WHAT IS YOUR DIAGNOSIS?

An eight year old, neutered male German Shepherd presented to the R(D)SVS Internal Medicine service for investigation of intermittent urinary tract obstruction over the preceding 24 months. Initially pollakiuria, haematuria and dysuria were noted by the owners with physical exam findings consistent with prostatitis.

Medical management with fluoroquinolones was initially successful but he continued to suffer from recurrent episodes and persistent microscopic haematuria. More recently, after an initial period of urinary incontinence he would often urinate non-productively and become distressed. When able to urinate, he would frequently do so with a thin stream. He was receiving meloxicam for well managed osteoarthritis and had recently completed a course of enrofloxacin. General history was otherwise unremarkable. Physical examination revealed discomfort on caudal abdominal palpation, with a large distended bladder. Otherwise examination was unremarkable.

1) What are your differential diagnoses for this dog’s problem list?

2) How would you evaluate this case further?

3) How would you treat and monitor this dog?

1. Problem List and Differential Diagnosis
   a. Lower Urinary Tract Clinical Signs (pollakiuria, dysuria, stranguria)
      - Prostatic disease: prostatitis, prostatic carcinoma, benign prostatic hyperplasia and prostatic squamous metaplasia
      - Bacterial cystitis
      - Neoplasia e.g. urothelial carcinoma
      - Urolithiasis
      - Chronic lower urinary tract inflammatory disease: polypoid cystitis, granulomatous inflammation (malakoplakia)
      - Urethritis, urethral stricture
      - Other contributory disorders to UTI: abnormal micturition (detrusor dyssynergia, dysautonomia, incontinence); altered urine composition (diabetes mellitus or insipidus, hypoadrenocorticism, renal disease,
hepatic disease/ portosystemic shunting) and impaired immunity (hyperadrenocortism)

b. Incontinence
   - Urge incontinence: secondary to causes listed above
   - Overflow incontinence: secondary to inflammation/irritation or (partial) obstruction of the urinary tract
   - Urinary sphincter mechanism incompetence
   - Ectopic ureter – unlikely given age

c. Haematuria
   - Secondary to disorders of the lower urinary tract listed above
   - Upper urinary tract disease (renal or ureteral disease)
   - Coagulopathy, hypertension, hyperviscosity syndrome
   - Idiopathic benign renal haematuria

2. Further evaluation
   Rectal examination revealed a normal sized, symmetrical and non-painful prostate. No evidence of urethral disease was palpable and the penis was visually normal. Urinary catheterisation was easily performed and a urinary sample obtained for full analysis with sediment exam. This revealed well concentrated urine (1.038) and erythrocytes. Very few inflammatory cells were noted and no neoplastic cells were seen. A prostatic wash was performed prior to referral and was normal. Serum biochemistry, haematology, biochemistry and clotting times revealed no abnormalities, making systemic disease unlikely. Abdominal ultrasound was performed which showed a normal prostate and urinary tract. A urine sample was taken by cystocentesis at this time for bacterial culture and sensitivity which was negative although an antibiotic course was recently completed. Thoracic radiography failed to identify any evidence of pulmonary metastatic disease. A retrograde, positive contrast urethrogram was performed by fluoroscopy, ruling out obstructive urethral disease (figure 1) and a full neurological exam revealed no relevant disease explaining his abnormal micturition. Taken together, a diagnosis of detrusor dyssynergia was suspected.
3. **Treatment and monitoring**

The combination of history and diagnostic investigation was strongly suspicious of detrusor dyssynergia. Therapy was initiated with prazosin at 2mg every 12 hours and as it can cause hypotension, blood pressure monitoring was performed over the first few days. Often, where hypotension occurs, it is typically a “first-dose” response which can be precipitated where other drugs such as diuretics or beta-blockers are also being given. Our patient was able to urinate more comfortably within 24 hours of beginning therapy and made a consistent improvement to a normal stream over the following days. Whilst he did not require titration of his dose to obtain the desired clinical effect, some cases will. Regular abdominal palpation was also performed, which the owners were taught, to ensure that he was not experiencing bladder distension which, left unchecked, can cause detrusor atony.

*Figure 1 Positive contrast retrograde urethrogram, colours inverted. Note the distal location of the urinary catheter and that the image was acquired as the contrast was injected whilst taking into account radiography safety precautions.*
Given the persistent haematuria, follow up urinalysis was performed by cystocentesis after 7 days off antibiotics, revealing the presence of a multi-drug resistant *Staphylococcus pseudintermedius* with a small number of neutrophils. As this was sensitive to doxycycline, a course was prescribed and given that he was considered to have a complicated urinary tract infection, given for 4 weeks. Repeat urinalysis and bacterial culture would be performed 7 days after stopping antibiotics which is due shortly.

**Discussion**

Idiopathic reflex dyssynergia (IRD, detrusor dyssnergia) is a poorly understood disease where there is a dissociation of the normal micturition reflex. During voiding, the internal urinary sphincter should relax whilst the detrusor contracts but instead, in IRD, remains constricted and reduces or stops the flow of urine leaving the bladder. Longer term, this promotes bladder over distension, predisposing to bladder atony and urinary tract infections. Most commonly, IRD occurs in middle age to older, large or giant breed male dogs. German Shepherds appear predisposed but IRD also occurs in cross-breeds. No neutering association is appreciated. Dogs typically present with recurrent episodes of urinary obstruction. Observing the urine stream is often helpful as in IRD, it may start normally but quickly become narrow, intermittent and eventually stopping. Incontinence is common secondary to bladder overflow. Diagnosis is based on ruling out other causes of urinary obstruction or neurological dysfunction. In humans, electromyography and measurement of vesicular pressures is often performed, but the equipment not readily available in veterinary medicine.

Initial treatment should be directed towards reducing the risk of ongoing bladder distension as this is detrimental to the long-term prognoses of these dogs. Catheterisation can be performed but repeated attempts should be discouraged so as not to introduce infection. In difficult cases, a tube cystostomy provides relief in the short to medium term but is not without its own difficulties. Longer term, many dogs respond favourably to sympatholytic therapy, prazosin being the first choice. Others may also have a somatic component to their disease affecting the external urinary sphincter and benefit from diazepam. In the worst cases, intermittent, sterile catherization could be considered at home. However, the prognosis is overall favourable with some dogs able to taper and eventually stop medication. Many will subsequently relapse or require life-long therapy and monitoring for over
distension and urinary tract infections.

Infections are often noted at time of diagnosis and have been considered as a predisposing factor to “idiopathic” reflex dyssynergia. However, it seems likely in most cases that this is a secondary occurrence, as suspected in our patient. Unfortunately, in multi-drug resistant cases, therapy can be challenging. Early investigation is helpful in minimising the development of resistant strains, as is treating based on culture and sensitivity where possible.

References


