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**CLINICAL ASPECTS OF SHE CAMEL MASTITIS
(*CAMELUS DROMEDARIUS*) IN SAUDI ARABIA
(Retrospective Study)
(With 2 Tables and 1 Figure)**

By

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الجوانب الأكلينيكية في التهاب الضرع في النوق
بالمملكة العربية السعودية
(دراسة مرجعية)

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أجريت دراسة مرجعية عن التهاب الضرع في النوق ونسبة حدوثها التي تمثلت في 36% منها التهاب الضرع الحاد 51.5% حالات مزمنة، أما عن مسببات التهاب الضرع فكانت الميكروب العنقودي - عترات الأوريس وكذلك الميكروب السبحي هي معظم الميكروبات المسببة. وكان ميكروب الباستريلا المحللة للدم سببا لحالات التهاب الضرع الصديدي في النوق. وعليه يمكن الاستفادة بأن التهاب الضرع المزمن هي الصفة الغالبة لالتهاب الضرع في النوق.

SUMMARY

Retrospective study was carried out for clinical types of camel mastitis occurred in Saudi Arabia. Acute (36%), chronic (51.5%) and gangrenous (4.7%) were the most types of mastitis diagnosed. *Staphylococcus aureus* and *Streptococcus* spp were the most prevalent isolates. *Pasteurella haemolytica* was detected as a pathogenic bacteria in chronic suppurative mastitis.

Key words: Clinical Aspects of She Camel Mastitis In Saudi Arabia.

INTRODUCTION

Camel's populations are the third largest animal herd in Saudi Arabia. Its number was estimate up to 600.000 head (Anon, 1998). Meat and milk of camel are preferred by Saudi citizens for main daily consumption. Camel's milk is less affected by storage and transportation than cow's milk (Sohail, 1983). Several authors reported on camel mastitis in Saudi Arabia (Barbonr *et al.*, 1985; Hafez *et al.*, 1987; Ramadan *et al.*, 1987a and Ramadan *et al.*, 1987 b).

The present study was aimed to view the present situation of camel's mastitis in Saudi Arabia with an overview on udder abnormalities.

MATERIAL and METHODS

Milk samples were collected from the udder under complete aseptic condition. Teats were thoroughly cleaned, disinfected and then dried. Milk samples then collected in clean, sterile vials and subjected to further bacteriological examinations according to methods after Anon (1949).

RESULTS

Results are obtained at Tables 1, 2 and Figure 1.

DISCUSSION

Table (1) shows the incidence of camel mastitis forms and abnormalities of the udder cases in fifteen years (Anon, 1982-1996). A total number of 295 cases were diagnosed by Sub-department of Medicine. The subdivided types of mastitic cases were acute (106), chronic (152), gangrenous (14), whereas oedematous udder conditions reached 22 and fibrosed udder only (1) case.

Table (2) shows eleven different types of isolated bacterial species. It can be noticed that *Staphylococcus aureus* was the dominant species and *Streptococcus* spp was next in term of percentage isolates. Other bacteria included *Micrococcus* spp, *Corynebacterium* spp, *Pseudomonas aeruginosa*, *Pasteurella* spp, *Pasteurella haemolytica*,

Eshcherichia coli *Klebsiella* spp, *Corynebacterium pseudo tuberculosis*, *Corynebacterium equi* and *Corynebacterium pyogens*.

Camel's milk is important for its salty quality to camel owners in hot desert life. However, the Arabian camel has a big role in animal production (Sohail, 1983). It is quite clear from results that chronic mastitis cases were of higher incidence than acute cases (51.5% and 36% respectively). This because that camels breeders usually apply traditional treatment firstly before seeking modern veterinary services. The conditions of gangrenous mastitis cases were the least (4.7%) and most probably due to delayed or failed treatment. Detailed necropsy was described for chronic obstructive mastitis by Ramadan *et al.* (1987a), and for chronic suppurative, nonsuppurative and gangrenous mastitis also by Ramadan *et al.* (1987b). In addition to above, 25% of 71 examined camels were diagnosed as chronic mastitis during post mortem at veterinary Teaching Hospital (Gameel *et al.*, 1992). In general, the clinical manifestations of mastitis in camel were characterized by sever systemic reaction, including fever (39°C), sever depression and weakness, and presence of two large voluminous udder reaching about four time of normal size and tenderness at palpation indicates inflammatory changes (Hafez *et al.*, 1987). The oedematous udder and fibrosed udder in this study represented 7.5% and 0.3% respectively. Normally such conditions were considered as a chronic form due to either delay or improper diagnosis or late treatment. The descriptive mastitis by Barbour *et al.* (1985) included acute and oedematous swelling of the udder, fissures on the surface and formation of pus in the mammary exudate and recorded subclinical mastitis. Subacute mastitis (Obeid, 1983) and subclinical mastitis (Mostafa *et al.*, 1987) were described in *Camelus dromedarius* in Sudan and Egypt respectively. As shown in Table (2), *S. aureus* and *Streptococcus* spp. Constituted the main aetiological agents participating in almost all cases of mastitis. This is in general agreement with the findings of Abdurahman (1995). The *Pasteurella* species were recorded by Hafez *et al.* (1987) and Ramadan *et al.* (1987 a&b), respectively from all types of mastitis. Karamy (1990), in studies on mastitis in small ruminants and she camels, found that 18.7% of cases was caused by *Pasteurella* spp. The annual report by Governmental Veterinary Diagnostic Laboratories, Saudi Arabia isolated 8.0% *Klebsiella* spp. From 67 samples of camel mastatic milk. This bacterium was isolated with *S. aureus* from the nose of normal camel (Alhendi, 1999).

This retrospective study indicated that camel infected with different mastitis forms and the micro-organisms isolated in this are known to cause mastitis in camels and other animals (Hafez *et al.*, 1987 and Karamy, 1990). It can be speculated that camel like other ruminants harbours different bacteria which cause mastitis at any stage of lactation (Abdurahman, 1996 and Salih, 1995). It can be stated that early detection of mastitis in camel is recommended for proper treatment, because of significance of milk production and utilization.

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Table 1: Camel mastitis forms and abnormal conditions of udder diagnosed by Sub-Department Medicine in the Veterinary Teaching Hospital, during 1982-1996 (Anon, 1982-1996)

Year	Acute	Chronic	Gangre-nous	Oedem-ontous	Fibrosed	Total n (%)
1982	11	4	0	0	0	15 (5.1)
1983	39	4	4	2	0	49 (16.6)
1984	16	16	1	1	0	34 (11.5)
1985	24	41	0	13	0	78 (26.4)
1986	10	46	1	2	0	58 (20.0)
1987	4	25	6	3	1	39 (13.2)
1988	0	6	0	1	0	7 (2.4)
1989	2	3	1	0	0	6 (2.0)
1990	0	2	1	0	0	3 (1.0)
1991	0	0	0	0	0	0 0
1992	0	0	0	0	0	0 0
1993	0	1	0	0	0	1 (0.3)
1994	0	1	0	0	0	1 (0.3)
1995	0	1	0	0	0	1 (0.3)
1996	0	2	0	0	0	2 (0.7)
n	106	152	14	22	1	295
Total %	(36.0)	(51.5)	(4.7)	(7.5)	(0.31)	

n = total number of isolates

Table 2: Types of bacteria and their percentage isolated from camel mastitis forms in Saudi Arabia according to cited references.

Isolates of Bacterial species	Barbour <i>et al.</i> 1985 (n = 54)	Hefez <i>et al.</i> 1987 (n = 62)	Ramadan <i>et al.</i> 1987 (n = 2)	Anon 1994 (n = 67)
Micrococcus spp.	51.85	-	-	-
Staphylococcus aureus	27.77	50.00	50.00	61.29
Streptococcus spp.	12.96	33.30	-	1.49
Corynebacterium pseudotuberculosis	1.85	-	-	1.49
Corynebacterium equi	1.85	-	-	-
Corynebacterium pyogens	1.85	-	-	1.49
Pseudomonas aeruginosa	1.85	-	-	-
Pasteurella spp.	-	16.70	-	-
Pasteurella haemolytica	-	-	50.00	-
Escherichia coli	-	-	-	31.34
Klebsiella spp.	-	-	-	3.0

n = Total number of bacterial isolates



Figure (1) : Chronic mastitis in 8 year old she camel (Native breed).