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Case Report

A Case Report: Bladder Cystolithotomy in a 4-Year-Old Queen, with a Struvite Stone

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Abstract

Struvite stones are the most common type of bladder stone in cats. Urinary pH is the most important factor in the prevention and dissolution of struvite. We report a case of a 4 years old Queen, who presented with history of reduced urine (oliguria) for last 3 weeks and feeding with low quality of dry food. The Struvite Stone was recognized in the bladder by the abdomen ultrasound. The stone was removed by cystolithotomy technique. Post-operative, patient was stable.

Keywords: *Queen; Struvite Stones; Cystolithotomy*

Introduction

In cats, sterile struvite uroliths occur more commonly than infection-induced struvite uroliths [1]. Struvite crystals are composed of magnesium, ammonium, and phosphate. They can form in sterile urine (most feline cases), or secondary to a urinary tract infection (UTI) with urease-producing bacteria (majority, if not all, of canine cases). Therefore, the goals of dietary management for struvite uroliths depend on the patient's species: prevention and dissolution in cats, and dissolution in dogs [2]. Promoting urine dilution might help but is less important for struvite than for other uroliths. Urinary pH is the most important factor in the prevention and dissolution of struvite. In alkaline urine, phosphate is in its trivalent state (PO_4^{3-}), making it readily available to form struvite crystals ($NH_4MgPO_4 \cdot 6H_2O$). When urine is acidified, protonation of phosphate decreases its availability. The lower the urine pH, the lower the struvite RSS (relative supersaturation). However, other factors such as urine dilution and amounts of precursors also influence RSS. The acidification potential of a diet depends on its ingredients and the balance between acidifiers (methionine, calcium or sodium sulfate, calcium or ammonium chloride, etc.) or alkalizers (calcium or sodium carbonate, potassium citrate, etc). Consumption of small meals throughout the day rather than 1 or 2 large meals blunts the postprandial alkaline tide and is associated with more acidic urine production and less struvite crystalluria [3]. Historically, surgical removal of struvite uroliths was the only reliable method of treatment. Currently, nonsurgical removal of bladder uroliths in cats via voiding urohydropulsion [2] or dietary dissolution [3] is possible.

Case Report

A 4-years-old Queen was referred to our clinic, weighting 3.5 kg, with the temperature of 38.4 and the heartrate of 185 b/min. early symptoms included oliguria and hematuria. history of patient indicated the consumption of poor quality dry food for a long time. On physical examination, her vital signs were stable. Whole abdomen ultrasound the struvite stone was recognized in the bladder. The lab examination was not done. The queen was sedated with acepromazine (0.05 mg/kg) and Xylazine (0.5 mg/kg) and after catheterization anesthetized with ketamine (5 mg/kg) and diazepam. Endotracheal tube was used to maintenance of anesthesia with isoflurane. Ventral surface of abdomen was clipped, shaved and surgically prepared. A midline laparotomy incision was made between the umbilicus to pubis (Figure 1). The bladder was identified and isolated from the rest of the abdomen with moistened laparotomy swabs, and a stay suture is placed in the apex. The cystotomy incision was performed approximately in the midline. A stab incision was made into the bladder using a scalpel blade, and residual urine and blood were removed using suction. The struvite was discharged from the bladder (Figure 2). Normograde urethral flushing from bladder was perform to sure that the urethra is not obstructed. Bladder was sutured by monofilament absorbable suture in two layers of cushing pattern (Figure 3). Muscles and skin were sutured as routinely. Postoperative, patient was stable.

Figure 1

Figure 2

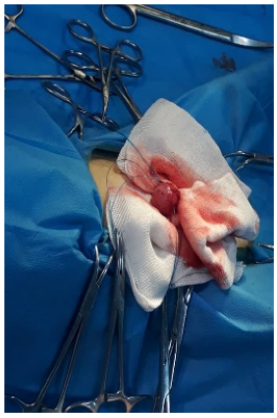

Figure 3

Discussion

The long-term feeding with low quality of dry food, causing a struvite stone. The bladder stone can make a lot of problems one of the important and common is oliguria. The most of the food with low quality could change some of the blood factors [5] too but we did not examine the blood factors for this current case.

Conclusion

It has been suggested that cats with struvite urolithiasis should be fed only canned food, as water intake is critical to is solution and prevention of urolithiasis [4]. Not all cats will currently available canned diets, and some cats will not eat canned food of any kind. The low quality of food could be making struvite stone as this case. be aware of the feeding of your pet.

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