



Management of Open-Cervix Pyometra in a Four-Year-Old German Shepherd-Cross Bitch

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INTRODUCTION

There are two types of pyometra; open-cervix pyometra and closed-cervix pyometra, depending on the condition of the cervix (Verstegen *et al.*, 2008), which is a major factor in the severity of the condition. If the cervix is open there is uterine drainage, it is easier and safer to treat than if it is closed. In closed-cervix pyometra, there is no drainage from the uterus, the uterus may rupture and pus escapes into the abdomen, causing peritonitis, subsequent systemic toxemia and possible rapid death (Jitpean *et al.*, 2017).

The most important aspect of treatment of pyometra is quick action to provide supportive care. Bitches may become septic and in shock. Intravenous fluids and antibiotics should be given immediately. Once the bitch has been stabilized, then the treatment of choice is an emergency spay (Höglund *et al.*, 2016). Ovariohysterectomy completely and promptly removes the infection, prevents uterine rupture

and peritonitis, and of course prevents recurrence in most cases. It is currently considered the most effective and safest treatment (Krista *et al.*, 2013; Wallace *et al.*, 2015).

CASE SIGNALMENT AND HISTORY

A four-year old German shepherd-cross bitch weighing 22 kg was presented to the Small Animal Clinic of Ahmadu Bello University Veterinary Teaching Hospital, Samaru, Zaria, with complaint of loss of appetite, vomiting, weakness and offensive body odour noticed two weeks before day of presentation. Historically, the bitch was once bred about 22 months ago with a pure male German shepherd, and whelped 6 puppies two months after. It was reported that she had abortion twice after the first and only successful delivery. She was also noticed to come on heat about 2 months prior presentation, but was not bred as owner has no further interest in breeding. The bitch was well-kept, and

vaccination record was up-to-date (mainly DHLPP-complex and anti-rabies).



PLATE 1: Sonograph of German shepherd-cross bitch showing the urinary bladder (thin blue arrow). Thickened uterine wall (fat blue arrow) and pus within the uterus (black arrow).

During physical and clinical examination, vital parameters recorded include rectal temperature, pulse and respiratory rates (TPR). The TPR were 40.1°C, 120 beats/min and 60 cycles/min, much over the reference ranges (38.5-39.4 °C, 65-90 beats/min and 15-30 c/min., respectively). Clinical observations include pyrexia, lethargy, mild tick infestation (nymphae), slightly congested ocular mucous membrane, generalized superficial lymph node enlargement and purulent, smelly vulva discharge. Babesiosis, and ehrlichiosis, either with vaginitis, cystitis, or open-cervix pyometra were considered as differentials.

DIAGNOSIS AND MANAGEMENT

Pelvic ultrasound (transcutaneous probe; Sonostar™ Technologies Co., Ltd., Guangzhou, China) revealed thickened uterine wall of 10 mm with accumulation of pus in the uterus (anechoic) (Plate 1). Two functional corpora lutea were also seen on the ovary, indicative of diestrus stage of cycle. X-ray revealed a dark-coloured, fluid-filled and slightly extended uterus (Plate 2). Based on the history of standing heat 2 months prior presentation, the clinical and diagnostic imaging findings, an open-cervix pyometra was diagnosed.

On day one of presentation, slow intravenous (IV) infusion (Darrow's solution + 50% Dextrose) and enrofloxacin intramuscular (IM) injections at 5 mg/kg (total dose 110 mg) was immediately initiated to provide energy, necessary electrolytes and as a broad spectrum antibiotic therapy. PGF2α (Lutalyse^R) 0.2 mg/kg (total dose 4.4 mg) subcutaneous (SQ) twice a day was also administered for two days. Twelve



PLATE 2: Lateral radiograph of the German shepherd-cross bitch showing the uterus containing pus (arrowed) resulting in the uterus appearing more radio-opaque than normal

hours after the commencement of treatment, vomiting had stopped and the TPR recorded were 39.5 °C, 104 beats/min and 40 cycle/min, respectively.

Results of full blood count showed slight leukocytosis due to neutrophilia and monocytosis. The bitch was free of any suspected haemoparasite or helminth. The bitch also tested negative for *Brucella spp.* antibody detection. Cultured anterior vaginal swab revealed, 48 hours after collection, the presence of haemolytic *E. coli*, *Staphylococcus aureus* and α -haemolytic *Streptococcus*, which were sensitive as follows: Amoxicillin.....++, Streptomycin.....++, Gentamycin.....+++ and Ciprofloxacin.....+++. Pelvic ultrasonography in conjunction with radiographic exposure and the bacterial isolation confirmed the condition. On day 3, enrofloxacin injection was replaced with ciprofloxacin at 5 mg/kg PO together with amoxicillin at 10 mg/kg PO twice per day, were both given for 2 weeks (Verstagen *et al.*, 2008; Fieni *et al.*, 2014). Ivermectin injection at 400 µg/kg (total dose 8800 µg) subcutaneous was administered and was to be repeated after two weeks. Lutalyse^R was also repeated on day 4 (0.20 mg/kg) SQ, BID, and the vital parameters were dropped within normal ranges. The bitch was discharged on day 4, and was fully on its feet and more active when it was re-presented two weeks after. The bitch was re-examined at two and four months after treatment, and the clinical and laboratory examinations were all normal. The client was advised to breed the bitch in her next heat. The outcome of the treatment was successful, as the bitch was confirmed pregnant and clinically normal at the last re-presentation 7 months after the treatment.

DISCUSSION

Based on the case history, clinical signs and laboratory results the condition was diagnosed as open-cervix pyometra. The animal was admitted and the condition was managed medically according to earlier successful reports. Pending the outcome of culture and sensitivity examination, antimicrobial drugs are usually selected on the basis of experience and knowledge of resistance patterns for the most probable predominant pathogen. *Escherichia coli*, *Staphylococcus aureus*, *Pseudomonas sp.* and *Streptococcus sp.* are the most frequently isolated uterine bacteria that can become opportunistic contaminants, and as highly sensitive to Enrofloxacin. In this case, the use of Enrofloxacin with broad spectrum of actions, and fluid therapy had a major effect on the bacterial numbers, a major cause of septicemia, or toxemia, with resultant pyrexia. Enrofloxacin (a fluoroquinolone) is a chemotherapeutic agent against a broad-spectrum of Gram negative and Gram positive bacteria. It is a drug of choice based on historical bacterial causes of uterine infection (Fieni *et al.*, 2014; Lopate, 2017). The susceptibility of the empiric antibiotic therapy was confirmed by antibiotic susceptibility reported from the patient's original bacterial culture. The antibiotic therapy should be continued for 7-14 days beyond resolution of the patient's pyometra based on physical examination, laboratory and ultrasonographic findings.

In conclusion, although, ovariohysterectomy is the most reliable treatment option for pyometra, medical management of pyometra is best performed in patients of appropriate breeding age that are of reproductive valuable and free of life-threatening illnesses including septicemia, endotoxemia and organ dysfunction.

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