



E-ISSN: 2320-7078

P-ISSN: 2349-6800

[www.entomoljournal.com](http://www.entomoljournal.com)

JEZS 2020; 8(4): 682-684

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Received: 28-05-2020

Accepted: 30-06-2020

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## Diagnosis of prostate gland diseases in dogs

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### Abstract

Inflammation of the prostate gland in dogs is mostly suppurative in nature that may even lead to abscess. Loss of appetite, difficulty in urination, hematuria were the common manifestations, apart from other signs viz., tenesmus, dyschezia, pain and fever. Neutrophilic leukocytosis along with border line serum creatinine and blood urea nitrogen were the significant hemato-biochemical abnormalities. Asymmetric and nodular prostate gland was detected on per-rectal digital palpation and presence of distended, irregularly shaped prostate gland with mixed echogenic texture and multiple anechoic foci in the gland were important ultrasonographic findings. Cultural examination of fine needle aspiration cytology of the sample revealed *E. coli* infection.

**Keywords:** Diagnosis, prostate gland diseases, dogs

### Introduction

The prostate gland, made up of two symmetrical lobes is located at the neck of the urinary bladder, encircles the pelvic portion of urethra. The diseases of prostate gland are equally noticed in both intact and neutered dogs <sup>[1]</sup>. Prostate diseases include benign prostate hyperplasia, prostatic cyst, abscess, prostatic calculi and neoplasia which are most commonly seen in older dogs and cat <sup>[1]</sup>. The common clinical signs in dogs with prostate disease include haematuria, dysuria, urinary incontinence, dyschezia, pain and weight loss <sup>[2]</sup>. Diagnostic procedures include radiography, ultrasonography, fine needle aspiration cytology and biopsy studies. The present paper puts on record about diagnosis of certain prostate diseases in dogs.

### Materials and Methods

Twenty three male dogs of various breed that were presented with the signs of dysuria, hematuria, stanguria were selected for the study. They were thoroughly evaluated physically followed by collection of blood, serum and urine for examination. Selected cases were then subjected for per-rectal digital palpation, x-ray and abdomen ultrasound. Those cases that were diagnosed for prostate disease were also subjected for ultrasound guided fine needle aspiration and cytology to identify the type of infection. The samples were transferred to nutrient broth and later to specific media viz., EMB agar to diagnose *E. coli*.

### Results

All the 23 dogs that were considered for the study were showing similar manifestations like altered appetite, weight loss, stanguria and hematuria for a couple of weeks. Few were also presented with additional signs viz., tenesmus, dyschezia, pain and fever. Except leukocytosis ( $16 \times 10^3$ ) with neutrophilia (84%) no other abnormality was noticed on hemato-biochemical evaluation among all the dogs, but with a border line serum creatinine ( $1.8 \pm 0.64$  g/dl) and blood urea nitrogen ( $26 \pm 1.02$  g/dl) among few (9/23) dogs. Urine analyses (6/23) revealed presence of blood and RBC. No bacteria of pathological significance was detected on urine culture. Abdominal radiography revealed radio dense particles in the urinary bladder (5/23) and distended urinary bladder (13/23). Per rectal digital palpation revealed asymmetric and nodular prostate gland cranially in the pelvic cavity. Ultrasonographic examination of abdomen among 16 patients revealed distended, irregularly shaped prostate gland with multiple heterogenous, anechoic foci (fig. 1) and hyperechoic or mixed echogenic texture (fig. 2). Multiple anechoic foci present in the gland parenchyma suggests cysts and whereas, presence of irregular fluid filled anechoic spaces is indicative of abscess (fig. 3), later confirmed by fine needle aspiration.

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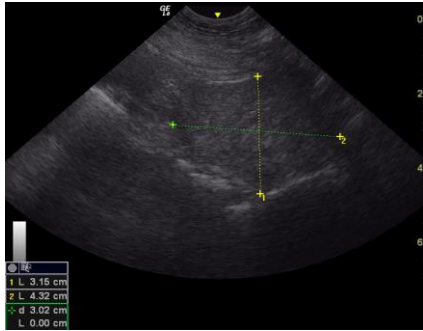
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Presence of hypoechoic peripheral prostatic tissue with parenchymal heterogeneity might be suggestive of benign prostatic hyperplasia (fig. 4). Pomeranian, Labrador and German shepherd were the different breeds that were diagnosed for prostate diseases that were aged between 8 -13 years; few (4/16) were neutered and while the rest (12/16) were intact males. Ultrasound guided aspiration was done using a sterile syringe and fine needle and the sample from 5 cases revealed *E. coli* on culture.



**Fig 1:** Enlarged prostate gland with mixed echogenic texture of a 10yr Pom



**Fig 2:** Enlarged prostate gland with hyperechoic mass and multiple anechoic foci of a 9yr GSD



**Fig 3:** Enlarged prostate gland with irregular anechoic foci in a 10yr Lab.



**Fig 4:** Enlarged prostate gland with peripheral anechoic area in a 12yr

## Discussion

Prostatitis is an infectious (bacteria) or non-infectious inflammatory condition of the prostatic gland. The cysts and abscess are common in an enlarged prostate, wherein, prostatic abscess is rare and is often a complication of an infected cyst or severe prostatitis. Bacterial prostatitis represents only one third of prostatitis [3]. Prostatic diseases such as, prostatic hyperplasia, cyst, abscess and neoplasia account for 10% of intact male dogs [1] and may lead to different clinical manifestations ranging from infertility to septicemia [4]. Prostate diseases are most commonly noticed in dogs over 10 years primarily in intact males, but neutered dogs may also have prostatic tumours and infections [2].

The clinical signs of prostatic diseases usually depends on type and severity, though prostatic abscesses usually arise as the immune system attempts to isolate, or wall off, an area of infection and from chronic infections of the prostate gland, mostly by *E. coli*. The abscess can be single or multiple and can be small or very large. The large abscesses probably develop from paraprostatic cysts and may become large enough to put pressure on other internal organs. When the enlargement of abscess reaches to a point where putting pressure on the colon and decreasing its functional diameter, affected dog will strain while defecating resulting in tenesmus and formation of ribbon-like appearance to the stools. Prostatic hyperplasia is diffuse and the enlarged prostate will change position by moving into the abdominal cavity. Compression of colon due to enlarged gland resulting in ribbon like stools, constipation, tenesmus may subside when the enlarged prostate moves beyond the pelvic rim into the abdominal cavity [5]. On the other hand, there will be dysuria or stranguria, if the enlarged abscess places pressure on the urethra. Intermittent pre-putial bloody discharge without urination and haematuria mostly towards the end of urination are the common signs of associated urinary system abnormalities [6]. Unlike in humans, dysuria is uncommon in dogs. Anuria in dogs is reported when large cavities and neoplasia are present in the prostate [1]. Previous authors stated that prostate carcinomas are more common tumours of the prostate among castrated males than intact males dogs, usually seen in older dogs with an average age of occurrence of 10 years [7, 8]. The condition no specifically noticed in any specific breed and there is no particular breed disposition [1].

Over 50% of cases of prostatic disease in dogs are benign prostatic hyperplasia, followed by infections in less than 20% [9]. In benign prostate hyperplasia, acinar epithelial cells increase in size along with development of cysts in the excretory ducts causing obstructions and glandulocystic prostatic hyperplasia under the influence of dihydrotestosterone. Androgens are known to stimulate growth of prostate cells in both humans and dogs. In dogs, as prostate carcinoma has a higher prevalence in castrated animals than in intact males, the role of androgens as the cause is still obscure. There appears to be no relationship between the age at castration and the age at the development of carcinoma, suggesting that castration does not initiate the development of prostate neoplasia in dogs but might be a promoting factor [7]. The authors also corrugated that the canine prostate carcinomas appears to originate from basal cells in the duct areas of the prostate rather than from acinar cells, hence probable occurrence in dogs even in the absence of androgens.

Dorsal caudal parts of the enlarged prostate can be easily palpated per-rectally in initial stages, as in more progressive

stage of prostatomegaly it is repositioned cranially into the abdomen cavity. Digital palpation of the normal prostate in the dog is symmetrical and smooth, with a distinct dorsal median groove that should not be painful [10, 5]. Presence of asymmetric gland along with loss of the dorsal median groove may be observed on per rectal palpation of diseased gland such as, prostatic abscess, prostatitis and neoplasia [6]. Though digital palpation is easy and cheap to perform to assess the position and symmetry of the gland, not a very accurate examination technique [11] as it does not reveal slight prostatomegaly when the prostate remains in the pelvis canal.

Though abdominal radiographs may help define the size, shape, and position of the prostate gland, transabdominal ultrasonography is the best diagnostic imaging modality of assessment of the prostate gland, as it allows to evaluate the gland parenchyma and adjacent soft-tissue structures. Presence of hyperechogenic parenchyma is suggestive of benign prostatic hyperplasia, chronic bacterial prostatitis, and prostatic neoplasia, whereas areas of mineralization may be secondary to chronic bacterial prostatitis or prostatic neoplasia [12]. While evaluating the prostatic diseases, a diagnosis using only ultrasonographic evaluation underestimates dogs with early stages of benign prostatic hyperplasia [3]. The most common ultrasonographic finding seen in prostate hyperplasia is presence of small anechoic cavities of <0.5 cm over the entire parenchyma. However, polycystic parenchyma (multiple anechoic cavities smaller than 5 mm) distributed throughout the parenchyma was observed in 14% of dogs considered as normal [13]. In case of severe benign prostatic hyperplasia, it is not uncommon to observe hypoechogenic peripheral prostatic fatty tissue (reflecting an inflammation) and parenchyma heterogeneity [14].

Among the various diagnostic procedures, ultrasonography helps to assess the size and homogeneity of the gland [15], where in the length (longitudinal section) and width (crosssection) are the most representative measurements [16]. However, ultrasound-guided percutaneous drainage or a surgical exploratory of prostatic abscess is proved to be a safe and quick tool providing excellent results [17]. Similarly, to choose an appropriate treatment protocol and assess the prognosis, it is necessary to confirm the nature of infection before starting antibiotic therapy [10].

### Conclusion

Prostatitis causing abscess, cyst or enlarged prostate associated with benign prostate hyperplasia or neoplasia can be suspected with certain specific manifestations like dysuria, hematuria or tenesmus during defecation. Though, x-ray, digital palpation helps to diagnose, ultrasonography along with USG guided fine needle aspiration cytology will be the modality for confirmation of the cause and there by adopting treatment.

### References

1. Levy X, Nizanski W, Heimendahl AV, Mimouni P. Diagnosis of Common Prostatic Conditions in Dogs: an Update. *Reproduction of Domestic Animals*. 2014; (49):50-57.
2. Wilson JD. The critical role of androgens in prostate development. *Endocrinology Metabolism Clinics of North America*. 2011; 40:577-590.
3. Levy X, Maurey C, Fontaine E, Fontbonne A. Comparative Evaluation of five Different Techniques to

Diagnose Prostatic Infection in the Dog. In: *Proceeding of the 5th EVSSAR meeting*, 2006, 319.

4. Smith J. Canine prostatic disease: are view of anatomy, pathology, diagnosis and treatment. *Theriogenology*. 2008; 70:375-383.
5. Johnston SD, Root Kustritz MV, Olson PNS. *Canine and Feline Theriogenology*. WB Saunders Company, Philadelphia. 2001a, 355.
6. Maurey-Guenec C. Approche clinique des affections prostatiques. *Pratique veterinaire Compendium Animal*. 2007; 38:7-8.
7. Teske E, Naan EC, Van Dijk EM, Van Garderen E, Scalken JA. Canine prostate carcinoma: epidemiological evidence of an increased risk in castrated dogs. *Molecular and Cell Endocrinology*. 2002; 197:241-255.
8. Cooley DM, Waters DJ. *Small Animal Clinical Oncology*. 2001.
9. Foster RA. Common lesions in the male reproductive tract of cats and dogs (review). *Veterinary Clinics North American Small Animal Practice*. 2012; 42:527-545.
10. Kustritz MVR, Klausner JS. Prostatic diseases. In: Ettinger SJ (ed), *Textbook of Veterinary Internal Medicine* 5th edn. WBSaunders, Philadelphia, 2000, 1687-1698.
11. Levy X, Mimouni P. Hyperplasie benigne de la prostate: actualites. *Le point veterinaire*. 2009; 293:39-43.
12. Michelle K, *Overview of Prostatic Diseases*, MSD Mercks manual, 2013.
13. Ruel Y, Barthez PY, Mailles A, Begon D. Ultrasonographic evaluation of the prostate in healthy intact dogs. *Veterinary Radiology and Ultrasound*. 1998; 39:212-214.
14. Levy X, Mimouni P. Echographie de la prostate. *Pratique veterinaire Compendium of Animals*. 2013; 109:42-45.
15. Gunzel-Apel AR, Mohrke C, Poulsen Nautrup C. Colour-coded pulsed Doppler sonography of the canine testis, epididymis and prostate gland: physiological and pathologic findings. *Reproduction of Domestic Animals*. 2001; 36:236-240.
16. Atalan G, Holt PE, Barr FJ, Brown PJ. Ultrasonographic estimation of prostatic size in canine cadavers. *Research Veterinary Science*. 1999; 67:7-15.
17. Bussadori C, Bigliardi E, D'Agnolo G, Borgarelli M, Santilli RA. The percutaneous drainage of prostatic abscesses in the dog. *Radiology Medicine*. 1999; 98(5):391-394.