**What's your diagnosis?**

Malori Marotz

Squirt, an 8month old mix breed puppy

**History:**

- The owner obtained squirt at 12 weeks of age.
- The owner reported that Squirt was passing soft stools lately and he is up to date on vaccines. Squirt's appetite is variable but he has never been anorexic. He is drinking and urinating normally.
- The owner first noted signs about 3 weeks prior to taking him to the referring DVM. The referring DVM performed blood work and placed Squirt on antibiotics for 2 weeks duration with no resolution of signs.
- Presented to KSU for weight loss and straining to defecate.

**Physical Exam:**

- On physical exam Squirt's temp was 101.2, HR was 110, R was 30 and he was depressed and lethargic.
- He had enlarged axillary lymph node on the left side, moderate dental calculus, a tense abdomen and a large bladder.

**Blood work done at referring DVM:**

Low RBC: 2.73 M/uL

Low HCT: 19.1%

Leukopenia: 4.8K/uL

Monocytopenia: 0.29K/uL

Low PLT: 155 K/uL

High BUN >130 mg/dL

High Creatinine: 10.2 mg/dL

Low Calcium: 7.4mg/dL

High AMYL: 2467 U/L

**Diagnostics (Ultrasound)**

**Radiographs were not available for interpretation**

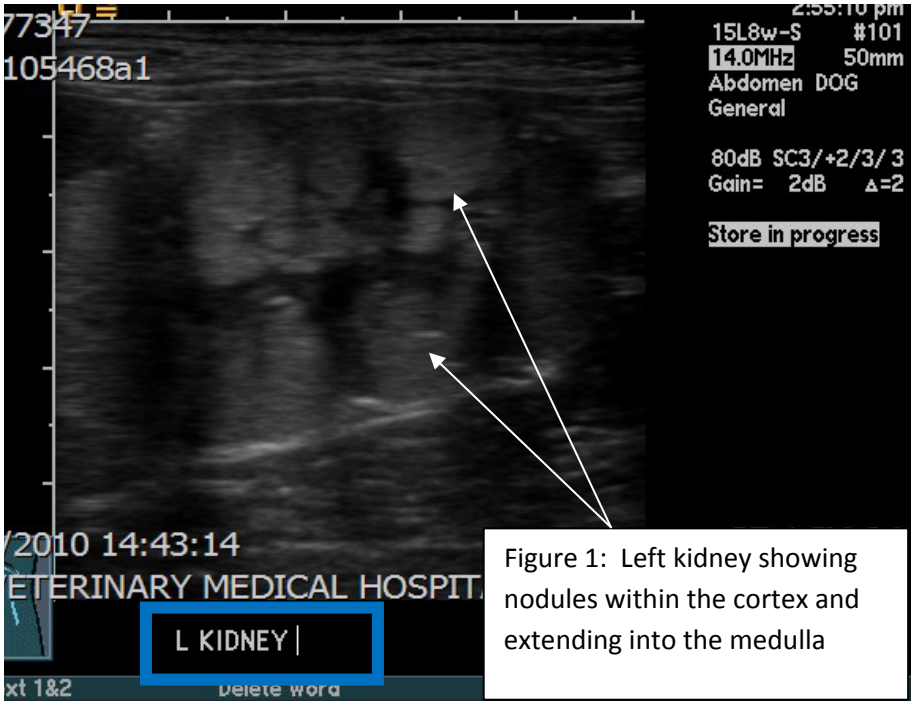



Figure 1: Left kidney showing nodules within the cortex and extending into the medulla

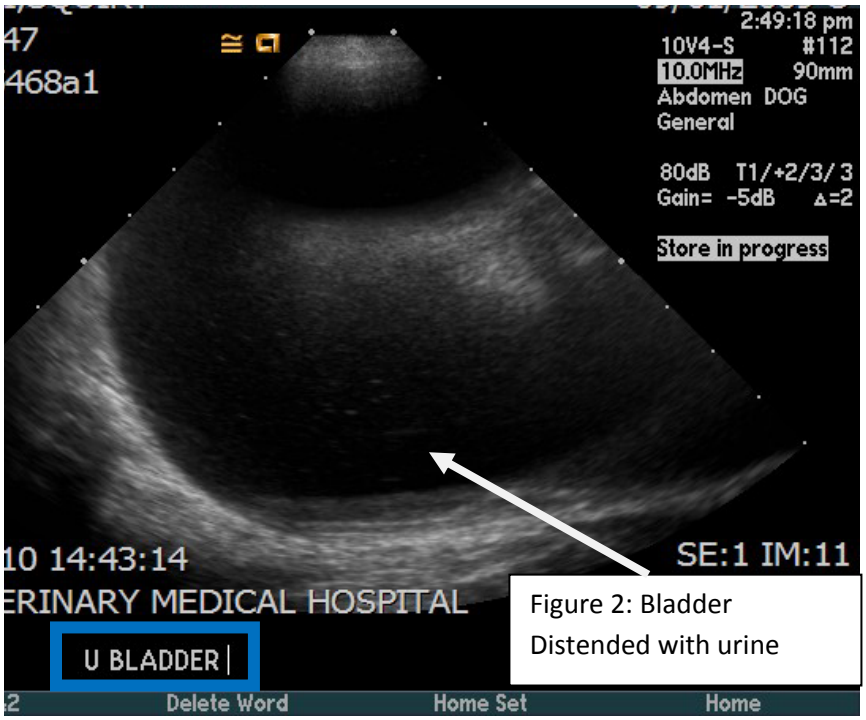



Figure 2: Bladder Distended with urine

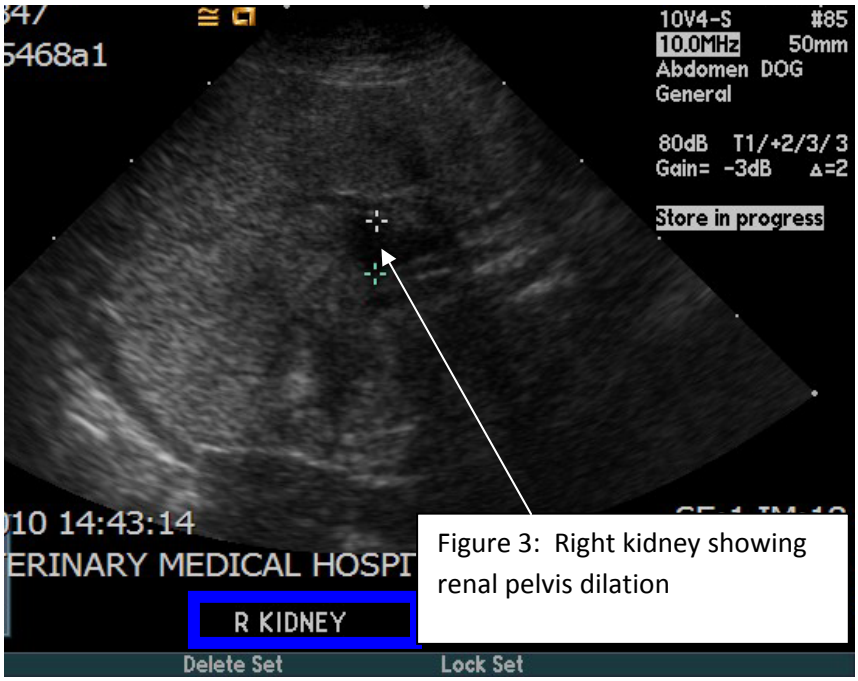
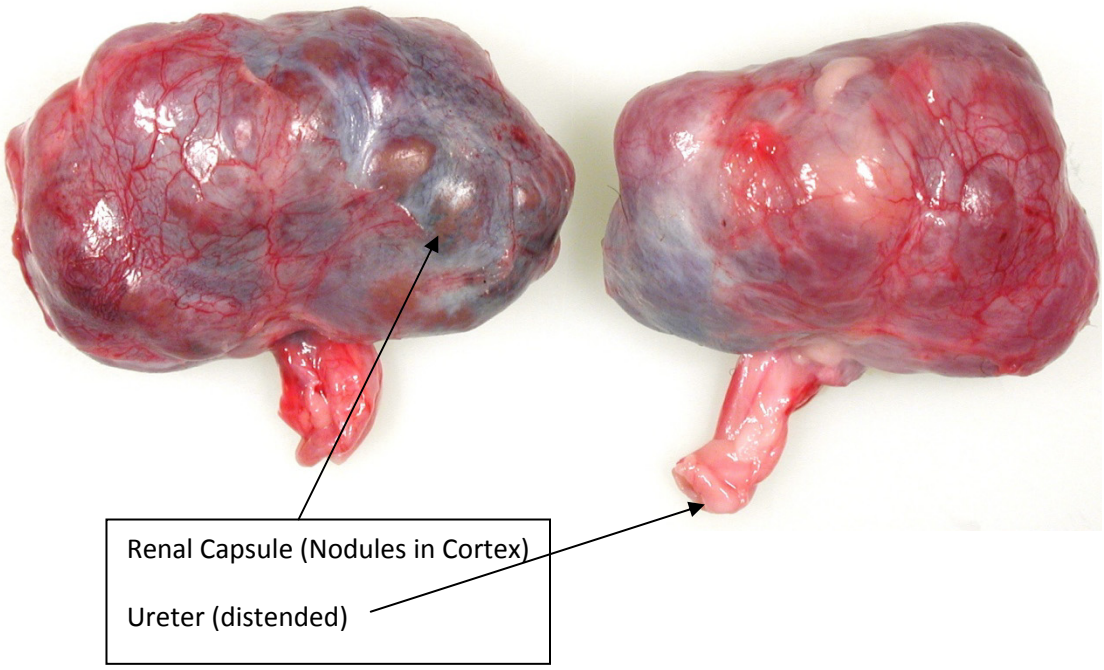


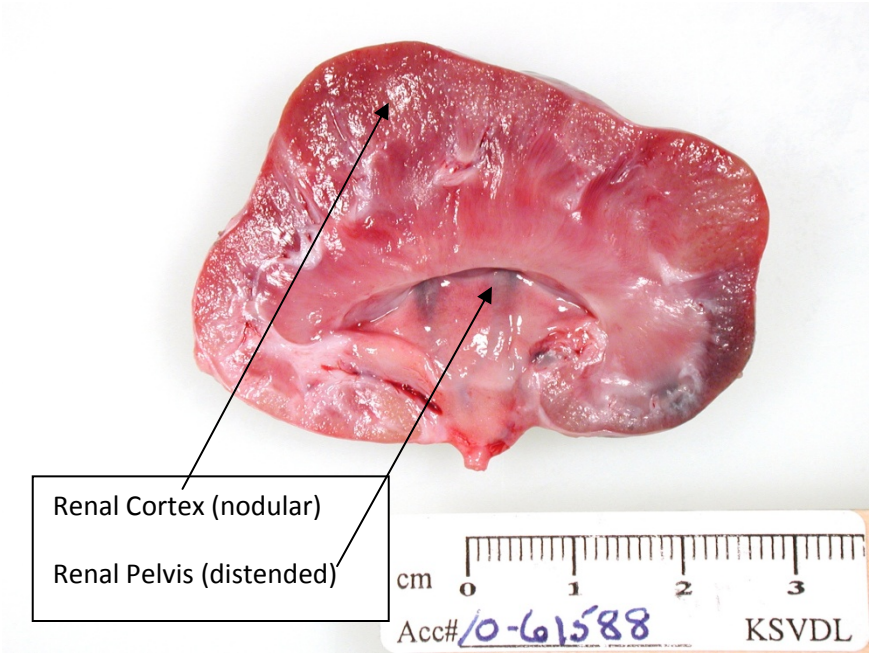

Figure 3: Right kidney showing renal pelvis dilation

**Ultrasound Description:** The kidneys were irregular and inhomogenous (with an increase in echogenicity greater than that of the spleen) Corticomedullary definition was decreased. There was dilation of the renal pelvis (0.5cm). Both kidneys measured 5cm in length. The urinary bladder was severely distended. The remainder of the study was unremarkable.

**Ultrasound Impressions: Renal dysplasia**

**Necropsy Findings:**




**Necropsy description:** Both kidneys were nodular in appearance and asymmetric and the capsule was very fibrotic in appearance. The cortices contained numerous nodules with some being as large as

1.5cm in diameter. Both kidneys also had distended renal pelvises' and enlarged ureters. All other gross findings were unremarkable.

**Histopathology Findings:**

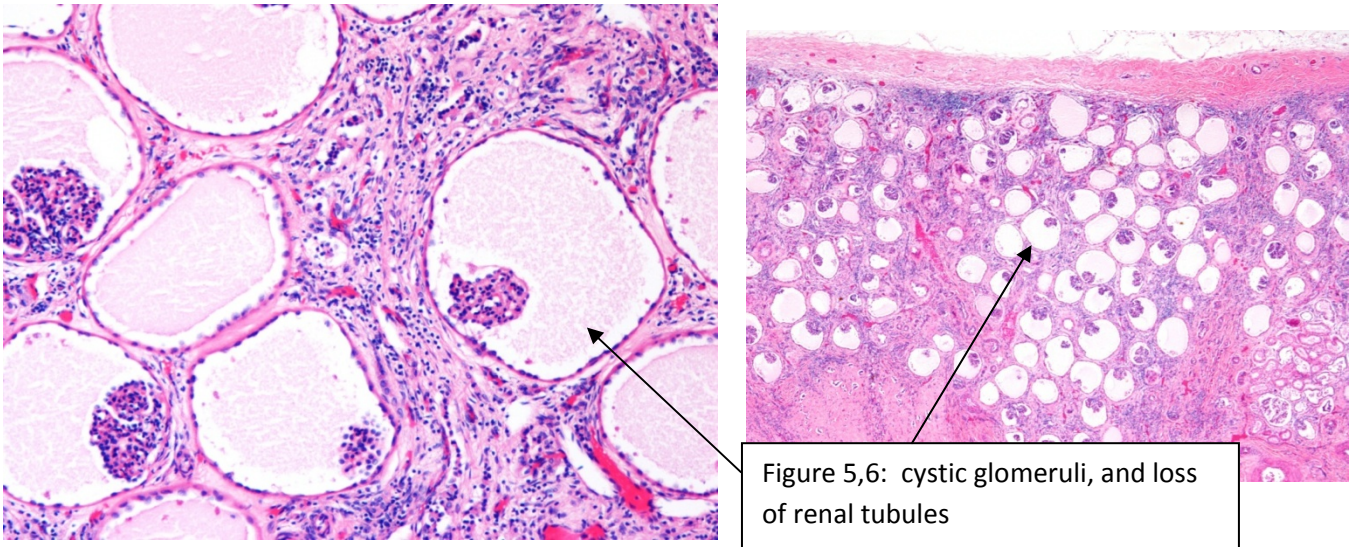


Figure 5,6: cystic glomeruli, and loss of renal tubules

**Histopathology Report:** Kidneys: There are segmental areas of moderately thin renal cortex with Interspersed areas of normal renal parenchyma containing normal tubules and moderately hypertrophied glomeruli. The affected renal cortex contains closely apposed cystically dilated glomeruli where there is 90-95% loss of tubules in the interstitial spaces of the cortex and in the underlying medulla with replacement by abundant fibrous connective tissue admixed with scattered infiltrates of moderate numbers of lymphocytes and plasma cells. These cystic glomeruli often contain shrunken and hypocellular glomerular tufts with protein and rare mineral deposits in the urinary space. The Bowman's capsule is lined by hypertrophied parietal epithelium with mild to moderate thickening of the Bowman's capsule. The arcuate arteries and veins are surrounded by abundant collagen bundles admixed with fibroblasts. The capsule is diffusely and irregularly thickened by moderate amount of fibrous connective tissue. Ureters: Bilaterally, the ureters are mildly to moderately dilated (visible grossly) with submucosal infiltrates of small numbers of lymphocytes. Cecum: The mucosa and submucosa are diffusely thickened by infiltrates of large numbers of macrophages containing abundant PAS positive granules in the cytoplasm. There is more than 95% loss of crypts and the epithelium lining the mucosa (ulceration). There are no microscopic lesions in the lungs, liver, spleen, adrenal glands, stomach, heart, skeletal muscle, thyroid glands, bone marrow or brain.

**Discussion- Renal Dysplasia**

Renal dysplasia is defined as disorganized renal development resulting from arrested or anomalous cellular processes. It is also referred to as juvenile renal disease and progressive juvenile nephropathy. The disease primarily affects canines and does not have any sex predilection. Most animals will develop

signs of disease at less than 2 years of age. Renal dysplasia is a familial disease and is reported in breeds such as the golden retriever, cocker spaniel, lhasa apso, and shih tzu. Risk factors that may predispose a puppy to renal dysplasia other than familial include in-utero viral infection (canine herpes virus). Clinical signs may be minimal and the owners may present the dog with very generalized signs including: anorexia, wasting, dehydration, vomting/diarrhea, stunted growth, depression and lethargy. On physical exam the puppy may be dehydrated, it may show muscle twitching, poor hair coat, oral ulcers, small kidneys on abdominal palpation and a pliable mandible. The animals poorly developed kidneys eventually results in renal failure and death. Some animals may be treated symptomatically to maintain hydration status, electrolyte and acid/base status. The animal uremic signs would need to be addressed as well as minimizing protein loss through the kidneys. Calcitriol would need to be initiated and calcium and phosphorus levels would need to be checked every 2 weeks. Renal dysplasia is an irreversible condition; long-term prognosis is very poor.

References:

Co□té, Etienne. *Clinical Veterinary Advisor: Dogs and Cats*. St. Louis, MO: Mosby Elsevier, 2007. Print.