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Medical management of closed pyometra in a bitch: A case report

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Abstract

Pyometra is a common reproductive disorder that affects more than one third populations of bitches over 7 years of age in which physiological effects of progesterone on the uterus play a major role. Ovariohysterectomy is the usual treatment for pyometra. The main advantage of ovariohysterectomy is both curative and preventive for recurrence of pyometra over medicinal therapy. However, surgery is associated with the risk of anaesthesia and offers the bitch sterile. Since last 10-12 years, several medical treatments have been suggested to treat both open and closed cervix pyometra. The most useful medical treatment with minimum side effects seems to be administration of mifepristone with additional treatment with low doses of prostaglandin E1 analog (Misoprostol).

Keywords: Bitch, close Pyometra, ultrasonography, mifepristone, misoprostol

Introduction

Pyometra also known as chronic purulent endometritis is a commonly affecting bitches over 7 years of age (Egenvall *et al.*, 2001) ^[1]. It is a life-threatening disease that more frequently affects during the luteal phase when there are higher of progesterone plasmatic levels in bitch (Pretzer, 2008) ^[5]. Canine pyometra is a common reproductive syndrome of intact, sexually mature bitches during met/diestrous stage with various clinical as well as pathological signs specific to reproductive system along with systemic signs (Fransson, 2003) ^[2]. It can be categorized as open and closed; however closed type of pyometra is more common than open type of pyometra (Smith, 2006) ^[7]. The pathogenesis of pyometra in bitch is affected by several factors including bacterial infection, neutrophilic activity and uterine motility (Santana and Santos, 2021) ^[6].

Case History

An eight year old bitch weighing 12 kg was presented to the Veterinary Clinical Complex, W.B.U.A.F.S., Belgachia, West Bengal with the history of hyporexia, vomition, polydipsia, polyurea, swollen of abdomen and also history of estrus before 3 months. Except for vaginal discharge on physical examination, the dog was found to be quite normal. The case was suspected for close pyometra.

Diagnosis & Treatment

Hematological examination (Table no. 1) discovered a high neutrophilic count (92%), indicating the presence of infection. Close pyometra was confirmed with the help of Radiography showed a dilated predominantly fluid-filled tubular structure located in the mid-abdomen below the lumbar vertebrae and Ultrasonographic examination revealed an enlarged uterus with convoluted, tubular horns filled with anechoic fluid (Fig. 1). Bitch was treated with progesterone receptor antagonist *i.e.* mifepristone @ 3mg/kg body weight orally twice daily for 3 days and synthetic prostaglandin *i.e.* misoprestol @ 10 µg/kg body weight orally twice daily for 4 days after one day starting the treatment.



Fig 1: Photograph showing anechoic sacculations on ultrasonographic scanning in bitch before treatment

Along with antibiotic Amoxicilin with Clavulanic acid *i.e.* Injection Clavam @ 20 mg/kg body weight intravenously twice daily for 7 days, proton pump inhibitor *i.e.* Injection Pan IV @ 1mg/kg body weight intravenously twice daily for 7 days and Injection Ringer's lactate @ 15 ml/kg body weight twice daily for 7 days. On the next day from the starting of treatment vaginal secretion was started (Fig. 2).



Fig 2: Vaginal secretion started after 24 hrs of treatment



Fig 3: Photograph showing no anechoic appearance after treatment

Following start of treatment, the animals were daily examined clinically to assess treatment response in terms of activity and vaginal discharge. After seven days again USG (Fig. 3) and blood test (Table 1) were done on day 0 (just before starting treatment) and on day 7. There was uneventful change of size of uterus.

Results and Discussion

Generally, closed pyometra is a more severe disease compared to open pyometra. Clinically, ovariohysterectomy is the only choice for treatment of bitches with closed pyometra. Ovariohysterectomy is always more complicated and carries a higher risk because of infection. So, it is best to treat the bitches either by medical or hormonal therapy (prostaglandins) when patients are not also fit for surgery. However, several researchers said that there were undesirable side effects after prostaglandin therapy. Hence, depending the severity of the case at the time of presentation to the clinic, prostaglandins were not administered to the patient. Considering the restriction of hormonal therapy and ovariohysterectomy is only the solution of close pyometra for the last decades, the availability of antiprogesterin based drugs has completely changed the clinical approach to that problem. The administration of mifepristone during diestrus in the bitch will cause opening of the cervical os with subsequent emptying of the vaginal content.

Table 1: Hemato-biochemical parameters in bitch before and after treatment

Test Parameter	Before Treatment	After Treatment
Hb%	12.9	12.4
TLC(cumm)	38,500	16,400
Neutrophil %	92	80
Eosinophil %	1	1
Basophil %	0	0
Lymphocyte %	6	17
Monocyte %	1	2
Platelate(cumm)	80,000	2,20,000
BUN	15	10
Creatininie	1.2	0.9
Total Protein	8.9	6.5
Albumin	1.8	1.9
Globulin	7.1	4.6
Total Bilirubin	0.19	0.19
SGPT	17	18
SGOT	42	29
Alkaline Phosphate	160	86

Closed pyometra became open after 24 h of onset of mifepristone therapy as indicated by the onset of vaginal discharge. Mifepristone has five times greater relative binding affinity than progesterone for progesterone receptors (Philibert *et al.*, 1985) [4], thus, mimicking the effects observed during luteolysis and leading to relaxation of cervix (Verstegen *et al.*, 2008) [9]. Previously, a rate of recurrence was observed 9.8-20% in successfully treated pyometric dogs (Trasch *et al.*, 2003 and Gobello *et al.*, 2003) [8, 3]. To avoid recurrence of pyometra antiprogesterins can be used and subsequent cycles should the owner decide not to breed the bitch immediately. At the start of treatment, uterine diameters in female dog ranged from 4.27 to 6.68 cm that decreased to 1.16 cm on day 7. In present study, the overall response to treatment was successful with improved activity and appetite side by side an initial increase in vaginal discharge followed by diminished of discharge. Bitches with a closed cervix

pyometra and with liver or kidney insufficiency are not considered in good condition for a medical treatment with mifepristone. So, to improve the physiological as well as biochemical parameters of bitch this justifies the use of the drug to stabilize the patient. In brief, mifepristone proves to be safe and efficient drug for opening the cervical canal in dogs with closed pyometra.

Conclusion

In conclusion, the combination of mifepristone and misoprostol are effective and safe and allows preservation of subsequent fertility in the medical treatment for closed pyometra. Nevertheless, clinical parameters should be monitored carefully throughout treatment. It can be a successful substitute option over as usual ovariohysterectomy in those bitches which are not suitable for operation or the patients which are intended for future breeding purposes.

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