

Case Study

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## Clinical Evaluation of Mifepristone along with Cabergoline in the Treatment of Close Pyometra in Labrador Bitch-A Case Report

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### ABSTRACT

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Pyometra is one of the most common diseases in intact bitches. The aim of the present communication was to evaluate the effectiveness of medical treatment for the close pyometra in a bitch. The diagnosis of pyometra was made by correlating the history and clinical signs with the findings of abdominal palpation and ultrasonography. The physiological, haematological and biochemical parameters were evaluated before and after treatment. Treatment of canine pyometra using a combination of progesterone receptor blocker (Mifepristone), anti-prolactin (Cabergoline) along with supportive therapy showed very efficacious alternative option over traditional ovario-hysterectomy (OHE) or which are critical for operative procedure.

### Introduction

Pyometra is a hormonally intervene polysystemic diestral disorder, also known as cystic endometrial hyperplasia complex (Singh *et al.*, 2010; Coggan *et al.*, 2008). It is associated with accumulation of pus inside the adult bitch uterus and it is the foremost reproductive disease induces high mortality. The development of pyometra occurs due to induce progesterone level in the uterus, causes endometrial hyperplasia (Singh *et al.*, 2010).

During the course of the disease different haematological and biochemical abnormalities commonly found are leukocytosis with neutrophilia, hyperglobulinaemia and azotaemia (Sant'Anna *et al.*, 2014).

### Case History

A Labrador bitch aged 6 years was brought to the Belgachia Veterinary Clinic, West Bengal University of Animal and Fishery Sciences, Kolkata, with the history of anorexia for a

month, depression, vomiting, polydipsia and polyuria.

### **Clinical Investigation**

The clinical observation revealed frequent vomition, polydipsia, dullness, distention of abdomen, moderately anaemic and bitch was unable to walk normally. There was no vulvar discharge.

### **Diagnosis**

The definitive diagnosis of pyometra becomes very difficult when estrus and breeding history of bitches is not properly known. The diagnosis of these cases was made based on history, clinical observation, abdominal palpation and ultrasonography. Abdominal palpation revealed that enlargement of uterus. Identical findings were also observed by Feldman and Nelson, 1987. The ultrasonography was performed by B-mode, real time scanner with 5 MHz linear array transducer. Ultrasonography was conducted in filled urinary bladder which encourages imaging of the uterus. Ultrasonographic examination uncovered that presence of hypo- to an-echoic sacs of pus inside the uterus before starting the treatment and the diameter of those sacs were around 4.11 cm (Fig.1).

The diameter of uterine horn 1.0 -1.1 cm along with few amount of fluid is normal during diestrus (Yeager and Concanon, 1995). Involvement of huge substance depicted circular hypoechoic to anechoic area, remain close covering the complete abdomen whereas in transverse segment direct association exhibited hypoechoic roughly circular structure ventral or ventro-lateral to the anechoic urinary bladder. The authentic determination of pyometra can be only made by combination of these methods and single test may not confirm the determination. On the basis of all those findings this case was

diagnosed as long standing case of close pyometra.

### **Treatments and Findings**

Till now we have seen, pyometra has been most commonly treated by ovariectomy (OHE) but sometime it is very difficult to present the patient for anesthesia and surgery, due to the insidious nature of the disease and its sometimes equivocal clinical signs. So we have tried alternate of surgery to recover the patient with different treatments to improve the physiological as well as biochemical parameters.

Treatment-1(T1): Although this is a long standing case of pyometra, first and foremost approach that we have tried was relaxing the cervix so that expulsion of purulent uterine discharge takes place. Animal was treated with progesterone receptor antagonist, Tab. Mifegest (Mifepristone, Zydus Healthcare Ltd) @ 5mg/kg orally twice daily for 3 days and dopamine agonist, Tab. Cabgolin (Cabergolin, Sun Pharmaceuticals Ltd.) @5µg/kg orally for 10 days) along with supporting treatment like Ringer's lactate, antibiotic Amoxycilin with Clavulanic acid (Inj Clavam 600, Alkem Laboratories Ltd), antiemetic Ondansetron (Zofer, Sun Pharmaceuticals Ltd.) and proton pump inhibitor Pan IV (Alkem Laboratories Ltd.) as per standard dose rate (Singh *et al.*, 2019). Within 24 hours of first treatment there was opening of cervix and expulsion of vulvar discharge occurred (Fig. 2). After expulsion of purulent discharge animal was able to walk properly. On third day post treatment-1, ultrasonography was done which shows absence of tubular or circular structure of uterine horn (Fig.3). She was also prescribed for biochemical (creatinine and blood urea nitrogen) and haematological (complete blood count) estimation pre and post treatment. Pre-

treatment blood reports showing in table-1.

Treatment-2(T2): As Haemato-biochemical analysis revealed non-regenerative – normocytic-normochromic anaemia and moderate increase in BUN and Creatinine (Table-1), the bitch was prescribed another treatment protocol with Injection Darbepoetin 25mcg (Cresp25, Dr Reddy’s Laboratories Ltd.)1 vial s/c weekly for 3 consecutive weeks); Tab. CK-Reno (Vivaldis Health and Foods Pvt. Ltd.)@2tab orally twice daily for 1 month along with supportive treatment. The bitch was subjected to haemato-biochemical analysis again after one week of T2 protocol. Blood report revealed improvement in both haematological as well as biochemical parameters (Table-1).

### Results and Discussion

The main reason behind the therapeutic management of pyometra was evacuate the uterine content, reduction of progesterone (P4)

concentration, improvement of haematological and biochemical parameters along with decreasing the secondary bacterial infection (Verstegen *et al.*,2008). Initially with T1, there was opening of cervix and expulsion of uterine content within 24 hours post treatment as Mifepristone compete with P4 to bind in the receptor site and give negative input impact, while the Cabergoline acts indirectly by hindering the prolactin production (Wehrend and Trasch-Bostedt, 2003 and Hoffmann *et al.*, 2001).Progesterone enhances secretion of endometrial glandular and to suppress uterine contractions which leads to bacterial growth inside the uterus. Canine pyometra is frequently related with systemic inflammatory response syndrome (SIRS) cause generation and discharge of inflammatory arbiters that affect the body systemically (Hardie,1995). The cell wall component of E. coli or other gram-negative bacteria release Lipopolysaccharide(LPS) or endotoxin that act on kidney and damage the hepatocytes.

**Table.1** Haematological and Biochemical Parameters in Labrador bitch with Pyometra pre and post treatment

Parameters	Results (Pre treatment)	Results (7 days post treatment 2)	Referral Range (Merck’s Veterinary Manual, 2016)
Haemoglobin (Hb)	6.8 g/dL	8.0 g/dL	9.8-15.4 g/dL
Total leucocyte count (TLC)	20,600/cumm	8,600/cumm	6000-15000/cumm
Neutrofiles (%)	75%	60%	45-75%
Lymphocytes	22%	37%	10-28%
Monocyte	2%	2%	03-09%
Eosinophil	1%	1%	02-14%
Basophil	0%	0%	00-01%
Blood urea nitrogen (BUN)	69.5mg/dL	12.0mg/dL	8-28mg/dL
Creatinine	2.6mg/dL	1.0mg/dL	0.5-1.7mg/dL
ALT	47	23	17-69 IU/L
AST	23	17	12-37 IU/L

**Fig.1** Hypochoic areas of pus inside uterus before treatment-1



**Fig.2** Expulsion of serosanguinous fluid after treatment-1



**Fig.3** Clear uterus with no hypochoic appearance of pus after treatment-1



In chronic cases reduced production of erythrocytes resulting from the SIRS, also on the other hand due to decrease production of erythropoietin hormone which helps in RBC production, produce by the kidney (Jelkmann, 1992). Alternatively, there was increase level of BUN and creatinine level due to renal dysfunction indicate that the efficiency of kidneys to remove nitrogenous waste from the circulation in case of pyometra. The increment was more stamped in close Pyometra than the open pyometra (Shah *et al.*, 2017).

Improvement of haemoglobin level after started treatment with Inj Cresp25 was significant (Jelkmann, 1992). It happened due to increase level of erythropoietin which helps in more production of erythrocytes in blood.

For diminishing the renal dysfunction supplement with Cap CK-Reno as Cap C K Reno provides a broad spectrum approach to support and normalise renal function. Combined therapy of Mifepristone with Cabergoline can be effective and safe treatment to induce cervical opening in closed pyometra. It can be an efficacious alternative option over traditional ovario-hysterectomy in those animals which are not suitable for operation or the bitches which are intended for future breeding purposes.

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