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IN VITRO CHEMOTHERAPEUTIC SENSITIVITY AGAINST VARIOUS ISOLATES FROM CLINICAL CASES OF MASTITIS IN COWS, BUFFALOES AND GOATS

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Milk samples from 325 buffaloes, 79 cows and 4 goats suffering from mastitis were studied. The analysis of samples showed bacterial growth in 353 (86.51%) samples while one (0.24%) sample showed fungal infection. Of positive samples, 165 (40.44%) revealed mixed infection of Streptococci and Staphylococci, 76 (18.62%) revealed Coliforms, 62(15.19%) ***Staphylococcus aureus****, 25(6.12%)* ***Corynebacterium pyogenese****, 12 (2.94%)* ***Str. agalactiae****, 7(1.71%)* ***Str. dysgalactiae****, 6(1.47%)* ***Pseudomonas aeruginosa****, 1(0.24%)* ***Candida albicans*** *and 54 (12.23%) revealed no growth. The highest number of samples 61.76% were sensitive to gentamicin. Ampicillin gave the lowest results (3.43%) in terms of* ***in vitro*** *sensitivity.*

INTRODUCTION

Among various diseases which adversely affect productive performance of dairy animals, mastitis probably ranks number one and it is a disease of economic significance affecting mainly buffalo and cattle. It has been estimated that only in Punjab total losses caused by clinical mastitis amount to Rs. 240 million per annum (Chaudhry and Khan, 1978). In the present study, 408 milk samples were collected from clinically affected buffaloes and cows in and arround Lahore. At present the treatment of mastitis is mostly done by hit and trial method using some broad spectrum antibiotics without having any prior information about nature of causative organism and their sensitivity. This indiscriminate use of antibiotics results in development of resistant strains of bacteria. The present study was therefore, planned to identify various microorganisms causing mastitis. Attempt was also made to study *in vitro* sensitivity of these microbes.

MATERIALS AND METHODS

Milk samples from 325 buffaloes, 79 cows and 4 goats suffering from mastitis were collected during months from August through January in 2 years. Monthwise collection of milk samples is shown in Table 1.

Bacteriological examination: Samples were collected with all aseptic precautions and then taken to the Divisional Diagnostic Laboratory, Lahore. Isolation and identification of bacteria was done through cultural, morphological and staining characteristics.

Antibiotic sensitivity test: Sensitivity of the bacteria to different antibiotics was graded as maximum, moderate and minimum depending

upon the size of bacteria–free zone. The discs used included Penicillin, Gentamicin, Cotrimoxazole, Ampicillin and Nystatin. These antimicrobial agents were tested for sensitivity against preparations available in injectable form in the market.

RESULTS AND DISCUSSION

For this study, 408 milk samples (325 from buffaloes, 79 from cows and 4 from goats) were collected in 18 months. The results of bacteriological examination are shown in Table 2.

Table 2 shows that Streptococci, Staphylococci and Coliforms are the major organisms causing mastitis. These organisms constitute the surface microflora of udder and get entrance into teats during unhygienic milking or due to an injury to the udder. The results are in agreement with Oliver and Mitchell (1984). They reported that Str. agalactiae and Staph. aureus are 87% of the organisms causing mastitis infection. They also reported that Streptococci other than Str. agalactiae, Staph. aureus and Coliforms were the predominant organisms isolated.

The present study showed that the incidence of mastitis rose during months of November to February. These results are in agreement

Table 1. Monthwise collection of milk samples

August	11	May	15
September	15	June	10
October	17	July	13
November	32	August	17
December	30	September	15
January	33	October	21
February	30	November	19
March	30	December	35
April	15	January	50

Table 2. Frequency of various organisms cultured from milk samples

Name of organism	No. of isolate	Percentage
Streptococci + Staphylococci	165	40.44
Coliforms	76	18.62
Staphylococcus aureus	62	15.19
Corynebacterium pyogenese	25	6.12
Str. agalactiae	12	2.94
Str. dysgalactiae	7	1.71
Pseudomonas aeruginosa	6	1.47
Candida albicans	1	0.24
No growth	54	13.23

Table 3. In vitro sensitivity of various isolates to various antibiotics

Antibacterial agent	No. of sensitive isolate	Percentage
Gentamicin	252	61.76
Chloramphenicol	144	35.29
Kanamycin	133	32.29
Oxytertracycline	117	28.67
Cotrimoxozole	60	14.70
Penicillin	48	11.76
Doxycyline	36	8.82
Ampicillin	14	3.43
Nystatin	–	–

with Hussain, and Manzi (1984) who reported higher incidence between December to July. Paranjape and Das (1986) reported that Streptococci and Staphylococci formed the commonest combination causing mastitis and that mastitis was more prevalent in the Monsoon season (June to September) than in winter or summer. The results of the present study are also in agreement with Singh and Baxi (1982). The results of sensitivity to various chemotherapeutic agents are shown in Table 3.

In the present study 61.56, 35.29 and 32.59% of the organisms were observed sensitive to Gentamicin, Chloramphenicol and Kanamycin respectively. Oxytetracycline, Penicillin, Doxycyline and Ampicillin were the least effective. The results are in agreement with Paranjape and Das (1986). They reported that most effective antibiotics were Gentamicin. Chloramphenicol, Ampicillin and Kanamycin. The bacteria were found relatively resistant to Oxytetracycline, Penicillin and Streptomycin. The same has also been observed in the results of the present study. These results are also in agreement with Hussain and Manzi (1984). It is concluded from the present study that Gentamicin and Chloramphenicol are the most effective antibiotics against mastitis organisms.

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