

Comparative antibiogram and clinical efficacy of neomycin in bovine genital infections

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ABSTRACT

Microbial agents isolated from seventy-six cases of bovine genital infections and their antibiotic sensitivity pattern was recorded. *E. coli* was the most prevalent organism followed by *Staphylococcus sp* and *Streptococcus sp*. Maximum per cent of genital isolates were sensitive to neomycin followed by gentamicin, amikacin and ciprofloxacin and were resistant to tetracycline and kanamycin. In the treatment trial, single parental administration of neomycin resulted in 84.30% conception rate whereas animals treated with gentamicin resulted in 60% conception only.

Key words: Bovine, genital infections, antibiotic sensitivity, neomycin.

Repeat breeding, primarily due to uterine infections, is one of the major factors contributing towards serious economic losses to the dairy industry. The microorganisms present in the genital tract play a significant role in the failure of conception or early embryonic death resulting in repeat breeding. The indiscriminate use of antibiotics to treat uterine infections has invariably resulted into emergence of resistance among bacteria complicating the effectiveness of therapeutic measures. Recovery rate is rapid when specific antibiotic is used for the specific type of organism *in vivo* (Koleff *et al.*, 1973). In perspective, the present study was designed to identify the microflora in genital system of repeat breeder cross bred cows, their antibiotic sensitivity pattern and conception rate in affected animals following treatment with neomycin and gentamicin.

The observation reported are based on a study of 76 cows (of different breeds) brought to the Veterinary dispensary, Killiyoor, Kanyakumari district and various infertility camps and those cows which failed to conceive for three or more than three times either naturally or artificially were included in this study. All

these animals had normal estrous cycle and estrus period without any palpable pathological problem in the reproductive tract. Cervical secretions of repeat breeder cows were collected aseptically at the time of estrus. The swab material was used for inoculation on laboratory media. The pathogenic bacteria were isolated and identified as per the standard procedure described by Carter (1984). The *in vitro* antibiotic sensitivity test of all the isolates against seven antibiotics was carried out by the disc diffusion technique (Bauer *et al.*, 1966). The antibiotics to which microorganisms were found to be most sensitive were used for treatment of repeat breeders. The repeat breeder cows were randomly divided in to three groups. The animals in gr I (n=30) were treated with single intramuscular injection of neomycin @ 4 mg/kg b wt) and gr II (n=20) with single injection of gentamicin @ 4 mg/ kg b wt). The animals of all the three groups were artificially inseminated during the next cycle. The conception rate was calculated based on pregnancy diagnosis results carried out between day 60 and 90 post insemination.

Out of the 76 samples tested, all the samples were positive for bacterial infection. These results are

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in agreement with the findings of Sharma *et al.* (1988) and Chandrakar *et al.* (2002) as they isolated 100% positive samples in repeat breeding cows. Predominant bacterial isolates were *E. coli* (30.26%), *Staphylococcus sp.*, (22.37%), *Streptococcus sp.*, (14.47%), *Klebsiella sp.*, (13.16%), *Pseudomonas sp.*, (10.53%) and *Proteus sp.*, (9.21%). The antibiogram revealed that more numbers of isolates were sensitive to neomycin (98.68%) followed by gentamicin (80%), amikacin (70.37%), ciprofloxacin (60.29%), Chloramphenicol (51.62%) and Ceftriaxone (33.33%). Tetracycline and Kanamycin are the two drugs, which showed least effectiveness or more resistance.

In the treatment groups, out of the 30 animals in gr I, 84.30% of the animals conceived after a single parenteral injection of neomycin where as in gr II only 60% of the animals conceived after a parenteral dose of gentamicin. In the control group none of the animal got pregnant. The good response obtained in the treatment group could be due to the effect of neomycin in controlling uterine infections and its subsequent retention within the uterine lumen. Singh *et al.* (2001) reported an overall conception rate of 63.85% with intra uterine infusion of neomycin and 64.28% with intra muscular neomycin. The present study proved that systemic administration of antibiotics to have reported advantage than local administration. This has been stated as intramuscular administration of the drug yielded considerable tissue concentration in all parts of the genital tract examined 24 hr after treatment contrary to intrauterine infusion that gave comparable concentration only in the endometrium and in uterine secretions (Gustafson, 1984). Sharma *et al.* (1988) reported 70% conception rate with gentamicin, which is slightly higher than the present study. The variation in result might be due to differences in the sensitivity pattern of the organisms and the increased frequency of using the common antibiotics.

Thus systemic administration of antimicrobials

gives better distribution in the tubular genital tract and ovaries. It appeared from the present observation that therapeutically effective levels of drugs cannot be achieved in for sufficient period after intra uterine infusion with recommended therapeutic dose. It is thus concluded that a parenteral injection of neomycin in normal therapeutic dose is highly effective in treating bovine genital infections in repeat breeding cows.

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