

**Short communication****Occurrence of subclinical mastitis in dairy does in Duhok, Iraq****Balqees A. Ali**

Department of Clinical Science, Faculty of Veterinary Medicine, University of Duhok, Kurdistan Region, Iraq

Abstract

California mastitis tests (CMT) and white side test (WST) were used to determine the occurrence rate of subclinical mastitis in dairy does in Duhok province of Iraq. The rate of subclinical mastitis was 40.5% and 37.5% by CMT and WST respectively. The *Staphylococcus aureus* was the most prevalent isolate with 72.38% followed by *Klebsiella spp.* (29.79%) and *Escherichia coli* (27.65%). This is the first report on subclinical mastitis report in Duhok area of Iraq.

Keywords: Subclinical Mastitis, Does, Iraq**Introduction**

Subclinical mastitis does not lead to visible changes in the milk or udder and is more important economically than clinical mastitis due to its higher prevalence (Seegers et al., 2003; Andwanetal, 2005). Diagnosis of subclinical mastitis is based on detection of bacteria and increased leukocyte numbers in milk, California mastitis test (CMT) and White side test (WST) (Fthenakis, 1995). The common technique in diagnosis that can be used in the field conditions is the CMT, which is easy, and inexpensive (Gonzalez-Rodriguez and Carmen, 1996).

In Duhok area, the prevalence of clinical mastitis was recorded in sheep and goat previously (Zuber, 2005), and subclinical mastitis in cattle (Balqees et al., 2008). Little work has been carried out in Duhok region on subclinical mastitis in does of Iraq. The objectives of this study were to determine the occurrence of Subclinical mastitis and to identify the pathogens causing subclinical mastitis in dairy Does in Duhok region.

Materials and Methods

A total of 200 raw milk samples were milked from apparently healthy animals consisting of major flocks in Duhok governorate including 50 Meseric, 54 Tanahi,

40 Dulbe, 30 Segi and 26 Semel. Milk samples of about 5-10ml were taken aseptically from each teat after washing with water and cleaning teats with cotton soaked in 4% povidine solution. The samples were taken to the laboratory for CMT, WST and bacteriological examination. The two tests were carried out on each sample using method described previously by Coles (1986). Scores were represented in four categories such as negative (0), trace, positive (+), (++) and (+++). Each milk samples within positive scores were cultured on 5% sheep blood agar, MacConky agar and 7% Manitol salt agar. Samples were subsequently incubated at 37°C for 24-72 hours. Gram's stain and culture characteristics (morphology, pigmentation and hemolysis) were used for identification for all isolates (Carter and Coles, 1990).

Results

The rate of occurrence of subclinical mastitis in tested Does is shown in Table 1. The total rate of subclinical mastitis by CMT was 40.5% and by WST was 37.5% in the examined animals. Table 2 indicates that subclinical mastitis based on CMT was slightly higher in right side. Table 3 shows that *Staphylococcus aureus* was the dominant bacterial species in CMT positive samples. The CMT score and the isolated number of bacteria indicated that *Staphylococcus*

Corresponding author: Balqees. A. Ali, Department of Clinical Science, Faculty of Veterinary Medicine, University of Duhok, Kurdistan Region, Iraq

Table 1: Rate of subclinical mastitis in studied samples in different districts of Dhuk

Area	No.	CMT +VE	WST +ve
Misiric	50	21	19
Semel	26	10	10
Tanahi	54	21	19
Dulbe	40	18	20
Segi	30	10	7
Total	200	80	75
Percentage		40.5%	37.5%

Table 2: Rate of subclinical mastitis according to the halves of mammary glands by CMT and WST

Area	No.	CMT		WST	
		Left	Right	Left	Right
Misiric	50	13	17	12	15
Semel	26	9	8	7	8
Tanahi	54	13	18	13	17
Dulbe	40	15	17	14	17
Segi	30	6	8	2	3
Total	200	56	68	48	60
Percentage of sub clinical mastitis		28	34	28	30

Table 3: Rate and types of bacteria isolated from does

Area	No.	CMT Positive	Bacteria		<i>Staphylococcus aureus</i>	<i>Kelbsiella Spp.</i>	<i>Escherichia coli</i>
			Positive culture	Negative culture			
Misiric	50	21	9	12	8	2	2
Semel	26	10	5	5	4	1	1
Tanahi	54	22	18	4	5	4	10
Dulbe	40	18	12	6	8	7	---
Segi	30	10	3	7	3	----	---
Total	200	81	47	34	28	14	13
%		40.5	23.5	17	72.34	29.79	27.65

Table 4: Relationship between CMT scores and isolated bacteria

CMT Scores	No. of Positive CMT	No. of isolated Bacteria		<i>Staphylococcus aureus</i>	<i>Kelbsiella Spp.</i>	<i>Escherichia coli</i>
		Positive culture	Negative culture			
+	23	4	19	3	1	0
++	46	14	32	5	5	3
+++	54	39	15	20	8	10
Total	123	57	66	28	14	13
%		46.34	53.66	48.27	24.13	22.41

1991). The use of CMT and WST for diagnosis of subclinical mastitis shown to be useful as quick diagnostic tests for field application.

In the current study, *Staphylococcus aureus* was the most prevalent bacteria compared to the other bacteria. This is in agreement with other reports (Kudinha and Simango, 2002; Suarzez et al., 2002) and the high prevalence of *Staphylococcus aureus*, associated with subclinical mastitis may be due to bad management. Similar to our results, Iqbal et al. (2004) found in positive mastitic milk samples of goats, contained 25% *Escherichia coli*, 25% *Streptococci spp.* 50% mixed growth. Andwan et al. (2005) also showed in goats milk that 72.5% had sub clinical mastitis and most pathogens (90.6%) isolated from milk samples were *Staphylococci spp.* (68.3%).

aureus was in the highest number compared to the other bacteria.

Discussion

In this study, the rate of subclinical mastitis as estimated by CMT and WST was 40.5% and 37.5% respectively which was higher in comparison with that reported in dairy goats and ewes in other countries (Smith and Roguinsky, 1977; Eastet al., 1987; Ndegwa et al., 2000; McDougall et al., 2002). Previously, Zuber (2005) reported that clinical mastitis in does in Iraq ranged from 6-8%. The different rates of subclinical mastitis in different countries may be due to the difference in animals breed, managemental conditions and methods of diagnosis. Diagnosis of subclinical mastitis is not easy since it is usually based on detection of bacteria and increased in leukocyte number in milk. Although the CMT and WST indirectly detect the presences of increased numbers of leukocytes in milk (El-Masannat, 1987; Maisi, et al., 1987; Watkins et al.,

In conclusion, the present research work may provide some basic information on subclinical mastitis in does in Dhuk area of Iraq.

References

- Andwan, G., Abusafieh, D., Aref, R. and Abo Omar, J. 2005. Prevalence of microorganisms associated with intra mammary infection in cows and small ruminants in the north of Palestine. *Journal of the Islamic University of Gaza (series of Natural studies and Engineering)*, 13(1): 165-173.
- Balqees, A.A. and Zangana, I.K. 2008. Prevalence of subclinical mastitis in cows in Duhok Governorate/Kurdistan region, Iraq. *Journal of Duhok University*, 11(2):155-158.

- Carter, G.R. and Coles, J.R. 1990. Diagnostic Procedures in Veterinary Bacteriology and Mycology. 5th (ed.). Academic Press Inc.
- Coles, E.H 1986. Veterinary Clinical Pathology. 3rd (ed.). W.B. Sanders Company. Philadelphia. London. Toronto.
- East, N.E., Brnne, E.F. and Farver, T.B. 1987. Risk factors associates with mastitis in dairy goats. *American Journal of Veterinary Research*, 48:776-779.
- El-Masannat, E.T.S. 1987. Ovine mastitis with especial reference to mastitis caused by *Pasteurella hemolytica* Ph.D. Thesis. The Royal Veterinary College. University of London.
- Fthenakis, G.C. 1995. California mastitis test and White side test in diagnosis of subclinical mastitis of dairy ewes. *Small Ruminant Research*, 16:271-276.
- Gonzalez-Rodriguez, M.C. and Carmen, P. 1996. Evaluation of California mastitis test as a discriminate method to detected sub-clinical mastitis in ewes. *Small Ruminant Research*, 21:245-250.
- Kudinha, T. and Simango, C. 2002. Prevalence of Coagulase-negative *Staphylococcus aureus* in bovine mastitis in Zimbabwe. *Journal of the South Africa Veterinary Association*, 73:62-65.
- Maisi, P, Seppanen, J. and Junttila, J. 1987. Detection of mastitis in ewes. *British Veterinary Journal*, 143: 402-409.
- McDougall, S.P., Pankey, W. Delaney, C., Barlow, J., Mardough, P.A. and Scruton, D. 2002. The prevalence of subclinical mastitis in dairy goats and dairy ewes in Vermont, USA. *Small Ruminant Research*, 46:115-121.
- Ndegwa, E.N. Mulei, C.M. and Munyua, S.J. 2000. The prevalence of subclinical mastitis in dairy goats in Kenya. *Journal of the South African Veterinary Association*, 71:25-27.
- Seegers, H. Fourichon, C. and Beaudeau, F. 2003. Production effects related to mastitis and economics in dairy cattle herds. *Veterinary Research*, 34:475-491.
- Smith, M.C. and Roguinsky, M. 1977. Mastitis and other diseases of the goat's udder. *Journal of Animal and Veterinary Medicine Association*, 171:1241-1248.
- Suarzez, V.H., Busetti, M.R., Miranda, A.O., Calvino, L.F., Bedotti, D.O. and Canovesio, V.R. 2002. Effect of infectious status and parity on somatic cell count and CMT in Pampinta dairy ewes. *J.V.M.B Infectious Diseases and Veterinary Public Health*, 49:230-234.
- Iqbal, M., Alikhan, B.D. and Siddique, U. 2004. Bacteriology of mastitic milk and in vitro antibiogram of the isolates. *Pakistan Veterinary Journal*, 24 (4): 161-164.
- Watkins, G.H., Burriel, A.R. and Jones, J.E.T. 1991. A field investi-gation of subclinical mastitis in sheep in Southern England. *British Veterinary Journal*, 147: 413-420.
- Zuber, A.I. 2005. Prevalence of clinical mastitis in ewes and Does in Duhok governorate. MSc thesis submitted to the college of Veterinary Medicine. University of Duhok.