Rapid vascular uptake of contrast media during retrograde urethrocystography in a dog

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ABSTRACT
A 6-year-old, male, neutered German Shepherd was presented for further investigation of recurrent clinical signs of dysuria following two years of an excellent medical control of suspected detrusor urethral dyssynergia. During retrograde contrast urethrocystography, contrast media was seen to be visible in the prostatic vessels and caudal vena cava, suggesting rapid vascular absorption of contrast media. Post-mortem histopathological evaluation of the prostate was consistent with pyogranulomatous prostatitis.

INTRODUCTION
Radiocontrast agents are commonly used during diagnostic procedures such as positive contrast radiography, fluoroscopy, or computer tomography angiography. Retrograde contrast urethrocystography has been shown to be a useful imaging tool in the evaluation of a urethral and urinary bladder integrity after trauma as well as part of investigations into the cause dysuria, stranguria, pollakiuria, or haematuria. In the presence of a normal prostate, urethrocystographic reflux is often observed as the presence of positive contrast within the prostatic parenchyma in the vicinity of the urethra. Conversely, the accumulation of the significant amount of the contrast medium within the prostatic parenchyma is often indicative of prostatitis. Complications associated with positive contrast cystourethrography include haemorrhage, urethral trauma, urinary tract infection, and bladder rupture among others.

SIGNALMENT AND HISTORY

Signalment: 6-year-old, male, neutered, German Shepherd.

Problem list
- dysuria
- pollakiuria
- haematuria

Previous diagnosis and relevant medical history
- chemical follow up by surgical castration performed by the primary care practice
- suspected detrusor-urethral dyssynergia 18 months prior to the presentation

DIAGNOSTIC INVESTIGATION

- CBC, biochemistry, electrolytes, coagulation and fibresgen within normal reference ranges
- urinalysis
- blood test
- clinical examination
- ultrasound
- contrast retrograde urethrocystogram

CONTRAST RETROGRADE URETHROCYSTOGRAM

Plain right lateral abdominal radiographs showed a significantly distended bladder and lumbar sacral spondylodiscus deformants.

A positive contrast retrograde urethrocystogram was performed under sedation using 25mls of iodhexol (Ominapaque 300; GE Healthcare) diluted 1:1 with 0.9% NaCl. The radiograph acquired during positive pressure retrograde urethrogram revealed a minimal amount of the contrast within the bladder with no evidence of an obstruction, however the urethra was significantly dilated.

The second radiograph revealed contrast extravasated to prostatic veins and also vessels associated with in Caudal Vena Cava.

- A – Caudal Vena Cava
- B – caudal vesical vein
- C – internal iliac vein
- D – urethroprostastic reflux
- E – prostatic vein
- F – internal pudendal vein

DISCUSSION
The almost immediate absorption into the systemic circulation was likely secondary to the chronic inflammation evidenced on histopathological examination. Although increased prostatic reflex can be seen with chronic inflammation, movement of a substantial amount of contrast into the systems circulation has only been reported once previously in a cat in 2015.

Hypervascularisation with increased blood flow secondary to the inflammation of the prostate and prostatic urethra are most likely to be the cause of the contrast medium extravasation. The primary cause of the inflammation was unknown. Although the presence of granulomatous inflammation suggests a chronic process and ‘acute on chronic’ process, either the result of a secondary prostatitis/cystitis or iatrogenic damage cannot be ruled out as the cause of the intravascular movement of contrast media. Previously identified causes of pyogranulomatous prostatitis in dogs include Leishmania spp and Brucella canis. As the dog had not been used as a stud-dog and in absence of travel outside of the UK, Brucella canis was considered less likely, although PCR/RSA1 would have been required to investigate this further.

REFERENCES