

Case Report

Management of Urolithiasis in Cat with Special Diets

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Abstract

Introduction: The current study is focused on the treatment of a cat with urolithiasis. The main goal is to help provide a greater understanding of how to treat the cat with special diets.

Case Description: Struvite urolithiasis was found in a 3-year-old female domestic short-haired cat with the complaint of straining for a week during urination. Ultrasonographs indicated the existence of two calculi in the bladder that were also detected by radiographic examination (7 mm in diameter each). Bladder stones were getting smaller by dissolution diets therapy. In this case, the cat was treated by melox 1.5 mg/ml (dosage 0.1 mg/kgBW) for 14 days, tramadol for 28 days (2mg/kg BW) and also special diets (struvite).

Conclusion: After a month treatment, the stones were almost cannot be seen radiographically. This report describes a cat with urolithiasis case which was successfully treated with special diets for struvite without any surgery.

Keywords: cat, struvite, dissolution diets therapy, urolithiasis

Introduction

Urolithiasis in cats can result in morbidity and even mortality for affected animals; the most common uroliths in cats (more than 80-90%) are struvite (magnesium ammonium phosphate) and calcium oxalate.^{1,2} Diet is very important for both treatment and prevention of urinary calculi, and some specifically formulated diets can promote struvite stone dissolution and reduce its recurrence.^{3,4} Most experts agree that struvite stones should be medically dissolved (unless contraindicated) with dissolution foods and/or medication. Struvite uroliths in cats appears to be between 2 and 7 years of age and female cats appear to have higher increased risk.^{5,6} The knowledge gained about urolithiasis is an outstanding

achievement towards the treatment and control of the disease. However, eradication of the disease is the most challenging as it requires total examination of all the factors that are responsible for the formation of uroliths.⁷

Case History and Clinical Observation

A 3-year-old female domestic short-haired cat weighing 15 kg was presented to Bali Vet Clinic, Kuta Bali, Indonesia with the history of straining since a week during urination and after urination she seems like dragging her bum on the floor. The cat was housed indoors and fed a commercially dry food with ad libitum drinking water. The cat was vaccinated periodically. Physical examination of the animal revealed pale mucous membrane with gingivitis and some plaque as well, tartar grade 2/5. Other vital signs such as blood pressure, body temperature, heart and respiratory rate were normal.

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Abdominal palpation was detected the pain in belly area and a sensation was felt when the bladder is palpated. Struvite crystal and no bacteria were found on sediment examination. Urinalysis was not being evaluated because the cat's owner agrees for sediment examination only. The cat was suggested to do a complete radiographic examination of the tract; radiopaque calculi about two stones (7 mm each in diameter) were visible inside the bladder. Ultrasonographic examination showed a thickened bladder wall. A cystotomy was not performed because the cat's owner refused a surgery.

Clinical Evaluations and Management

A diagnosis of urolithiasis was made based on the radiographic and urine sediment examination. We offered two options: doing surgery or treatment with special diets for struvite. The cat's owner decided to try medication and also food s/d (struvite) first. We

suggested to observe the cat's condition in a month and come for ultrasonograph and another radiographic as well. If the stones not getting smaller then may need surgery. The cat was properly treated with melox 1.5 mg/ml (dosage 0.1 mg/kgBW) for 14 days, tramadol for 28 days (2mg/kg BW) and also special s/d food (struvite) at home. We need transition periods over at least 1 week from the normal diet to the dissolution diet. We reminded owner that possibility for blockage (because this stone could go to urethra and stuck there). Reradiograph cats on dissolution diets was done after 30 days. The stones almost cannot be seen due to tiny on (Fig. 1). Ultrasonographic showed the stone's size becomes < 3 mm in diameter. We suggested to the cat's owner for maintaining her condition with special food (for struvite calculi) until the stones were no longer visible radiographically.

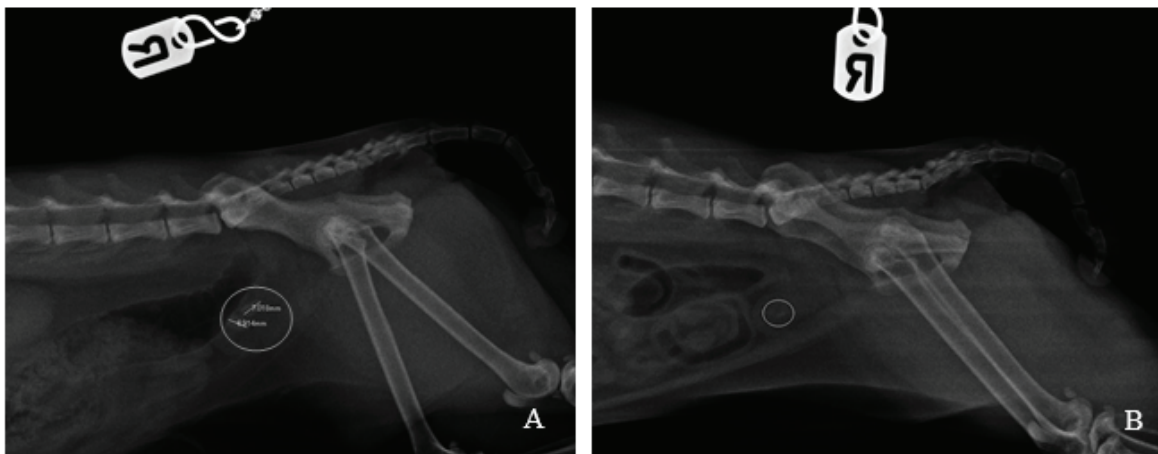


Fig. 1. Radiograph image before treatment (A) showed a several calculi inside the bladder; after 30 days treatment with dissolution diets (B) showed that calculi almost could not be seen.

Discussion and Conclusion

Urolithiasis is a nutritional disease that attacks domestic carnivores. Three main contributing factors which important to mechanisms involved in urolith formation are matrix, crystallization inhibitors, and precipitation crystallization factor. Uroliths are not produced unless sufficiently high urine concentrations

of urolith-forming constituents exist and transit time of crystals within the urinary tract is prolonged. For struvite stones, proper pH must also exist. These criteria can be affected by urinary tract infection, diet, intestinal absorption, urine volume, frequency of urination, therapeutic agents, and genetics.⁸

Nutritional management is the best preventive strategy against urolithiasis. As such it may not replace the surgical procedures but may surely help in decreasing the recurrence rate of uroliths, since long-term pharmacological therapy and its potential side effects often lead to subsequent failure. Struvite dissolution diets are magnesium-reduced, acidifying diets. Struvite dissolution diets do not dissolve non-struvite uroliths and are less effective if a persistent UTI is present or the cat is fed anything in addition to the dissolution diet.^{4,9}The rate at which uroliths dissolve is proportional to the surface area of the urolith exposed to the undersaturated urine. Cats fed with low-magnesium, urine-acidifying dry foods had successfully reduction in urolith size at 2 weeks.¹⁰

In conclusion, dissolution diets therapy is safe and effective in management of sterile struvite calculi in cats. The key goals of dissolution diets include manipulation of urine pH < 6.0 and reduction of dietary magnesium.¹¹Early detection of recurrence may allow nonsurgical therapies to be used. Ultrasonography and radiography are complementary to each other where prediction can serve as an alternative to distinguish urolith mineral composition whenever performing surgery is difficult to retrieve the urolith in an unstable patient to choosing medical treatment.¹²

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