

### Short Communication

## STUDIES ON CLINICAL EFFICACY OF SOME THERAPEUTIC REGIMENS FOR THE MANAGEMENT OF ENDOMETRITIS IN COWS

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**ABSTRACT:** A total of 124 cows were treated with various therapeutic regimens by different routes. In the first group, Ciprofloxacin was administered through intrauterine route with clinical recovery of 87.88 percent and were inseminated in subsequent estrus with conception rate (CR) 48.28 per cent. In second group, clinical response was observed in 95.20 per cent to intra muscular administration of ciprofloxacin with CR of 50.00 per cent. Third group showed clinical recovery in 87.50 per cent animals administered gentamicin intra uterine with CR of 47.62 per cent. Likewise, clinical response and conception rate was 95.40 and 52.63 per cent, respectively after intramuscular administration of gentamicin. Similarly, 0.1 per cent Lugol's iodine yielded CR of 42.86 per cent amongst 87.50 per cent clinically recovered animals. In untreated control repeat breeder cows, CR was 20.00 per cent whereas amongst normal cyclic cows 55.00 per cent animals conceived. Non-significant ( $p>0.05$ ) improvement in conception rate was achieved in present study.

**Key words:** Endometritis, Antibiotics, Conception rate, Repeat breeder cows.

Purulent vaginal discharge and cytological endometritis are associated with impaired subsequent reproductive performance in postpartum dairy cows (Dubuc *et al.* 2010, Adnane *et al.* 2017). It affects the general health of animals and adversely affects their reproductive performance (Amiridis *et al.* 2003). The presence of bacteria in the uterus causes the uterine inflammation, histological lesions of the endometrium and delays uterine involution (Sheldon *et al.* 2003). In addition, uterine bacterial infection or bacterial products suppress pituitary LH secretion and perturb postpartum ovarian follicle growth and function, which disrupts ovulation in cattle (Opsomer *et al.* 2000). Thus, clinical endometritis is associated with lower conception rate (CR), increased intervals from calving to first service or conception and more culls for failure to conceive (LeBlanc *et al.* 2002).

For decades, endometritis in cows has been treated with intrauterine infusion of a bewildering array of substances and these are now receiving a scrutiny. There are no recommended doses for most of the drugs available for intrauterine use (Singh *et al.* 2004, Gilbert *et al.* 2005). Therefore, treatment of repeat breeder bovines suffering

from endometritis needs proper selection of antibiotics/ antibacterials/ antiseptics so as to prevent development of resistant strains of microbes and to eliminate the infection as quickly as possible.

Keeping in view the above facts, the present study envisages use of commonly used antibiotics / antibacterials /antiseptics their route of administration and post treatment fertility in affected animals following treatment with specific antibiotics.

### The study

The present work was conducted in 124 repeat breeder cows suffering from endometritis presented in the Clinical Complex of College of Veterinary and Animal Sciences, Himachal Pradesh Agriculture University, Palampur, India (32.6°N, 76.3°E, and altitude 1290.8 m). Cows were randomly selected for treatment studies after thorough clinico-gynaecological examination and those showing post treatment clear cervico-vaginal discharge (CVD; n=110) were inseminated in different groups using frozen thawed semen.

In all the groups, the treatment was started on day 0 (first day of estrus with turbid CVD) and continued for

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**Table 1. Clinical efficacy of some therapeutic agents in cows (n=124) suffering from endometritis.**

Treatment groups	Drug and Dose	Route of administration	No. of animals treated	Responded clinically and inseminated	Conceived	CR
1	Ciprofloxacin @5mg/kg b.wt. o.d. X 3 days	Intrauterine	33	29	14	48.28
2	Ciprofloxacin @5mg/kg b.wt. o.d. X 3 days	Intramuscular	21	20	10	50.00
3	Gentamicin @4mg/kg b.wt. o.d. X 3 days	Intrauterine	24	21	10	47.62
4	Gentamicin @4mg/kg b.wt. o.d. X 3 days	Intramuscular	22	19	10	52.63
5	Lugol's iodine (0.1%) @30ml X 3 days	Intrauterine	24	21	9	42.86
6	Untreated Control	-		10	2	20.00
7	Normal Control	-		20	11	55.00

next 3 days. In subsequent normal estrus, the cows showing clear CVD were inseminated. Another 10 animals with turbid CVD were not given any treatment (untreated controls) and were inseminated. Additionally, 20 normal cyclic cows were employed as normal controls and were inseminated. Pregnancy diagnosis was carried out 60 days post AI by rectal palpation method in cows not returning to estrus within this duration. Distribution of experimental cows in different treatments and insemination groups has been shown in Table 1.

Out of 124 cows given different treatments, 110 (88.71%) animals responded. All these animals (n=110) were inseminated with frozen semen. In present study, 87.80 per cent animals responded clinically to treatment with an overall CR of 48.28 per cent in first group. Similar results (47.00%) with regards to conception have been reported earlier (Singh *et al.* 2004) following treatment with ciprofloxacin whereas Das (2004) recorded high CR (80.00%) with ciprofloxacin on second insemination basis.

In second group, the clinical response was observed in 95.24 per cent with conception rate of 50.00 per cent. However, quite a high CR (80.00) with enrofloxacin, a quinolone group antibacterial has been recorded when given through parenteral route at therapeutic doses (Kumar *et al.* 2004).

In third group, clinical response was observed in 87.50 per cent with CR of 47.62 per cent. Majority of workers have been using gentamicin in diluted concentrations. Das (2004) recorded 40.00 per cent CR in cows treated with 10ml gentamicin in diluted with 30 ml distilled water intrauterine. However Singh *et al.* (2001) recorded a higher CR (63.10%) with diluted gentamicin (5ml

gentamicin+15ml distilled water). Al-Guedawy *et al.* (1983) observed that 17 and 82 per cent of infused gentamicin remained in the uterine lumen at six hours post infusion using water and saline vehicle, respectively.

However, in a study, gentamicin sulphate has been reported to inhibit spontaneous as well as oxytocin and PGF<sub>2</sub>α induced contractions of myometrium isolated from non- pregnant cows. This may be of importance considering the potentially negative effect of gentamicin sulphate on uterine involution in cows with puerperal endometritis, resulting in impairment of fertility performance (Ocal *et al.* 2004).

In fourth group, clinical response was observed in 86.36 per cent with CR of 52.63 per cent. When injected intramuscularly, the endometrial tissue concentration of gentamicin sulphate is reported to exceed serum concentrations (Haddad *et al.* 1987). It has been observed that sufficiently high concentration of gentamicin accumulates in the uterine lumen of cows 6 hours after intra muscular administration @4mg/Kg body weight (Al Guedawy *et al.* 1983).

In fifth treatment group, clinical response was observed in 87.50 per cent with CR of 42.86 per cent. Das (2004) recorded a lower CR (20.00%) in animals treated with 0.25 per cent Lugol's iodine. However Singh (1996) recorded a CR of 45.50 per cent in animals treated with 0.1% Lugol's iodine. Shogo *et al.* (2016) compared 2 per cent Povidone iodine with 0.5 per cent as intrauterine infusion with encouraging results in treatment of endometritis.

In untreated control animals (n=10), only 2 (20.00%) conceived. Das (2004) also recorded a similar CR (20.00%) in cows given no treatment. In 20 normal cyclic

cows without any clinical abnormality, a CR of 55.00 per cent was recorded. This is in close agreement with the findings of Singh *et al.* (2004) who also recorded 55.00 per cent CR in control group. Kumar *et al.* (2004) recorded a lower CR (44.40%) in normal breeding cows.

Factors to consider in the selection of antimicrobials for the treatment of endometritis are the uterine environment, pathogen, minimum inhibitory concentration of the pathogen, route of administration of the antimicrobial agent or vehicle, antimicrobial and/or carrier agent used for the intrauterine therapy, treatment economics and therapy outcome (Sharma *et al.* 2017).

It has been concluded in a study that systemic, rather than intrauterine treatment achieves adequate concentration of gentamicin in blood serum and endometrial tissue, which is particularly necessary in cases of septic metritis. Also, systemic administration eliminates the risk of damage to genital tract and of introducing new organisms into the site of infection (Haddad *et al.* 1987). Similar results with regards to CR i.e. intramuscular (52.6%) v/s intrauterine treatment (47.6%) were obtained in the present study.

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