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Pyometra in a female dog: A case report

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Abstract
A seven year old female Labrador was presented to Veterinary Clinical Complex, F.V.Sc & AH, SKUAST-J, RS Pura, Jammu, with a history of abdominal distention, sanguino-purulent vaginal discharge, vomition, polyuria, polydipsia lethargy, depression and fever. Treatment was initiated immediately but the animal died after two days. Post mortem examination revealed presence of hugely dilated uterus in the abdominal cavity and about 5L of yellow to greenish thin watery off smelling exudate came out when the uterus was incised. The serosa of the uterine wall was severely congested. Microscopically, severe necrosis and sloughing of endometrium and atrophy of endometrial glands was seen. Myometrium was severely degenerated. *Staphyloccocus aureus* was isolated from the uterine exudate. On the basis of gross and histopathological examination and microbial isolation, it was confirmed to be a case of pyometra.

Keywords: polydipsia, pyometra, neutrophilia, uterus, myometrium

Introduction
Pyometra is a common pathological condition in which enlargement of uterus with accumulation of pus in the uterine lumen occurs. This pathological condition affect middle aged to older female dogs and age at clinical presentation ranges from 6.4 to 9.5 years (Gibson *et al*., 2013) [3]. The disease has been shown to affect around 19% of all female dogs before the age of 10 (Jitpean *et al*., 2012) [4]. Pyometra develops as an infection secondary to hormonal alterations in uterus. Estrogen enhances stimulatory effects of progesterone in the uterus through progesterone receptor. Estrogen administration, therefore, greatly increases risk of pyometra. After estrus, a steady rise in progesterone is seen which causes increase in uterine wall thickening which may lead to cystic endometrial hyperplasia. Afterwards, due to this conducive environment for bacterial growth, the condition can steadily progress to pyometra (Feldman and Nelson, 2004) [2]. Line of treatment for pyometra is intravenous fluid therapy, antibiotics and prostaglandins.

Case History and observations
A female Labrador visited Veterinary Clinical Complex, F.V.Sc & AH, SKUAST-J, RS Pura, Jammu. The animal was suffering from high fever and was anorectic, depressed, had abdominal distention and a sanguino-purulent vaginal discharge was present. Fluid therapy and antibiotic therapy was initiated immediately. Clinical pathology showed neutrophilia with left shift. Dog was prescribed lutalyse @ 1.5 mg/kg bid I/M for 1-2 days followed by 0.25mg/kg for next 5-7 days but within 2 days the animal died and the carcass was sent to the Division of Veterinary Pathology for conduct of post mortem examination. A thorough necropsy was done and appropriate samples were taken in sterile containers for microbial culture and in 10% neutral buffered formalin for histopathological examination respectively.

Results and Discussion
The carcass was in a good body condition and appeared well fed. The Conjunctiva was pale and the abdomen was enlarged. Upon opening, an enormously enlarged uterus was found to occupy most of the abdominal cavity (Fig1). The serosal blood vessels of wall of uterus were severely congested and uterine wall was friable. The hind quarters were stained yellowish green due to a clingy discharge around the vaginal area. Liver was dark reddish black in colour. Lungs were heavy, edematous and congested. Frothy exudates came out from trachea and bronchi. Kidneys were soft and friable. Mild congestive and hemorrhagic lesions were appreciated in gastrointestinal tract.

Cut open uterus yielded 5L of greenish brown exudates (Fig 2). The wall of uterus had thinned out considerably and had a granular appearance with thin exudate adhering to it. Histopathologically, the mucosa of uterus was effaced and at only few places some remnants of epithelium could be appreciated. The inflammatory exudate comprised of lymphocytes, plasma cells and neutrophils. Uterine glands were totally obliterated (Fig 3). For microbiological examination, exudate was plated on mannitol salt agar and after 12 hours golden yellow colonies were seen on the plate indicating presence of *Staphylococcus aureus*. Phenotypic identification was done by demonstration of the typical morphology in Gram's stained smears, where gram positive cocci occurred in clusters. The colonies were subjected to preliminary biochemical tests. The positive tube coagulase test confirmed the presence of *Staphylococcus aureus* as the clotting of rabbit plasma occurred within 2-4 hours.

Usually in cases of pyometra, endometrial glands are dilated due to diffuse cellular infiltration with neutrophils. Infiltration and haemorrhages in the endometrial stroma can be seen (Biswas *et al.*, 2012; Feldman and Nelson, 2004; Pretzer 2008) [1, 2, 5], however, in the present case, probably due to the prolonged severity of the condition, severe necrotic changes were appreciated in the endometrial lining which was severely sloughed off at most places. Also, the endometrial glands was completely effaced (Fig 4). Severe congestion was seen in other organs particularly liver, kidneys, urinary bladder and lungs. From gross and histopathological examination and microbial isolation, it was confirmed to be a case of pyometra. In old dogs, progesterone levels are higher which provide ideal conditions for bacterial infection and growth. High Progesterone levels are responsible for increased glandular secretions and prevent uterine contractions. The bacteria usually come from vagina, urinary tract, or can also arise due to fecal contamination. *E. coli*, *Staphylococcus* spp, *Streptococcus* spp, *Klebsiella* spp, *Proteus* spp and *Pseudomonas* spp. are commonly found associated with cases of pyometra (Rebordao *et al*, 2017) [6]. In our case also, *Staphylococcus aureus* was isolated. The most common treatment for pyometra is therapeutic management using prostaglandins, antibiotics and fluid therapy (Smith, 2006) [7]. Although, the same treatment was also given in our case yet the animal could not survive.

Fig 1: Severely dilated uterus occupying entire abdominal cavity

Fig 2: Cut open uterus with thin wall and exudate adhering to it

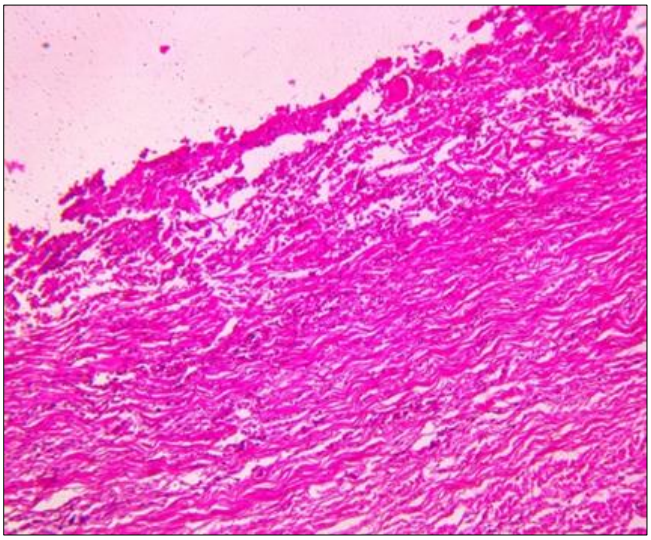

Fig 3: Necrosis & degradation of endometrial lining, presence of inflammatory cells and, obliteration of endometrial gland. (H&E, 400X)

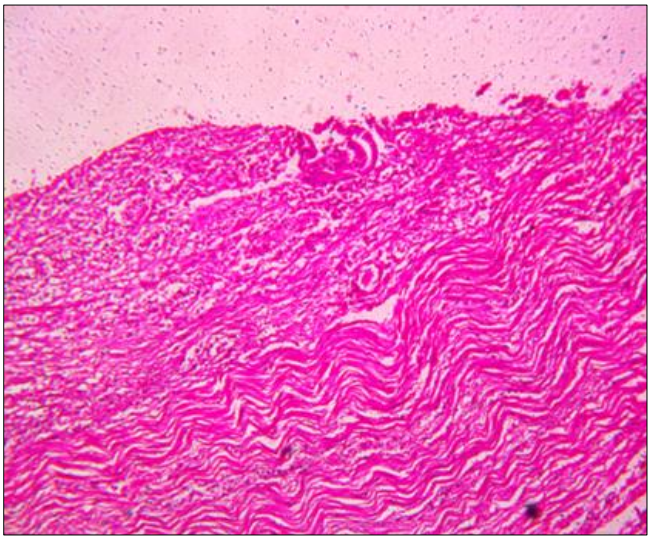

Fig 4: Necrotic endometrial Lining with inflammatory cells and degeneration of underlying myometrium. (H&E, 400X)

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