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Cystoliths in female schi tzu dog-a case study

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Abstract

A 5 years old female schitzu dog presented to SVVU super speciality veterinary hospital, Visakhapatnam a history of dysuria, stangury, hematuria since 2 months with inappetence and abdominal discomfort. The dog is administration of antibiotics. Blood in urine is not subsided. clinically all physiological parametres are normal range. however abdominal palpation revealed hard consistency at ventral abdomen. Lateral radiographic examination of abdomen revealed that 2radiopaque calculi. Ultrasound examination is a common non invasive method for detecting cystic calculi, where they typically appear as bright, reflective structures (Hyperechoic foci) with a dark area beneath them (Posterior acoustic shadowing). On basis of history, physical and radiographic and ultrasound examination the dog is operated for cystotomy for removal of bladder calculi. To conclude the female schitzu dog was having 2 big calculi causing haematuria and abdominal discomfort and it was successfully removed by cystotomy without complications. A ventral cystotomy is recommended because of this area provides the best visualization of the trigonal region where calculi are often found and avoids iatrogenic damage to the ureteral openings and neurovascular supply which are located in the dorsal as

Keywords: Shih Tzu, Cystic calculi, Cystotomy, Hematuria; Dysuria, Ultrasonography, Radiography

Introduction

Urolithiasis is a process of calculus formation in the urinary tract and it is the third most frequent disease of lower urinary tract of dogs (Sosnar *et al.*, 2005) ^[8]. Uroliths are collections of Crystalline and noncrystalline solid particles seen in the urinary tract(Koehler *et al.*,2009) ^[1] and is common cause of disease in lower urinary tract(urinary bladder and urethra in dogs and cats (SLATTER,2003) ^[2],Urethral blockage from stones is more common in males and the clinical signs vary depending on the obstructions; the bladder rarely ruptures, result canine in uroabdomen (Dehmiwal *etal.*,2016 ^[7].The two most frequent canine cystoliths types are struvite and oxalate(Fossum,2007) ^[6]. Struvite and calcium oxalate uroliths frequently contain calcium phosphate as a small component. phosphate has been described as the primary component. Of canine urolithiasis, particularly uroliths in female dogs and the bladder is where phosphate uroliths are most frequently seen (Singh *et al.*, 2001) Ahigh calcium and phosphate diet, primary hyperparathyroidism, renal acidosis and other metabolic disorder are frequently associated with calcium phosphate uroliths in dogs which are unusual(Osborne *et al.*,2009) ^[3] There are different types of uroliths reported in dogs including struvite (Magnesium ammonium phosphate hexahydrate)calcium oxalate,urate and cystine uroliths.but struvite uroliths represents most common type in uroliths worldwide (Cote, 2007:Ettinger and Feldman, 2000) ^[4, 5] These uroliths are present as 2 large stones predominantly in bladder (Hesse and Neiger 2009).

History and Diagnosis

A 5 years old female schitzu dog presented to SVVU super speciality veterinary hospital, Visakhapatnam a history of dysuria, stangury, hematuria since 2 months with inappetence and abdominal discomfort. The dog is administration of antibiotics. Blood in urine is not subsidised. clinically all physiological parametres are normal Inormal in range. The blood picture showed leukocytosis 22000 cells/cmm neutrophilia (91%) blood urea nitrogen

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91 creatinine (3.2 mg/dl) level was higher indicates compromised function of urinary system. Thorough physical examination of abdomen revealed distention and discomfort however abdominal palpation revealed hard consistency at ventral abdomen. Lateral radiographic examination of abdomen revealed that the urinary bladder was nearly full 2 rounded radiopaque calculi. Ultrasound examination is a common non invasive method for detecting cystic calculi, where they typically appear as bright, reflective structures(Hyperechoic foci) with a dark area beneath them(Posterior acoustic shadowing).Then it was diagnosed as urinary bladder calculi and was suggested for surgical removal of the stones.

Materials and Methods

The dog was admitted and kept on intravenous drip With antibiotic therapy. To correct the dehydration, Ringer's lactate solution was initiated as 20 ml/kg body, along with 10ml/kg body weight of sodium chloride with addition of 25% dextrose. To check the infection, amoxycillin and sulbactam 100mg intravenously two times a day was given continuously 5 days.

When the condition was stable, the dog was prepared for the surgery. For the following surgery premedicated with atropine sulphate 0.04 mg/kg bodyweight and sedation with xylazine 1mg/kg body weight intramuscularly. After 10 minutes induction was achieved with Propofol@ 3mg/kg body weight and surgical anaesthesia was maintained with 2% isoflurane in 100% oxygen.

The ventral midline abdomen was aseptically prepared for surgery and celiotomy was performed via linea alba approach. The distended urinary bladder was gently palpated. and urine was evacuated with sterile 20 g hypodermic needle connected to intravenous infusion set to relieve pressure on distended bladder. After cystostomy incision there were 2 large calculi were retrieved (Fig)without damaging the bladder mucosal lining. The bladder lumen was lavaged with sterile normal saline aiming to remove all cellular debris as well as to check the urethral patency. After thorough examination of bladder lumen, the surgical incision was closed with double inversion suture pattern (Cushion followed by lamberts suturing) by using PGA suture material. The celiotomy wound was sutured with simple interrupted pattern followed by subcuticular suturing by using PGA 3-0.Postoperatively,dog has received injection ceftriaxone at dose rate of 20 mg/kg body weight and injection. Meloxicam was given subcutaneously once a day for three days at a dose rate of 0.3mg/kg body weight. Skin sutures were removed after 10th postoperative day, dog assumed normal urination.

Animal's post-operative recovery went quite well. Magnesium ammonium phosphate hexahydrate (50%) was the most prevalent kind of urolith discovered in a study, followed by calcium oxalate monohydrate (30%), calcium oxalate dihydrate (10%), and uric acid (10%). (Fromsa *et al.*, 2011) [14]. Struvite stones, or magnesium ammonium phosphate hexahydrate, are typically white to light yellow in colour. They typically manifest in the bladder as numerous huge stones or as single, massive stones. Struvite stones are circular with a smooth surface, frequently multiple but occasionally solitary, and quite large. They are radiopaque and can be seen clearly. Urolithiasis requires a survey abdominal radiography or ultrasound for confirmation. If the urolith is large enough to restrict urine flow, medical disintegration is impossible, and surgical removal is required (Yadav *et al.*, 2011) [13].

Surgical treatment is thought to be more beneficial in the treatment of canine urolithiasis (Fossum, 2007 and Saharan *et al.*, 2018) [6, 8]. In present case, the nature and gross appearance of cystic calculi and the available literature in female dogs suggestive of struvite type of cystic calculi. However, it was quickly identified by radiography and was not connected to a urinary tract infection. Probable causes may be single conception, upkeep of personal hygiene, and routine probiotic supplementation to reduce the likelihood of urinary tract infection. Dogs must consume diets that maintain acidic urine and lower urinary phosphate and magnesium levels (Uma *et al.*, 2018) [9].

According to Osborne *et al.*, (2009) [3], female dogs (85%) are overrepresented because they are more likely to get urinary tract infections. Due to the perception that surgical management of uroliths is more effective, less expensive, quicker to relieve clinical signs, and won't be associated with urethral obstruction that could occur as uroliths decrease in size with medical dissolution, some veterinarians prefer to remove uroliths surgically (Bartges *et al.*, 1992) [12] and surgical intervention is the best option to treat cystic calculi (Suryawanshi *et al.*, 2009) [11]. Therefore, surgical removal was performed in the present case, which resulted in effective management. To avoid a cystolith recurrence after surgical intervention, vigilant general and nutritional care is necessary (Uma *et al.*, 2018) [10]. To conclude, a five year old female schtzu dog was presented with history of haematuria and dysuria accompanied with anorexia and abdominal discomfort which was diagnosed as multiple cystic calculi and treated successfully via cystotomy which put a record of rare case in female dogs.



Fig 1: Ultrasonography is for detecting cystic calculi, where they typically appear as bright, reflective structures (Hyperechoic foci) with a dark area beneath them(Posterior acoustic shadowing).



Fig 2: Lateral radiographic examination of abdomen revealed that 2radiopaque calculi



Fig 3: The female schitzu dog was having 2 big calculi causing haematuria



Fig 4: ventral cystotomy Showing distended bladder



Fig 5: Measurement of cystic calculi



Fig 6: Urinary bladder showing cystic calculi

Conflict of Interest

Not available

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