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CULTURE AND SENSITIVITY OF BACTERIAL GROWTH FROM EXOTIC COWS SUFFERING FROM ENDOMETRITIS UNDER PAKISTANI CONDITIONS

Idrees Ali Zahid
Research Institute for Physiology of Animal Reproduction, Bhunikey (Pottoki), Distt. Kasur, Pakistan

ABSTRACT

Bacteriology of endometritis and *in vitro* antibiotic sensitivity of the isolates in Holstein Friesian and Jersey cows maintained at Research Institute for Physiology of Animal Reproduction, Bhunikey, District Kasur were carried out. Out of 100 samples, 89 contained different strains of bacteria and 11 were found bacteriologically sterile. Different species of bacteria isolated from these samples were, *Bacillus subtilis* (08.99%), *Corynebacterium pyogenes (*19.10%), *Escherichia coli* (29.21%), *Neisseria meningitides (*03.37%), *Staphylococcus aureus (*23.60%), *Streptococcus pneumonia (*03.37%) and *Streptococcus pyogenes (*12.36%). The *in vitro* antibiotic sensitivity test indicated that the highest number of isolates (92%) were sensitive to neomycin, followed by doxycyline (89%). Clindramycin showed the lowest results in terms of *in vitro* antibiotic sensitivity (51%).

Key Words*:* Bacteriology, endometritis, antibiotic sensitivity, sub-tropical climate, exotic cows.

INTRODUCTION

Endometritis affects the fertility and milk yield of cows. It is the main health problem in high producing cows (Aeberhard *et al.,* 1997). Bacterial isolation has been reported from uterine secretions of cows suffering from endometritis (Cohen *et al.,* 1997).

The infections of uterus caused by bacteria are treated with antibiotics. However, the efficacy of such therapeutic agents needs to be evaluated from time to time due to continuous emergence of drug resistant bacterial strains. Objectives of this study were, to find out the organisms causing endometritis in an exotic herd maintained at the Research Institute for Physiology of Animal Reproduction, Bhunikey and to determine their *in vitro* sensitivity to various antibiotics.

MATERIALS AND METHODS

One hundred uterine samples, 48 from Holstein Friesian and 52 from Jersey cows maintained at the Research Institute for Physiology of Animal Reproduction Bhunikey, were collected from clinical cases of endometritis. Immediately after collection, each sample was mixed in sterile normal saline solution and incubated at 37^0C for four hours. These samples were inoculated by streaking method on blood agar, MacConkey's agar, Staphylococcus medium No. 110, Edward medium and Nutrient agar. The inoculated media were incubated, both under aerobic and anaerobic conditions, at 37^0C and examined after every 12 hours till 48 hours post inoculation for the presence of any growth. Growth characteristics of the isolates were recorded. The cultures were purified by subculturing and were refrigerated for further studies. Each isolate was characterized on the basis of staining behaviour, size, motility and cultural and biochemical tests. All the isolates were tested for *in vitro* antibiotic sensitivity (Muneer *et al.,* 1991*).* For this purpose, separate discs containing amoxycillin 10 mg, clindramycin 10 mg, cotrimoxynol 25 mg, doxycyline 30 mg, lincomycin 10 mg, neomycin 30 mg, tobramycin 10 mg and trimethoprim 05 mg per disc were employed. The antibiotics inhibiting a zone of bacterial growth 10-14 mm, 15-24 mm and $\geq$ 25 mm were considered slightly, moderately and most effective antibiotic against that isolate, respectively.

RESULTS AND DISCUSSION

Various species of bacteria isolated from uterine samples of Holstein Friesian and Jersey cows and their *in vitro* antibiotic sensitivity to different antibiotics are presented in Table I. Of the total 100 uterine samples, 89 contained different bacterial strains while 11 were found bacteriologically sterile. Bacterial species isolated from these samples were, *Bacillus subtilis* (08.99%), *Corynebacterium pyogenes (*19.10%), *Escherichia coli* (29.21%), *Neisseria meningitides (*03.37%), *Staphylococcus aureus (*23.60%), *Streptococcus pneumonia (*03.37%) and *Streptococcus pyogenes (*12.36%).

Table I: Bacteriology of endometritis and *in vitro* antibiotic sensitivity of the isolates in Holstein Friesian and Jersey cows

Name of organisms	Total number of isolates	Number of isolates sensitive to						
		Amoxy-cillin	Clindra-mycin	Cotrim-oxynol	Doxy-cyline	Linco-mycin	Neo-mycin	Tobra-mycin
Bacillus subtilis	8	4	5	5	6	5	6	3
Corynebacterium pyogenes	17	9	9	11	15	14	17	10
Escherichia coli	26	15	10	23	24	22	24	16
Neisseria meningitidis	3	2	2	3	3	3	3	2
Staphylococcus aureus	21	13	10	20	18	17	19	12
Streptococcus pneumonia	3	3	3	2	3	2	3	1
Streptococcus pyogenes	11	6	6	10	10	9	10	7
Total	89	52 (58%)	45 (51%)	74 (83%)	79 (89%)	72 (81%)	82 (92%)	51 (57%)

The figures in the parenthesis indicate the antibiotic sensitivity percentage against total isolates.

In the present study, 11% samples did not show any microbial growth. Since these samples were taken from animals showing clinical signs of endometritis, they cannot be bacteria-free. It is possible that the media/conditions used in the study were not favourable for the growth of micro-organisms present in these samples.

Bonnett *et al.* (1991) reported that endometrial biopsies in Holstein Friesian cows were positive for *Actinomyces pyogenes, Escherichia coli* and *Streptococci* bacteria. Zahid *et al*. (1989) also isolated *Bacillus subtilis, Corynebacterium pyogenes*, *Escherichia coli*, *Staphylococcus aureus* and *Streptococcus pyogenes* from the clinical cases of metritis in buffaloes. Similarly, Ahmad and Muneer (1995) reported the isolation of these organisms from uterine discharge and washings of cows suffering from metritis or other reproductive disorders.

The *in vitro* antibiotic sensitivity test indicated that the highest number of isolates were sensitive to neomycin, followed by doxycyline (Table 1). Clindramycin showed the lowest results in terms of *in vitro* antibiotic sensitivity. However, Muneer *et al.* (1991) reported oxytetracycline to be the best antibiotic for the treatment of metritis in cows.

From these results it appears that neomycin, as well as doxycyline, lincomuycin and cotrimoxynol, are equally effective in treating endometritis in exotic cows. However, therapeutic trials using these antibiotics should have been carried out to find out the most effective drug.

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