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Retrospective Studies of Reproductive Disorders of Small Ruminants in Maiduguri, Nigeria.

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ABSTRACT

A ten year retrospective study of reproductive disorders of small ruminants presented to the Borno State Veterinary Clinic, Maiduguri, was conducted between 2004 and 2013. Clinical case records of sheep and goats used for this study were analyzed based on the disease condition, sex of the animals and season of the year. Out of a total of 2343 ruminants examined, 340 (14.5%) were found to have reproductive disorders comprising dystocia 74 (21.8%), pregnancy toxaemia 67 (19.7%), mastitis 49 (14.4%) and retained placenta 46 (13.5%), with 308 (90.6%) in sheep and 32 (9.4%) in goats ($p<0.05$). 906 (38.7%) of the cases observed were male and 1437 (61.3%) were female ($p<0.05$) with a higher prevalence during the rainy season (between April and September) compared with the dry season (between October and March) ($p<0.05$). In conclusion, the alleviation of these disorders through prompt veterinary attention will improve small ruminant production in Nigeria.

Keywords: Retrospective Studies, Reproductive disorders, Small ruminants, Maiduguri, Nigeria.

Introduction

Over the years, the demand for animal protein has been on the increase in Nigeria, which has resulted into increased importation of meat and milk products into the country to supplement the local shortfalls [1]. The population of sheep and goats in Nigeria stands at 22.1 million and 34.5 million respectively [2]. There exists several factors that affect the physiology and reproductive performance of farm animals which include diseases, environmental temperature, poor husbandry practices and nutrition [3] leading to huge economic losses [4]. Retrospective epidemiological studies provide useful information on disease patterns that could be useful for prevention and policy formulation for their management. Although the analysis of some common reproductive diseases have been conducted in different parts of Nigeria such as Calabar [5], Nsukka [6], Abuja [7], Maiduguri [4], and Sokoto [8], the temporal distribution patterns of the occurrences of these diseases have not been elucidated. This study was aimed at determining the temporal distribution pattern of reproductive disorders of

small ruminants presented to the State Veterinary Clinic, Maiduguri between January 2004 and December 2013.

Materials and Method

Study Area

This study was conducted at the State Veterinary clinic, Maiduguri. Maiduguri is the capital city of Borno State which lies between longitude $11^0$50`N and latitude $13^0$09`E. The city is cosmopolitan in nature and stands at 354m above sea level. This part of Nigeria has two distinct seasons, the rainy (April - September) and hot-dry (October -March) seasons with mean ambient temperatures of 13-41^{0}C, annual rainfall of 9-198mm, daylight length of 7-9h/day and an average relative humidity of 19-78%. This area is located between the Sudan savannah and Sahel Savannah vegetation zones.

Data Collection and Analysis

Reproductive disorders of sheep and goats obtained from clinical case records between January, 2004 and December, 2013 were studied and analyzed based on disease condition, sex of the animals and season. Simple descriptive statistics was used to determine the prevalence of such reproduction disorders and results expressed as simple percentile. Data obtained were compared by Chi-square analysis at 5% confidence levels.

Results

Table 1 shows the yearly prevalence of reproductive disorders of sheep and goats examined. Cases of disorders were evenly distributed with the highest prevalence in 2010 with 48 (14.1%) and the lowest in 2009 with 24 (7.1%) ($p<0.05$). The table also revealed that dystocia is the most prevalent disorder 74 (21.8%) compared to the least prevalent as swollen prepuce with 1 (0.3%) ($p<0.05$).

Table 2 shows the prevalence of reproductive disorders amongst sheep and goats examined. A total of 308 (90.6%) sheep were affected which was significantly ($p<0.05$) higher than for goats with 32 (9.4%).

Table 3 shows the prevalence of reproductive disorders based on the sex of the animals and season of examination. Female sheep and goats had higher prevalence ($p<0.05$) of reproductive disorders with 283 (21.9%) and 32 (21.5%) compared with the males having 25 (3.1%) and 0 (0%) respectively. There was

however, no significant ($p>0.05$) difference between the dry and wet seasons examined with 166 (14.7%) and 174 (14.3%) respectively.

Discussion

The results of this study has shown that dystocia, pregnancy toxaemia, mastitis and retained placenta were the most common reproductive disorders encountered. This finding agrees with previous reports from different parts of Nigeria [6, 4, 8, 9], however, the overall prevalence was higher (14.5%) compared to the 4.07% by Waziri *et al.,* [4] and 9.1% by Williams *et al.,* [10] from the same study area. The reason for this variation is unclear, but may likely be due to the total quantum of caseloads analyzed or the period of the study. Dystocia has been reported to be common in primigravid than in multigravida sheep and goats [11, 12]. The high prevalence of dystocia observed in this study could have been due to such and also due to early pregnancy when such animals are not physically mature for normal kidding/lambing at parturition. Prevalence rates of pregnancy toxaemia and mastitis were 19.7% and 14.4% respectively. Pregnancy toxaemia is caused by low glucose concentrations in the blood and excessive breakdown of fats to compensate.

Therefore, inadequate nutrition especially during the last trimester is the primary cause of pregnancy toxaemia in ewes as they cannot consume enough feed to meet the demands of their growing fetus [13]. Mastitis is mostly due to pathogens but may also be from injury, allergy and neoplasm [14]. Although the results from this study revealed that the prevalence of mastitis in sheep and goats was low (14.4%) when compared to the 36% in the US and 39% in Iran [14, 15], it still has the tendency of causing fever, anorexia, depression and lethargy especially when it becomes septic.

Most livestock in Maiduguri are reared under semi extensive system of production and under unsanitary surroundings where they are allowed to roam freely, thus exposing them to pathogens or allergens that could cause mastitis and other reproduction disorders that are infectious in nature. This may lead to a generalized disease and huge economic losses to the farmer during treatment.

Females had a higher prevalence of reproductive disorders than males ($p<0.05$) for both sheep and goats in this study. This is similar to reports by Waziri *et al.,* [4] and Umaru *et al.,* [8]. This may be due to the fact that females are kept for longer periods in the herd and probably due to their unique position as reproduction vessels.

This study has also shown that the prevalence of reproductive disorders is independent on season which is contrary to that reported by Waziri *et al.,* [4] who found high prevalence during the dry season.

Conclusively, reproductive disorders lead to wastages that are very difficult to quantify monetarily hence their alleviation will increase livestock production.

Table 1: Prevalence of Reproductive Disorders of Ruminants Based on Year of Study.

	No (%) of Ruminants Affected										
Reproductive disorders	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total (%)
Dystocia	3(8.8)	5(17.9)	7(18.9)	5(21.7)	3(10.0)	7(29.2)	14(29.2)	9(23.1)	9(30.0)	12(25.5)	74(21.8)
Pregnancy Toxaemia	7(20.6)	4(14.3)	9(24.3)	3(13.0)	13(43.3)	5(20.8)	8(16.7)	6(15.4)	5(16.7)	7(14.9)	67(19.7)
Parturient paresis	2(5.9)	3(10.7)	0(0)	0(0)	2(6.7)	0(0)	0(0)	0(0)	0(0)	0(0)	7(2.0)
Retained placenta	6(17.6)	2(7.1)	5(13.5)	5(21.7)	2(6.7)	1(2.1)	7(14.6)	6(15.4)	5(16.7)	7(14.9)	46(13.5)
Abortion	1(2.9)	1(3.6)	1(2.7)	0(0)	1(3.3)	0(0)	1(2.1)	0(0)	1(3.3)	0(0)	6(1.8)
Stillbirth	0(0)	1(3.6)	1(2.7)	1(4.3)	0(0)	0(0)	2(4.2)	0(0)	2(6.7)	2(4.3)	9(2.7)
Uterine Prolapse	3(8.8)	2(7.1)	3(8.1)	1(4.3)	3(10.0)	3(12.5)	5(10.4)	6(15.4)	1(3.3)	8(17.0)	35(10.3)
Vaginal Prolapse	1(2.9)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	1(2.6)	0(0)	1(2.1)	3(0.9)
Mastitis	6(17.6)	7(25)	7(18.9)	3(13.0)	3(10.0)	4(16.7)	5(10.4)	4(10.3)	4(13.3)	6(12.8)	49(14.4)
Orchitis	1(2.9)	2(7.1)	2(5.4)	3(13.0)	2(6.7)	3(12.5)	3(6.3)	4(10.3)	2(6.7)	2(4.3)	24(7.1)
Post partum bleeding	1(2.9)	0(0)	1(2.7)	0(0)	0(0)	0(0)	2(4.2)	1(2.6)	0(0)	0(0)	5(1.5)
Post partum infection	0(0)	1(3.6)	1(2.7)	0(0)	1(3.3)	1(2.1)	0(0)	1(2.6)	0(0)	0(0)	5(1.5)
Vaginitis	3(8.8)	0(0)	0(0)	2(8.7)	0 (0)	0(0)	1(2.1)	1(2.6)	1(3.3)	1(2.1)	9(2.7)
Swollen Prepuce	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0 (0)	0(0)	1(2.1)	1(0.3)
Total	**34(10)**	**28(8.2)**	**37(10.8)**	**23(6.8)**	**30 (8.8)**	**24(7.1)**	**48(14.1)**	**39(11.5)**	**30(8.8)**	**47(13.8)**	**(N=340)**

Table 2: Prevalence of Reproductive Disorders amongst Sheep and Goats in Maiduguri.

Reproductive disorders	Number (%) of animals affected	
	Sheep	Goats
Dystocia	67 (21.8)	7 (21.9)
Pregnancy Toxaemia	65 (21.1)	2 (6.3)
Patureitn paresis	7 (2.3)	0 (0)
Retained placenta	42 (13.6)	4 (12.5)
Abortion	3 (1.0)	3 (9.4)
Stillbirth	9 (2.9)	0 (0)
Uterine prolapse	35 (11.4)	0 (0)
Vaginal Prolapse	3 (1.0)	0 (0)
Mastitis	35 (11.4)	14 (43.8)
Orchitis	24 (7.8)	0 (0)
Post partum bleeding	4 (1.3)	1 (3.1)
Post partum infection	4 (1.3)	1 (3.1)
Vaginitis	9 (2.9)	0 (0)
Mamary Gland tumour	0 (0)	0 (0)
Swollen Prepuce	1 (0.3)	0 (0)
Total	308 (90.6^{a})	32 (9.4^{b})

Note: Total values with different superscripts indicate significant difference (p<0.05)

Table 3: Prevalence of Reproductive Disorders based on the Sex of Animals and Season of Examination

Specie/season	Number examined (n = 2343)	Number affected (n = 340)
Sheep		
Male	811	25 (3.1%)^{a}
Female	1288	283 (21.9%)^{b}
Goats		
Male	95	0 (0%)^{c}
Female	149	32 (21.5%)^{d}
Season		
Dry	1129	166 (14.7%)^{e}
Wet	1214	174 (14.3)^{f}

Note: Percentiles with Different Superscripts are statistically Significant (p<0.05)

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