Antibiotic Sensitivity Pattern of Cervico-Vaginal Mucous Culture of Repeat Breeding Buffaloes

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Abstract

Cervical mucus plays a vital role in fertility and breeding efficiency of bovines by providing an immediate nourishing and aseptic protective environment to spermatozoa deposited in female genital tract. During various phases of estrus cycle, mating and Artificial Insemination the genital track of a female came into contact with dirt, dust, air etc and subsequently gets infected with micro-organism. They set there and inflammatory process starts. Such condition makes the animal repeat breeder due to settled infection in the cervico-vaginal fluid and its epithelium. In the present paper the resistance patterns of bacterial isolates from the cervico-vaginal mucus of repeat breeder buffaloes to antibiotics were determined. Gentamicin was most effective antimicrobial agent followed by chloramphenicol, ampicillin and penicillin. The use of standardized techniques for monitoring microbial susceptibility to antimicrobial agents is emphasized.

Keywords- Buffaloes, cervical mucous, antimicrobial agents, chemotherapy

Introduction

Antibacterial agents are widely used in chemotherapy of infections of the bovine female reproductive tract. The evaluation of results of treatment with chemotherapeutic agents in genital tract infections has been and will continue to be singularly difficult. The association of episome mediated transfer of drug resistance among certain bacterial strains \textsuperscript{7, 9} and emergence of resistant mutants \textsuperscript{6} presents a constantly changing pattern in susceptibility of organisms to the broad spectrum of antibiotics that are presently in use. Under most clinical circumstances, empiric treatment is instituted without recourse to microbiological laboratory investigation.

The most fundamental principle in the treatment of any infection is that the therapy should be determined by isolation and determination of the causative organisms and in vitro testing of their susceptibility to antimicrobial agents \textsuperscript{10}. It is primarily important to know whether the pathogens isolated will be eliminated by concentrations of the antibiotic that can be safely achieved at the site of infection. Secondly, in order to avoid a protracted course of treatment, it should be determined whether any already instituted therapy may be altered if necessary. Keeping this theme in mind the present work was undertaken.
Cervico-Vaginal Mucous Antibiotic Sensitivity Pattern in Buffaloes

Materials and Methods

Cervico-vaginal mucous from fifty repeat breeding buffaloes was collected aseptically from field during estrous phase and subjected to in-vitro antibiotic sensitivity test using standard procedures at Vikas Pathological Laboratory, Deesa, Gujarat. The plates were incubated at 37°C. After overnight incubation, the zones of bacterial inhibition surrounding the discs were measured with calipers up to the nearest millimeter. The measurements were compared with the interpretive chart and the zones graded as susceptible, intermediate, or resistant. The dose and duration of treatment was decided according to the type of infection. The volume of infusion media ranged from 50 to 100 ml. buffaloes which did not repeat after first and following successful breeding were diagnosed for pregnancy per rectally after 90 days post breeding and those repeated were treated with the most sensitive antibiotic agent.

Results

The growth of bacteria was recovered in 46 (92 per cent) out of 50 samples. The cultures were found sensitive to different antibiotics. The antibiotic sensitivity was maximum for gentamicin followed by chloramphenicol, ampicillin and penicillin. In the total samples, about two thirds of the isolates are resistant to one or more of the antibiotic agents used. The range of resistance varies from 0.4% for gentamicin to 97.8% for oxytetracycline. An assessment of the extent of resistance to the 14 antibiotics used reveals a gradient of the following order: oxytetracycline 95.8%, lincomycin 51.5%, bacitracin 40.5%, triple sulph 34.2%, methicillin 32.1%, streptomycin, 31.2%, colymycin 28.7%, novobiocin 24.9%, erythromycin 23.2%, kanamycin 18.6%, penicillin 13.1%, ampicillin 8.0% and chloramphenicol 6 %, gentamycin 0.4 %, respectively.

All the cultures were found resistant to oxytetracycline. Repeat breeder buffaloes treated with Gentamicin 800 – 1200 mg, gave 73.91 per cent conception (34 buffaloes) at first A.I. and 15.21 per cent (7 buffaloes) in the subsequent A. I. Out of remaining five buffaloes, one had under developed genitalia and four had hormonal disturbances and treated accordingly.

Discussion

The antibiotics are widely used in the treatment of bovine genital infections. Gentamicin and chloramphenicol has been reported to be the most sensitive antibiotic against bacteria isolated from the cervico-vaginal mucous of repeat breeders. Higher conception rate was observed in repeat breeder buffaloes treated with antimicrobial agents after antibiotic sensitivity test. The broadest spectrum of inhibitory activity in this study was demonstrated by gentamicin followed by chloramphenicol, ampicillin and penicillin.

In many cases, potential bioactive compounds have lost their significance for therapy due to extensive and prolonged use. Outstanding example of such an occurrence is the emergence of penicillin-resistant strains of gonococci. Excessive uses of antibiotics in livestock, particularly large scale administration in the form of feed supplements, are partly responsible for the free dissemination of multiple drug resistance among bacteria. Effectiveness of antibiotics depends on many factors, only two of them lend themselves to objective quantification. These are the sensitivity of the causative infectious agents to antibiotics and the latter is concentration in the inflammatory focus. In some cases, the resistance to bacteria is natural. The interpretive schemes for monitoring microbial susceptibility to antimicrobial agents should be based on recognized
standards so that results obtained could be correlated with the response to therapy observed in clinical practice. The Bauer technique used in the present study is currently considered satisfactorily standardized.

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**References**