

DIAGNOSIS AND TREATMENT OF PROSTATIC DISEASES IN DOGS

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Introduction

Prostatic diseases are encountered frequently in small animal practice especially in older sexually intact male dogs. Large and medium sized breeds like German shepherd and Doberman pinschers are more prone to prostatic diseases than the other breeds. (Black et al., 1998; Krawiec and Heflin, 1992).

The common conditions affecting the canine Prostate gland include Benign prostatic hyperplasia (BPH), prostatitis, prostatic cysts and prostatic neoplasia. The clinical signs associated with each of these conditions often overlap and many treatment modalities are available and are different for different prostatic disorders. It is therefore important for the clinician to have a definitive diagnosis prior to initiating the treatment.

Anatomy of canine prostate

Prostate is the only accessory sex gland of the genital tract in male dogs. The canine prostate gland is a bilobed structure, androgen dependant and located predominantly in the retroperitoneal space, usually at the pelvic inlet within the pelvic canal and it completely encircles the urethra. The precise function of the prostate gland has not been clearly elucidated.

Diagnostic approaches

1. History and clinical presentation: The condition affects male dogs, usually older than 5 years. These patients may be clinically presented with signs like rectal tenesmus, ribbon/ tapered stools, urethral discharge, haematuria and decreased libido in breeding dogs.

2. Physical examination: The prostate is best examined by per rectal digital palpation with assisted caudo-abdominal pressure. Normally, the prostate is smooth, symmetrical in shape, slightly movable, isothermic and free of pain on palpation. Abnormalities include pain on palpation, more warm on touching, hardness, asymmetry and adherence

to the floor of the pelvis.

Pain and warmth on palpation of the prostate indicate inflammatory condition of the prostate. Asymmetry and adherence to the floor of pelvis are the important findings seen in dogs with prostatic neoplasia or prostatic cysts.

3. Examination of prostatic fluid: The prostatic fluid expelled either during ejaculation or obtained by prostatic massage can be subjected to cytology and culture and sensitivity, which are unavoidable diagnostic criteria for prostatic disorders.

4. Cytological picture of prostatic fluid: The normal cytology of prostatic fluid is the presence of cubic/ cylindrical prostatic epithelial cells with oval nuclei. The cytoplasm reveals basic granules. The cells are usually attached to each other forming a honey-comb pattern. The bacterial concentration in the prostatic fluid of a healthy dog should not exceed 100 bacteria/mL of prostatic fluid; however undetected urethral contamination may account for up to 10⁵ bacteria/mL without any evidence of inflammation (Barsanti and Finco, 1995). Abnormalities in cytology and its diagnosis is given in Table 1.

5. Urethral discharge: The presence of urethral discharge is a frequent finding in dogs with prostatic disorder. For eliminating urinary incontinence as a cause of urethral discharge, compare the cytology, pH and specific gravity of urine with that of urine collected by cystocentesis.

6. Hematology: A complete blood count including the band-forms could be helpful in identifying acute prostatitis or abscess.

7. Prostatic Markers

a. *Canine prostate specific arginine esterase (cpse)*: The most important and significant marker of prostatic secretion in dogs is CPSE released by prostatic epithelial cells (Chapdelaine et al., 1984) although it's exact role in various diseases of the canine prostate is not yet completely understood. The serum CPSE concentration is elevated mostly

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Table 1: Abnormal cytological picture of prostatic fluid and its diagnosis

Abnormal	Diagnosis
Presence of large cells with hypertrophy and hyperplasia.	BPH
Presence of squamous epithelial cells	Squamous cell metaplasia or squamous cell carcinoma
Presence of degenerated neutrophils often with intracellular bacteria	Prostatitis
Acellular fluid containing few erythrocytes, leucocyte or benign epithelial cells	Prostatic cyst
Prostatic epithelial cells with abundant deeply basophilic cytoplasm, high nucleus: cytoplasm ratio, anisokaryosis and numerous large rounded poorly staining cytoplasmic vacuoles	Prostatic neoplasia

in dogs with BPH (189.7 ng/mL) compared with normal intact dogs (41.8 ng/mL).

b. *Prostatic acid phosphatase (pap)*: Dogs suffering from prostatic adenocarcinoma were found to have significantly higher quantities of PAP than dogs with BPH, and PAP assay was helpful in differentiating tumour from BPH. The Total Acid Phosphatase (TAP) value greater than 10U/L accompanied by a high PAP value (>4U/L) was strongly indicative of prostatic adenocarcinoma.

8. Serum biochemistry: The elevated levels of serum creatinine may help to identify renal failure developed from ascending grade infection of prostate or neoplasia/cysts induced urethral obstruction.

9. Diagnostic imaging

a. *Radiology*: The prostate is very difficult to visualize radiographically in normal dogs. However it can be used to determine the enlarged prostate, shape, contour, location and mineralization of the prostate. Both lateral and ventrodorsal views of the caudal abdomen are recommended. The prostate

is considered enlarged when the prostatic diameter as visualized on the lateral radiographic view is greater than 70% of the pubic sacral promontory distance (Feeney et al., 1987).

b. *Ultrasonography*: Ultrasonography is an excellent diagnostic tool in evaluating the prostate gland, useful for visualizing both the internal as well as external architecture (Johnston et al., 1991). In addition to this, ultrasonography serves as guidance when percutaneous biopsy and aspiration is performed.

Using the bladder as an anatomical landmark, the prostate may be identified just caudal to the bladder neck, encircling the urethra. Normal ultrasonographic picture is symmetrical, uniform echotexture except in cases where a periurethral/hilar echogenic zone (Figure 1). Assymetrical/irregular prostate with focal/ diffuse hyperechoic pattern is seen in prostatic adenocarcinoma. Well defined rounded hypoechoic/ anechoic area is noticed in prostatic abscess/cyst (Figure 2). Hyper-echogenic areas is seen in prostatitis (Figure 3) and Echogenic foci with acoustic shadowing is the feature in dystrophic calcification of gland (associated with prostatic adenocarcinoma).

10. Prostatic biopsy: a. Fine Needle Aspiration Biopsy (FNAB), b. Excisional Biopsy, c. Percutaneous Biopsy

Management of prostatic disorders

The therapeutic choice vary depending on different prostatic disorders

i) Benign Prostatic Hyperplasia:

1. Castration, 2. Estrogen therapy - Oral therapy: Diethyl stilbestrol 0.2 – 1mg/Kg PO for 5

Figure 1: Symmetrical, bilobed gland having uniform echo-texture with anechoic prostatic urethra

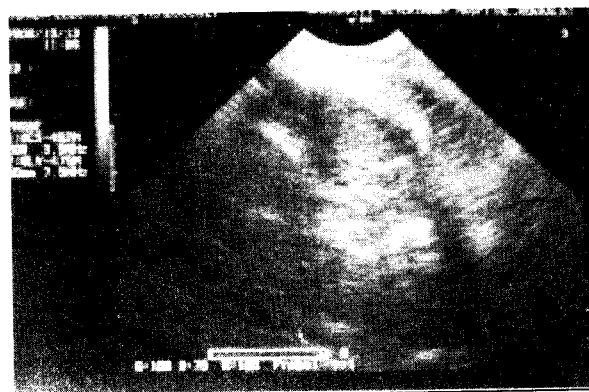
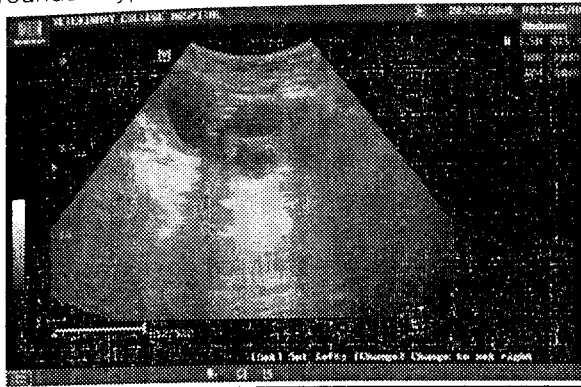


Figure 2: Bilateral prostatic cyst - well defined rounded hypoechoic/ anechoic area in both lobes



days; Parental: Estradiol cypionate 0.1ng/Kg, 3. Antiandrogen - Medroxy progesterone 3ng/Kg SC, 4. 5- α reductase inhibitors - Finasteride 0.1 – 0.5mg/Kg PO every 24 hour for 16 weeks, 5. Androgen receptor antagonists - Flutamide and Hydroxy flutamide 2.5 – 5mg/Kg/day for 6 – 7 weeks

ii) Prostatitis:

1. Use antibiotics that can penetrate the intact blood prostate barrier e.g. Chloramphenicol, Trimethoprim-sulfamethoxazole, Enrofloxacin. Enrofloxacin is @ 5 mg/kg bid for 3-6 weeks has given good results., 2. Castration, 3. Marsupialization/placement of Penrose drain

iii) Squamous metaplasia:

1. Removal of Estrogen source

iv) Prostatic cyst:

1. Surgical debridement, 2. Omentization, 3. Marsupialization, 4. Placement of surgical drains, 5. Ultrasound guided drainage of cyst, 6. Finasteride/Castration

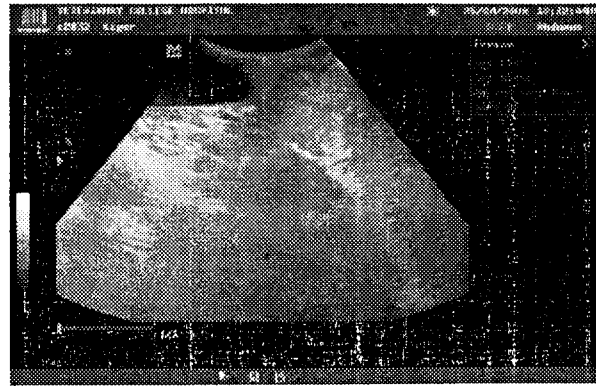
v) Prostatic neoplasia:

1. No effective therapy, 2. Castration, 3. Radiation therapy

Conclusion

Prostate is the only accessory sex gland of the genital tract in the male dogs and canine prostate gland can be affected by several disease processes such as BPH, prostatitis, prostatic cyst and prostatic neoplasia. In most of the prostatic diseases, the clinical signs may overlap making it difficult to have a definitive diagnosis. Hence, an accurate diagnosis requires proper and efficient

Figure 3: Prostatitis - hyperechogenic areas



diagnostic test which will further help us to select an appropriate treatment strategy.

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