MANAGEMENT OF METRITIS IN CROSSBRED CATTLE OF KASHMIR USING OXYTETRACYCLINE, CEPHALEXIN AND PROSTAGLANDIN F₂α

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ABSTRACT
A total of 36 cows suffering from metritis were divided into 3 groups i.e. group-IA (metritis without palpable CL), Group-IB (metritis without palpable CL) and group-II (metritis with palpable CL) keeping equal number of animals in each group. Animals of group-IA were treated with oxytetracycline 3.0 gm intrauterine daily for 2-4 days; whereas, group-IB animals were treated with cephalxin 4 gm intrauterine daily for 2-4 days. Single intramuscular injection of Dinoprost (PGF₂α) 25mg was given to animals of group-II. Recovery rate, on the basis of results of cultural examination, of 3 groups were found as 80.00, 71.43 and 91.67% respectively.

Key words: Oxytetracycline, Cephalexin, Prostaglandin F₂α, Metritis, Cattle, Kashmir.

INTRODUCTION
Metritis is a common cause of reproductive failure that is often associated with increased number of services (Roberts, 1971) and results in delayed conception. Different types of drugs are being used to treat this condition. However, the efficacy of these drugs in various geographical regions differs due to the variation in the prevalence and sensitivity of different microbes. The present study was planned to evaluate and compare the efficacy of oxytetracycline, cephalexin and prostaglandin F₂α in the treatment of metritis in crossbred cows of Kashmir valley.

MATERIALS AND METHODS
A total of 36 crossbred cows presented with the history of expelling vaginal discharge following artificial insemination/natural service were included in the study. Diagnosis of metritis was done on rectal examination. On palpation uterus was hard, swollen, thick walled and fluid filled with moderate tone. The characteristic longitudinal ridges, usually palpable, were absent. Purulent or muco-purulent exudates evacuated per vagina on massaging the uterus. The discharge was collected aseptically in a sterilized test tube and was put to bacteriological examination. The isolation and identification of the organisms was carried out on the basis of cultural, morphological, colony characteristics, motility and biochemical reactions as per the method described earlier (Cowan and Steel, 1970). All the bacterial isolates were put to in-vitro drug sensitivity test as per the method described by Bauer et al. (1966). Animals were divided into two groups on the basis of palpable corpus luteum (CL). Group-I consisted of animals having no palpable CL on one of the ovaries. Group-II consisted of cows having CL on one of the ovaries. Animals of group-I were randomly assigned to either group-I or group-IB. Animals of all the 3 groups were treated with different drugs as shown in the Table 1.

Absence of pus/purulent discharge and return of proper tonicity of uterus in all the animals were considered as signs of clinical recovery. The discharge from all the animals in the next estrus was collected aseptically once again to know the kind of bacterial infection, if any. The complete recovery rate was assessed by calculating percentage of culturally negative animals which were inseminated with frozen thawed semen having 60% post-thaw motility. Conception rate (CR) was determined by per-rectal examination of pregnancy diagnosis at 70 days post insemination. Data were subjected to statistical analysis by logistic Z-test (Snedecor and Cochran, 1994).
RESULTS AND DISCUSSION

The predominant isolates were *Staphylococcus spp.*, *E. coli*, *Bacillus spp.*, *Corynebacterium spp.*, *Pseudomonas spp.*, *Proteus spp.*, *Klebsiella spp.* and *Streptococcus spp.* This finding was in close conformity with the findings of several earlier workers (Ahmed and Bhattacharyya 2005, Gani et al. 2008 and Kusum et al., 2008). Highest sensitivity of bacterial isolates was shown against oxytetracycline (71.00%) followed by ceftriaxone (67.00%), cephalexin (63.00%) and gentamicin (60.00%).

In group-IA, 9 animals out of 12 (75.00%) got cured clinically and showed complete recovery. These animals came into estrus after 10-27 (average 15.3) days of treatment. Genital discharge collected from all these estrous animals showed no bacterial growth. Oxytetracycline is a popular antibiotic used for uterine infection. The drug being irritant helps in expelling the debris from the genital tract (Morrow, 1980).

In group-IB, 8 animals out of 12 (66.67%) showed clinical recovery. All the 8 animals came into estrus after 16-23 (average 17.2) days of treatment. Genital discharge collected from these animals showed no bacterial growth in 7 animals, one showed *Staphylococcus spp.* and thus complete recovery rate with cephalexin in treating metritis was 87.50% (Table 1). (Sandhu (2006) found 50% cure rate of oxytetracycline and cephalexin in post-parturient endometritis. Decreased efficacy of cephalexin as compared to oxytetracycline in the present study might be due to the development of resistant microbes to later one; however, this difference was statistically non-significant. Indiscriminate use of cephalexin in treating metritis in this locality for last few decades is probably largely responsible for development of resistant bacteria against this antibiotic. However, oxytetracycline is now a days least used antimicrobial under field conditions. Sheldon and Noakes (1988) also found more efficacy (73%) with intrauterine use of oxytetracycline than with intrauterine use of either cloprostenol (67%) or estradiol benzoate (63%).

In all the animals of group-II, CL regressed following the administration of PGF₂α. These cows showed estrus within 3-6 (average 5.2) days of treatment (Table 1). This finding corroborates well with the earlier findings of Noakes et al. (2001). In all these cows except one, estrous discharge was normal in colour and consistency with no bacterial growth. However, in one, discharge was still opaque and showed bacterial growth on culture. This cow was later treated with oxytetracycline 3 gm intrauterine daily for 3 days to which the animal responded. Thus PGF₂α showed clinical recovery in 91.67% and complete recovery in 100.00% cases (Table 1). Palmer (2003) reported that both PGF₂α and its various analogues had been widely used for the treatment of post-partum metritis. High efficacy of PGF₂α in the present study might be due to its luteolytic effect, cervical dilation and myometrial contractility. Earlier workers reported that unless the purulent discharge is severe, it is advisable to serve or inseminate cow at induced estrus as good results of conception are achieved (Gustafson et al., 1976). Prostaglandin F₂α and its synthetic analogue is the most successful treatment both in terms of cure rate

<table>
<thead>
<tr>
<th>Groups</th>
<th>No of animals</th>
<th>Treatment protocol</th>
<th>Clinical recovery (%)</th>
<th>Mean time of occurrence of estrus in days following treatment</th>
<th>Complete recovery (%)</th>
<th>1st Insemination CR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>12</td>
<td>Oxytetracycline (3.0 g) intrauterine daily for 2-4 days depending on the severity (4 days to 5 animals, 3 days to 4 animals and 2 days to 3 animals)</td>
<td>75.00 (9/12)</td>
<td>153</td>
<td>100.00 (9/9)</td>
<td>77.78 (7/9)</td>
</tr>
<tr>
<td>IB</td>
<td>12</td>
<td>Cephalexin 4 gm intrauterine daily for 2-4 days depending on the severity (2 days to 6 animals and 4 days to 6 animals)</td>
<td>66.67 (8/12)</td>
<td>172</td>
<td>87.50 (7/8)</td>
<td>85.71 (6/7)</td>
</tr>
<tr>
<td>II</td>
<td>12</td>
<td>Dinoprost (PGF₂α analogue) 25 mg intramuscularly as a single dose.</td>
<td>91.67 (11/12)</td>
<td>52</td>
<td>100.00 (11/11)</td>
<td>81.82 (9/11)</td>
</tr>
</tbody>
</table>

P > 0.05
and calving to conception interval in cases of metritis provided a CL is present (Sheldon and Noakes, 1988 and Noakes et al., 2001). Even administration of PGF$_2$â in endometritis with no CL has also been reported (Steffan et al., 1984).

First insemination CR was slightly but non-significantly higher in group-IB than in group-II and 1A. From the study it can be concluded that PGF$_2$â is a good choice of drug for treating metritis in cows that show palpable CL on the ovary. Intrauterine oxytetracycline is a better choice than cephalaxin for cows suffering from metritis with no palpable CL under agroclimatic condition of rural Kashmir.

REFERENCES


Palmer, C. (2003). Large Animal Veterinary Rounds, Volume 3, Issue: 8. as presented in the Rounds of the Department of Large Animal Clinical Sciences of the Western College of Veterinary Medicine, University of Saskatchewan, held in October, 2003.


