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NON-PROSTATIC CAUSES OF CANINE DYSURIA

Peter E. Holt, BVMS, PhD, ILTM, DECVS, CBiol, FIBiol, FRCVS
Department of Clinical Veterinary Science
University of Bristol, United Kingdom

INTRODUCTION
Animals with urinary tract disorders present with the clinical signs of dysuria, haematuria, urinary incontinence and after trauma. Surgical emergencies mainly include those animals presenting with dysuria or after trauma. With the exceptions of severe trauma and idiopathic renal haemorrhage, animals with haematuria are rarely emergency cases. In this paper, the causes and management of obstructive dysuria in the dog (with the exception of that resulting from prostatic disorders) will be discussed.

The main differential diagnosis of dysuria (in the dog) is:
- Urethral calculus
- Prostatic disease
- Bladder neck neoplasia
- Neurogenic (upper or lower motor neurone lesions)
- Urethral trauma
- Urethral neoplasia
- Urethritis
- Bladder displacement
- Other visceral pressure on bladder/urethra – eg adjacent neoplasm, ureterocele (rarely)
- Dyssynergia

DIAGNOSIS
Often has to wait! In cases of complete urinary retention, the bladder must be emptied (by catheterisation or centesis) to prevent secondary vesical problems (mucosal sloughing, deeper ischaemic damage, paralysis) and the metabolic effects of uraemia, acidosis and hyperkalaemia counteracted. Once the animal's condition is stabilised, a diagnosis can be attempted. The examination should include the above catheterisation (unreliable as a diagnostic aid for obstructive diseases) plus detailed clinical, imaging and laboratory techniques. The most useful radiographic technique is positive contrast retrograde urethrocystography or vagino-urethrogramy which will demonstrate most urethral (and some prostatic) conditions including non radio-opaque calculi. Subsequent introduction of air will result in a double contrast cystogram, useful in the diagnosis of bladder neck neoplasia. The combination of contrast radiography and ultrasonography is a powerful diagnostic aid in animals with urological signs.

Differentiation of urethral tumours from urethritis may be difficult but biopsy via a catheter is a valuable, non-invasive diagnostic aid.

Bladder neck tumours are usually urothelial in origin and, frequently, malignant carcinomas. However, in young, large breeds of dogs, malignant bladder rhabdomyosarcomas may occur, albeit rarely. Benign tumours are papillomas and leiomyomas.

Neurogenic dysuria associated with an upper motor neurone (UMN) lesion (eg. thoracolumbar disc) is due to lack of higher control of the micturition reflex whereas in the cases of a lower motor neurone (LMN) lesion, the pathways of the reflex itself are affected. LMN lesions can be difficult to diagnose unless other signs of cauda equina disease are present. Often the diagnosis rests on elimination of other causes of dysuria and close clinical observation. A form of LMN dysuria may follow obstructive dysuria after the obstruction is relieved. This is presumably due to bladder wall stretching, break down of tight junctions, inflammation and reduced perfusion affecting neuro-muscular function.

TREATMENT
Firstly, the bladder must be emptied and supportive therapy given. If catheterisation is not possible, the bladder may be drained via a needle inserted through the abdominal wall (never attempt to express the bladder); the same technique can be used as a first-aid measure to drain prostatic cysts or abscesses. Cystocentesis can sometimes result in leakage of urine in the abdomen from the needle puncture hole in the bladder (this is extremely rare in animals with normal bladders) and so is best reserved for animals in which it is being used as part of a stabilisation process prior to further treatment for the cause of the urinary obstruction. In animals with severe obstructive disease, a tube cystostomy (once the animal has been stabilised enough to allow anaesthesia) may be used to manage the case until elective surgery can be performed.

In dogs with urethral calculi, it should be borne in mind that bladder stones are usually also present. If so, it is safer to return any urethral calculi to the bladder using the technique of retrograde hydropropulsion and then to remove all stones via a cystotomy.

If this is not possible, urethral calculi should be removed via a urethrotomy and the vesical calculi removed later when the urethrotomy has healed. It is inadvisable to perform urethrotomy and cystotomy on the same occasion; any obstruction of the urethra in the region of the urethrotomy post-operatively (e.g. see (c) below) could result in back pressure on the bladder and break down of or leakage from the cystotomy incision.

Complications after urethrotomy include:
(a) Haemorrhage - bleeding from the wound usually stimulated by urination/excitement. Lasts up to 10 days.
(b) Infiltration of ventral abdominal tissues with urine - related to malalignment of skin and urethral incisions. Associated with urine scalding and possibly occlusion of the skin incision. May need further surgery to create a larger fistula.
(c) Blood clots - may obstruct urethra. Clear using catheter.
(d) Non-healing - a permanent urethral fistula results (rare). Remedy by suturing.
(e) Scar tissue formation - post-surgical or calculus trauma. May lead to stricture. A more proximal urethrostomy may be needed to by-pass the stricture.

In the case of neurogenic dysuria associated with intervertebral disc prolapse, mildly affected animals may respond to conservative treatment but severe cases with complete loss of motor, bladder ± sensory function should be treated as emergencies and decompressive surgery performed within 24 hours.

Mild cases of urethral trauma respond to the use of an indwelling catheter and conservative treatment but complete urethral ruptures may be treated surgically. If urine leakage is intra rather than retroperitoneal, uroperitoneum results and such cases have the same metabolic problems as animals with bladder rupture (hyperkalaemia, acidosis and uraemia).
which must be corrected before surgical intervention (see also ‘Uroperitoneum’ below). Urethral repair (especially intra-pelvic) is difficult and an indwelling catheter should be used as a urethral "splint" post-operatively. Some authors recommend prepubic cystostomy catheters to provide urinary by-pass and allow urethral tears to heal but this author’s experiences with these are disappointing. Whilst such bypass is suitable for small tears, it is often difficult to determine accurately the extent of the damage from contrast radiographs. In animals with gross, irreparable trauma, it is possible to perform an antepubic urethropotomy but post-operative scalding of the ventral abdomen with urine and incontinence may occur and the long-term results are often disappointing and unacceptable to the owner.

Most urethral/bladder neck tumours are malignant and only occasionally is the tumour benign and/or operable. Piroxicam or meloxicam may provide relief from symptoms for a period, possibly combined with a tube cystostomy.

Urethritis is best treated by means of an indwelling catheter and parenteral antibiotic therapy based on bacteriological sensitivities. In some cases, corticosteroid therapy may also be required. This condition is likely to recur (hence the term ‘chronic urethritis’ used in some publications).

Bladder displacement usually occurs either ventrally (into an inguinal hernia or ventral rupture) or caudally (into a perineal rupture). Treatment involves replacement of the organ and hernia or rupture repair repair.

Dyssynergia can be voluntary (failure of urethral striated muscle to relax during micturition) or involuntary (failure of urethral smooth muscle relaxation). In the author’s experience, it can occur after surgery (e.g. colposuspension in bitches) or prostatic disease but is frequently idiopathic, especially in males, making treatment difficult. Treatment involves the use of drugs to relax urethral musculature (e.g. diazepam, alpha-adrenergic-blocking agents) but this is not always successful and some of these dogs require long-term tube cystostomy placement.

Uroperitoneum

In animals with rupture of the urinary organs, the metabolic disorders of uraemia, acidosis and hyperkalaemia are life-threatening and must be corrected before surgery. Intravenous fluids (initially without potassium) and sodium bicarbonate coupled with peritoneal drainage and dialysis (or lavage) are most useful. In addition, an indwelling urinary catheter is helpful, particularly in cases of bladder rupture to minimise further urine leakage into the abdominal cavity.

Gross renal trauma usually results in haemoperitoneum rather than uroperitoneum. In order of incidence, bladder, urethral or ureteral rupture may occur. Urethral rupture has been described already and repair of the ruptured bladder involves debridement followed by repair of the defect. Ureteral tears are difficult to locate and intravenous urography is a useful diagnostic aid. It may be necessary to perform a ventral cystotomy and catheterise the affected ureter. The ureter can then be detected in its retroperitoneal position and the site of leakage demonstrated by retrograde infusion of sterile saline via the catheter. Following repair (using 4/0 or 5/0 synthetic absorbable material), the catheter is left in situ as a splint for 1 - 3 days. Distally, the catheter is passed out via the urethra and sutured to the vulva or prepuce.

FURTHER READING