Introduction

Urolithiasis is a common urinary tract disorder in dogs (1). Some risk factors that are known to affect canine uroliths include breed, gender, age, anatomical and metabolic abnormalities, urinary tract infections, diet, and urine pH (2-5). Previous studies have shown that the breed most affected by urate urolithiasis is Dalmatians (6-9). Although Dalmatians are known to be predisposed to urate uroliths due to their unique metabolism of purines (1,2,4,7), the definitive mechanism of urate urolith formation in Dalmatian dogs remains unknown (2).

The present report documents urate urolithiasis in a Dalmatian dog with emphasis on clinical features and treatment.

Case Report

A 1-year-old male Dalmatian dog with urinary obstruction was examined on an emergency basis. The macroscopic urine examination, direct radiography, positive contrast cystography, and ultrasonography revealed urolithiasis. Histology of the vesica urinaria showed urolith particles deeply embedded in a membrane on the mucosa. This is not commonly seen in dogs with urolithiasis.

Key Words: Dog, urolithiasis, urate
specific gravity (SG), and urate crystals were detected in a urine sample collected by cystocentesis. Urate sodium hydrogen monohydrate was diagnosed by both biochemical and X-ray diffraction methods (10,11). Urethral catheterization was not successful due to obstruction with uroliths. Removal of the uroliths by both anterograde and retrograde flushing was unsuccessful. Urethrotomy was performed followed by cystotomy. Macroscopic examination of the vesica urinaria revealed uroliths embedded in the mucosa (Figure 2). Samples for histological examination were taken from the ventral mucosa of the vesica urinaria. Later, samples were sent to a laboratory (Yorum Patoloji Laboratuvari, Ankara) for sectioning. Uroliths deeply embedded in a membrane on the ventral mucosal portion of the vesica urinaria were noted (Figure 3).
Macroscopic uroliths in vesica urinaria were successfully removed during surgery and antibiotic treatment (Enrofloxacin, 2.5 mg/kg, PO q12h) was given for 1 week postoperatively. Postoperative 15th, 30th, and 60th day urine analysis findings are shown in the Table.

Medical prevention of urate urolithiasis included Allopurinol (15 mg/kg, PO q12h), sodium bicarbonate (1/4 tsp/5 kg PO q8h), and a low purine diet, Canine u/d (Hill’s, USA) (9).

Results and Discussion

Urate urolithiasis in Dalmatians is considered a common occurrence (3,6,12,13), and is reported more commonly in male Dalmatians than in females (3,4,6,7,9). Medical and dietary therapy was used postoperatively to help prevent recurrence of the uroliths (3,6,7). The optimal dietary regimen for canine urate urolithiasis has been suggested according to the urinary pH and type of the urolith that is analyzed in the laboratory including both nucleus and the outer covering of the urolith (9). Cystolithiasis in Dalmatians with uroliths embedded in the vesica urinaria has not been reported to the best of the authors’ knowledge. This case shows that urinary stones not only cause obstruction by freely moving within the urinary system but can be attached or embedded in the mucosa in Dalmatians.

References