



Open Pyometra in Cocker Spaniel Female: Diagnosis, Treatment, and Management using Mifepristone and Misoprostol

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Abstract

An intact thirteen-year-old female cocker spaniel dog with inappetence and sanguineous mucopurulent discharge from the vagina was clinically diagnosed with open cervix pyometra based on the history, clinical signs, laboratory, and radiographic examination. The dog was treated to full recovery without surgical intervention with a combination of oral medication, hormonal therapy, and intra-uterine treatment.

Keywords: Pyometra; Cocker Spaniel Female; Mifepristone; Misoprostol

Introduction

Pyometra means "pus in the uterus". It is classified as open and closed cervix pyometra based on the intactness of the cervical plug. Pyometra is a common uterine disorder found in middle to old-aged intact female dogs. Studies have shown that some breeds including cocker spaniels have a higher risk of developing pyometra over others, suggesting breed predisposition in disease occurrence [1,2,4]. It is a hormone-mediated disorder that occurs during the diestral phase due to sequential progestational stimulations [8]. The disease is characterized by cystic endometrial hyperplasia (CEH) with an accumulation of inflammatory exudate in the uterine lumen occurring concurrently with a secondary bacterial infection [5]. Bacteria enter the uterus from a pre-existing vaginal infection, uterine infection, or fecal contamination [8], causing acute or chronic suppurative bacterial infection leading to the clinical manifestation of the disease.

Pathogenesis: During the estrous cycle in a female dog, the uterus is under the influence of progesterone for 9-12 weeks following ovulation regardless of the conception and pregnancy [2]. Progesterone promotes endometrial growth and glandular secretion while decreasing myometrial activity. It also inhibits leukocyte activity in the endometrium providing a conducive environment for bacterial growth [2]. The bacterial infection in pyometra is caused by fecal/perineal bacteria like *E. coli*, *Streptococcus* spp., *Staphylococcus* spp., *Klebsiella*, *Proteus*, and *Pseudomonas* [8]. However, *Escherichia coli* is the most common bacterium isolated in the case of pyometra [9]. Endotoxins released after bacterial death get absorbed from the uterine lumen into the circulation resulting in endotoxemia followed by shock and death in serious cases.

Clinically, the dog may present with inappetence, depression, polyuria, polydipsia, vomiting, lethargy, fever, and abdominal distension. Vaginal discharges are seen in cases where the cervix is

open. The discharges may be haemorrhagic, serosanguineous, or mucopurulent. In cases where the cervix is closed, no vaginal discharge is seen.

- **Hemogram:** A marked increase in total white blood cell count (WBC) is a common haematological finding in pyometra. Leucocytosis with severe neutrophilia with a left shift is seen frequently [3]. Hyperproteinaemia due to hyperglobulinemia is found in some cases [5].
- **Radiological findings:** Ultrasonographic findings reveals thickened uterine wall and distended lumen with serous to viscous heteroechoic fluid [2].
- **Treatment:** Pyometra can be treated medically or surgically or both. However, the decision is driven by several factors like the type of pyometra (open cervix/ close cervix), age and breed of the dog, overall health status of the dog, and conserving the reproductive capability of the dog.

Case history

A 13-year-old female cocker spaniel was presented at the C.P. Vet clinic with a history of inappetence, dullness, depression, reduced water intake, and sanguineous/mucopurulent vaginal discharge for the past several days.

Physical examination revealed congested mucous membranes, mildly enlarged lymph nodes, a rectal temperature of 103.2 degrees Fahrenheit, profuse vaginal discharge with blood, and an



Figure 2: Sanguineous/mucopurulent vaginal discharge.

open cervix. Haematological examination showed an increase in TLC count with left shift neutrophilia, normochromic normocytic anaemia, and neutrophilic leucocytosis. Biochemical reports revealed hyperglobulinemia resulting in hyperproteinaemia. Microscopic examination of vaginal swabs showed numerous neutrophils and erythrocytes.

Treatment and Discussion

The dog was managed with a combination of oral and intravenous medications, hormonal therapy, and intrauterine manage-



Figure 1: Affected Cocker spaniel female.

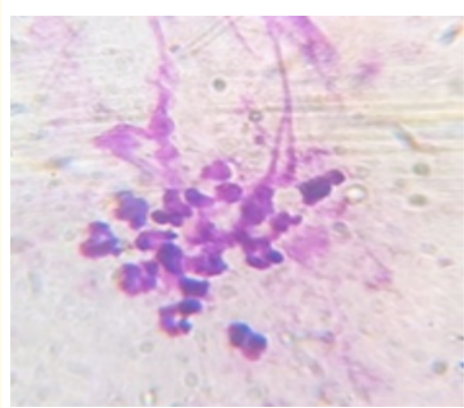


Figure 3: Vaginal Cytology showing Increased Neutrophil population.

Parameters	Before	After	Normal Range
HB (g/dl)	13.6	12.5	11.9-18.9
TLC ($10^3/\mu\text{l}$)	23	14	5-14.1
Neutrophils (%)	89	76	58-85
Lymphocytes (%)	7	19	12-30
Monocytes (%)	2	3	2-12
Eosinophils (%)	2	2	3-10
Platelets ($10^3/\mu\text{l}$)	178	238	211-621
Blood sugar (mg/dl)	97	105	76-119
SGOT (U/L)	40	45	13-15
SGPT	24	40	10-109
ALP	180	105	1-114
Total Protein	8.65	7.0	5.4-7.5
Albumin	2.00	2.5	2.3-3.1
Globulin	6.65	3.5	2.7-4.4
A/G ratio	0.3	0.71	0.85-1.3
BUN (mg/dl)	11.1	12.0	8-28
Creatinine (mg/dl)	1.0	1.1	0.5-1.7

Table 1

ment. For stabilizing the dog, intravenous fluid Ringer lactate @ 20ML/KG body weight twice daily for 5 days and DNS (Dextrose and Sodium Chloride Solution) @ 15 ML/KG body weight twice a day for 5 days were administered along with broad-spectrum antibiotics Amoxicillin-sulbactam @20mg/kg body twice a day intravenous for 5 days, and Inj. Pantoprazole @ 1mg/kg body weight twice a day for 5 days. The dog was treated with progesterone receptor; oral mifepristone @5 mg/kg body weight once a day for 3 days. Intrauterine flushing with metronidazole followed by Prostaglandin E1 analogue; misoprostol administration intrauterine for 3 days. A day after the treatment was started a mild increase in vaginal discharge was noticed. This could be due to the opening of the cervix because of misoprostol administration. It gradually reduced thereafter. The dog was under observation throughout the treatment. The physiological parameters like temperature and mucous membrane were normal after 5 days of treatment. The dog regained appetite and showed significant improvement in activity level. Hemogram and biochemistry values came back to the normal range.

In most cases of pyometra, surgical intervention of ovariohysterectomy (surgical removal of the uterus and ovaries) is advised. In this case, the decision of medicinal-hormonal therapy/management was made considering the old age of the dog, impaired vision, and presence of benign tumours all over the body. These conditions made surgical intervention risky and life-threatening. Prostaglandin used for the treatment has shown to have adverse side effects ranging from simple allergy to anaphylactic reaction, salivation, vomiting, diarrhoea, hyperpnoea, ataxia, urination, anxiety, pupillary dilatation followed by a contraction in dogs. However, some studies have shown the use of the drug in the treatment of pyometra without any side effects [3]. In this case, no side effect was observed during/after the treatment with prostaglandin therapy. Mifepristone has been used for pregnancy termination in bitch. Mifepristone has five times greater relative binding affinity than progesterone for progesterone receptors [7]. Thus, mimicking the effects observed during luteolysis and leading to relaxation of the cervix [10].

The risk of pyometra increases with age due to physiological changes that occur in the uterus due to progesterone dominance during the estrous cycle. This makes prevention difficult. Moreover, genetic and breed predisposition of certain breeds towards increased risk of pyometra adds to the complication [8].

Old intact female dogs with short inter-estrous intervals are more susceptible to pyometra because of repeated exposure of endometrium to progesterone. The only preventive measure is to say the female dogs who will not be used for breeding purposes before six months of age [6].

Conclusion

In conclusion, mifepristone and misoprostol combination is a safe and effective option for the treatment of open pyometra in female dogs. It is recommended to consider all the parameters and monitor the case throughout treatment. It is a life-saving alternative for dogs that cannot be treated surgically due to the physical state of the patient or for cases where the owner wants to keep the bitch intact for future breeding.

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