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Comparative efficacy of parental and intravaginal administration of $PGF_2\alpha$ for the treatment of pyometra in bitches

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ABSTRACT

A total of fourteen pyometra affected bitches were treated with $PGF_2\alpha$ for a minimum period of 5 days either by subcutaneous route (Group-I; n=8) @ 0.1 mg/kg b.i.d. or by intravaginal route (Group II; n = 6) @ 0.15 o.i.d. along with antibiotics. In group I, six bitches (75%) responded to the therapy; 4 in one series while 2 required second series of $PGF_2\alpha$ therapy. In group II all the bitches (100%) responded to the treatment. The number of $PGF_2\alpha$ administration per animal required with intravaginal route was significantly lower ($P < 0.05$) than with parenteral administration. The side effects were less pronounced by intravaginal route. Successful treatment in both the groups was associated with disappearance of clinical signs of pyometra. It thus appeared that both the routes of $PGF_2\alpha$ administration along with antibiotics were effective to treat pyometra in bitches. However, the intravaginal administration was advantageous, as it required fewer administration and the side effects were milder.

Key words : Canine pyometra, prostaglandin therapy

Pyometra in bitches is a polysystemic diestral disorder, which if not treated can induce high mortality. The incidence of pyometra in bitches has been found to be 12.14 percent (Gandotra *et al.*, 1993). The preferred treatment for pyometra has been ovariohysterectomy. Medical treatment with parenteral prostaglandings is not popular due to its very severe side effects (Wykes and Olson, 1993). However, Gabor *et al.* (1999) obtained a high recovery rate and no side effects with intravaginal administration of $PGF_2\alpha$. The present study was therefore, undertaken to find the comparative efficacy of parenteral and intravaginal administration of $PGF_2\alpha$ for the treatment of open pyometra.

MATERIALS AND METHODS

A total of fourteen pyometra affected cases presented at Veterinary Clinic, PAU were divided into two treatment groups. In group I (n = 8) bitches, $PGF_2\alpha$ (Inj. Lutalyse*) @ 0.1 mg/kg b.i.d. was administered subcutaneously whereas, in group II (n = 6) bitches were treated with $PGF_2\alpha$ @ 0.15 mg/kg o.d. intravaginally for a minimum period of 5 days. An infant feeding tube (no.6) was inserted inside a large animal AI sheath. The infant feeding tube was cut from the cranial end and AI sheath from the caudal part so as to make the equipment 10-14 cm long and was used for the intravaginal deposition of drug. After deposition of the drug, both hind legs of the bitch were kept lifted for 2-3 minutes.

Antibiotic combinations achieving "four quadrant therapy" (covering spectrum of four major groups of bacteria i.e. gram-positive aerobes, gram-positive anaerobes, gram-negative aerobes and gram-negative anaerobes) were also administered following culture and sensitivity test. Supportive therapy in the form of intravenous fluids and vitamin B-complex preparation was given as and when required.

The bitches were closely monitored for half an hour after $PGF_2\alpha$ administration for the appearance of various side effects.

The animal was clinically examined each day to evaluate the response of treatment. If required, a secon series of $PGF_2\alpha$ therapy was instituted. Those bitches, which did not show adequate response to $PGF_2\alpha$.

RESULTS AND DISCUSSION

Out of eight bitches, in group I, six (75%) responded to the therapy. Four of six animals recovered with 1st series of treatment while two required a 2nd series of therapy, one week after the end of 1st series. Two bitches in this group did not respond to the treatment. One died on day 3 of therapy and

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Table 1. Side effects observed after subcutaneous and intravaginal $PGF_2\alpha$ administration in bitches on day1 of treatment

Side effects	$PGF_2\alpha$ s/c (n = 8)	$PGF_2\alpha$ intravaginal (n = 6)
Restlessness	8/8	6/6
Salivation	8/8	6/6
Hyperpnoea	8/8	6/6
Vomiting	7/8	2/6
Defecation	5/8	1/6
Urination	6/8	0/6

The contractile effect of $PGF_2\alpha$ on the myometrium, gastrointestinal, tracheobronchial and bladder smooth musculature accounts for the clinical responses observed (Boothe, 1984) and reflects the physiologic effects of endogenous prostaglandins. Satisfactory therapeutic results of $PGF_2\alpha$ @ 0.1 mg/kg by subcutaneous route were found by other workers (Meyers-Wallen *et al.*, 1986; Nelson and Feldman, 1986; Johnson, 1993). Gabor *et al.* (1999) observed 86.6% recovery rate as compared to 100% in the present study with no side effects using intravaginal $PGF_2\alpha$ @ 0.15 mg/kg and parenteral broad-spectrum antibiotics.

Table 2. Comparison of subcutaneous and intravginal $PGF_2\alpha$ treatment of pyometra in bitches

Treatment group	No. of animals treated successfully	Mean No. of treatments	Mean No. of days	Mean total dose of $PGF_2\alpha$ required per animal(mg)
Group I	6/8	15.00±2.35[a] (10-26)	7.5±1.17 (5-13)	22.8±3.95 (14-40)
Group II	6/6	7.33±0:76[b] (6-11)	7.33±0.76 (6-11)	19.0±3.52 (10.5-31.5)

*Means bearing different superscripts in the same column differ significantly ($P < 0.05$)
Figures in parenthesis indicate range

another was ovariohysterectomized after 6 days of therapy. In group II, all the six (100%) animals responded to the treatment within 6-11 days. Successful treatment resulted in an improved appetite, diminished or no vaginal discharge and disappearance of other clinical signs. The side effects of treatment observed and their frequency of occurrence in both the groups are listed in Table 1. The side effects seen after intravaginal infusion were lesser and/or milder as compared to parenteral administration of $PGF_2\alpha$. The adverse reactions resolved within 1 hr of therapy. The adverse diminished in severity and duration after subsequent $PGF_2\alpha$ administration (Nelson and Feldman, 1986; Davidson, 1995). A comparison of parenteral and intravaginal administration of $PGF_2\alpha$ therapy is summarized in Table 2. The number of $PGF_2\alpha$ administrations per animal required with parenteral route was significantly ($P<0.05$) higher than that with intravaginal route. However, no significant difference was observed in the number of days of the treatment. The total quantity of drug ($PGF_2\alpha$) required per animal for recovery was found to be slightly higher in parenterally treated than that in intravaginally treated animals. This difference was statistically non-significant but may reflect economical considerations. $PGF_2\alpha$ exerts its effect on the uterine myometrium, cervix and corpora lutea. $PGF_2\alpha$ stimulates uterine motility. This myotonic effect increases intrauterine pressure to cause movement of uterine contents towards the cervix.

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