

SURGICAL MANAGEMENT OF CYSTOLITHS AND BLADDER PAPILLOMA IN A FEMALE BEAGLE - A CASE REPORT

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A five-year-old female Beagle dog was presented to the Department of Veterinary Surgery and Radiology, Veterinary College, Hebbal with a history of anorexia, haematuria, stranguria, and pollakiuria. Animal evinced pain upon palpation of abdomen and cystoliths were palpable. Patient history, clinical examination, radiographic and ultrasonographic examination revealed multiple cystoliths. Cystotomy was performed to remove the multiple cystoliths. Incidentally small tissue growth on the bladder wall was also noticed which was surgically excised. Stone analysis by FTIR -Fourier Transform Infrared Spectroscopy revealed cystoliths to be calcium oxalate monohydrate & calcium oxalate dihydrate. Histopathology of the tissue revealed a benign papilloma. Post-operative treatment included antibiotics and analgesics together with dietary management. The dog recovered uneventfully.

Keywords: Cystolith, Urolithiasis, Cystotomy, Papilloma.

Urolithiasis refers to occurrence of aggregate of crystalline material anywhere in the urinary tract (Koehler, 2009). It was frequently the most typical cause of canine lower urinary tract disease. Uroliths that occur in bladder are cystoliths. Some of the risk factors for urolithiasis include excessive mineral saturation of urine, pH changes, bacterial infections, and decreased water intake. Other risk factors include concurrent Cushing's disease use of cortisone for skin allergies or Addison's (hypoadrenocorticism) disease. Uroliths made of calcium oxalate must be surgically removed since they cannot be dissolved (Tiruneh and Tagesu, 2017). Calcium oxalate cystoliths, had high rate of recurrence even after removal. Diet was an important factor in the prevention of Ca oxalate stones.

Of all canine tumors, bladder tumours made up 1.5 percent to 2.0 percent. In dogs, urinary bladder papillomas were epithelial tumours, account for 14% of primary bladder tumours (Pamukcu, 1974).

Case History and Observations

A 5-year-old female Beagle was presented to the hospital with a history of

anorexia, haematuria, stranguria, pollakiuria. Animal evinced pain upon palpation of abdomen and cystoliths were palpable. Radiographic examination revealed radio-opaque calculi in the urinary bladder and ultrasonography revealed multiple hyperechoic structures in the urinary bladder with acoustic shadows suggesting the presence of multiple small cystoliths and an echogenic mass on bladder wall. On the basis of patient history, clinical examination, radiographic and ultrasonographic examination it was diagnosed as urolithiasis.

Surgical Treatment

The dog was premedicated with Atropine sulphate @ 0.02 mg/kg body weight and Xylazine hydrochloride @ 1mg/kg body weight intramuscularly. General anesthesia was induced and maintained with isoflurane. The animal was positioned in dorsal recumbency. A ventral midline incision was made through the skin and linea alba. Urinary bladder was exteriorized (Fig.1) and a stab incision was made on dorsal surface of the bladder, away from the urethra. Cystoliths were removed and a small brownish mass, visible on the bladder wall, was excised

(Fig.2, 3). The urinary bladder and urethra were flushed with normal saline. The bladder incision was closed by Cushing followed by a Lembert suture pattern with Chromic catgut No 2-0. Linea alba was

closed in a simple interrupted pattern using Vicryl No. 1. The subcutaneous tissue and skin were closed routinely. Postoperatively, Cephalexin @ 20mg/kg for 7 days and Carprofen @ 3mg/kg P.O.



Fig.1 Exteriozized urinary bladder through mid-ventral abdominal incision.



Fig.2 Incision on dorsal bladder wall exposing multiple cystoliths and tissue mass on bladder wall



Fig.3 Excised tissue mass and multiple cystoliths



Fig.4 Histopathology of tissue mass obtained from bladder wall

Results and Discussion

Urolithiasis is a result of one or more underlying abnormalities rather than as a separate disease. Because a female's urethra is shorter than a male's, there is a greater chance that an infection from the urinary system or vagina would spread to the bladder. This suggests that females are more likely than males to develop cyst urolithiasis. Increased renal clearance of calcium due to excessive intestinal calcium absorption (absorptive hypercalciuria), inadequate renal calcium conservation (renal leak hypercalciuria), or excessive skeletal calcium mobilization (resorptive hypercalciuria) can all lead to

hypercalciuria and calcium oxalate stone development.

Treatment entails lithotripsy or surgical removal, followed by preventive measures to stop recurrence. Increased water consumption is perhaps the most crucial element in helping to stop a recurrence. Hydrochlorothiazide (2 mg/kg PO q12h) is the preferred medication for dogs with CaOx urolithiasis since thiazide diuretics may lower calcium excretion in these patients as also recommended by Lulich *et al.*, 2001. The pH of urine is raised by potassium citrate, and citrate inhibits the crystallisation of calcium oxalate as also reported by Butterweck and

Khan, 2019. Supplementing vitamins C and D is not recommended since these vitamins are converted to oxalate and may increase calcium absorption through the gastrointestinal tract respectively, which would raise calcium and oxalate levels in the urine. There are commercially available "optimal" diets that maintain urine pH at 6.5-7.5 and are low in protein, salt, and oxalate.

Surgical removal of the mass through cystotomy was warranted. In this case the mass turned out to be a benign papilloma hence surgically removed. Histopathology of excised mass (Fig.4) studied showed tissue composed of papillary tufts lined by hyperplastic urothelium with subepithelium showing marked stromal hemorrhage. Scattered mixed inflammatory cells are seen which favours papilloma. In conclusion, following surgical intervention proper general and dietary management is required to prevent reoccurrence of cystoliths.

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