



Pyometritis in an Alsatian X Mongrel Cross Bitch: A Case Report

ANYA, K.O.¹ and ANYOGU, D.C.²

¹Department of Veterinary Obstetrics and Reproductive Diseases, University of Nigeria, Nsukka, ²Department of Veterinary Pathology and Microbiology, University of Nigeria, Nsukka. *Corresponding Author: E-mail: davinson.anyogu@unn.edu.ng Phone: 234-(0)7036841871

SUMMARY

An Alsatian x mongrel cross bitch over 8 years of age was presented to the Veterinary Teaching Hospital, University of Nigeria, Nsukka for treatment. The primary complaint was bloody vulva discharge, reduced appetite and weakness. Cytological studies of vaginal swab revealed non-cornified epithelial cells with degenerated neutrophils. Digital examination of the vestibule and posterior vagina did not reveal any detectable abnormality. Hematological studies revealed mild anaemia and neutrophilia with a left shift. Abdominal ultrasonography showed intra uterine accumulation of mixed echotexture. Grossly, the uterine horns showed multiple serosal cysts. Histological studies of the ovary and uterus demonstrated cystic subsurface epithelial structures and necrosis with leucocytic infiltration respectively. Culture of uterine exudate gave a good growth of a pure culture of *Staphylococcus* species. A rational chemotherapy for the bitch was based on sensitivity of the cultured micro-organism to available antibiotics. The clinical findings in this report are consistent with pyometritis.

KEYWORDS: Bitch, pyometritis, serosal cysts, ultrasonography.

INTRODUCTION

Pyometritis is a disease of the uterus that can occur in any breed of dog especially Collies, Rottweilers, Miniature Schnauzers, Golden Retrievers and English Springer Spaniels. (Egenval *et al.*, 2001; Hagman *et al.*, 2011). Pyometritis in the bitch results from an interaction between bacteria and the uterus that has undergone pathologic change as a result of hormonal stimulation (Noakes *et al.*, 2001., Pretzer 2008). Exposure of dogs to steroid hormones (estrogens and progesterone) influences the concentration and distribution of steroid receptors within the uterus of bitch. This leads to the development of cystic endometrial hyperplasia (CEH), which normally precedes pyometritis (Dhaliwal *et al.*, 1991).

Cystic endometrial hyperplasia-pyometra complex is a common progesterone-dependent disease of the genital tract that appears clinically either in the diestrus or anestrus period of the canine estrous cycle (Blendiger *et al.*, 2004). Cystic endometrial hyperplasia is considered to be an exaggerated response of the uterus to chronic progesterone stimulation during the luteal phase of the estrous cycle, causing abnormal accumulation of fluid within the endometrial glands and uterine

lumen (De Bosschere *et al.*, 2001). *Escherichia coli* and other bacteria tend to multiply in a hormone-sensitized uterus (Bigliardi *et al.*, 2004). Pyometritis may be a natural complication of degenerative and inflammatory changes that attend CEH in aging intact dogs. It is a disease of the luteal phase, with most bitches showing clinical signs between 5 and 80 days after the end of estrus (Noakes *et al.*, 2001).

Pyometritis can occur at any age although it becomes more common as the bitch gets older (Niskanen and Thrusfield, 1998). The clinical signs and the severity of the signs depend on whether the cervix is open (open cervix pyometra) or closed (closed cervix pyometra) and include lethargy, depression, anorexia, polydipsia, polyuria, discharge of pus from the vulva, vomiting, weakness and pyrexia (Noakes *et al.*, 2001). Myeloid suppression resulting from toxemia may lead to a mild normocytic, normochromic, non-regenerative anaemia while an absolute neutrophilia with a degenerative left shift result from infection and septicemia (Feldman, 2000).

CASE REPORT

An Alsatian x Mongrel cross bitch (about 8 years of age) was presented to the Veterinary Teaching Hospital, University of Nigeria, Nsukka with the primary complaint of reduced appetite, weakness and bloody vulva discharge two weeks following a heat period in which the bitch was bred. The owner came with the request that the dog be scanned to ascertain its pregnancy status. He explained that his Veterinarian had placed the dog on an antibiotic, gentamycin®. The medical history showed that the bitch earlier had dystocia resulting in uterine tear. A vaginal swab was collected for cytological evaluation. Blood was collected by cephalic venipuncture, after disinfection of the area with cotton wool soaked in

methylated spirit, for haematological studies. A gloved finger was used to examine the vestibule and posterior vagina for possible growth of Transmissible Venereal Tumor (TVT). Abdominal ultrasonographic examination could not be performed immediately and the patient was reappointed for a later date.

On the said date the dog had poor body condition. She had lost weight considerably, was extremely weak and could hardly stand or walk. She was dehydrated and with a Malodorous reddish-brown vulva discharge. Abdominal ultrasonographic scan was performed. The dog on the consent of the owner was slated for ovariohysterectomy to be performed 2 days later, within which period she was placed on fluid rehydration therapy (Darrow's solution) to stabilize her for surgery. During the two days preparatory period for surgery, the dog demonstrated increased thirst as it drank water copiously (Polydipsia).

During the surgery, a swab for uterine culture of the reddish-brown fluid was aseptically collected through a hysterotomy incision of the exteriorized uterus. Representative sections of the ovaries and uterus were taken after the surgery for histopathological study. Tissues were fixed for 24 hours in neutral-buffered 10% formalin, trimmed, dehydrated in ascending grades of alcohol, embedded in paraffin, sectioned at 5- μ m thickness, routinely processed, and stained with hematoxylin and eosin.

RESULTS

Vaginal smear revealed non-cornified intermediate cells and toxic degenerated neutrophils (Fig. 1). Abdominal ultrasonographic scan showed an accumulation of a mixed echo-texture in the uterine lumen (Fig. 2). The exteriorized tubular genitalia showed multiple serosal cysts along its length (Fig. 3) and Corpora

lutea were found on the ovaries. Haematological studies revealed a neutrophilia with a left shift. Total leucocyte (WBC) count was 25600 cells/mm³. Differential WBC count appeared as follows: neutrophils, 73%; lymphocytes, 21%; monocytes, 6%; eosinophils, 0%; basophils, 0%. Packed cell volume (PCV) was 33.5%

Histopathological studies showed cystic distention of the endometrial glands (Fig.4) and necrosis and leucocytic infiltration of the wall of the uterus

(Fig. 5). Also, histological studies of the ovary revealed acystic epithelial structures (SES) (Figure 6). Uterine culture gave a good growth of a pure culture of *Staphylococcus* species. Antibiotic sensitivity test showed that the infective bacterium was resistant to all commonly used antibiotics like drovid[®], cephaloxin[®], gentamycin[®], erythromycin[®], chindamycin[®], septrin[®], amoxil[®], and ampiclox[®] but was sensitive to norfloxacin[®] and ciprofloxacin[®].

FIGURE LEGENDS:

Fig 1: Vaginal swab: Intermediate vaginal epithelial cell (arrow) and numerous degenerated neutrophils. (Methylene blue, x400).

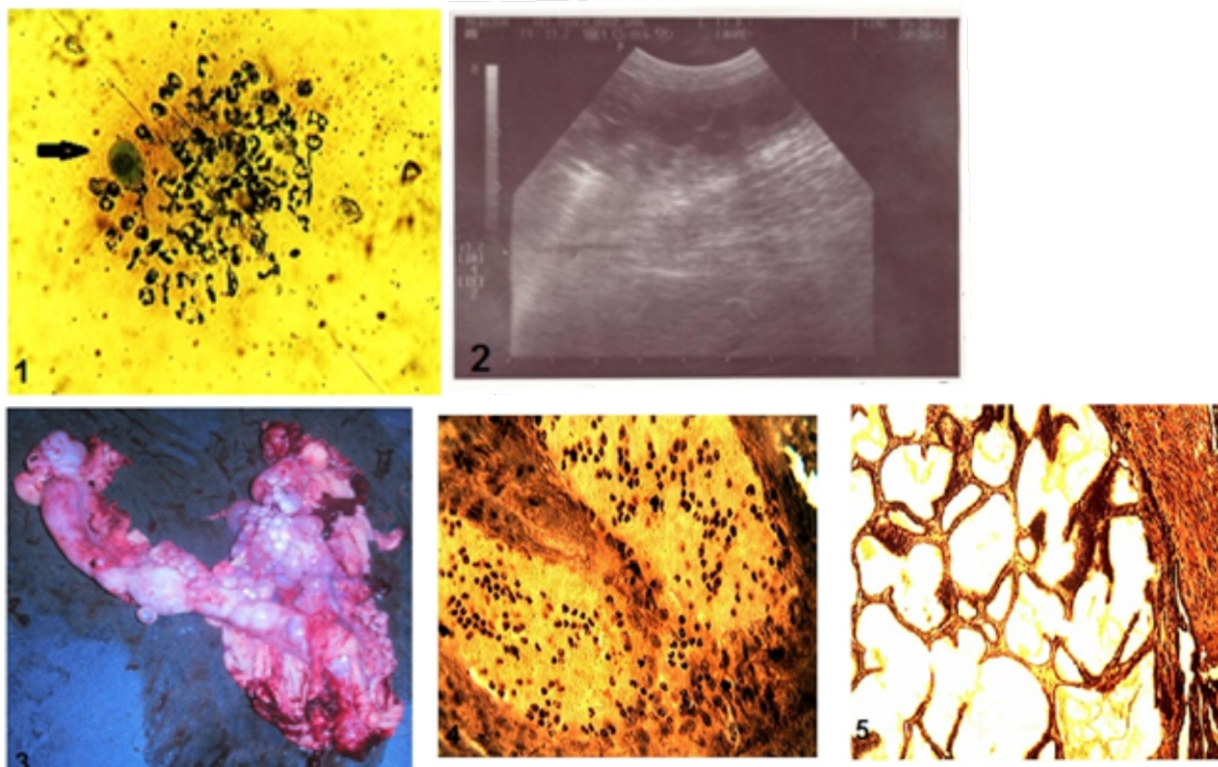
Fig 2: Uterus: Mixed echo-texture of uterine accumulation.

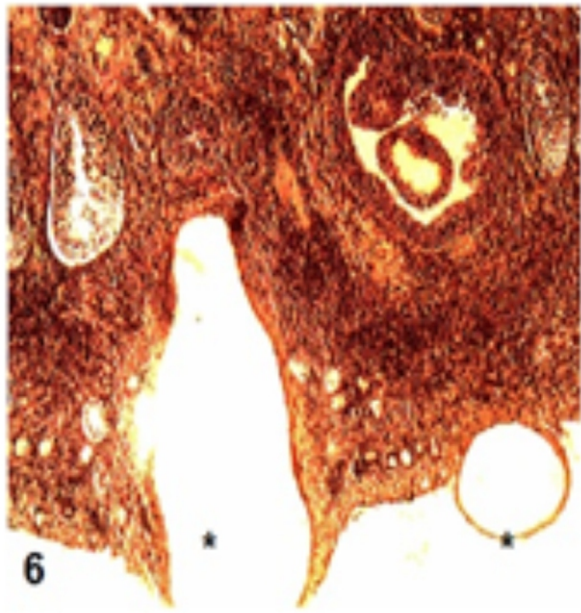
Fig 3: Gross genitalia: Pus-filled uterus with multiple serosal cysts.

Fig 4: Photomicrograph of the uterus: Necrosis and leukocytic infiltration of the wall of the uterus (metritis) (H&E x400)

Fig 5: Photomicrograph of the uterus showing hyperplasia and cystic distention of Endometrial glands. (H&E x400).

Fig 6: Photomicrograph of the ovary showing cystic sub-surface epithelial structures (asterisks) (H&E x400).





DISCUSSION

Pyometritis is primarily a disease of the uterus but with systemic manifestations resulting from bacteraemia and toxemia. The most obvious symptom of open cervix pyometritis is a discharge of pus from the vulva in a female that has recently been in heat. In this report the primary complaint of the owner was a bloody discharge from the vulva of a dog that was bred two weeks earlier. This finding is consistent with the reported clinical manifestation of symptoms of pyometra 5 to 80 days following a heat period (Feldman, 2000). Pyometritis is usually preceded by cystic endometrial hyperplasia. Organisms isolated from uterine fluid in cases of pyometritis are those found as part of the normal vaginal and vulva micro flora (Noakes *et al.*, 2001). In this report evidence of pathologic change of the uterus is seen sonographically (Fig 2) as abnormal uterine accumulation, and also histologically (Fig 5) as cystic distensions of endometrial glands (Bigliardi *et al.*, 2004). Presence of corpora lutea in the ovaries suggested that the uterus was under the stimulation of luteal progesterone. This stimulation caused hyperplasia of endometrial glands which secreted copious quantities of sterile mucus (Amstutz *et al.*, 1998).

Migrating *Staphylococcus* from the vagina used the uterine secretions as a culture medium to proliferate and set up metritis and endometritis, evidence of which was seen sonographically (Fig 2) and also histologically (Fig 4). The finding of cystic subsurface epithelial structures (SES) in this report (Fig 6) has also been reported in the ovary of old dogs with CEH (Buergelt, 1997).

The observed clinical presentation, sonographic and histological features of this case is consistent with previously described features of open-cervix pyometritis (Buergelt 1997; Amstutz *et al.*, 1998). Also, the result of the cytology of the vaginal smear (Fig. 1) is consistent with that of a bitch with pyometritis (Feldman 2000). Serosal cysts as shown in this report (Fig 3) are common in dogs and are believed to arise when mesothelial cells become trapped in the serosa and continue to secrete and become hyperplastic (Arnold *et al.*, 1996). The good growth of a pure culture of *Staphylococcus* species from the uterine exudate is evidence of an infective process as is the mild anaemia (PCV33.5%) and neutrophilia ($25600\text{cells}/\text{mm}^3$) with a left shift. The mild nature of the anemia and the neutrophilia was because of the open cervix which allowed elimination of the bacteria with the vulva discharges. Ovario-hysterectomy was adopted because it is the treatment of choice as it forestalls recurrence of pyometritis and also because the patient was an old bitch. Based on culture and sensitivity test, appropriate chemotherapy was prescribed for use in managing the dog until she was successfully discharged from the hospital. It is suggested that as a preventive measure against pyometritis, pet owners should neuter all dogs not meant for breeding before six months of age.

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