Case Report
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Ultrasonographic diagnosis of polypoid cystitis with struvite crystals in a Shih Tzu dog

Abstract

A seven-year-old un-castrated male Shih Tzu dog was presented with signs of appetence and dysuria for ten days. Abdominal ultrasonography noticed multiple mucosal projections, isoechoic with a mildly thickened bladder wall and sledge in the urinary bladder. Urine analysis revealed a pH of 8.5, specific gravity of 1.050, struvite crystals and microbial culture yielded *Staphycolocci* and *Pseudomonas*. Present communication about the rare documentation of polypoid cystitis which was diagnosed by abdominal ultrasonography.

Keywords: dogs, polypoid cystitis, struvite, ultrasonography

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Introduction

Polypoid cystitis is a relatively uncommon disease condition affecting adult dogs with signs of haematuria, pollakiuria and stranguria; some dogs have no clinical signs. The polyps are commonly associated with the presence of uroliths, bacterial urinary tract infections or repeat catheterizations.[1] Due to chronic irritation of the urothelium, these lesions are trends that develop.[2] This condition needs to be differentiated from neopalsies of the bladder wall, blood clots and uroliths. The polyps can disappear spontaneously when the concurrent disease is treated (e.g. with antibiotics, dietary change to change the medium of urine to dissolve the uroliths), in a few surgical resections are required.[3,4] Very limited documentation is available in dogs with polypoid cystitis hence, present communication reports the case of polypoid cystitis in a dog.

Case history & observations

A seven-year-old male un-castrated Shih Tzu was presented to the clinic with signs of inappetence and dysuria for ten days which was regularly vaccinated against rabies, canine distemper virus, canine adenovirus type-2 virus, canine parvovirus, canine parainfluenza virus and leptospira strains. Upon clinical examination, the dog was dull, reduced response, rectal temperature (102.2°F), heart rate (112/min) and respiratory rate (28/min). Blood haemoglobin 9.24g/dL, packed cell volume 34%, total erythrocyte count 4.6×10^6/µL, total leucocyte count 26.88×10^3/µL, neutrophils 82%, lymphocytes 11%, eosinophils 4% and monocytes 3%. Serum total protein 5.89g/dL, albumin 1.88g/dL, alanine transaminase 128IU/L, bilirubin 1.2mg/dL, BUN 62mg/dL, creatinine 2.82mg/dL. A plain right lateral abdominal radiograph did not reveal any specific abnormalities of the abdomen. Ultrasonography noticed the multiple mucosal projections (Figure1), isoechoic with mildly thickened bladder wall (Figure 2) and sludge in the bladder (Figure 3). Urinary catheterization was unsuccessful and urine sample was obtained by cystocentesis which was cloudy, red-tinged with a specific gravity of 1.050, pH 8.5, microbial culture yielded *Staphycolocci* and *Pseudomonas* and presence of struvite crystals (Figure 4). Dog was orally administered with cefpodoxime with clavulanic acid (5mg/kg/ day BID), meloxicam (0.2mg/kg/ day BID), multivitamin syrup (@2ml BID) and urinary acidifier (ammonium chloride @ 200mg/kg /day divided into three times) and further advised for surgical intervention.

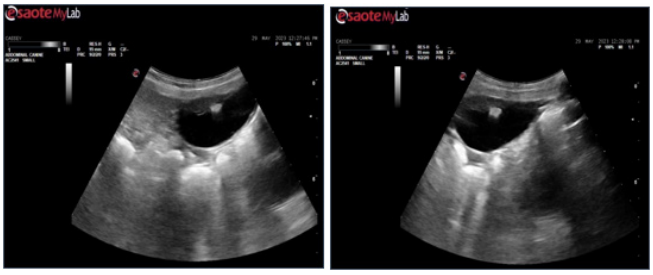

Figure 1 Abdominal ultrasonography – polyps at the bladder walls.

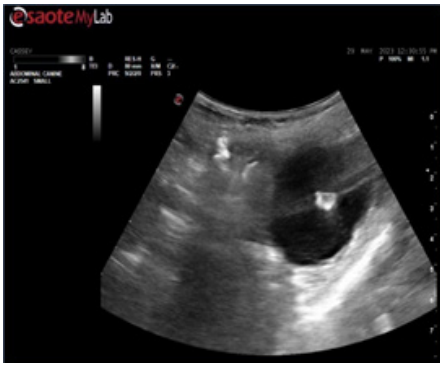

Figure 2 Abdominal ultrasonography – increased thickness of bladder.

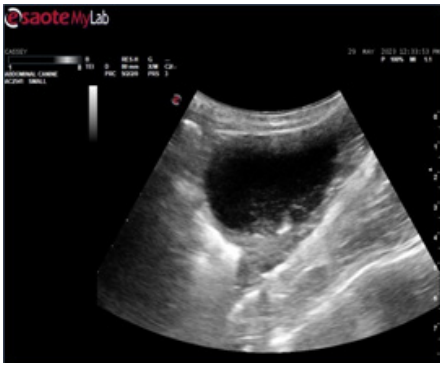

Figure 3 Abdominal ultrasonography – presence of sludge in the bladder.

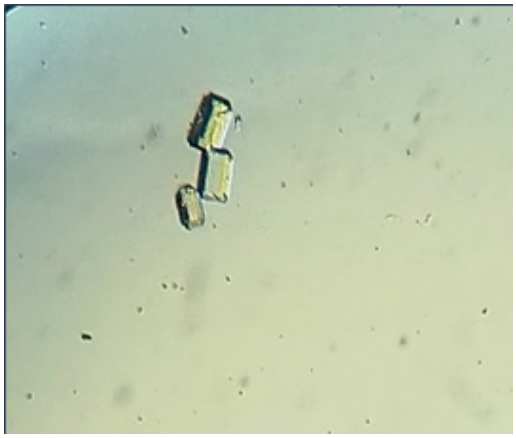

Figure 4 Microscopic examination of urinary sediment – Presence of struvite crystals.

Discussion

Polypoid cystitis is characterized by excessive proliferation of the bladder mucosa, which appeared as a thickening of the bladder wall, papillary-like projections from the mucosal surface, and polyps that extend into the bladder lumen.[5] Chronic irritations of the bladder mucosa due to urinary tract infection or urolithiasis are considered an etiology for development.[6] The differential diagnosis for this type of masses in the bladder is transitional cell carcinoma, leiomyoma, fibrosarcoma, myxoid sarcoma, and polyp.[7] In humans, polypoid cystitis is well-documented and is a complication of repeated urethral catheterization. In the present case, concurrent struvite urolithiasis, bacterial cystitis was noticed along with polyps in the bladder and consider as predisposing factors for it. During bacterial cystitis, bacteria (urea-splitting organisms) produce urease which is the common cause of struvite urolithiasis.[8] The urease enzyme hydrolyzes urea to ammonia, which buffers the hydrogen ions forming ammonium ions, increasing the urine pH (more alkaline), and increasing dissolved ionic phosphate which may precipitate to form a urolith in the presence of magnesium. Okafor et al.[9] stated that the best treatment option for struvite is appropriate antimicrobial therapy by feeding a urine-acidifying diet.

For a definitive diagnosis of polyps, a histopathologic examination of biopsy which can be obtained via cystoscopic or surgical approach is required. But in the present study confirmation of the polypoid cystitis was done by ultrasonography of the bladder and the absence of tumour cells in urine analysis and lack of facilities to carry out cystoscope.[6,10] Other possible etiology for cystitis might be parasitic infections, urinary crystals and ascending infections.[11,12] Treatment of polypoid cystitis requires the removal of the inciting cause of inflammation, reduction of inflammation, removal of polyps, removal of uroliths if present and adjunctive antimicrobial therapy based on urine culture.[5,6]

Dogs with recurrent urinary tract infections and cystolithiasis are at risk for recurrence of polypoid cystitis, but surgical removal of these lesions has been associated with good outcomes however, recurrence is possible.

Conclusion

Present case report on the ultrasonographic diagnosis of polypoid cystitis in a dog with struvite crystals.

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Conflicts of interest

Authors declare there are no conflicts of interest.

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