

## MANAGEMENT OF PROSTATIC DISEASE IN THE STUD DOG

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### Background

Subfertility or infertility in the stud dog is a relatively common complaint in small animal practice, which is often unrewarding. Many problems, such as testicular atrophy are not treatable and may end a stud dog's breeding career prematurely. Prostatic diseases, such as benign prostatic hyperplasia, prostatitis, prostatic cysts or abscesses, represent 25-40% of male reproductive problems. They can often be managed medically to sustain the dog's breeding potential at least temporarily.

**Diagnostic tests** listed are applicable for all prostatic disease:

- rectal palpation- with a gloved, well lubed index finger; note position of gland, size, symmetry, structure and painfulness
- cytology and culture of prostatic fluid (3<sup>rd</sup> fraction of ejaculate); collected by ejaculation; (most reliable culture results however, have been achieved by prostatic biopsies)
- ultrasonography- the best predictors are prostate width and length
- fine needle aspirate and/ or biopsy (usually ultrasonographically guided)
- retrograde cysturethrography
- radiography- can often be omitted if ultrasonography is performed adequately, however it may reveal metastases in bones and lymph nodes in case of prostatic neoplasia

### Benign Prostatic Hypertrophy/ Hyperplasia (BPH)

Enlargement of the prostate occurs in virtually all intact male dogs > 5 years old (incidence of 60%). Dogs older than 9 years old have an incidence of almost 100% BPH. The exact pathogenesis is not understood but it is believed to be caused by an increased intraprostatic oestrogen : androgen ratio in the ageing dog. Castration is curative. The prostate will reduce significantly in size within a few months. BPH predisposes the dog to other prostatic diseases, e.g. prostatitis, which affects 40% of dogs with BPH.

- **Clinical signs:** may be absent; can include dripping bloody fluid from penis, blood in the semen, haematuria, straining while defecating and characteristic flat faeces are not always present.
- **Diagnosis:** rectal palpation: prostate will be symmetrically enlarged and have a smooth surface; if it is markedly enlarged it might be located cranial to the pelvic inlet and it needs to be elevated by supporting the ventral abdomen with the other hand; ultrasonography will reveal an enlarged symmetrical prostate.

- **Differential diagnosis:** urinary tract infection
- **Treatment in stud dogs:** The aim is to reduce prostatic size!
  - **finasteride** 5- $\alpha$ -reductase inhibitor -> decreases concentration of the testosterone metabolite 5- $\alpha$ -dihydrotestosterone; give 0.1 to 0.5 mg/kg/day; prostate will decrease in size within 2 to 3 months; libido may be lowered; ejaculates more concentrated; fertility is not affected; the dog should still be castrated as soon as it retires from breeding; monitor regularly (q 4 to 6 months) for prostatitis; drug of first choice but very expensive!
  - progestagens: high dose is required for anti-androgenic effect; e.g. **delmadinone acetate** (2-3 mg/kg single intramuscular injection, repeat once after 2 weeks), **megestrol acetate** (2.2 mg/kg orally for 2 weeks or 0.55 mg/kg orally for 4 to 8 weeks); semen quality is often not impaired and size reduction in prostate up to 12 months possible; side effects with prolonged use are: diabetes mellitus, acromegaly, mammary enlargement
  - **deslorelin** GnRH agonist; 6-month, 4.7 mg subcutaneous implant; about 1 year later prostate returns to approximate pre-implantation volume
  - **tamoxifen** oestrogen receptor blocker; 2.5 mg/ day for 4 weeks has been shown to reduce prostatic size and testosterone but also causes decrease in testicular size and libido; there are no long-term effect or safety studies yet

### Prostatitis

Prostatitis is an acute or chronic inflammation of the prostate gland. Bacterial infection is by far the most common cause. *E. coli*, *Staphylococcus spp.*, *Streptococcus spp.*, *Proteus spp.*, *Brucella canis* and other bacteria are commonly isolated. Occasionally distemper virus or *Blastomyces dermatitidis* can cause the disease. The infection can spread to the testis or the epididymis and cause subsequent infertility.

*Mycoplasma spp.* organisms are often cultured from dogs with prostatitis but its significance is debated. Prostatitis may incur secondary to other prostate diseases, e.g. ascending infection secondary to BPH.

- **Clinical signs:**
  - acute prostatitis: painful with stilted gait, anorexia, fever, lethargy
  - chronic prostatitis: can be asymptomatic, or may show (intermittently) haematuria, lethargy, straining to defecate, poor semen quality chronic prostatitis is often hard to diagnose; if suspected, prostatic fluid (collected from 3<sup>rd</sup> fraction of ejaculate) should be centrifuged and checked for inflammatory cells.
- **Diagnosis:** see above; neutrophilia with left shift present in acute stage, inflammatory cells (+/- intracellular bacteria) in 3<sup>rd</sup> fraction.

- **Treatment:**  
acute prostatitis: antibiotic therapy until the infection is under control followed by castration; Trimethoprim-Sulfamethoxazole, Enrofloxacin and Chloramphenicol are known to diffuse well into the prostatic tissue; treat for 3 to 4 weeks and reculture after 7 and 10 weeks post diagnosis; the haemato-prostatic barrier is not functional in acute infection, which aids in antibiotic penetration into the gland; antibiotic needs to be alkaline, ionized and lipophilic to reach adequate levels within the gland.  
chronic prostatitis: should be treated based on an antibiogram and should last for at least 6 weeks; BPH is almost often present and should be treated concurrently.

### **Prostatic abscess**

Prostatic abscesses can occur secondary to prostatitis; omentalization and prostatic curettage may be necessary if cavity is > 2cm.

### **Prostatic cysts**

Intraprostatic cysts are a common sequelae of BPH; therapy is similar to BPH; aspiration alone is not curative; surgical methods are available, e.g. marsupialization, partial prostatectomy, intracystic ultrasound-guided ethanol injection. Paraprostatic cysts are located outside the gland are believed to be vestigial remnants (mullerian ducts of the female). Very rarely do they become quite large and require surgical removal.

### **Prostatic Neoplasia**

Malignant adenocarcinoma is THE most common neoplasia in the prostate gland. Interestingly, it is the only prostatic disease that has a higher incidence in castrated dogs. The reason for this phenomenon is unknown. In contrast to humans, there does not seem to be a hormonal influence on the development of prostatic neoplasia in the dog. Metastasis to the lung, regional lymph nodes, liver, vertebra etc. is common.

- **Clinical signs:** tenesmus, constipation, weight loss, haematuria
- **Diagnosis:** see above; the biggest difference to BPH on palpation is that the prostate with neoplasia is often asymmetric and can feel lumpy; enlarged sublumbar lymph nodes are possible; cytologic examination of prostatic fluid will often show exfoliated neoplastic cells, which can be multinucleated.
- **Treatment:**  
 prostatectomy is not the treatment of choice; the prognosis is grave as metastasis has often occurred by the time the diagnosis is made; some entire males do respond to castration, although sex hormones are not causative in the disease; the mechanism is unknown.

### **Prostatic calculi and calcifications**

On ultrasonography prostatic calculi and calcifications can sometimes be visualized within the gland. They are considered to be incidental findings and do not require treatment.

### **Management considerations for stud dogs with prostatic disease:**

Benign prostatic hyperplasia is by far the most common abnormality in ageing male dogs. Most other prostatic diseases, with the exception of prostatic neoplasia, are sequelae to BPH. Since these diseases are androgen dependent castration is the treatment of choice. However, if the dog is needed as a stud dog freezing semen for future use should be considered. If the semen quality at the time of assessment is not sufficient, appropriate treatment should be initiated and semen reevaluation scheduled at 3, 6, and 12 months intervals. The spermatogenic cycle in the dog is about 62 days. Substantial change in semen quality is unlikely to occur in less time. If semen quality has not improved after 12 months it is very unlikely to ever occur. BPH and subclinical prostatitis can often take place simultaneously. BPH should always be suspected in cases of prostatitis. The treatment of choice in these cases is a 6 week course of an appropriate antibiotic (based on sensitivity) in order to control the bacterial infection and anti-androgenic treatment in order to reduce prostatic size. Finasteride is the best choice to treat BPH but it is almost prohibitively expensive. The most cost-efficient anti-androgenic drug is a progestagen e.g. delmadinone acetate, which is given as an intramuscular or subcutaneous injection (2-3 mg/kg) once. This can be repeated once after 2 weeks. Semen collection and cryopreservation can commence about 3 months after the start of the treatment.

### **References**

Sirinarumitr, K., Johnston, S.D., Kustritz, M.V., Johnston, G.R., Sarkar, D.K., Memon, M.A., 2001, Effects of finasteride on size of the prostate gland and semen quality in dogs with benign prostatic hypertrophy. *J. Am. Vet. Med. Assoc.* 218, 1275-1280.

Verstegen, J.P., Onclin, K. 2002, Management of Prostatic Disorders, WSAVA proceedings 2002. (available online at [www.ivis.org](http://www.ivis.org)).