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Original article

Prevalence of mastitis in goat herds in some northwestern villages in Nigeria

B.K. Tanimomo[a,*], S.A. Hena[b], E.O. Ngbede[c], R. Tarhyel[d], O.E. Owoleke[a]

[a]*Department of Animal health and Production, Faculty of Veterinary Medicine, University of Abuja.*
[b]*Department of Animal health and Production, College of Agriculture and Animal Science, Bakura.*
[c]*Department of Veterinary Microbiology, Faculty of Veterinary Medicine, Ahmadu Bello University, Zaria.*
[d]*Department of Animal Science, Faculty of Agriculture, University of Maiduguri, Borno State.*

[*]Corresponding author; Department of Animal health and Production, Faculty of Veterinary Medicine, University of Abuja; Tel: +2347032819469

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ABSTRACT

In this study 10 different herds were randomly sampled and milk samples obtained from 263 lactating does with normal sized udder and enlarged (unilateral/bilateral) pendulous udders .The obtained milk samples were analyzed for mastitis using a rapid field catalase test (RFCT). From 194 samples obtained from NSU (Normal Size Udder), 164 samples were negative to the test while 30 samples were positive. These represent 84.5% negatives and 15.5% positives of the total sample analyzed. Similarly, 69 samples were obtained from both U/BEU (Unilateral/Bilateral Enlarged Udder), 42 samples were negative to RFCT while 27 samples positive, representing 60.7% negatives and 39.3% positives of the total analyzed samples. The information obtained from this research work is to sensitize farmers on the need for routine examination/screening of their herd for mastitis; since mastitis occurring as the most common and costly disease which could take a heavier toll in animal industry than any single disease through considerable economic loss.

1. Introduction

Mastitis is universally recognized as one of the most costly disease in the dairy industry (Alrawi *et al.,* 1979). The major components of the economic losses caused by mastitis are: reduced milk yield, increase veterinary charges, increased labor costs, discarded milk and reduced longevity of goats milk (Blood and Radostits, 1989). High mortalities of kids born to goats with mastitis make the disease economically significant to the goat industry (Addo *et al.,* 1980). Milk yield in dairy animals can be reduced by as much as 25% and at times up to 100%.

Mastitis is an inflammation of the mammary gland (udder) that causes physical and chemical changes in milk and leads to pathological condition of the glandular tissue. It is generally associated with poor hygienic and husbandry practices. This disease can have an infectious or non-infectious etiology, and the infectious pathogens is the most important ones that frequently due to infection by one and/or the other pathogens, such as bacteria, viruses, mycoplasma, yeasts and algae (Cheng *et al.,* 2010). Majority of microorganisms that are responsible for mastitis and spoilage of milk are; *Staphylococcus aureus*, *Streptococcus agalactiae Corynebacterium bovis*, *Mycoplasma spp*, *Streptococcus uberis*, *Escherichia coli*, *Klebsiella spp* and *Enterobacter aerogenes, Serratia, Pseudomonas, Proteus spp*, *Enterobacter spp.* (Bedada and Hiko, 2011).

Current knowledge of mastitis in small ruminants has been recently reviewed by authors such as Bergonier *et al*., (2003). More specifically, the role of intra-mammary pathogens in mastitis in goats has been reviewed by Contreras *et al.,* (2003), Bergonier and Berthelot (2003), have reviewed the epidemiology and control of mastitis in sheep. Other studies include those of Paape *et al.,* (2001), who explored the feasibility of indirectly diagnosing mastitis in small ruminants by using MSCC (Milk Somatic Cell Counts), and of Gonzalo (2004), who recently discussed the analytical, health, productive and technological aspects of performing MSCC in sheep and goat milk.

The objective of this paper is to determine the prevalence of mastitis in goat herd kept at the studied area and to use the outcome in herd health campaign in the state.

2. Material and methods

10 different herds were selected at random from Bakura town, a town located in Zamfara State, North-western part of Nigeria. Milk samples were obtained from 263 lactating does with normal sized udder and enlarged (unilateral/bilateral) pendulous udders. Before sample collection, teat of each doe was washed with soap and swabbed with 60% ethyl-alcohol. The initial milk expressed from each udder was discarded. 10mls of the sample was stripped into sterile test tube and labeled. In this study the Rapid Field Catalase Test was used where 6 drops of milk was placed on a glass slide over a dark background and 3 drops of 9% fresh cool hydrogen peroxide solution was added. After thorough mixing, some samples produced bubbles indicating a positive test for mastitis, while those without bubble formation indicates negative test for mastitis. The data obtained were analyzed using simple percentages.

3. Results

The results obtained in this study were presented in Tables 1-5 below. From the findings in this study (Table 4), the number of samples identified positive for mastitisfrom the normal sized udders were 30 out of the 194 cases sampled while 164 were negative, it thus represented that 15.5% of the samples from NSU were positive for mastitis while, 84.5% were negative based on the catalase test performed.

Table 5 shows that from unilaterally/bilaterally enlarged udders there were 27 cases of mastitis out of the 69 samples analysed, while 42 were negative. It thus indicated that 39.3% samples were positive while 60.7% negative. Though, the percentages of animals negative to the test were higher than the positive ones, these clearly shows low incidence rate. This may be due to presence of sub-clinical mastitis in the sampled herds. This is similar to the findings of Bergonier and Berthelot, (2003) and Contreras et al., (2003), who estimate prevalence rate of sub-clinical mastitis to be 5-30%.

Though, the does sampled in the studied area are not dairy goats' *par se*, yet the effect of mastitis on the neonate cannot be over emphasized in animal industry. Infections are easily transmitted from the dam to the neonate who accounts for heavy losses to farmers.

4. Discussion

Mastitis is the most important disease in dairy milk production worldwide (Kossaibati *et al.,* 1997), and it is notoriously difficult to estimate the losses associated with clinical and sub - clinical mastitis, which arise from the costs of treatment, culling, death and decreased milk production and constituent quality (Bradley, 2002).

Table 1
Number of samples obtained from different herds.

NOH	NSU	U/BEU	TNC
1	27	13	40
2	20	5	25
3	29	3	32
4	11	7	18
5	19	11	30
6	16	5	21
7	25	9	34
8	17	6	23
9	12	1	13
10	18	9	27

NOH= Number of Herd, NSU= Normal sized udder; U/BEU=unilateral/Bilateral Enlarged Udder; TNC=Total number of samples collected.

Table 2
Number of positive and negative cases of mastitis from normal sized udders.

NOH	NSU	+ve sample	-ve sample	%+sample	%-ve sample
1	27	5	22	16.7	13.4
2	20	7	13	23.3	7.9
3	29	3	26	10	15.9
4	11	0	11	0	6.7
5	19	1	18	3.3	11.0
6	16	0	16	0	9.8
7	25	10	15	33.3	9.1
8	17	4	13	13.3	7.9
9	12	0	12	0	7.3
10	18	0	18	0	11.0

NOH= number of Herd; NSU= Normal sized udder

Table 3
Number of positive and negative cases of mastitis from unilateral or bilaterally enlarged udders.

NOH	(U/BEU)	+ve sample	-ve sample	%-sample	%+ve sample
1	13	4	9	21.4	14.8
2	5	0	5	11.9	0
3	3	2	1	2.4	7.4
4	7	2	5	11.9	7.4
5	11	4	7	16.7	14.8
6	5	2	3	7.1	7.4
7	9	6	3	7.1	22.2
8	6	5	1	2.4	18.5
9	1	0	1	2.4	0
10	9	2	7	16.7	7.4

NOH= No. of Herds, NSU= Normal sized udder; U/BEU=unilateral/Bilateral Enlarged Udder;

Mastitis reported (Okolo, 1985; Kawu et al., 1992) in goats implicated micrococal abortions and high intra – and perinatal losses among kids (Elze, et al. 1972). While mastitis cannot be totally eliminated from the goat herd, incidence can be reduced to bearest minimum. The key elements in the control strategies include sound husbandry practices, sanitation and appropriate treatment of infected animals. All goats should be dehorned and have regular foot care practice carried out as routine; this will reduce potential for traumatic injury to the teats and udder and goats with open, draining abscesses should be isolated or preferably eliminated from the herd and subsequently treated.

Table 4

Total number of positive and negative cases of mastitis from Normal sized udders.

TNOH	NSU	Total No. of +ve samples	Total No. of -ve samples	Total % +ve	Total % -ve
10	194	30	164	15.5	84.5

TNOH = Total No. of Herds, NSU= Normal sized udder

Table 5

Total number of positive and negative cases of mastitis from unilateral or bilaterally enlarged udders.

TNOH	U/BEU	Total No. of +ve samples	Total No. of -ve samples	Total % -ve	Total % +ve
10	69	27	42	60.7	39.3

TNOH = Total No. of Herds, U/BEU=unilateral/Bilateral Enlarged Udder

5. Conclusion

Although, the study area is a microcosm of the society, it represents a true picture of prevalence of the disease in the state. The result obtained can be used to extrapolate other parameters in determining the extent of the spread of the disease in the state at large.

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