



This case report demonstrates the usefulness of PURINA® PRO PLAN® VETERINARY DIETS Feline UR ST/Ox Urinary (dry) in the treatment of lower urinary tract disease in the cat.

A case of struvite urolithiasis

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Introduction

Sammy (*photo 1*) was a two-year-old male domestic cat living mostly in an apartment with occasional trips outside. Sammy had been castrated at seven months. He weighed 5.18 kg at 16 months but in the next six weeks had grown to 5.71 kg, partly for behavioural reasons (owner's absence). A diet based on Feline UR ST/Ox Urinary (dry) was then prescribed and continued successfully for several months until it was replaced for a month with a grocery dry cat food.



Photo 1: Sammy at day 0

Thirty-six hours before the consultation, Sammy had begun vomiting food and passing only small amounts of urine on frequent trips to the litter box. The next day, Sammy was showing signs of soiling with painful urination, using several areas outside the litter box and soiling his stomach.

Clinical examination

Sammy weighed 5.16 kg and his body condition index was 6/9. His overall condition was good and his coat shiny and smooth, but he had the withdrawn attitude of an anxious cat.

Physical examination revealed an abdomen with marked faecal impaction and a small, fairly pliable bladder. On receiving a suspected diagnosis of spastic cystitis with an empty bladder, and colonic stasis, the owner said Sammy had been increasingly vocal over the past three weeks.

Additional examinations and diagnosis

Radiography was performed to rule out renal or ureteral calculi. It confirmed the spastic faecal impaction. A second radiograph following an enema found no radiologically visible stones in the upper urinary tract.

Bladder ultrasound revealed a substantial quantity of sediment. Images resembling a 'snowstorm' effect were seen on manipulation of the bladder. A urine sample was collected by cystocentesis, followed within an hour by examination of the urinary sediment. This revealed a large quantity of sediment (*photo 2*), a slightly high urine specific gravity (1.065), lacking the normal acidity (pH 7.0), and the presence of red blood cells following trauma to the bladder wall caused by small but extremely numerous struvite crystals, so many that they spanned the microscope's field of view (*photo 3*). Additional cytobacterial examination confirmed the absence of bacterial infection. Blood tests confirmed the absence of renal insufficiency (creatinine 11 mg/l) and identified mild hyperglycaemia, related to the cat's anxiety.



Photo 2: Urine sample showing sediment



Photo 3: Microscopic examination of Sammy's urine showing numerous struvite crystals

A diagnosis of non-obstructive cystitis associated with struvite crystals was made.

Management

Due to the very large numbers of harmful crystals, a ten-day course of antispasmodics was prescribed to relieve Sammy's symptoms while waiting for the struvite crystals to dissolve. A diet based on Feline UR S1/Ox Urinary (dry) was introduced. The body condition score being 6/9, the cat's owner was advised to feed 65 grams of dry food per day, on the low side of the manufacturer's recommendations.

Follow-up

A dietary transition was effected over the course of the first week.

A few days after discontinuing the antispasmodics, Sammy had a two-day recurrence of dysuria causing him to make more frequent and longer trips to the litter box.

By the end of the first month, Sammy was comfortable again and had gained 300 grams compared with his initial weight before the change of diet. Bladder ultrasound showed a significant reduction in the quantity of sediment. In view of Sammy being castrated and his sedentary lifestyle, the ration was reduced to 50 grams per day, to be weighed out in a single amount rather than measured out by cup.

One month later, Sammy had lost 190 grams; a moderate addition of cooked courgettes had helped him to accept the reduced ration. He was living a normal life and urinating slightly less frequently. Urine examination confirmed a marked reduction in the quantity of crystals (*photo 4*); urine density had fallen to 1.050. Ultrasound still showed some urinary sediment, although it was continuing to dissolve. Blood tests indicated stable blood parameters, especially renal values.



Photo 4: Microscopic examination of Sammy's urine showing marked reduction of crystals

Discussion and conclusion

The prescribing of a therapeutic diet successfully resolved the medical problem. The diet's effectiveness was confirmed by bladder ultrasound examinations, which showed a gradual reduction in the volume of sediment. In this case, where there was a very high density of urinary crystals, the owner was advised to continue feeding the diet until the crystals had completely dissolved, and additionally until the microhaematuria had resolved and the pH had fallen.

The owner understood the need to restrict Sammy's initial treatment to something he was happy to accept. Her confidence in the diet was such that she did not immediately resume antispasmodics during the transient episode of dysuria that occurred about two weeks into the follow-up period.

Sammy did not initially appreciate the change in his diet. The transition period helped him to accept Feline UR S1/Ox Urinary (dry), which he then enjoyed to the point of gaining weight. In neutered and sedentary cats at risk of weight gain, it may be useful to reduce the ration by 30%.

Due to the small volume of the dry food, it might be appropriate to consider the value of mixed feeding. Feline UR S1/Ox Urinary has the advantage that it is also available in wet formulas. Because 90% of owners combine wet and dry food, it may be worthwhile to suggest a mixed diet that increases the proportion of water in the ration. Deng *et al.*¹ have shown that a diet containing 70% water and divided into four meals produces better physical activity and lower urinary saturation.

¹Deng et al. Effects of feeding frequency and dietary water contention on voluntary physical activity. *J. Anim. Sci.* 2014, 92: 1271-1277.