



Pyometra in a Great Dane: A Clinical Case Report

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ABSTRACT

A 4-year-old Great Dane was admitted with continuous sanguino-purulent vaginal discharge, distended abdomen, and cachexia. The dog was clinically diagnosed with pyometra and successfully cured by ovario-hysterectomy. This is the first case report of pyometra seen in as Great Dane in Bareilly, India.

Introduction

Typically, pyometra occur in a bitch one to two months following estrus due to elevated progesterone level whether she was bred or not (Nelson and Feldman, 1986). Clinically, the bitch may present with inappetence, depression, polydipsia, lethargy and abdominal distension. She may or may not have vaginal discharge and fever and will often have an elevated White Blood Cell (WBC) count. The incidence of pyometra in dogs is approximately 24% before 10 years of age (Hagman, 2000). During this time, progesterone levels are elevated and help to create the ideal conditions for

infection. This progesterone-primed condition stimulates uterine glandular secretions within the uterus, which suppresses uterine contractions (Cox, 1970) and inhibits the effect of infection-fighting blood cells in the uterus. The effects are cumulative in that each oestrous cycle results in more glandular activity and higher levels of inflammatory cells and fluid or mucous within the uterus. After the establishment of a bacterial infection, which may originate from vaginal infection, urinary tract infection, or fecal contamination, the bacteria enter the uterus and multiply. In approximately 90% of cases, *Escherichia coli* is a main causal agent (Susi *et al.*, 2006). This bacterium produces endotoxins (that are capable of initiating the cytokine cascade and the release of many inflammatory mediators. *E. coli* is thought to be the cause of the local and sys-

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temic inflammatory reactions associated with pyometra. Cystic Endometrial Hyperplasia (CEH) often precedes the disease, but can also be found in many older bitches with no signs of pyometra. The clinical manifestations of canine pyometra are well known. Some breeds are more prone to uterine infection like golden retriever, miniature schnauzer, Irish terrier, Saint Bernard, Airedale terrier, Cavalier King Charles spaniel, rough collie, Rottweiler and Bernese mountain dog and some are low susceptible to developing the disease include Drovers, German shepherds, miniature dachshunds, dachshunds (normal size) and Swedish hounds (Egenvall *et al.*, 2001). Severe pyometra sometimes leads to fatal and systemic infection and infertility. Different treatment methods have been applied during pyometra but the popular and effective methods is ovario-hysterectomy (OHE) (Feldman and Nelson, 2004; Johnston *et al.*, 2001).

Case History

A 4-year-old Great Dane was admitted to the polyclinic, IVRI, Izatnagar, Bareilly-India, with a several-day history of sanguinopurulent vaginal discharge. The clinical examination revealed that the dog was dull and depressed, licked her backside and was uncomfortable. Daily food intake was decreased. On physical examination, the dog was found to be quite normal with the exception of vaginal discharge and a deteriorated body condition. Systemic broad spectrum antibiotics in the

form of Ceftriaxone were administered, but there was no improvement. Haematological examination revealed a high WBC count (65%), indicating the presence of infection. OHE was considered to be the best treatment because of the reason given for surgical removal of the uterus and ovaries is prevention of disease recurrence. OHE was aseptically performed according to a standard procedure. Pre-medication was administered in the form of intramuscular atropine sulfate (0.04 mg kg IM) and diazepam (0.5mg/kg, IV). Induction and maintenance involved a diazepam and ketamine hydrochloride combination (0.5 and 5 mg kg⁻¹, respectively). 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. The abdominal wall was closed with PGA according to a standard procedure. During the entire operative period, normal saline was intravenously infused. Postoperatively, the broad-spectrum antibiotic ceftriaxone was administered for 7 days and the meloxicam was administered for 3 days.

Results and Discussion

The gross examination revealed voluminous uterine horns (Fig. 1). Endometrial was flabby and thickened. Uterine horns containing abundant sanguinopurulent fluid (Fig. 2). This may have been due to inflammation of the myometrium and endometrium wall. The endometrial layer was corru-

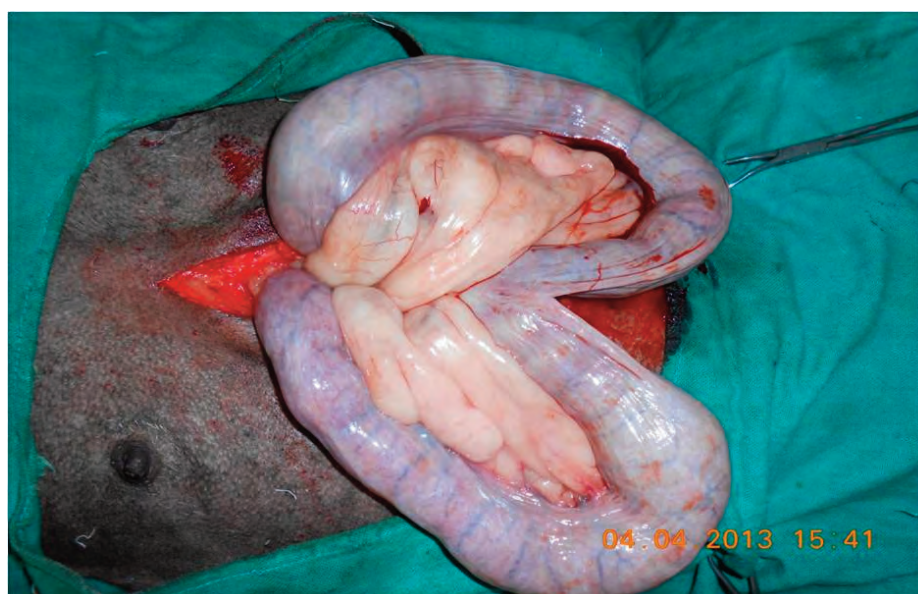


Fig. 1. Voluminous uterine horns (1.9 kg)

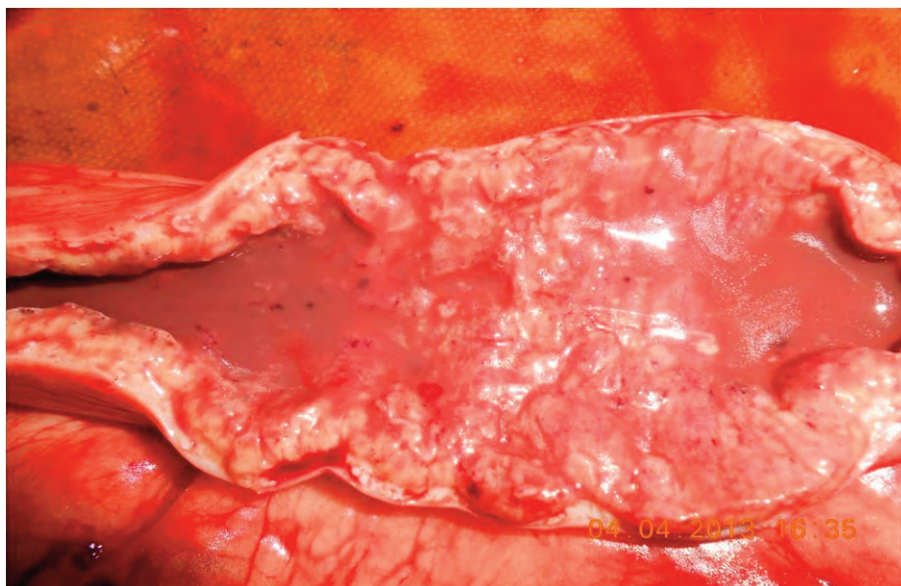


Fig. 2. Uterine horns containing abundant sanguinopurulent fluid and thickening of endometrium



Fig. 3. Gross ulceration and cyst like (small dark spots) appearance of endometrium

gated and a small cyst-like structure was found on the endometrium. Progesterone-primed conditions influence hyperplasia of the endometrium and endometrial glands, decrease myometrial contractions and inhibit the local leukocyte response to infection, which allows for bacterial proliferation within the uterine lumen. Ovarian cystic fluid also contains estradiol, which enhances the number of estrogen and progesterone receptors in the endometrium that activated the endometrium gland to secrete endometrium fluid. During the early luteal phase, the increased progesterone concentration suppresses cellular immunity (Sugiura *et al.*, 2004). *E. coli* is the most prevalent organism that causes

pyometra in the dog and cat (Beutin, 1999; Coggan *et al.*, 2008) and is normally present in the urine and feces of affected bitches (Tsumagari *et al.*, 2005). 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 for these pathogens allow for bacterial colonization and proliferation. 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). In the present study, the presence of sanguinopurulent vaginal discharge can be due to hyperplastic endometrial glands, diffuse cellular infiltration with neutrophils and extravasated erythrocytes in the endometrial stroma and presence of microorganisms. The presence of sanguinopurulent uterine fluid accumulation caused of the grossly voluminous uterine Fig. 1.

Conclusion

OHE is usually the recommended treatment for pyometra associated with CEH in bitches. To the author's knowledge, this is the first report of CEH and endometritis in a Great Dane in polyclinic IVRI.

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