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Case Report: Management of Closed Pyometra on a 7 Year Old Bitch

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ABSTRACT

Pyometra commonly occurs in female dogs > 4 years of age. There are two types of pyometra: open pyometra and closed pyometra. Open pyometra referred to purulent and bloody discharge from the vulva, while closed pyometra did not have any vaginal discharge; however, there was an enlarged abdomen from the fluid-filled uterus. A 7-year-old domestic bitch with a swollen abdomen was clinically diagnosed with closed pyometra as there was no vaginal discharge. Additional examinations, such as radiography, complete blood count, and biochemistry profiles were also performed to establish the diagnosis. A clear mass with grayish features, characteristic of fluid-filled abdomen, was found on radiography, while complete blood examination showed leukocytosis and elevated globulin levels, indicating an infection. Based on the following examinations, ovariohysterectomy was performed to eliminate the source of infection. Anti-inflammatory and antibiotic drugs were administered post-surgery, and the patient fully recovered after one week of intensive care.

Keyword: closed pyometra, dog, ovariohysterectomy

INTRODUCTION

Pyometra is a reproductive pathology that commonly occurs in female dogs of sexually mature age. Affected dogs are generally aged 4-7 years or older, although some cases have reported that younger dogs also developed pyometra (Egenvall *et al.,* 2001; Koo *et al.,* 2011). Pyometra occurs due to high levels of progesterone, which weakens the immune system and increases the risk of endometritis, a bacterial infection of the inner lining of the uterus (Santana and Santos, 2021). Endometritis followed by the accumulation of purulent fluid is called pyometra. There are two types of pyometra, open pyometra and closed

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pyometra. Open pyometra is characterized by the appearance of pale cream-colored vaginal discharge, sometimes with a slightly pink color, while vaginal discharge is found on closed pyometra (Kempisty *et al*., 2013). Pyometra can be life-threatening if it is not treated immediately as the infection spreads throughout the body.

MATERIAL AND METHOD

Case History

A 7-year-old domestic bitch, weighing 9,3 kg, presented to the Alit Vet Animal Clinic with a swollen abdomen and slight anorexia for the past week. The bitch looked normal, as there was no sign of lethargia. Vaginal discharge was not observed. Physical examination revealed a rectal temperature of 38.5^{0}C, heart rate of 120 beats/min, respiratory rate of 30 breaths/min, and no signs of dehydration. The last parturition occurred about two years ago, and the dog had never taken any birth control drugs.

Diagnosis

Clinical examination, including complete blood count (CBC), biochemical profile, and X-ray, was performed to confirm the diagnosis. CBC revealed marked leukocytosis with a left shift due to infection and thrombocytopenia (Table 1). The biochemical profile showed high levels of blood urea nitrogen (BUN), slightly elevated phosphorous (PHOS), globulin (GLOB), total protein (TP), and K+. Low Na+ levels were also observed (Table 1). Changes in the biochemical profile showed decreased kidney function. On brief radiography of the caudal abdomen, a dilated fluid-filled structure was visualized, which nearly filled the entire abdominal cavity (Figure 1). Thus, this case was confirmed as a closed pyometra.

Table 1. Comple Blood Cell Count and Biochemistry Profile.

Parameter	Result	Reference
White Blood Cells (WBC)	124.40 x 10^9/l	6 – 17 x 10^9/l
Lymphocyte (LYM)	16.03 x 10^9/l	1 – 4.8 x 10^9/l
Monocyte (MON)	9.48 x 10^9/l	0.2 – 1.5 x 10^9/l
Neutrophil (NEU)	98.28 x 10^9/l	3 – 12 x 10^9/l
Eosinophil (EOS)	0.59 x 10^9/l	0.0 – 0.8 x 10^9/l
Basophil (BAS)	0.02 x 10^9/l	0.0 – 0.4 x 10^9/l
Red Blood Cells (RBC)	5.62 x 10^{12}/l	5.5 – 8.5 x 10^{12}/l
Haemoglobin (HGB)	13,1 g/dl	12 – 18 g/dl
Haematocrit (HCT)	38.79 %	37 – 55 %
Mean Corpuscular Volume (MCV)	69 fl	60 – 77 fl
Mean Corpuscular Haemoglobin (MCH)	23.3 pg	19.5 – 24.5 pg

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(Continue from previous table)

Parameter	Result	Reference
Mean Corpuscular Haemoglobin Concentration (MCHC)	33.8 g/dl	31 – 39 g/dl
Platelet (PLT)	27 x 10^9/l	165 – 500 x 10^9/l
Blood Urea Nitrogen (BUN)	88 mg/dL	7 – 25 mg/dL
Globulin (GLOB)	5.7 g/dL	2.3 – 5.2 g/dL
Phosphorus (PHOS)	7.5 mg/dL	2.9 – 6.6 mg/dL
Total Protein (TP)	8.2 g/dL	5.4 – 8.2 g/dL
Sodium (Na+)	121 mmol/L	138 – 160 mmol/L
Potassium (K+)	7.4 mmol/L	3.7 – 5.8 mmol/L

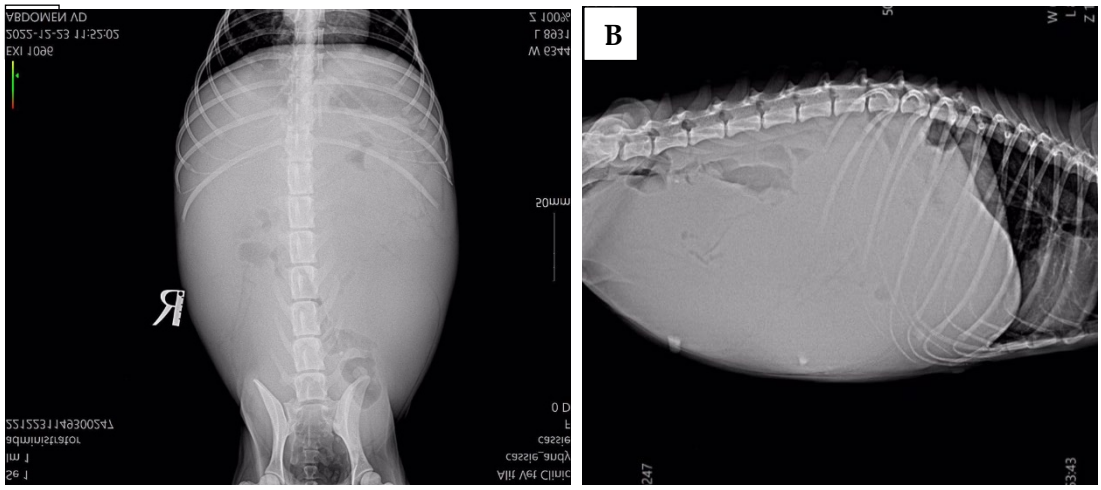

Figure 1. Radiography of lower abdomen. The grayish-white radiopacity clearly showed that there was fluid accumulation on uterine horns. (A) Ventro-dorsal position (B) Lateral position.

Treatment

The main treatment for pyometra is ovariohysterectomy. The bitch fasted for approximately 12 h before surgery. Sodium chloride 0.9 %) was administered intravenously to stabilize the patient. The bitch was anesthetized using combination of tiletamine and zolazepam IV (Zoletil®) at a dose 3 mg/kg body weight then maintained with isoflurane 2%. Midline laparotomy for ovariohysterectomy was performed to remove both sides of the ovaries and the uterus filled with fluid (Figure 2). Meloxicam was injected intramuscularly at a dose 0,2 mg/kg body weight single dose after surgery. For daily treatment post-surgery, the bitch was administered an intravenous injection of ceftriaxone at a dose of 25 mg/kg body weight twice a day for 7 days and vitamins. Additional therapy with cefixime 100 mg was administered orally twice a day for the next 7 days.

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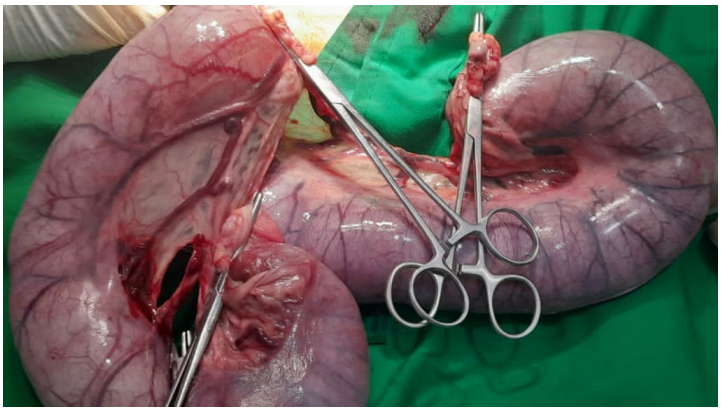

Figure 2. Ovariohysterectomy showing enlarged uterine horns

RESULTS AND DISCUSSION

The bitch with closed pyometra did not show any vaginal discharge; therefore, it was difficult to confirm the case early, before there was considerable abdominal swelling. Therefore, closed pyometra is often considered more severe than open pyometra because the infection has spread and the animal may develop septic shock more quickly (Koo *et al*., 2011). As observed in the blood test results, there was an extreme increase in leukocytes, indicating the presence of infection. High levels of leukocytes were followed by a higher chance of the bitch suffering from septic shock. Sepsis is also thought to cause thrombocytopenia owing to decreased tissue perfusion caused by bacterial activity (dos Anjos *et al*., 2021). Severe infection also leads to impaired kidney function, as indicated by the increased levels of BUN, PHOS, GLOB, and TP. Thus, this closed pyometra case can be considered an emergency case. The use of radiography and ultrasonography was necessary to confirm the diagnosis of closed pyometra, as it will be clear whether there was build-up of fluid within the uterus. The prognosis for closed pyometra treated with ovariohysterectomy is good as long as there is no rupture of uterus causing abdominal contamination, with mortality rate below than 10% (Birchard and Sherding, 2000).

Ovariohysterectomy has been the main treatment option for closed pyometra. In cases where it is not possible for the bitch to undergo surgery, hormonal therapy can be administered by administering antiprogestin drugs combined with prostaglandins during the diestrus phase. The consumption of these drugs causes opening of the cervix, so the accumulated fluid in the uterus can be expelled through the vagina. In other words, closed pyometra is converted into open pyometra. Hormonal therapy was followed by antibiotic consumption

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to eliminate the remaining bacteria in the uterus. Unfortunately, this therapy could not be applied to severe closed pyometra and resulted in excessive fluid accumulation (Sarkar *et al*., 2022).

CONCLUSION

In conclusion, closed pyometra is an emergency that requires immediate treatment. The absence of symptoms of lethargy and vaginal discharge makes this case less recognized, although the infection will continue to develop. Supportive examinations such as complete blood count, biochemistry profile, X-ray, and ultrasonography could help establish the diagnosis of pyometra. The patient recovered well after surgery.

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