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Canine prostatic disease

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Hyperplasia

Pathophysiology: Increase in epithelial cell number is more marked than the increase in epithelial cell size. Vascularity of the prostate is increased. Intraparenchymal fluid cysts develop. Hyperplasia requires the presence of the testes. Intraprostatic dihydrotestosterone is the hormonal mediator.

Clinical Findings: Most affected dogs are asymptomatic. Hemorrhagic urethral discharge, hematuria, and/or difficult defecation are the most common signs. The prostate gland is non-painful and symmetrically enlarged. Urine is normal or contains blood. Semen is normal or hemorrhagic. On ultrasonography, the prostate may be diffusely hyperechoic with parenchymal cavities. The prostatic capsule is smooth. Any cavitary areas are typically well defined and smoothly margined. In one study, 4 of 12 dogs with asymptomatic intraprostatic cysts detected by ultrasound had an asymptomatic UTI and all of these dogs had positive cultures of the same organism from prostatic cyst fluid. Thus, a culture of urine is indicated in all dogs with intraprostatic cysts.

Treatment: Treatment of prostatic hyperplasia is only required if abnormal signs are present. The most effective treatment is castration, which will result in a 75% decrease in prostate size over 8-9 weeks. Medical therapies include estrogen, antandrogens, and progestins. Products containing extracts of the saw palmetto plant, Serenoa repens, are widely advertised for prostatic hyperplasia in men. We were unable to document any beneficial or harmful effects of one such product in dogs with prostatic hyperplasia.

Prostatic Infection

Pathophysiology: Infections occur predominantly in intact male dogs, but if infection is present prior to neutering, infection may persist. E. coli is the usual bacteria involved.

Clinical Findings: With acute prostatitis and abscessation, anorexia, lethargy, and fever are usually noted. Most often there are no signs directly referable to the prostate gland with chronic prostatitis. The dog may be presented for recurrent episodes of cystitis. With a large abscess or abscesses, the dog may be presented with tenesmus or dysuria. Evidence of septic shock was noted in 10% of cases. On palpation, the prostate gland is usually abnormal with abscessation: enlarged, asymmetric and variable in consistency.

Hematuria, pyuria and bacteriuria are common in prostatic infections. A urine culture on a sample collected by cystocentesis or catheterization should be performed.

In acute prostatitis and abscessation, a neutrophilic leukocytosis with or without a left shift often exists. In chronic prostatitis, the WBC is usually normal. Blood chemistry is normal with chronic prostatitis but bilirubin, alkaline phosphatase, and bile acids may be increased with acute infections and abscessation. Hypoglycemia was noted in 40% of abscess cases. Such findings are suggestive of gram negative septicemia.

Assessment of prostatic fluid is essential to diagnose chronic prostatitis. Prostatic fluid is preferably collected by ejaculation or by ultrasound guided aspiration of intraprostatic cysts.

Survey radiographs may be normal or show a loss of detail at the margins of the prostate gland in acute prostatitis. The prostate gland is usually radiographically normal with chronic prostatitis, but a few cases may have granular parenchymal mineralization. Prostatic enlargement that can be asymmetric or irregular in outline may be evident with abscessation. The sublumbar lymph nodes may be enlarged.

With acute and chronic prostatitis, the prostate gland may have focally to diffusely increased echogenicity on ultrasonography. In chronic prostatitis, multifocal mineralization may also be seen, although mineralization is more common with neoplasia. With abscessation, the prostate gland is usually asymmetric and hyperechoic with parenchymal hypoechoic cavities with distal enhancement.

Treatment of Acute Prostatitis: An antibiotic, based on urine culture and sensitivity, is administered for 28 days. Since acute infections may become chronic, reexamination is performed 7 days after completion of antibiotic therapy.

Treatment of Chronic Prostatitis: Chronic bacterial prostatitis is very difficult to treat effectively because of the blood-prostatic fluid barrier. The appropriate choice of an antimicrobial agent depends on the both the antimicrobial sensitivity of the infecting organism and the ability of the antimicrobial to penetrate prostatic acini. Antimicrobials, which have been shown to have prostatic penetration in dogs include chloramphenicol, clindamycin, difloxacin, enrofloxacin, erythromycin, orbifloxacin, and trimethoprim. Once a drug is chosen, it should be continued for at least 6 weeks. Castration is beneficial. Urine and/or prostatic fluid are recultured 7 days and 1 month after discontinuing antibi-
otics to ensure the infection has been eliminated (not merely suppressed).

**Treatment of Abscessation**: Surgical drainage is the treatment of choice. Castration is recommended. Dogs with abscessation must receive antibiotic therapy. If the dog is systemically ill, intravenous antimicrobials are used initially. The antibiotic choice is based on results of cytology (gram negative or positive rods or cocci), culture and sensitivity, and the presence or absence of bacteremia. After improvement of clinical signs, the dog is managed as a case of chronic bacterial prostatitis.

Continued prostatic infection and recurrent urinary tract infections are common despite surgical treatment. Urinalysis and urine culture are evaluated monthly for several months after initial therapy is discontinued and then every 3 months for at least a year. The prostate gland should be re-palpated and re-examined by ultrasound at monthly intervals until abscess resolution is confirmed.

**Neoplasia**

**Pathophysiology**: The most common neoplasm is carcinoma which occurs in both intact and neutered male dogs. Prostatic carcinoma tends to metastasize through the external and internal iliac lymph nodes to vertebral bodies as well as to the lungs. Cysts, abscesses, and areas of hemorrhage can be found with neoplasia.

**Clinical Findings**: Dogs with carcinoma have a mean age of 9-10 years. In most cases, the prostate will be enlarged and asymmetric with increased firmness. It is often non-movable. In determining whether the prostate is enlarged or not, the examiner must consider the dog’s reproductive status.

Hematuria is common. Atypical cells are occasionally found in urine sediment. Approximately 50% of affected dogs have an increase in serum alkaline phosphatase.

Asymmetrical, irregular prostatomegaly may be evident on survey abdominal radiography. Occasionally prostatic carcinomas are associated with multifocal or granular poorly-defined mineral densities. The lumbar vertebral bodies and the pelvic bones should be examined for areas of lysis or proliferative changes. Metastasis may also occur to other vertebral bodies, long bones, scapula, ribs, and digits. Thoracic radiographs are indicated.

Ultrasonography usually shows focal or multifocal hyper-echoic parenchyma with asymmetry and irregular prostatic outline. Echogenicity tends to be very heterogeneous. There may be multifocal irregularly distributed areas of mineralization. If metastasis is not evident by radiography, a presumptive diagnosis of neoplasia should always be confirmed by aspiration or biopsy under ultrasound guidance.

**Treatment**: Most dogs with prostatic carcinoma are euthanized within two months of diagnosis because of progressive disease. However, one case survived 19 months without therapy. Therefore the decision in regard to euthanasia should be based on the animal’s quality of life. Castration is not beneficial; however, lack of decrease in prostatic size after castration may help differentiate neoplasia from other prostatic diseases. Piroxicam at 0.3 mg/kg/day may improve quality of life in dogs with mild to moderate signs. Combining cisplatin with piroxicam to improve survival time has been reported.

**More Detailed Information**
