

Crystaluria and Nephropathy in a young DSH Cat

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A 2 year old castrated male DSH cat was referred to a private veterinary hospital with intermittent urethral obstruction and haematuria. Due to re-occurring urethral obstructions a penis amputation had been performed previously. Several urine samples obtained by catheterisation were submitted to the lab for urinalysis (Table 1). In addition, small calculi were removed from the urethra and also submitted for analysis. The patient had no history of previous medication.

A serum CBC and biochemistry panel submitted at week 14 revealed a marked azotemia (Table 2) but was otherwise unremarkable. An ultrasound examination revealed small uroliths in the renal pelvis, but no calculi were detected in other part of the urinary tract.

Table 1: Results of urinalyses

	Week 0	Week 14	Reference range
Colour and transparency	light yellow, turbid	light yellow, turbid	
Specific gravity	1.016	1.018	1.020-1.060
Dipstick:			
pH	6	7	6-7
WBC	positive +++	positive +++	negative
Nitrite	positive +	negative	negative
Protein (SSA-method)	positive ++	positive +	trace
Glucose	negative	negative	negative
Ketones	negative	negative	negative
Urobilinogen	normal	normal	normal
Bilirubin	negative	negative	negative
RBC	positive ++++	positive ++	negative
Sediment:			
Quantity	increased	increased	
RBC	>10/HPF	negative	
Leukocyte	>10/HPF	>10/HPF	
Crystals	*	*	
Transitional epithelial cells		1-2/HPF	
Bacteria	abundant rods**	abundant rods***	

* Masses of yellow-brownish, amorphous to needle-like crystals (Fig. 1, Fig. 2)

** Bacterial culture revealed *Pseudomonas aeruginosa*.

*** Bacterial culture revealed *Pseudomonas aeruginosa* and *Bacteroides fragilis*.

Table 2: Serum biochemistry findings

	Week 14	Week 28	Reference range
Urea (mmol/l)	28.9	37.6	3.3 - 13.7
Creatinine ($\mu\text{mol/l}$)	335.9	459.7	< 141.4
Phosphorus (mmol/l)	1.2	3.1	0.8 - 1.6
Uric acid ($\mu\text{mol/l}$)	11.9	35.7	< 59.5

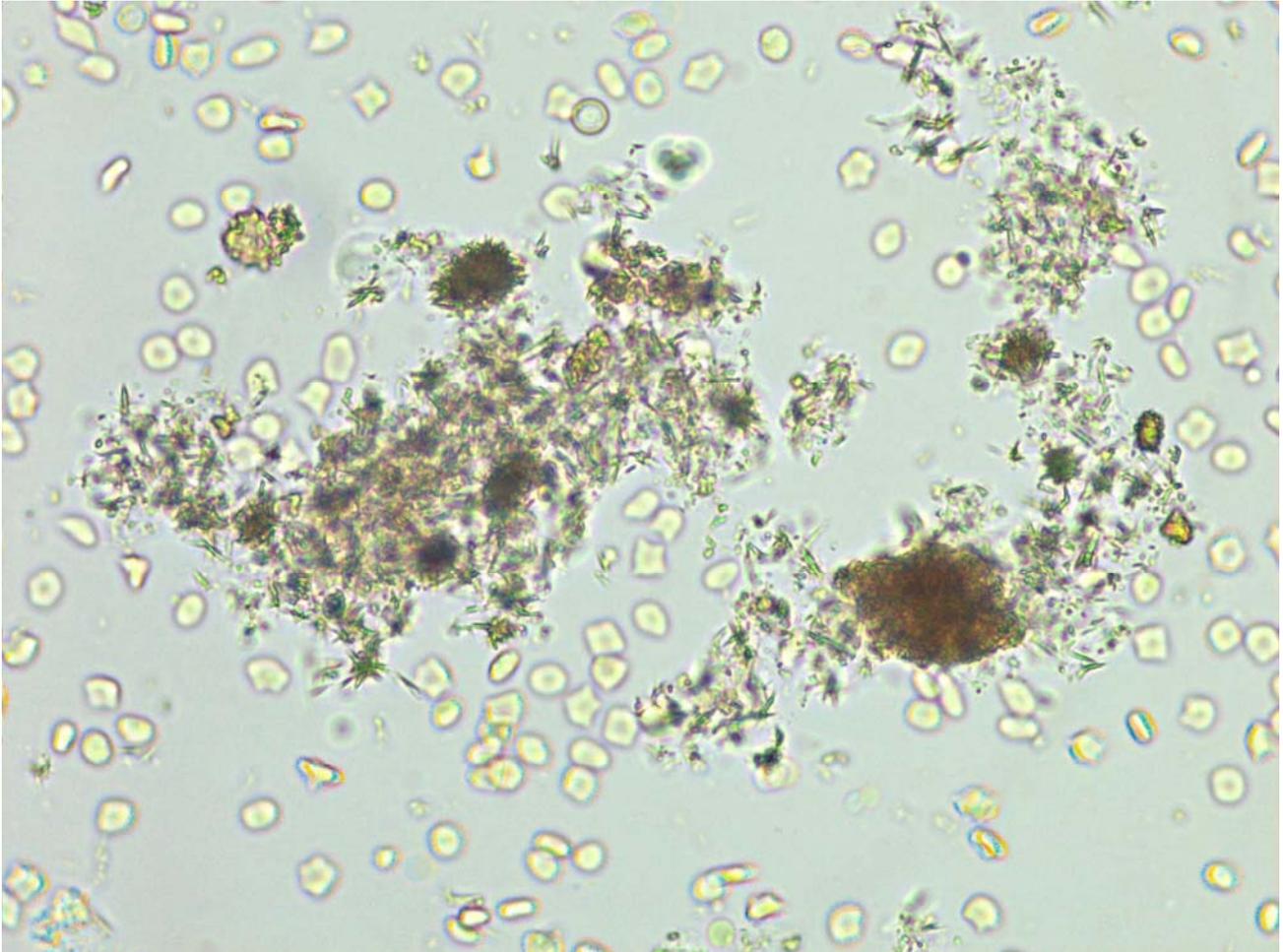


Figure 1: Photo of the first sample submission with crystals and haematuria (40x, unstained sediment)

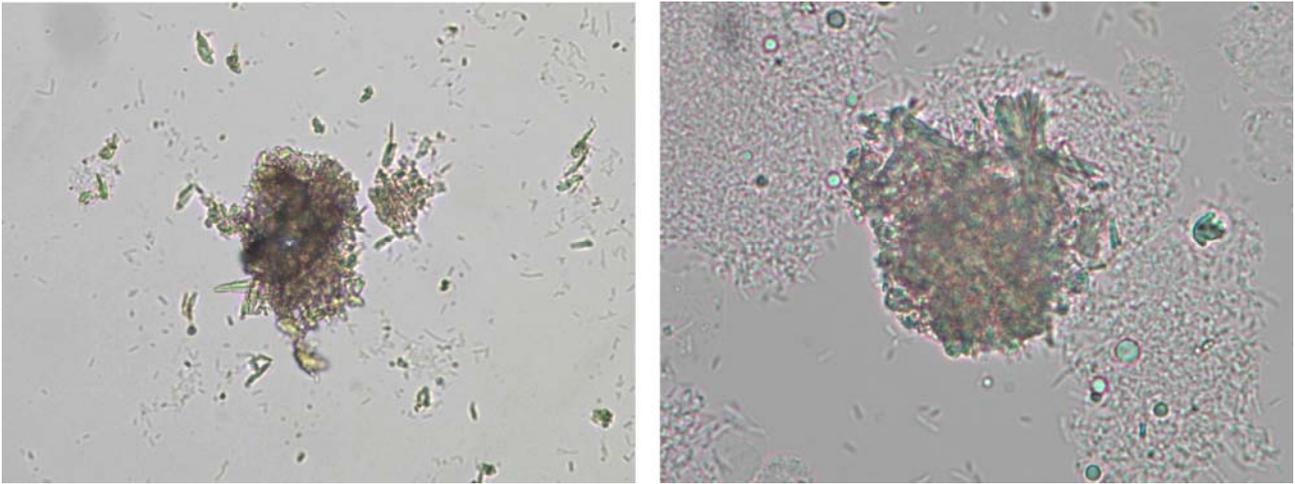


Figure 2: Urine sediment from the same cat (week 14, left: 40x, right; 60x, unstained)

Questions:

- What type of crystals were present in the sediment?
- Why/how do they arise?