State Veterinary Hospital Maiduguri during the years 2009 to 2013

Type of disease	2009	2010	2011	2012	2013	Total	%
Infectious diseases							
mastitis	1	3	1	3	0	8	5.6
listeriosis	0	1	0	0	0	1	0.7
tetanus	0	2	1	4	0	7	4.9
metritis	0	1	0	0	0	1	0.7
foot rot	0	1	0	0	0	1	0.7
septicemia	0	0	0	1	2	3	2.1
PPR	0	1	2	1	4	8	5.6
pneumonia	0	0	3	1	2	6	4.2
Parasitic diseases							
helminthiasis	2	5	6	4	2	19	13.3
coccidiosis	0	0	0	1	0	1	0.7
fleas	0	0	0	0	1	1	0.7
dermatophilosis	0	0	1	0	0	1	0.7
mange	1	2	2	3	1	9	6.3
Surgical conditions							
abscess	1	1	1	0	1	4	2.8
fracture	4	2	1	1	0	8	5.6
traumatic injury	1	3	4	3	2	13	9.1
atresia ani	0	0	0	1	0	1	0.7
Digestive disorders							
bloat	0	2	1	1	2	6	4.2
inappetence	0	0	2	0	0	2	1.4
constipation	0	1	0	0	0	1	0.7
diarrhoea	1	1	3	1	1	7	4.9
Reproductive diseases							
dystocia	1	1	0	1	1	4	2.8
vaginitis	0	1	0	0	0	1	0.7
retained placenta	0	1	1	1	1	4	2.8
orchitis	1	0	0	0	0	1	0.7
abortion	0	1	0	1	0	2	1.4
Bites	0	3	0	4	2	9	6.3
Eye problems	1	3	1	1	1	7	4.9
Lameness	2	2	0	0	0	4	2.8
Metabolic diseases	0	0	0	1	0	1	0.7
Poisoning	1	0	0	0	0	1	0.7
Nervous disorders	0	0	0	1	0	1	0.7
Total	17	38	30	35	23	143	

based on season, it was observed that the frequency of clinical cases during the dry season in both sheep and goats was more than that of wet season (Table 6).

DISCUSSION

The study showed that sheep were frequently presented to the hospital for treatment than goats. This may be due to the fact that animal owners in the study area keep sheep because of their high market value compared to goats (Aliyu et al., 2005) or for religious festivities. However, the fewer goats presented to the hospital for treatment might be due to their hardy nature or because they are resistant to common diseases, especially in the area where they are kept

Table 4: Diseases of Sheep diagnosed at the State Veterinary Hospital Maiduguri during the years 2009 to 2013

Disease	2009	2010	2011	2012	2013	Total	%
Parasitic diseases	73	108	73	52	92	398	34.5
Digestive disorders	16	47	41	41	30	175	15.2
Surgical conditions	21	41	29	19	42	152	13.2
Infectious diseases	15	38	24	25	42	144	12.5
Reproductive diseases	11	31	23	17	29	111	9.6
Lameness	5	14	18	11	10	58	5.0
Metabolic disorders	5	8	5	4	7	29	2.5
Poisoning	2	6	7	4	4	23	2.0
Eye problems	2	4	5	5	5	21	1.8
Nervous diseases	2	3	6	2	8	21	1.8
Bites	1	5	2	3	2	13	1.1
Urinary tract infections	0	2	0	1	3	6	0.5
Tumors	0	2	0	1	1	4	0.3
Total	153	309	233	185	275	1155	100

Table 5: Specific diseases of sheep diagnosed at the State Veterinary Hospital Maiduguri (2009 to 2013)

Type of disease	2009	2010	2011	2012	2013	Total	%
Parasitic diseases							
helminthiasis	61	82	54	37	65	299	25.9
tick infestation	0	1	0	1	0	2	0.2
coccidiosis	0	2	0	1	2	5	0.4
fleas	0	0	3	0	2	5	0.4
lousiness	1	0	0	0	0	1	0.1
mange	11	23	16	13	23	86	7.4
Digestive disorders							
bloat	9	19	20	16	13	77	6.7
inappetence	0	0	6	12	4	22	1.9
stomatitis	0	1	0	2	1	4	0.3
constipation	1	2	1	2	1	7	0.6
diarrhoea	4	21	11	6	8	50	4.3
foreign bodies	1	2	1	1	1	6	0.5
atresia ani	0	2	2	1	2	7	0.6
rectal prolapse	1	0	0	1	0	2	0.2
Surgical conditions							
overgrown hooves	1	1	2	0	1	5	0.4
dehorning	1	0	0	0	1	2	0.2
hernia	1	1	2	1	3	8	0.7
abscess	3	12	8	7	11	41	3.5
fracture	5	4	5	2	5	21	1.8
traumatic injury	10	23	12	9	21	75	6.5
Infectious diseases							
mastitis	0	1	2	2	4	9	0.8
listeriosis	1	8	4	9	6	28	2.4
cowdriosis	0	0	0	0	1	1	0.1
tetanus	4	7	2	1	6	20	1.7

	metritis	1	0	1	0	0	2	0.2
	foot rot	1	3	1	2	2	9	0.8
	arthritis	0	1	2	2	1	6	0.5
	septicemia	2	3	5	1	5	16	1.4
	PPR	2	2	1	0	1	6	0.5
	Orf	1	4	0	1	1	7	0.6
	pneumonia	3	7	6	5	14	35	3.0
	pox	0	2	0	2	1	5	0.4
Reproductive diseases								
	dystocia	6	14	10	7	11	48	4.2
	vaginitis	0	1	1	1	1	4	0.3
	vaginal prolapse	0	0	0	0	1	1	0.1
	retained placenta	1	6	5	5	6	23	2.0
	orchitis	1	3	2	1	1	8	0.7
	stillborn	0	1	0	0	0	1	0.1
	uterine prolapse	3	5	4	1	8	21	1.8
	abortion	0	1	1	2	1	5	0.4
Lameness		5	14	18	11	10	58	5.0
Metabolic disorders								
	Pregnancy toxaemia	5	8	5	4	7	29	2.5
Poisoning		2	6	7	4	4	23	2.0
Eye problems		2	4	5	5	5	21	1.8
Nervous diseases		2	3	6	2	8	21	1.8
Bites		1	5	2	3	2	13	1.1
Urinary tract infections		0	2	0	1	3	6	0.5
Tumors		0	2	0	1	1	4	0.3
Total		153	309	233	185	275	1155	100

Table 6: Distribution of disease of goat and sheep according to season at the State Veterinary Hospital, Maiduguri during the years 2009 to 2013

Specie	Season		Total
	Dry	Wet	
	Number (%)	Number (%)	
Goat	89 (62.2)	54 (37.8)	143
Sheep	698 (60.4)	457 (39.6)	1155

(Peacock, 1996). Higher number of cases was observed in the year 2010 and the least was observed in the year 2009 for both species. This may be due to increased awareness of the hospital location and services provided by the hospital through the use of mass media at that time. Moreover, there is an increasing trend of awareness campaigns run by the government/state strategic bodies that results the improvementsin livestock production and disease management (Buhari et al., 2015). The nature of diseases in sheep and goats in Maiduguri is similar during the years investigated. This may be due to management system thereby predisposing these animals to similar clinical disease and disorders. It has been pointed out that animals managed under semi intensive system are predisposed to diseases and other disorders as compared to those managed under intensive system of management (Aliyu et al., 2005). This is further compounded by extremes of weather conditions and other environmental factors that impair the innate or adaptive resistance of these animals and thus increase their susceptibility to these diseases and disorders (Kamar et al., 2015).

Helminthiasis presents itself as the most common disease condition in both sheep and goats. This agrees with reports by Barde et al. (2012) who reported helminthiasis as the prevalent case at a private clinic in another northern city (Kaduna) in Nigeria, among cattle, dog and sheep. The management system tenable in Maiduguri may predispose sheep and goats to helminthiasis. It is a common sight to see animals roaming freely within most parts of the city consuming garbage sometimes from refuse heaps. Gastrointestinal helminth infection has been known to cause lowered productivity (Perry and Randolph, 1999), mortality (Sykes, 1994) and huge economic losses (Igbal et al., 1993) thus affecting income of small resourced farming

communities. To plan an effective helminth control program, a periodic surveillance of the prevalence of gastrointestinal helminths in Maiduguri and associated risk factors that influence their transmission is required.

Disease occurrence during the dry season tend to rise. This may be associated with inadequate pasture which may lead to starvation. The available pasture tend to have lost their nutritive value. It is thus evident that this condition affects animals and this lack of nutrients during such seasons impairs the ability of animals to mount an immune response to fight infections.

CONCLUSION

The study has shown that parasitic diseases, infectious diseases, surgical conditions, digestive disorders and reproductive diseases are the frequently encountered disorders in sheep and goat in Maiduguri. These cases were mostly observed during dry season. It is therefore recommended that animal owners and health service providers should make available drugs, vaccines and equipment necessary for the management of these frequent clinical diseases especially helminthiasis, bloat and traumatic injuries. The need to carryout similar studies in other parts of the State and on other livestock will be worthwhile as this will elucidate on the temporal distribution of diseases affecting livestock within the State. It is also recommended that vaccination against common viral diseases like PPR in the area be carried out routinely.

CONFLICT OF INTEREST

The authors have none to declare.

AUTHORS CONTRIBUTION

Innocent Damudu Peter, Hannah Alim Madziga and Jashilagari Stephen concieved the idea and prepared the initial draft. Yahi Dauda, Paul Bura Thlama and Juliana James Ndahi obtained and analyzed the data. Innocent Damudu Peter and Abdularahman Mustapha revised the initial draft and prepared the final draft. All authors read and approved the final draft.

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