

Case Study

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## Successful Management of Pyometra in a Labrador Retriever A Clinical Case Report

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### ABSTRACT

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An intact eight-year-old female Labrador retriever dog presented to Veterinary Clinical Complex having a history of sanguino-purulent vaginal discharge and vomiting for several days. Based on the history, clinical signs and laboratory results, the condition was diagnosed as open cervix pyometra and was successfully treated by ovariohysterectomy.

### Introduction

Pyometra is the most common disease in female dogs (Frances, 2006) which mainly affects middle-aged female dogs that have not been spayed. It is caused by the response to progesterone stimulation, which leads to an increased predisposition to bacterial infection (Chotimanukul and Sirivaidyapong, 2010; Shiju *et al.*, 2011). The bacteria isolated from the uteri of dogs with pyometra belong to diverse species; *Escherichia coli* is most

frequently found (Hagman and Greko, 2005; Chotimanukul and Sirivaidyapong, 2010). The incidence of pyometra in dogs is approximately 24% before 10 years of age (Hagman, 2000). The clinical manifestations of canine pyometra depend on the patency of the cervix. Closed cervix pyometra is comparatively serious because of the absorption of toxins from the accumulated pus and consequent development of toxemia. In open cervix pyometra, bitches are less systemically affected than in closed cervix

pyometra. Cystic Endometrial Hyperplasia (CEH) often precedes the disease, but can also be found in many older bitches with no signs of pyometra. Severe pyometra occasionally leads to fatal and systemic infection and infertility in some bitch. It has also been reported secondary to postpartum metritis (Brain and Jeff, 2012). Pyometra can occur at any age after the first estrus cycle and approximately at a mean age of two years. Pyometra can be treated surgically or medically. However, the decision depends on several factors such as open or closed cervix pyometra, the health status of the animal, and if the animal is intended for future breeding.

### **Case history and observations**

Aneight-year-old Labrador retriever was admitted to the Veterinary Clinical Complex, Hisar, with a history of purulent-sanguineous vaginal discharge, vomiting, polydipsia, polyuria and anorexia. On physical examination, the dog was found to be quite normal except for vaginal discharge. Systemic broad-spectrum antibiotics in the form of Ceftriaxone were administered, but there was no improvement. Hematological examination (Table no. 1) revealed a high neutrophilic count (95%), indicating the presence of infection. The lateral radiograph showed a dilated predominantly fluid-filled tubular structure located in the mid-abdomen below the lumbar vertebrae (Fig.1). Ultrasonographic findings revealed an enlarged uterus with convoluted, tubular horns filled with anechoic fluid giving speckled appearance (Fig.2). Hence it was diagnosed as a case of pyometra and OHE was considered the best treatment to prevent recurrence of the disease.

### **Treatment and Discussion**

Ovariohysterectomy(OHE) was aseptically performed according to a standard procedure.

Premedication was administered in the form of intramuscular atropine sulfate (0.04 mg/ kg body weight) and anesthetized with Xylazine (1 mg/kg body weight) and ketamine (5 mg/kg body weight) intramuscularly. Induction and maintenance involved the intravenous infusion of a xylazine and ketamine hydrochloride combination (1 and 5 mg/kg-1, respectively). During the entire operative period, normal saline was intravenously infused. After exposing the abdomen by laparotomy, the uterine and ovarian blood vessels were properly secured and the ovaries, uterine horns and uterus were completely removed(Fig.4). The gross examination revealed voluminous uterine horns (Fig.3) containing abundant sanguine-purulent fluid (Fig.5). The abdominal wall was closed with Vicryl No.1 according to a standard procedure. Finally, the skin was sutured using simple interrupted sutures with Silk. The wound was then disinfected with an antiseptic solution and protected with an adhesive dressing. Postoperatively, the animal was fed with moist food and maintained on daily parenteral antibiotics for 7 days. Sutures were removed on the 14<sup>th</sup> postoperative day. No serious postoperative problems were observed in either anesthetic recovery or wound healing.

During the initial luteal phase, the increased progesterone concentration overwhelms cellular immunity (Sugiura *et al.*, 2004). Estradiol causes cervical dilation during estrous and therefore allows bacteria that are part of the normal flora of the vagina (especially *E. coli* and *Streptococcus* spp.) to ascend into the uterus. The combination of reduced local immunity and favorable uterine conditions allows bacterial colonization and proliferation of these pathogens. It has been reported that inoculation of *E. coli* into the uterus on days 11 to 20 and 20 to 30 after the luteinizing hormone peak caused canine pyometra because at that time the uterus is

most susceptible to infection (Smith, 2006). Subacute endometritis followed by CEH is believed to cause pyometra. Endometrial hyperplasia is the result of cystic deformation of endometrial glands and stromal proliferation of fibroblasts with inflammatory reaction (De Bosschere *et al.*, 2001). However, the CEH pyometra complex also develops as a consequence of an abnormal response of the uterus to repeated progestational stimulation during the luteal phase of the estrous cycle (Feldman and Nelson, 2004). CEH is also associated with mucometra; it results from endometrial thickening with the accumulation of viscid uterine fluid caused by hyperplastic and hypertrophic endometrial glands. CEH is not associated with clinical signs unless the uterine content becomes infected; this is referred to as pyometra (Barton, 1992). Pyometra induces disturbed organ functions which are noted in the hematological and blood biochemical examinations. Typically there is leucocytosis, with neutrophilia and left shift in the differential white blood cell count (Børresen, 1980). Neutrophilia was the characteristic findings in the present report which is in covenant with the findings of Mahesh *et al.*, (2014). OHE is usually the recommended treatment for pyometra associated with CEH in bitches. Pyometra is best managed either by medical or hormonal therapy (prostaglandins) in patients not fit for surgery. However, adverse side effects ranging from simple allergy to anaphylactic reaction were reported after prostaglandin therapy by several researchers. Hence, Prostaglandins were not administered to the patient, seeing the severity of the case at the time of presentation to the clinic. In pyometra, ovariohysterectomy is always more complicated and carries a higher risk than routine spaying because of infection. This justifies the use of fluid therapy and a corticosteroid to stabilize the patient. Breeding bitches with a history of pyometra

should be mated on the cycle following treatment using appropriate antibiotic therapy and surgical insemination to minimize contamination of the uterus. The interval between estrous cycles is usually shortened (4 - 6 weeks) following medical treatment because of the shortening of the luteal phase (progesterone secretion) resulting from prostaglandin therapy. Bitches treated medically will be predisposed to recurrence on subsequent cycles, so should be spayed as soon as their reproductive careers are concluded (Baithalu *et al.*, 2010). Mated bitches must be monitored carefully after breeding for any signs of recurrence of the pyometra before and after the diagnosis of pregnancy. Pyometra and pregnancy can occur simultaneously. Approximately 30 – 50% of bitches medically treated for pyometra can be successfully bred on subsequent cycles. The prognosis depends on the amount of damage to the endometrium. This is dependent on the amount of pathology in the uterus, the length of time the pyometra was present before diagnosis, the response to treatment and the incidence of relapse. Prevention of pyometra is difficult because of the normal aging changes in the uterus due to progesterone dominance during estrous. The greater the number of the estrous cycle the greater the chances of pyometra occurrence. Intact bitches with short inter estrous interval and aged bitches are more predisposed to pyometra because of the number of times the endometrium is exposed to progesterone production. The changes that lead to pyometra are normal aging changes in the uterus so most intact bitches if they were to live long enough, would eventually develop pyometra. For this reason, it is recommended that any bitch not being actively used for breeding or planned future breeding should be spayed before six months of age to prevent the occurrence of this disease (Foster and Smith, 20006). In the present case, voluminous pus was present in the uterus, so

ovariohysterectomy was considered a surgical management of pyometra has been reported and discussed here. A case of

**Table.1** Serum and blood parameters with their significance in differentiating disease diagnosis

Parameters	Healthy dog values	Values in Pyometra affected bitch	Significance
Haemoglobin (g/dL)	11.9–18.9	11.9	Within the normal range
PCV (%)	35–57	37	Within the normal range
TLC( $\times 10^3/\mu\text{L}$ )	5.0–14.1	6.9	Within the normal range
Neutrophils (%)	58–85	95	Relative Neutrophilia
Lymphocytes (%)	8–21	4	Within the normal range
Monocytes (%)	2–10	01	Within the normal range
AST (IU/L)	5-55	29.9	Within the normal range
ALT (IU/L)	10-109	59.6	Within the normal range
Urea (mg/dl)	8-28	21.2	Within the normal range
Creatinine (mg/dl)	0.1-2	0.67	Within the normal range

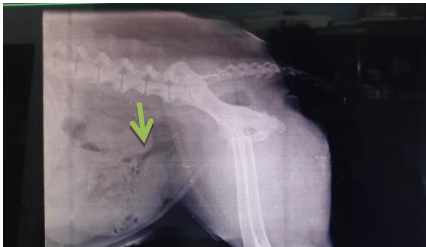


Fig.1 Radiograph of abdomen showing opaque distended uterine shadow in the lower abdomen



Fig.2 Photograph showing anechoic sacculations on ultrasonographic scanning in a dog.



Fig. 3 large sized uterus with pus after exteriorization through caudal midventral abdominal incision in a dog



Fig.4 Photograph showing large sized uterus with pus after excision



Fig.5 Uterine horns containing abundant sanguine-purulent fluid

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