SHORT COMMUNICATION

A Clinical Study on Canine Pyometra

Atul Kumar Verma, Harshit Saroha, Aman Srivastava, Shambhavi, Akhil Patel*, Ashutosh Tripathi, Manish Kumar Shukla, Vijay Singh

Abstract

Pyometra is an important gynaecological disorder of canine females along with dystocia and transmissible venereal tumor. Canine pyometra is problematic for canine owner and sometimes fatal in canines in severe cases. This study was aimed to know the incidence of pyometra among different gynaecological disorders, breed-wise, and factors affecting incidence of pyometra. A total 178 female dogs, presented with gynaecological disorders at VCC, Meerut, were included in this clinical study. Maximum incidence of canine pyometra was observed in five to six years age group. The incidence was found more in nulliparous (intact) animals and in Labrador breed. Incidence of open cervix pyometra was more common than closed cervix pyometra. USG can be used as a tool for the diagnosis of closed cervix pyometra. Mifipristone, Cabergoline, Misoprostol/Dinoprostone (oral/vaginal prostaglandin) along with antibiotic and other supportive therapy was found very effective in canine pyometra.

Keywords: Cabergolin, Canine, Mifepristone, Nulliparous, Pyometra.

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Introduction

Dog has been the best companion animal since ancient times, as many small families use to rear dogs and cats for their companionship. Among reproductive disorders pyometra, dystocia, anestrous, transmissible venereal tumor, infertility, pseudopregnancy and vaginal hyperplasia are frequently encountered in female dogs (Roberts, 1971). Pyometra in dogs is a very common reproductive disorder especially in older sexually intact females occurring during metestrual or diestrual stage of estrous cycle (Baithalu *et al.,* 2010). It is characterized by the various clinical (inappetance, depression, polydipsia, lethargy and abdominal distension) and pathological signs which are systemic as well as specific to reproductive system (Fransson, 2003). Closed cervix pyometra is a medical emergency that requires rapid intervention to prevent overwhelming sepsis and potential of patient death (Smith, 2006). Prevalence of pyometra in canine is 5-66 % (Gandotra *et al.,* 1993; Johnston *et al.,* 2001). Only a few reports on incidence and causes of canine pyometra in India have been documented (Honparkhe *et al.,* 2010). Therefore, in present study the incidence of pyometra, its predisposing factors (age, parity, breed) and the diagnosis/ treatment aspect were studied.

Materials and Methods

In this study, a total 178 female dogs with reproductive problems presented during January 2020 to December 2021 (two years) and treated at Veterinary Clinical Complex, College of Veterinary & Animal Sciences, Sardar Vallabhbhai Patel University of Agriculture & Technology, Meerut (Uttar Pradesh) were included. The incidence of pyometra among reproductive disorders, predisposing factors (age, parity, breed) affecting incidence of pyometra, and its diagnosis and treatment aspects were studied. Incidence of pyometra was compared with other gynaecological problems like dystocia, anestrous, transmissible venereal tumor, infertility, pseudopregnancy, vaginal hyperplasia, etc. frequently encountered in female dogs. Incidence of pyometra was compared according to different age groups. The female dogs were grouped as 1-2, 3-4, 5-6, 7-8, 9-10, 11-12 and 13-14 years of age. Incidence of pyometra was compared on the basis of parity, the female dogs were grouped as Nulliparous, with one, two, three and four parity. Breed-wise incidence of pyometra was also studied. Diagnosis of pyometra was done on the basis of symptom and using ultrasonography (USG). The affected animals were treated with medicinal and surgical technique.

Department of Veterinary Gynaecology and Obstetrics, College of Veterinary & Animal Sciences, Sardar Vallabhbhai Patel University of Agriculture & Technology, Meerut -250110 (UP), India.

Corresponding Author: Akhil Patel, Department of Veterinary Gynaecology and Obstetrics, College of Veterinary & Animal Sciences, Sardar Vallabhbhai Patel University of Agriculture & Technology, Meerut -250110 (UP), India, Phone: 8429480751, e-mail: dr.akhil.patel87@gmail.com

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Results and Discussion

The occurrence of reproductive diseases clinically diagnosed in 178 canine females is depicted in Table 1. Out of total 178 cases reported with various reproductive diseases, the incidence of pyometra was highest (34.26%, 61/178), followed by Caesarean section/dystocia (25.28%, 45/178), transmissible venereal tumor (16.29%, 29/178), anestrus (12.92%, 23/178), prolapse (3.93%, 07/178), pseudo-pregnancy (3.93%, 07/178), hyperplasia (02.80%, 05/178) and abortion (0.56%, 01/178). Our findings are in agreement with Honparkhe *et al.* (2010) and Ramsingh *et al.* (2013) who reported about 40 % pyometra, which was highest among all reproductive disorders.

Table 1: Incidences of gynaecological disorders in dogs

Type of case	Number of cases	Incidence (%)
Hyperplasia	05	02.80
Caesarean Section/Dystocia	45	25.28
Pyometra	61	34.26
TVT	29	16.29
Abortion	01	00.56
Pseudopregnancy	07	03.93
Prolapse	07	03.93
Anestrus	23	12.92
Total	**178**	**100**

The incidence of pyometra ranged from 1.63 to 32.79% in different age groups. In present study, the highest number of dogs (32.79%) affected with pyometra was in the age group of 5 to 6 years (Table 2). However, Baithalu *et al*. (2010) and Contri *et al*. (2014) reported maximum incidence of pyometra in 7 to 8 years age group. In present study, 68.85% dogs affected with pyometra were of > 4 years age, which is in agreement with Chastain *et al.* (1999) and Sethi *et al.* (2020). This increase in incidence of pyometra with age could be due to more exposure of endometrium to progesterone with the increase in the number of estrous cycle (Gilbert, 1992). So the probability of the occurrence of pyometra increases with the prolonged exposure of higher concentration of progesterone as it reduces the immunity of the uterus (Gabriel *et al*., 2016) as well as myometrial contractions (Gultiken *et al.,* 2016) and failure of closure of the cervix (Hardie, 1995) and increased bacterial adhesion with endometrium (Gabriel *et al.,* 2016).

Table 2: Incidences of pyometra in different age groups of dogs

S.No.	Age group (years)	Number of cases (%)
1.	1-2	7 (11.48%)
2.	3-4	12 (19.67%)
3.	5-6	20 (32.79%)
4.	7-8	10 (16.39%)
5.	9-10	8 (13.12%)
6.	11-12	3 (04.92%)
7.	13-14	1 (1.63%)
Total		**61 (100%)**

The highest incidence (78.69%) of pyometra was recorded in nulliparous (intact) dogs (Table 3). The findings are in agreement with those of Unnikrishnan (2018) and Vidya *et al.* (2020), who opined that the incidence of pyometra was more in nulliparous (intact) than pluriparous dogs.

Table 3: Incidences of pyometra in different parity of dogs

S.No.	Parity	Number of cases	%
1.	Nil	48	78.69
2.	One	5	8.20
3.	Two	5	8.20
4.	Three	2	3.28
5.	Four	1	1.64
Total		**61**	**100**

The breed-wise incidence of pyometra revealed the highest (37.70%) occurrence in Labrador (Table 4). The incidence of pyometra was 13.10% in German shepherd, followed by non-descript breed (9.84%) and others. The findings of present study are in disagreement with the Sethi *et al.* (2020) and Martins *et al.* (2015), who observed the highest incidence of pyometra in Non-descript breed of dog. However, Antonov *et al.* (2015) reported the highest incidence of pyometra in Golden Retriever. Breed susceptibility strongly indicates the contribution of genotype towards increase or decrease of disease (Jitpean *et al.,* 2012). This variation could also be due to preference of dog breed by the pet owners in different geographic areas.

Table 4: Incidences of pyometra in different breeds of dogs

S.No.	Breeds	Number of cases	%
1.	Labrador	23	37.70
2.	German Shepherd	8	13.10
3.	Rottweiler	5	8.20
4.	Non-descript	6	9.84
5.	Pug	5	8.20
6.	Pomeranian	5	8.20
7.	Bullmastiff	4	6.56
8.	Bulldog	1	1.64
9.	Beagle	1	1.64
10.	St. Bernard	1	1.64
11.	Pit Bull	1	1.64
12.	Boxer	1	1.64
	Total	**61**	**100**

It was observed that the incidence of open cervix pyometra was approximately three times higher (73.77%) than closed cervix pyometra (26.23%). Vidya *et al.* (2020) also found higher incidence of open cervix pyometra than closed cervix pyometra.

The diagnosis of pyometra (especially closed cervix) was done symptomatically and by using ultrasonography (Gupta *et al*., 2013). In case of closed pyometra, there was reduction in haemoglobin and packed cell volume. These haematological values are in agreement with Gupta and Dhami (2013). The cases of pyometra were treated using mifepristone (10 mg/kg b.wt. once orally), cabergoline (5 µg/kg b.wt. once in a day for 7 days) and misoprostal (prostaglandin) (5 µg/kg b.wt. once in a day for 4 days) along with broad spectrum antibiotics as described by England *et al*. (2007). In case of closed-cervix pyometra, cabergoline (5 µg/ kg b.wt) was used to convert close pyometra to open pyometra (England *et al*., 2007). Cerviprime gel (dinoprostone) was used to evacuate the pus from uterus along with mifepristone and antibiotics. In severe cases of pyometra which included low haemoglobin and packed cell volume, first treatment was done with antibiotics, haematinics and ecbolics. However, few (27.78%: 5 out of 18) severe cases of pyometra died during or before the start of proper treatment; while most of the cases (72.22%: 13 out of 18) recovered after medicinal treatment (mifepristone (10 mg/kg b.wt. once orally), cabergoline (5 µg/kg b.wt. once in a day for 7 days) and misoprostal (prostaglandin) (5 µg/kg b.wt. once in a day for 4 days) along with antibiotics ceftriaxone+ tazobactum @ 25 mg/kg b.wt. for 7 days). After improvement in physiological values of patient, ovariohysterectomy was performed successfully in 7 cases of pyometra under general anaesthesia.

Conclusions

Pyometra is the most common reproductive disorder followed by dystocia and TVT in female dogs. The probability of occurrence of pyometra increased with breeding/mating restriction. Labrador breed was the most susceptible to pyometra. The canines of age group 5-6 years were the most susceptible for incidence of pyometra. Also, the open-cervix pyometra is more common than closed-cervix pyometra. Ultrasonography can be used as tool for confirmatory diagnosis especially for closed-cervix pyometra. Medicinal treatment provided using progesterone receptor blocker, anti-prolactin and prostaglandin intra-vaginal/oral with antibiotic/supportive therapy is very effective and after improvement ovariohysterectomy can be performed for permanent management of pyometra.

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