

Occurrence of Prostatic Diseases in Intact Adult Dogs

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ABSTRACT

Retrospective studies showed an overall occurrence of 1.48 per cent of prostatic diseases among male dogs aged more than two years. The highest occurrence of 2.89 per cent was noticed in German Shepherds, followed by 2.61 per cent in Labrador Retrievers, 2.50 per cent in Belgian Shepherds and 2.40 per cent in St. Bernards. Occurrence progressively increased with the advancing age and 4.48 per cent occurrence of prostatic diseases was recorded in dogs aged more than eight years. The most common prostatic disease recorded was BPH (74.21%), followed by prostatitis (18.42%), prostatic cyst (3.16%) and prostatic neoplasia (4.21%).

Keywords: Occurrence, prostatic diseases, dogs

Prostate gland is the only accessory sex gland in dogs and its secretions contributes fluid fractions of ejaculate, which transport, support and nourish sperms. It is a musculo- glandular, bilobed and bilaterally symmetrical ovoid structure located around the neck of the urinary bladder. The growth and secretions of prostate gland are under the influence of androgenic hormones throughout its life and tend to increase in size with progressive advancement of age (Berry *et al.*, 1986). Prostatic diseases of dogs are more frequently encountered in dogs than any other domestic animals. This study was designed to investigate the occurrence of different prostatic diseases in dogs and to study the influence of breed and age on the on the occurrence of prostatic diseases.

MATERIALS AND METHODS

The occurrence of various prostatic diseases in male dogs was studied by retrospective screening of clinical records of all male dogs, aged over two years, presented at Veterinary

College Hospital, Hebbal, Bengaluru between November 2011 to October 2016. The data generated by the retrospective screening of clinical records and the following information was generated:

1. Overall occurrence prostatic diseases in dogs
2. The influence of breed of the male dog on the occurrence of prostatic diseases
3. The influence of age of the male dog on the occurrence of prostatic diseases
4. The occurrence of various prostatic diseases in male dogs

RESULTS AND DISCUSSION

The total number of male dogs, aged over two years, screened during this period of five years was 12876. Among these, 3276 (25.44%) dogs, belonging to 24 different breeds were presented with one or more clinical signs suggestive of prostatic diseases. However, after

a detailed clinical examination using digital rectal examination, ultrasonography and prostatic fluid examination, prostatic disease was confirmed only in 190 dogs out of 3276 male dogs presented with suggestive symptoms of prostatic diseases. Therefore, the overall occurrence of prostatic disease was found to be 1.48 per cent of male dogs aged over two years.

The overall occurrence of observed in this study is in accordance with the studies of Kraweik and Heflin (1992), Teske *et al.* (2002) and Menon *et al.* (2011) who reported it as 2.5, 1.46 and 1.34 per cent, respectively. However, Dhivya *et al.* (2012) and Polisca *et al.* (2016) reported the overall incidence of prostatic disease in dogs as 0.05 and 0.70 per cent, respectively which is lower than the occurrence recorded in the present study, which may be due to screening of a small population of dogs, neglect in presenting older dogs to hospitals, inadequate diagnosis or regional genetic variations in predisposition to prostatic diseases. Higher occurrence rates of 8.0 and 10.71 per cent was reported by Dabhi *et al.* (2005) and Tepla *et al.* (2005), which may be due to screening of less number of dogs or due to short duration of study.

Prostatic disease was diagnosed in 190 dogs, which belonged to 15 different breeds. The highest occurrence of 2.89 per cent (n=51) was noticed in German Shepherds, followed by 2.61 per cent (n=45) in Labrador Retrievers, 2.50 per cent (n=2) in Belgian Shepherds and 2.40 per cent (n=3) in St. Bernards. Prostatic diseases were recorded in 11 other breeds also in a lower frequency.

The results of the present study appear to suggest that German Shepherds, Labrador Retriever, Belgian Shepherds and St. Bernards are at an increased risk of developing prostatic disease. In these breeds, the occurrence of prostatic disease varied from 2.40 to 2.89 per cent. There are some reports (Kraweik and Hefin, 1992; Menon, 2008) which indicated that German Shepherd dogs are at increased risk in developing prostatic disease. An

increased susceptibility for prostatic diseases has also been reported for other breeds such as Scottish Terrier, Bouvier des Flandres, Bernese mountain dogs and German Pointer (Teske *et al.*, 2002).

Age-wise occurrence of prostatic disease is shown in Table 1. The highest occurrence of prostatic disease (4.48%) was recorded in dogs over eight years of age. However, it was encountered as early as 2 – 4 years, although infrequently. It was also observed in the present study that the prostatic diseases were not diagnosed in any dogs below two years of age. Similarly, Menon (2008) in his study also reported the prostatic diseases appeared to have an onset at a mean age of eight years, although it was encountered in some dogs as early as five years of age. Similarly, Kraweik and Heflin (1992) reported the mean age of the dog at which a diagnosis of prostatic disease was made as 8.9 years.

Table 1: Age wise occurrence of prostatic diseases in dogs

Age group	Number of clinical records screened	Number of dogs diagnosed with prostatic disease	Occurrence (Per cent)
2 – 4 Yrs.	3445	4	0.12
4 – 6 Yrs.	3618	27	0.75
6 – 8 Yrs.	3159	40	1.27
More than 8 Yrs.	2654	119	4.48

The results of the present study show that the diagnosis of the disease is made more frequently in older dogs and that the incidence of prostatic disease in dogs was increased with the increase in age of the dog. This characteristic has also been previously reported by Barsanti and Finco (1995) and Smith (2008) who described a higher incidence in older, sexually intact male dogs. The fact that the maximum incidence is seen in dogs aged more than five years (Kutzler and Yeager, 2005), six years (Lowseth *et al.*,

1990) and eight years (Menon, 2008) has been substantiated by this study.

Occurrences of various prostatic diseases are recorded in Table 2. The most common disorder recorded in the present study on screening of clinical records was BPH (74.21%). BPH has also been reported to be the most common disorder of prostate gland by Laroque *et al.* (1994) and Davidson (2003). Parry (2007) reported that more than 80 per cent of male dogs aged over five years exhibit BPH and prostatic volume is 2 to 6.5 times greater than that of normal dogs of similar weight. Raskin and Meyer (2010) opined that a modest decrease in serum testosterone concentration, combined with no change in serum estradiol – 17 β results in a decrease in serum androgen to estrogen ratio, which increases sensitivity to circulating androgens and development of BPH.

Table 2: Occurrence of various prostatic diseases recorded in dogs

Nature of prostatic disease	Number of dogs diagnosed with prostatic disease	Occurrence (Per cent)
Benign Prostatic Hyperplasia	141	74.21
Prostatitis	35	18.42
Prostatic Cyst	6	3.16
Prostatic Neoplasia	8	4.21
Total	190	100

Inflammation of prostatic gland was the second most common prostatic disorder recorded in the present study (18.42%). Johnston *et al.* (2001) opined that prostatitis may occur secondary to diseases of intact or castrated dogs and age at onset of the disease vary with underlying cause of infection. Kraweik and Heflin (1992) reported that bacterial prostatitis was the most common prostatic disease identified in their study, diagnosed in more than 38 per cent of dogs identified with prostatic disease and in more than 18 per cent of all prostatic diseases. Mean age of diagnosis was 8.2 years. Reported

prevalence of prostatitis by various authors are 20 – 70 per cent (Cowan *et al.*, 1991) and 19.3 per cent (Teske *et al.*, 2002). Johnston *et al.* (2001) opined that dogs become predisposed to prostatitis by increased number of bacterial organisms in the periprostatic urethra, compromise of local immunity, disease of urinary tract, altered prostatic tissue and fluid flow as in cases of BPH and cysts. Infection is mostly of ascending nature from the urethral flora, along with hematogenous spread or extension from testes, epididymis or peritoneal cavity.

In the present study, prostatic cyst had been recorded in only 3.16 per cent of cases diagnosed as prostatic disease. Bursanti and Finco (1986) opined that prostatic cysts may be associated with BPH and are formed when canaliculi become obstructed, leading to accumulation of prostatic fluid. Black *et al.* (1998) reported that the small cysts found in the parenchyma of a hyperplastic prostate communicate with each other and get manifested macroscopically as prostatic cysts. Studies of various authors revealed two per cent (Kraweik and Heflin, 1992), two to five per cent (Dorfman and Barsanti, 1995) and 14 per cent (Black *et al.*, 1998) cases of prostatic cysts in dogs.

Prostatic neoplasia had also been diagnosed very infrequently (0.83%). Adenocarcinoma is the most common prostatic neoplasia followed by locally invasive transitional cell carcinoma. Other reported prostatic neoplasms include lymphoma, squamous cell carcinoma, adenoma, leiomyosarcoma, leiomyoma, fibroma and hemangiosarcoma. Prostatic adenocarcinoma tends to metastasize to the iliac lymph nodes, urinary bladder, rectum, lung, pelvic musculature and bone. Gobello and Corrada (2002) reported that by the time clinical signs suggest the presence of prostatic tumours, local or regional metastasis would have already occurred. Reported prevalence of prostatic neoplasia by different authors includes 0.2 to 0.6 per cent (Bell *et al.*, 1991), 13 per cent

(Kraweik and Heflin, 1992; Teske *et al.*, 2002) and 5 to 7 per cent (Memon, 2007) of cases.

CONCLUSION

The overall occurrence of prostatic diseases was determined as 1.48 per cent and the disease was identified in 15 breeds with a higher prevalence amongst German Shepherds, Labrador Retrievers, Belgian Shepherd, St. Bernard and Great Dane. Occurrence of prostatic diseases progressively increased with the advancing age and highest occurrence was recorded in dogs aged more than eight years. The most common prostatic disease recorded was Benign Prostatic Hyperplasia, followed by prostatitis, prostatic cyst and prostatic neoplasia.

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