



Pelagia Research Library

Advances in Applied Science Research, 2011, 2 (2): 290-294



Prevalence of Mastitis in Lactating Cows in some selected Commercial Dairy Farms in Sokoto Metropolis

A.U. Junaidu, M.D. Salihu*, F.M. Tambuwal^a, A.A. Magaji and S. Jaafaru.

Department of Veterinary Public Health and Preventive Medicine, Usmanu Danfodiyo University, Sokoto, Nigeria

^aDepartment of Veterinary Microbiology, Usmanu Danfodiyo University, Sokoto, Nigeria

ABSTRACT

The study was carried out to determine the prevalence of mastitis in lactating cows in some selected commercial dairy farms in Sokoto metropolis. A total of 100 milk samples were collected from dairy farms in the metropolis. The samples were subjected to microbiological techniques for the isolation of pathogenic bacteria. Fifty two (52%) of the samples were positive for bacterial isolation. The isolates are Staphylococcus aureus (22.8%), Staphylococcus epidermidis (10.9%), Streptococcus spp. (14.1%), Corynebacterium spp (15.2%), Bacillus spp (7.6%), E coli (9.78%), and klebsiella spp. (4.35%). Others are Proteus spp. (8.69%), Enterobacter spp. (1.09%), Salmonella (2.17%) and Providentia spp (3.26%). Mastitis is a highly economic disease resulting in reduced milk production and therefore requires proper diagnosis and treatment. There is also rapid surveillance and enhanced method of prevention and control.

Keywords: Dairy farms, Mastitis, prevalence, cows, sokoto.

INTRODUCTION

Mastitis which in the inflammation of the Parenchyma of the mammary gland is characterized by physical, chemical and bacteriological changes in the milk and pathological changes in the glandular tissue. Nigeria cattle population stands at 13 million and livestock in general contribute 5% of Gross Domestic Product. Milk produced from these animals provide an important dietary source for the majority of rural as well as a considerable number of the Urban and Pre Urban Population. However, Mastitis is said to be among the various factors contributing to reduced milk production [5] Mastitis is a common problem among livestock in Nigeria and despite its economic importance very little attention is given to it.

Sokoto State the area of this study is the second largest producer of livestock in Nigeria and rearing of livestock and consumption of milk and milk product is habitual to the people in the area [7]. However, Mastitis have been a major problem in the state. There is little study done on mastitis in Sokoto State. There is therefore the need to investigate and determine the prevalence of the disease at least in some selected dairy farms so as to form the basis for further investigation.

MATERIALS AND METHODS

Study Area

Sokoto Metropolis is the area of the study which consists of Sokoto North, Sokoto South and some parts of Wamakko Local Government Area of Sokoto State. Sokoto State is located in the North Western part of Nigeria between longitude 4° 8' E an 6° 54'E and between latitude 12° N and 13° 58' N

There are 27 commercial dairy farms within the study area out of which 10 were randomly selected.

Sample collection

A total of 100 samples were collected from the randomly selected farms. 5 -10mls of milk from each lactating cow was systematically collected in standard bottles and transported in ice-packed container to the Veterinary Microbiology Laboratory of Usmanu Danfodiyo University for analysis. Samples were serially diluted before inoculation on culture media. The culture were gram stained and the isolates were biochemically identified as described by carter et al [3].

RESULT

The result obtained from this study showed that out of the 100 samples collected and processed 52 (52%) was positive for cultural isolation of bacteria organisms (Table 1).

Based on the laboratory results the following bacteria organisms were isolated; *Staphylococcus aureus*, *Streptococcus* spp. *Corynebacterium* spp, *Bacillus* spp, *E coli*, *klebsiella* spp., *Proteus* spp., *Enterobacter* spp., *Salmonella* and *Providentia* spp (Table 2).

DISCUSSION

This study investigated the prevalence of mastitis in selected diary farms within Sokoto metropolis over a four month period. A prevalence of 52% was recorded. This is in line with the findings of Karimurbo et al., [8] who reported a prevalence of 66% for Bovine mastitils in Dodoma and Marogoro regions of Tanzania. The prevalence could be as a result of tick infestation as reported by FAO who observed that high tick infestation and vigorous suckling by calves are known to cause direct inflammatory reaction to the mammary gland, necrosis and abscess formation, which may lead to udder damage and or exposure to serious secondary infections [6]. It could also be due to traditional diary husbandry practices whereby calves are kept away from their dam over a long period of time and are only allowed to suckled for a short period as well as inadequate milk supply which leads to calves suckling vigorously, inducing teat

injuries and subsequent infection of the mammary gland [6]. This is supported by the work of Capuco et al, [2] who reported that partial removal of keratin from the teat canal compromise the ability of the teat to prevent passage of bacteria pathogens from the external environment into the mammary glands. The high prevalence recorded could as well be attributed to the poor milk hygiene practices such as lack of usage of disinfectant on udder, teat dipping and lack of instituting dry cow therapy. The lack of surveillance programme for mastitis could also be a contributory factor.

Laboratory results indicated *Staphylococcus aureus* as the most prevalent bacteria being implicated. This is similar to the findings of Kewler et al [9] who reported *Staphylococcus aureus* to be the most common cause of bovine mastitis. The isolation of *staphylococcus aureus* is of public health significance since it is a commonly recovered pathogen in outbreaks of food poisoning due to milk and milk product [4]. The isolation of *streptococcus* in this work is in agreement with that of Ankalo and Sternejo [1] who isolated 39 (20.4%) and 123 (15.4%) respectively from apparently healthy and mastitic cow in Kenya. The isolation of *streptococcus* spp is of public health significance as it causes various gastrointestinal upset ranging from abdominal pain to diarrhea.

The implication of the presence of *Bacillus* is that it causes diarrhea and vomiting which causes a serious health problem to the consumers.

The isolation of *E. coli* is in consonance with the findings of Shekimwari, et al, [10] who isolated it from clinical mastitic cow in Morogoro Tanzania. The isolation of *E. coli* is of public health significance as this bacteria is known to cause serious gastrointestinal disorders in both young and adult humans.

The presence of *Salmonella* is in close agreement with that of Ankalo and Sternejo[1] who isolated 12(1.5%) in clinically mastitic cow. The presence of this organism may indicate faecal contamination of milk but more importantly an indicator for poor sanitary practice during milking. *Klebsiella* and *proteus* species though isolated, their presence in milk sample is less frequent. However, being a coliform they may occur in milk samples probably as contaminants.

CONCLUSION

Mastitis is a highly economic disease resulting in reduced milk production and therefore requires proper diagnosis and treatment.

Lack of maintenance of strict hygiene and good sanitary environment may be a contributory factor in the cause of mastitis in the study area. It is therefore important that farmers should ensure strict personal hygiene, that of animals and general sanitary condition of the farms should be improved and maintenance

It is also concluded that people consuming raw cow's milk are at risk of food borne intoxication associated with *staphylococcus aureus*, since it is a commonly recovered pathogen in outbreaks of food poisoning due to milk and milk products. Consumption of such milk could also expose

the individual to high risk of contracting brucellosis and other milk borne zoonosis from the result of this work, we recommend that:

Dairy farmers should be educated on the implications and health hazards associated with irrational and unhygienic method of milking cows. They should be informed on the relevance of pasteurization of milk before consumption.

Professionals should work on the bacterial load of cow milk in this area. The virulence and behavior of the identified organisms should be properly studied.

Due to increasing incidence of mastitis, there is the need for sensitive and rapid surveillance and enhanced method of prevention and control.

Table 1: Prevalence rate of mastitis in selected commercial dairy farms in Sokoto Metropolis.

S/N	Farms	Total no of sample	Positive samples
1	A	09	04 (44.4%)
2	B	18	4 (50%)
3	C	15	9 (46.7%)
4	D	09	5 (55.6%)
5	E	04	1 (25)
6	F	11	6 (54.5%)
7	G	10	4 (40%)
8	H	05	5 (100%)
9	I	06	5 (50%)
10	J	13	8 (61.5%)
	Total	100	52 (52%)

Table 2: Results of Isolates of different organisms

Organism	Number of Isolates	% isolate
<i>Staphylococcus aureus</i>	21	22.8
<i>Staphylococcus epidermidis</i>	10	10.9
<i>Streptococcus spp</i>	13	14.1
<i>Corynebacterium spp</i>	14	15.2
<i>Bacillus spp</i>	7	7.61
<i>E. Coli</i>	9	9.78
<i>Kilebsiella spp</i>	4	4.35
<i>Proteus mirabilis</i>	3	3.26
<i>Proteus vulgaris</i>	5	5.43
<i>Enterobacter spp</i>	1	1.09
<i>Providentia spp</i>	3	3.26
<i>Salmonella spp</i>	2	2.17
Total = 10	92	100

REFERENCES

- [1] Ankalo, S. and Sternejo, A. *Journal of Food Safety*, **2006**, 21, 205-215.
 [2] Capuco, A.V. Bright, S.A: Pankey J.W. Wood, D.L. Miller. R.H.; Bitman, J. *Journal of Dairy Science*, **1990** 75 (8), 2126- 2130.

- [3] Carter, G.R. and John R. Cole JNR. Diagnosis Procedures in Veterinary Bacteriology and Micology 5th Ed. **1991**, 95-104.
- [4] Culler, S. Mastitis and its influence Upon Reproductive Performance in Dairy Cattle. In: Proc. Inter, Symp. Bovine Mastitis Indianapolis. **1967**, 176-180.
- [5] Fedaku, K., Survey on the prevalence of bovine mastitis and the predominant causative agent in Chaffa Valley: Proceedings of the 9th Conference of Ethiopian Veterinary Association: Addis Ababa, Ethiopia **1995**, 101-111.
- [6] Food and Agricultural Organization (FAO), Animal Production and Health Papers, **1990**, 85, 9-24.
- [7] Junaidu A.U. and Garba H.S. *Sahel Journal of Veterinary Sciences*, **2006**, 5, 9-12
- [8] Karimuribo, E.D; Kusiluka, L.J; Mdegela, R.H: Kapaja, A.M; Sindato, C and Kambarage; D.M. *Tanzania Journal of Veterinary Science*, **2005**, 6,3, 213-221.
- [9] Kewler, D.H; Andrews, M.L. Moffat, R.J. *American Science*. **1992**, 70(6), 1677-1681.