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Canine Urolithiasis

by

Ron Hullinger *

CANINE UROLITHIASIS

A ten-year-old, 27 pound, female Toy Shepherd was presented to the Iowa State University Stange Memorial Clinic on October 16, 1964. The history revealed that she had been inappetent for the previous two days and had diarrhea the day before hospitalization.

CLINICAL EXAMINATION

The initial physical examination revealed a large, golfball-sized mass in the posterior abdominal region. A moderately distended stomach containing material of doughy consistency was palpated. The patient was able to stand and walk but only for short periods of time. The dog was cachectic and listless. The temperature was within the normal range. No marked scleral injection, icterus, odor of ammonia on the breath, or other signs of uremia could be observed. The owner could not recall any tenesmus on urination, or abnormal appearance of the urine. Ventral-dorsal and left-lateral radiographs were taken of the abdominal region to confirm a tentative diagnosis of cystic calculi.

RADIOGRAPHIC FINDINGS

The radiographic studies revealed a large, rounded cystic calculus (Figure 1 and 2-A) and a very large renal calculus (Figure 1 and 2-B) in the right kidney. The

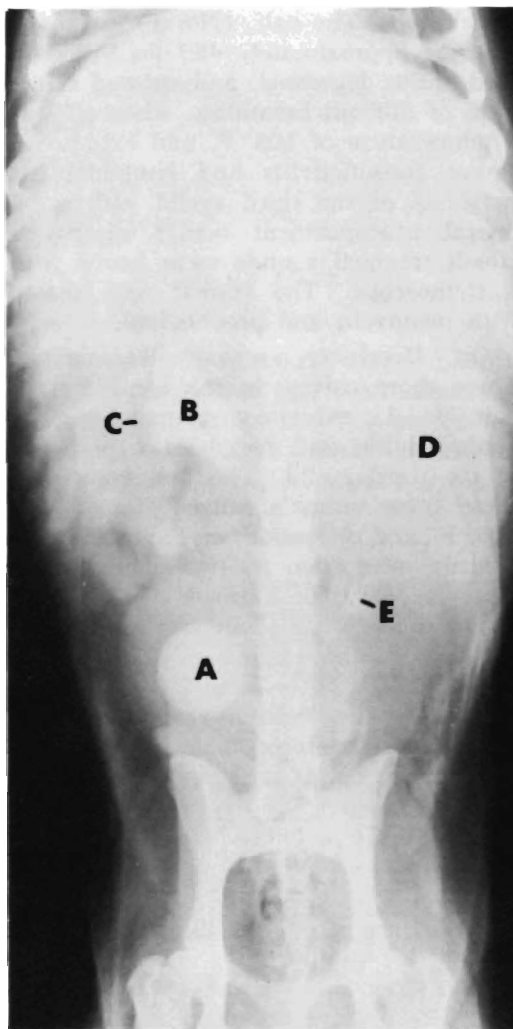


Fig. 1. Ventral-dorsal radiograph of the abdomen. Note the cystic calculus (A), the renal calculus (B) contained within the atrophied parenchyma of the right kidney (C), the large mass of the hypertrophied left kidney (D) and the ureteral calculus (E) in left ureter.

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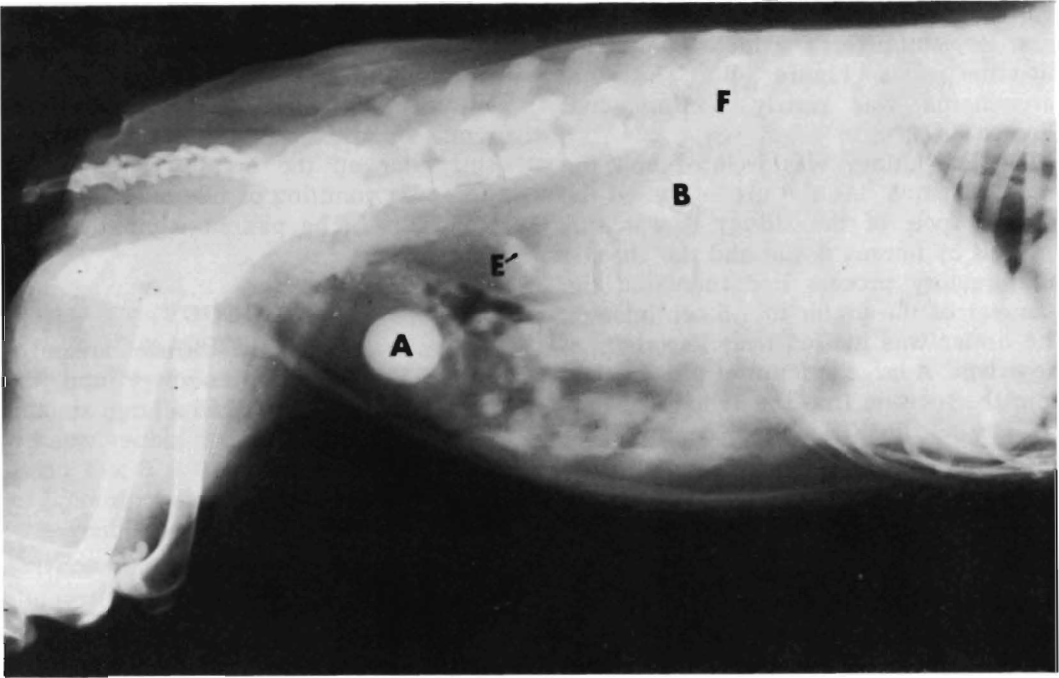


Fig. 2. Left-lateral radiograph of abdomen. Note the cystic calculus (A), the ureteral calculus (E), the renal calculus (B), and the spondylitic lesions (F) markedly affecting the 3rd lumbar through the 11th thoracic vertebrae.

calculus was contoured so as to be lodged in the renal pelvis distending this structure and projecting into the calyces at the periphery (Figure 1-C). The parenchyma of this kidney appeared to have undergone nearly complete atrophy (Figure 1-C). The left kidney evidenced a smaller renal calculus and appeared greatly hypertrophied (Figure 1-A). The left ureter contained a small ureteral calculus (Figure 1 and 2-E). Spondylitic lesions were seen in the region of the third lumbar vertebra to the tenth thoracic vertebra inclusively, being most severe at the 10th and 11th thoracic vertebrae (Figure 2-F).

TREATMENT

The patient was eating and drinking well and eliminating without difficulty. Therapy consisted of 2cc Penicillin-Dihydrostreptomycin administered intramuscularly and 2cc Aqua B (Upjohn) given subcutaneously. The patient showed little change in condition during the next two days. In an attempt to evaluate the condition of the left kidney an excretory pyelogram was performed. Fifteen cubic centi-

meters of Hypaque (Winthrop) was administered intravenously and the abdomen radiographed following intervals of 5 and 20 minutes respectively. No contrast medium was seen in the calyces or in the bladder in either of the radiographs. This implied that the enlargement of the kidney was not due entirely to compensatory hypertrophy but was suggestive of some renal pathology. Although the patient was considered to be a poor surgical risk, it was believed that if the calculus could be removed and if the kidney could compensate, there would be some chance of recovery. The patient was placed on Methiscol (U.S. Vit. and Pharm.) b.i.d. for supportive therapy prior to surgery. Surgery was performed October 21, 1964.

SURGICAL FINDINGS

Initially the large cystic calculus was removed. It measured 2.5 x 1.3 x 2 centimeters (Figure 3-A). The right kidney was observed and palpated. A weak renal arterial pulse was noted; digital palpation revealed little functional tissue present. The kidney was removed and found

to contain a large renal calculus (3.5 x 2 x 2 centimeters) which completely filled the pelvis (Figure 3-B). The renal parenchyma was nearly nonfunctional (Figure 3-C).

The left kidney was isolated and the ureter palpated. As the ureter passed the posterior pole of the kidney it was surrounded by fibrous tissue and the chronic inflammatory process had increased the diameter of the ureter to 1.5 centimeters. The ureter was incised near its origin at the pelvis. A large amount of pus escaped from the incision into the abdominal cavity. The calculus (.5 x .5 x .5 centimeters) was removed (Figure 3-E) along with the inflammatory exudate and several microcalculi. The incised ureter was then closed. One-half of a Furacin-oblet (Eaton) was placed in the abdomen prior to closure.

POST SURGICAL TREATMENT

Post surgical therapy consisted of 1cc Chloromycetin Succinate (Parke, Davis and Co.) intramuscularly b.i.d. Two-hundred-fifty cubic centimeters of half strength saline and 2.5% dextrose were given intravenously and the same quantity subcutaneously. The patient re-

covered quite well from the anesthetic. On October 22, the condition was worse. The animal was very depressed, the temperature was 97.2 F, and some signs of uremia (marked scleral injection and a urine odor on the breath) were noted. There was vomiting of bile but no uremic convulsions. The patient expired on the same day.

PATHOLOGY

There were focally diffuse areas of hemorrhage in the mesentery and the peritoneal cavity contained a large amount of purulent fluid. The left kidney was hypertrophied to a size of 9 x 6 x 4 centimeters. Pyelonephritis and hydronephrosis were observed within the kidney.

Histologically the kidney parenchyma showed an accumulation of neutrophils and cellular debris in the renal pelvis. Chronic interstitial nephritis was detected as evidenced by the accumulation of interstitial connective tissue, extensive plasma cell infiltration, and tubular degenerative changes of the epithelium.

Death was attributed to either acute uremic poisoning or acute septicemia from the chronic pyelonephritis.

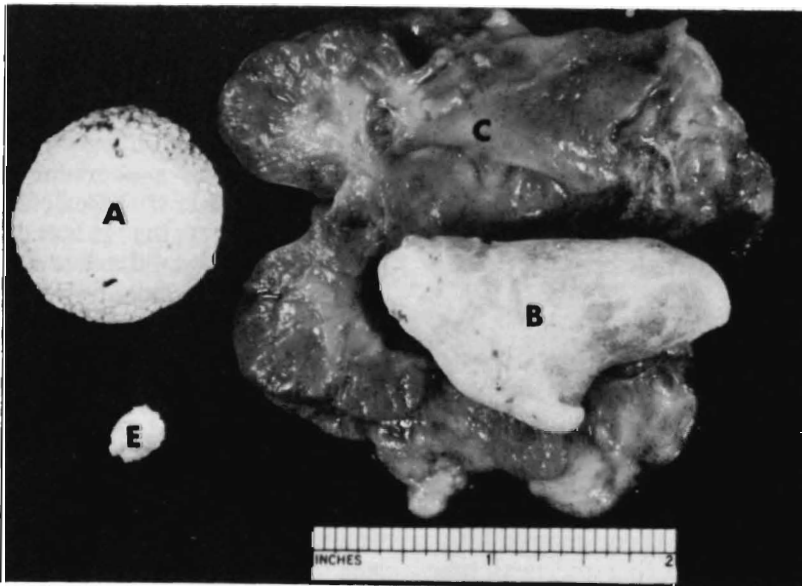


Fig. 3. Photo showing the items removed surgically: cystic calculus (A), the renal calculus (B), positioned much as it was when removed from the atrophied right kidney parenchyma (C), and the calculus removed from the left ureter (E).