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Daniel Kakki

Farm Manager, Department of
Dairy Unit, College of
Horticulture and Forestry,
Central Agricultural University,
Pasighat, Arunachal Pradesh,
India

Surgical management of cystolith in a shih TZU bitch: A case report

Daniel Kakki

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Abstract

A four years old Shih Tzu bitch was presented to Veterinary clinic with history of urinary inconsistency, inappetence and haematuria, since last six months. Radiography revealed the presence of urolith in the urinary bladder. Cystolithotomy was performed and the dog had a complete recovery.

Keywords: Shih Tzu, bitch, cystolith, cystolithotomy

Introduction

Uroliths are organized inorganic and organic solutes that precipitate around the nidus because of oversaturated urine (Devi *et al.* 2020) [3]. Uroliths that develop in the bladder are cystoliths. Cystolithotomy refers to the surgical opening made in the urinary bladder to remove the formed stones from the bladder (Sharun *et al.* 2021) [7]. The occurrence of uroliths in cats and dogs have multifactorial etiologies which include breed, sex, water intake, dietary origin, abnormal urine pH, urinary tract infections, drug-induced formation, genetic disorder and metabolic or endocrine causes (Appel *et al.* 2008, Lekcharoensuk *et al.* 2002) [1, 6]. There are mainly four types of mineral deposits in uroliths: calcium, struvite (magnesium ammonium phosphate), urate and cystine. The most common mineral deposits are calcium-containing urolith and struvite (Tion *et al.* 2015) [8]. The formation of struvite urolith is primarily linked to urinary tract infections (Tiruneh, 2017) [9]. In this study, the case of cystolith was relieved by cystolithotomy.

Materials and Methods

An intact Shih Tzu bitch aged around four years was brought to Veterinary Clinic with a complaint of inappetence, dysuria, lethargy, occasional haematuria and vomition for last six months. Previously the treatment was done for urinary tract infection before it was referred to the clinic. On clinical examination, the dog was emaciated, anemic, distended abdomen, dehydrated. After general clinical examination, venous blood sampling was carried out for complete blood count (CBC) and the serum biochemical analysis for blood urea nitrogen and creatinine. Radiographic examination of the lateral abdomen revealed the presence of one big radiopaque mass in the urinary bladder which was diagnosed as Cystolith (Figure.1). Following abdominal radiography, it was prepared for aseptic surgery. Bitch was premedicated with Ringer lactate @ 10 ml/kg BW IV, Ceftriaxone @ 20mg/kg IV and meloxicam @ 0.3 mg/kg BW IM. The caudal ventral abdomen was prepared for aseptic laparotomy. The bitch was anesthetized with xylazine @ 1 mg/kg and ketamine @ 5 mg/kg, a ventral midline approach was performed, the bladder was grasped and an incision was made from the dorsal approach (Yadav *et al.* 2011) [11]. One large sized urolith measuring around 1.2 x 2.4 cm was retrieved and a catheter was passed through the bladder to the urethral opening to check the patency, however, no obstruction was evident. Bladder was closed with double row of Lambert's suture using vicryl. Abdominal incision was closed in a routine manner.

Corresponding Author:

Daniel Kakki

Farm Manager, Department of
Dairy Unit, College of
Horticulture and forestry,
Central Agricultural University,
Pasighat, Arunachal Pradesh,
India



Fig 1: Lateral radiograph showing single big urolith inside the bladder

Results and Discussion

Clinical and imaging findings were compatible with the diagnosis of urolithiasis. The blood picture revealed neutrophilia which showed the presence of infection and also marked increase in creatinine, which may indicate an obstruction of urine due to urolith. Elevated creatinine level could be due to renal damage caused by hydrostatic pressure on the kidney and increased reabsorption of creatinine from bladder because of prolonged stasis of urine in the urinary bladder (Kim and Oh, 2023) [4]. Struvite cystoliths are the most common stones in bitches with urinary tract infection. Uroliths in bitches are usually located in the urinary bladder (Kokila *et al.* 2023) [5]. Study shown that small breeds of dogs produce less urine, urinate less frequently and have more concentrated urine, which also suggested as a predisposing factor to urolithiasis. Shih Tzu is one of the most commonly affected breed (Arun *et al.* 2015) [2].

In the present case, the urolith was large, single and ellipsoidal in shape with surface porosity. The bladder is the most common site of phosphate urolith, and phosphate has been reported as the main constituent in canine urolithiasis especially uroliths of female dogs (Uma *et al.* 2018) [10]. The major component of phosphate uroliths is magnesium ammonium phosphate (Struvite).

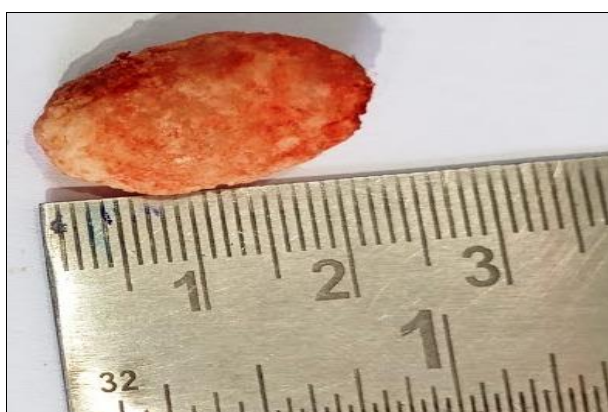


Fig 2: Single large cystolith measuring 1.2 x 2.4 cm was retrieve by Cystolithotomy.

A similar physical characteristics and findings have been described for struvite urolith in earlier reports in bitches (Figure 2). The urolith retrieved from the urinary bladder was tentatively diagnosed as struvite.

Conclusion

Confirmatory diagnosis and treatment improve the outcome of urolithiasis. Surgical intervention along with post-operative care will give satisfactory results in the affected animals. The case of urolithiasis in bitch suffering from last 6 months was successfully treated with no post operative complication.

Conflict of Interest

Not available

Financial Support

Not available

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