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STUDIES ON SUMMER MASTITIS IN COWS IN IRAQ

A. A. Yass, Iwdish, and Judi, A. H.

Department of Internal and Preventive Veterinary medicine
College of Veterinary Medicine, University of Baghdad

SUMMARY

A total of two-hundred and thirty-two cows (eight hundred and eighty four milk samples) located in three different regions in Iraq were examined. the overall incidence of summer mastitis was found to be 6.90% (4.98% on quarter basis). The udder infections were highest during August (47.73%) and September (27.27%). Bacteriological examination of milk samples revealed that C. pyogenes (35.18%) were the main etiological agents followed by Str. agalactiae (22.22%) Str. dysagalatiae (16.67%), Str. uberis (9.26%) , Staph. aureus (7.41%) and Microcoeeus indolicus (5.56%). The In vitro sensitivity testing of mastitis pathogens, showed that all isolates (100%) tested were sensitive to gentamycin. Most isolates (77.78 to 87.04% of the isolates) were sensitive to erythromycin, kanamycin, oxytetracycline and chloramphenicol.

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INTRODUCTION

Bovine mastitis is a major cause of economic loss on all countries where dairying is practised. Mastitis is responsible for causing heavy economic losses which may be in terms of reduced milk yield from infected quarters, degrading of milk quality, loss of saleable milk curing antibiotic therapy, culling of chronically affected cows and additional cost in the care and treatment of mastitic animal. Besides, the disease renders the animal unproductive and uneconomical to keep. A part from it's economic importance, the disease is also of significance from public health point of view(1).

Summer mastitis is a type of udder sepsis affected non- lactating and lactating cows, predominantly occurring in summer time when the animals are left at pasture and not kept under close observation(2). The incidence is much higher in wet summer and on heavily wooded and low lying farms when the fly population is high. the mortality rate of summer mastitis without adequate treatment is probably about 50% and the affected quarters of surviving cows are always totally destroyed(3). In Iraq, extensive studies have been made on bovine clinical and subclinical mastitis (4 and 5). However no attention has paid to summer mastitis. The present study was designed to determine the prevalence of summer mastitis and to isolate and identify the bacteria associated with this infection as well as determining the

sensitivity of mastitis pathogens (isolates) to different antimicrobial agents.

MATERIALS AND METHODS

The present study was conducted on three herds, one in Kut province and the two others in Al-Dahab (White-Gold Village) and Al-Futhalia Village. The udder of each cow examined clinically and all information's concerning breed, age, number and stage of lactation were recorded. Milk samples were collected from the affected quarters of each cow in sterile test tubes asptically. A loopful of milk from each sample was inoculated on 50% sheep blood agar and Mac Conkey agar and incubated at 37c for 24-72 hours. Cultures so obtained were identified according to their cultural, morphological an biochemical characteristics as suggested by Carter(6). Sensitivity of mastitis pathogens was determined using Bauer- Kirby technique(24).

RESULTS

The results are presented in table I. The overall incidence of summer mastitis was found to be 6.90% (4.98% on quarter basis). A reference to table 2. would also show that the udder infections were highest during August (47.73%) and September (27.27%). Bacteriological examination of 884 milk samples revealed that C.pyogenes (35.18%) were the chief etiological agents followed by Str. agalactiae (22.22%), Str. dysagalactiae (16.67%), Str. uberis (9.26), Staph. aureus (7.41%) and Micrococcus indolicus (5.56%), Table 3. The results of sensitivity tests

carried out on (54) isolates against 10 antibacterial agents are presented in table

Table 1. Incidence of summer mastitis in cows

Herd	No. of cows examined	No. of quaters examined	No. showing mastitis		prevalence rate	
			Animals	Quarters	on animals basis	on quarter basis
White-Gold	71	265	5	15	7.04%	5.66%
AlL-futhalia	66	244	6	11	9.09%	4.51%
Gover-ment Kut Dairy Farm	95	375	5	18	5.26%	4.8%
Total	232	884	16	44	6.90%	4.98%

Table 2. Incidence of summer mastitis in the months of year.

No. of cows examined	No. of qurters found infected	Months (No. with percentage)				
		June	July	Augest	September	October
232	44	3 6.82	7 15.91	21 47.73	12 27.27	1 2.27

Table 3. Relative frequency of different types of mastitis pathogens in summer mastitis

No of quarters examined	No of qurters found infected	No of mixed infection	Total isolation	Types of infectio detected (No. of quaters with percentage)					
				C. pyogens	Staph aureus	Str agalactiae	Str dysagalactiae	Str uberis	Micrococcus indolicus
884	44	10*	54	19	4	12	9	5	5
				35.18	7.41	22.22	16.67	9.26	9.26

* C. pyogens + Str agalactiae
C. pyogens + Staph aureus
C. pyogens + Str uberis
C. pyogens + Str dysagalactiae
Str uberis + Micrococcus indolicus
C. pyogens + Str dysagalactiae + Micrococcus indolicus
Str dysagalactiae + Str uberis
C. pyogens + Micrococcus indolicus
C. pyogens + Micrococcus indolicus
Str agalactiae + Micrococcus indolicus

Table 4. In vitro sensitivity of summer mastitis pathogens to different antimicrobial agents

Species	No. of strain examined	Sensitivty									
		chloram phenicol	Oxytetra phenicol	Erythro mycin	Cloxaci llin	Gentamy cin	Strepto mycin	Neomy cin	Penicil lin	Kanamy cine	Ampic illin
		30 mcg	30 mcg	15 mcg	1 mcg	10 mcg	10 mcg	30 mcg	10 mcg	30 mcg	10 mcg
C. pyogens	19	16 (84.21)	14 (73.68)	17 (89.47)	16 (84.21)	19 (100.00)	12 (63.12)	14 (73.68)	17 (89.47)	16 (84.21)	15 (78.96)
Str agalactiae	12	9 (75.00)	10 (83.33)	11 (91.67)	9 (75.00)	12 (100.00)	8 (66.67)	7 (58.33)	8 (66.67)	11 (91.67)	7 (58.33)
Str dysagalactiae	9	7 (77.78)	8 (88.89)	7 (77.78)	6 (66.67)	9 (100.00)	7 (77.78)	5 (55.56)	7 (77.78)	7 (77.78)	6 (66.67)
Str uberis	5	3 (60.00)	4 (80.00)	4 (80.00)	3 (60.00)	5 (100.00)	3 (60.00)	3 (60.00)	3 (60.00)	4 (80.00)	3 (60.00)
Staph aureus	4	3 (75.00)	4 (10.00)	3 (75.00)	3 (75.00)	4 (100.00)	3 (75.00)	2 (50.00)	2 (50.00)	4 (100.00)	3 (75.00)
Micrococcus indolicus	5	4 (80.00)	5 (100.00)	5 (100.00)	4 (80.00)	5 (100.00)	3 (60.00)	3 (60.00)	4 (80.00)	5 (100.00)	4 (80.00)

DISCUSSION

The incidence of summer mastitis in cows (6.90%) was considered high in comparison with those reported by Bean et al., (7), Weitz(8), Hamana et al.,(3), Yeoman and Warren (9), Egan (10) and Vecht et al.,(11). the possible factors contributing the relative high incidence of summer mastitis in Iraq might be due to peaks of the fly population during summer season, the prevailing climate especially the wind force and direction, the delay in the detection and treatment of mastitis and no attentions have been paid to the uses of long-acting antibiotics at the dry period and repeated spraying of the udder with a contact insecticide.

The injuries to the udder or teat epithelium as resulting from bite of an insect (9), F.M.D virus (12) and pasturing of the animals in the fields, especially those surrounded by tries or high hedgs (13) play an important role for the establishment of infections to produce outbreaks of summer mastitis.

The peak infection period of summer mastitis was highest in August (47.73%) followed by September (27.27%), July (15.91%) and October (2.27%). These finding were in agreement with those reported by (13, 9, 10 and 2) who found much high incidence of summer mastitis occurring during summer months especially in August and September.

An analysis of the data available on the relative frequency of different types of microorganisms encountered in udder infections revealed that C.pyogenes was the most prevalent among organisms associated with summer , mastitis in cows (35.18%). The incidence rates of other microorganisms in decreasing order were Str. agalactiae (22.22%), Str. dysagalactiae (16.67%), Str. uberis (9.26%) and Micrococcus indolicus (9.26%). These findings were in agreement with those of other workers (14,13, 9, 15 and 2).

C. pyogenes causes acute mastitis which is distinctly suppurative in type with formation of a large amount of pus, often abscesses which may break through the skin and sometimes with extensive necrosis and sloughing of masses of tissue (16). The udder secretion in the beginning is serous, cloudy or flocculent, or has a gritty sediment. Later the exudate becomes purulent, greenish, sanguinopurulent chocolate-brown. The exudate has a characteristics foul odor due to the presence of other microorganisims, anaerobic streptococcus and micrococcus indolicus, commonly associated with C. pyogenes. It attacks the dead tissues produced by the C. pyogenes toxin and causes putrefaction with typical smell (14 and 13).

In vitro test on (54) isolates recovered from bovine summer mastitis, showed that all of mastitis isolates (100%) were sensitive to gentamycin. Almost similar findings to the above antibiotic has been reported previously (17, 18, 11 and 19). C. pyogenes were moderately sensitive to erythromycin (89.47%), penicillin (89.47%), chloramphenicol (84.21%), cloxacillinn (84.21%) and kanamycin (84.21%). Almost similar finding have been

reported by others (20, 19 and 11). The sensitivity of the mastitis streptococcal strains were found to be: highly sensitive to oxytetracycline (93.33%) and moderately sensitive to kanamycin (86.67%) and erythromycin (83.33%). these findings agrees with those reported by others (21, 22 and 19). All strains of S. aureus were sensitive to kanamycin (100.00%) and oxytetracycline (100.00%). These findings were in agreement witzh those of other workers (23 and 19). Most strains of Micrococcus indo licus were found to be sensitive (100.00S%) to most of the above mentioned antibiotics except for sensitivity (60.00%) to streptomcin and neomycin.

The present study suggests that frequent examination of dairy herds is necessary for the diagnosis of summer mastitis and early treatment of affected animal. In addition, hygienic measurement must be taken to reduce factors exposing the animal to it.

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دراسة حول مرض التهاب الضرع الصيفي في الابقار في العراق

عبد الوهاب عبد الرزاق ياس ، عامر اسكندر عوديش ،
عبد المناف حمزة جودي

فرع الطب الباطني والوقائي البيطري ، كلية الطب البيطري، جامعة بغداد

الخلاصة

اجريت الدراسة على مئتين واثنين وثلاثون من الابقار (ثمانمائة واربعة وثمانون نموذج من الحليب) في ثلاثة مناطق مختلفة من العراق. لقد وجدنا ان نسبة حدوث التهاب الضرع الصيفي في الابقار هي 6.90٪ (4.98٪ وفقا لاصابة الشطر) ، وان نسبة انتشار المرض بلغت ذروتها خلال شهر اب (47.73 ٪) وايلول (27.27٪).

اتضح من العزل الجرثومي لنماذج الحليب بان الوتديات القيحية (35.28٪) سببت القدر الاكبر من الحالات التهاب الضرع الصيفي تلتها جراثيم المكورات المسبحية الاكالكشية (22.22٪) ، المكورات المسبحية الدس اكالاكشية (16.67٪) ، المكورات المسبحية يوبرس (9.26٪) ، المكورات العنقودية الذهبية (7.41٪) والمايكروكوكس اتديوليكس (5.56٪).

اوضحت نتائج اختبار الحساسية لمختلف الجراثيم ان جميع الجراثيم (100٪) كانت حساسة للجنتامايسين ، بينما كانت معظمها (77.78 – 87.04٪) حساسية للاريثرمايسين ، الكاناميسين ، الاوكسي تتراسايكلين والكلورمفينيكول.