



PATIENT

Copper Lauffer

SPECIES

Canine

BREED

Toy Poodle

SEX

Spayed female

AGE

13 years

WEIGHT

9.1 lbs

INTERPRETED BY

Eric Lindquist, DMV
DABVP, Cert. IVUSS

IMAGING PERFORMED BY

Dr. Moon

HOSPITAL NAME

Shiloh VH

REFERRING VET

Dr. Schneider

INVOICE

42152

DATE

1/16/23

PRESENTING CLINICAL SIGNS

History: Previous ultrasound in 7/22 Recently diagnosed diabetic (12/18/22) and started on 2IU Novolin-N q12h BW showed elevated liver values, concerned about Cushing's
Abnormal PE/Chem/CBC/UA Results: ALT (SGPT) 156IU/L (12- 118) Alk Phosphatase 1981IU/L (5-131) Total Bilirubin 0.3mg/dL (0.1-0.3) Urea Nitrogen 41mg/dL (6-31) Creatinine 0.5mg/dL (0.5-1.6) BUN/Creatinine Ratio 82 (4-27) Phosphorus 6.2mg/dL (2.5-6.0) Glucose 360mg/dL (70-138) Calcium 9.5mg/dL (8.9-11.4) Sodium 146mEq/L (139-154) Potassium 5.7mEq/L (3.6-5.5) Cholesterol 630mg/dL (92-324)

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The **urinary bladder**, trigone, and pelvic urethra presented normal thicknesses and normal tone. The ureters were not visible which is normal. No uroliths or sediment were visualized and anechoic urine was present. No evidence of inflammatory or neoplastic changes was noted. Ureteral papillae were normal.

The **kidneys** were normal in size and contour; however, a minor hyperechoic ring was noted at the corticomedullary junction. This is consistent with diabetic nephropathy. This is likely from glucosuria. However, assessment for proteinuria is also warranted. This is an idiopathic finding, but an expected finding in diabetic patients. The left kidney measured 3.8 cm. The right kidney revealed slight areas of mineralization. The right kidney measured 4.3 cm.

Adrenal Glands

The **adrenal glands** appeared slightly enlarged and swollen. No evidence of focal capsular expansion or invasion into the phrenic veins was noted. No overt suspicion of neoplasia was noted. This is considered likely a hyperplastic change associated with stress or adrenal endocrinopathy (PDH). If isosthenuria is persistently present and the patient morphologically suggests Cushing's disease then ACTH testing would be indicated. Maximum width of the left adrenal gland measured 0.67 cm at the caudal pole and 0.8 cm at the cranial pole. The right adrenal gland was slightly enlarged and measured 0.86 cm at the caudal pole and 0.86 cm at the cranial pole.

Spleen

The **spleen** presented a smooth homogeneous parenchyma hyperechoic to liver and renal cortical parenchyma. The capsule was smooth without noticeable expansion or deviation from within the spleen or adjacent pathology. Slight areas of mineralization were noted likely owing to underlying endocrinopathy. The splenic vasculature demonstrated normal volume without signs of congestion or thrombosis. No sonographic evidence of acute or chronic inflammatory, neoplastic, or infarctual changes was noted.



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Liver

Copper Lauffer

The **liver** revealed heterogenous parenchymal changes. Minor swelling was noted. This is consistent with diabetic hepatopathy with benign nodular hyperplasia. The gallbladder revealed mild polyps.

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Gastrointestinal

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The **stomach** was mildly thickened with prominent rugae. The lumen was empty. The small intestines and colon were unremarkable.

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Pancreas

The **pancreas** revealed some remodeling with no evidence of masses and no evidence of active inflammation.

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ULTRASONOGRAPHIC FINDINGS

Diabetic nephropathy. Minor, non-obstructive nephrolithiasis.

Bilateral adrenal hypertrophy.

WEIGHT

9.1 lbs

Diabetic hepatopathy.

Thickened stomach mucosa. History of gastritis is likely.

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Eric Lindquist, DMV
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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

If the patient appears Cushingoid then work-up for pituitary dependent Cushing's is indicated.

IMAGING PERFORMED BY

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Potential Causes of Diabetic Dysregulation

This is a suggestive checkoff list when faced with an unregulated diabetic patient:

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UTI

Dietary indiscretion/intolerance

Pancreatitis

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Hyperthyroidism/hypothyroidism

Exogenous steroids (including topical eye meds)

Cushing's

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Acromegaly

Owner compliance

Insulin quality issues

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Antibodies to insulin



PATIENT

Underlying Neoplasia

Copper Lauffer

Diffuse liver disease

SPECIES

Efficient & Accurate Cushing's Work up-Lindquist

Canine

Notes regarding Cushing's Clinical Presentations:

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Toy Poodle

Nearly all Cushing's dogs have SAP elevations and true PU/PD (USG < 1.025) and most are polyphagic.

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Cushing's dogs are > 6 years and usually > 9 years old, usually have poor skin coats, body scores > 3/5, and are usually sedentary animals.

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Its important to remember that Cushing's dogs usually look and play the part and other diseases cause false + stress related cortisol spikes. On rare occasion a Cushing's dog will not follow the rules but this is truly an exception.

Potential Cushing's patient workups can be costly and frustrating if not definitive and, in my experience, the non-definitive patient usually has something else going on that may be contributing to some of the clinical signs a Cushing's dog will have, especially SAP elevations or PU/PD. Based on this prelude of information I came up with the following algorithm in the spirit of diagnostic efficiency.

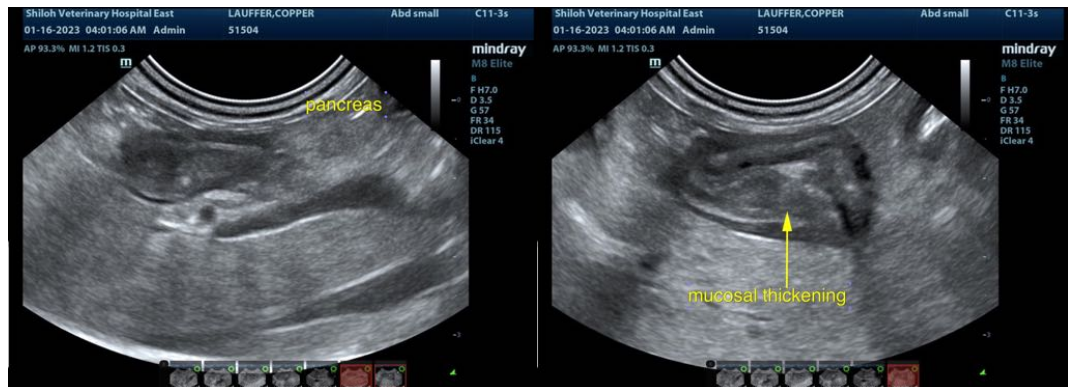
The following suggested protocol is based on current available literature on Cushing's disease and extensive clinical-sonographic experience evaluation + Cushing's and False + LDDST & ACTH stim. cases in order to maximize the efficiency of a Cushing's workup in practice.

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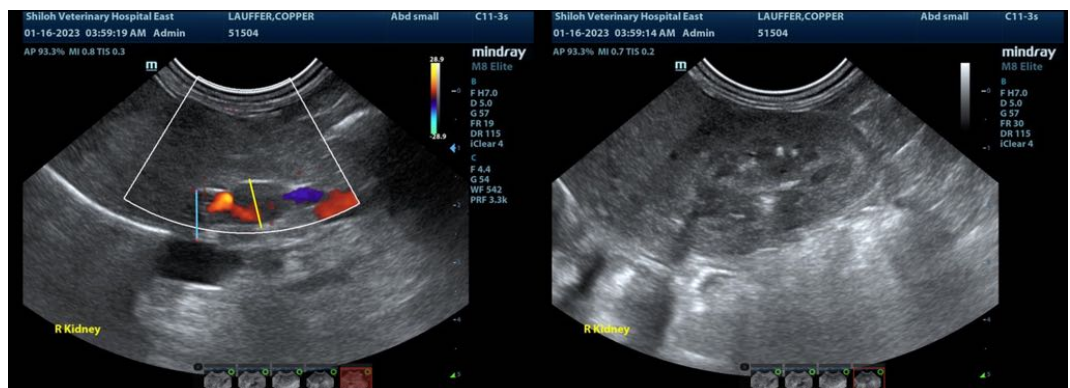


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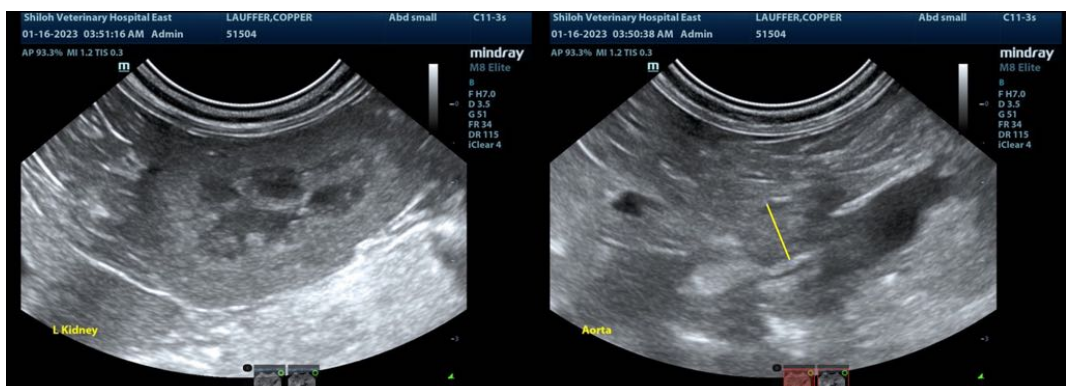
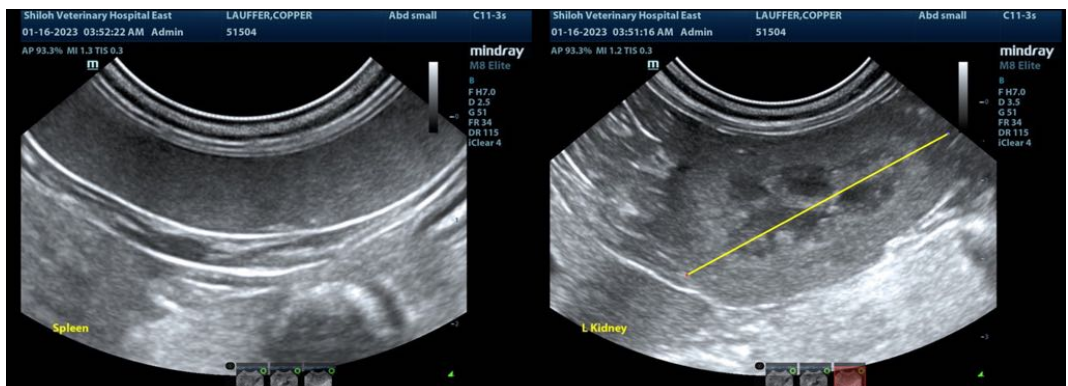
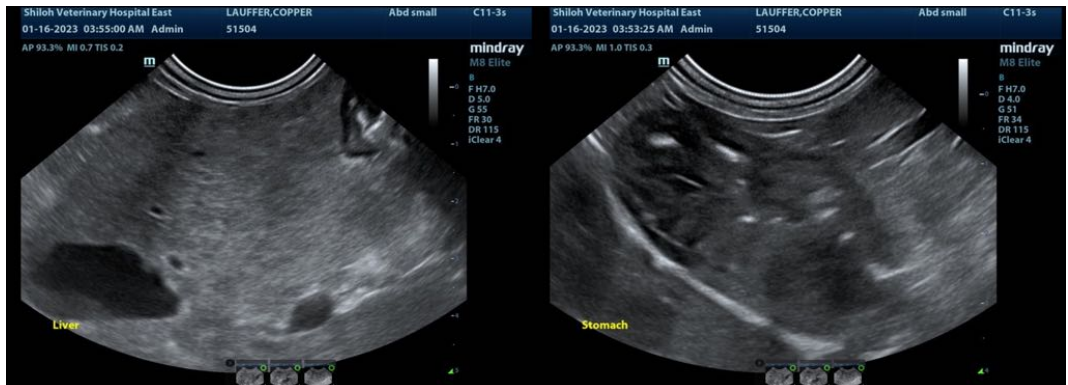
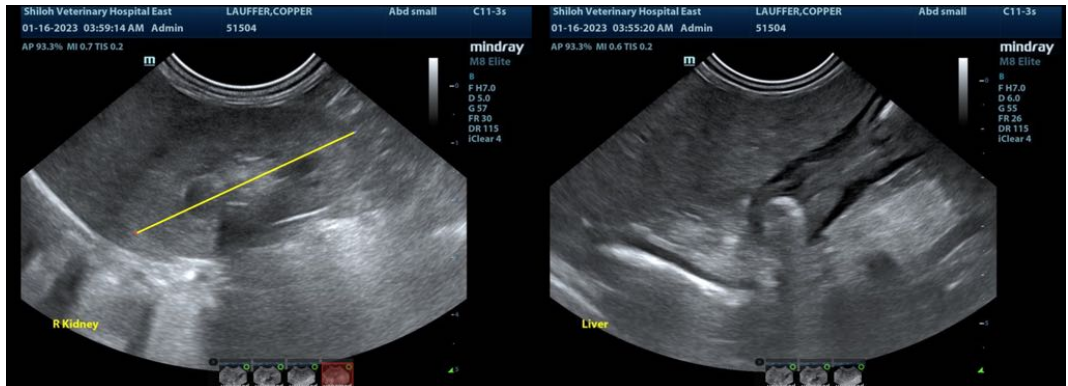
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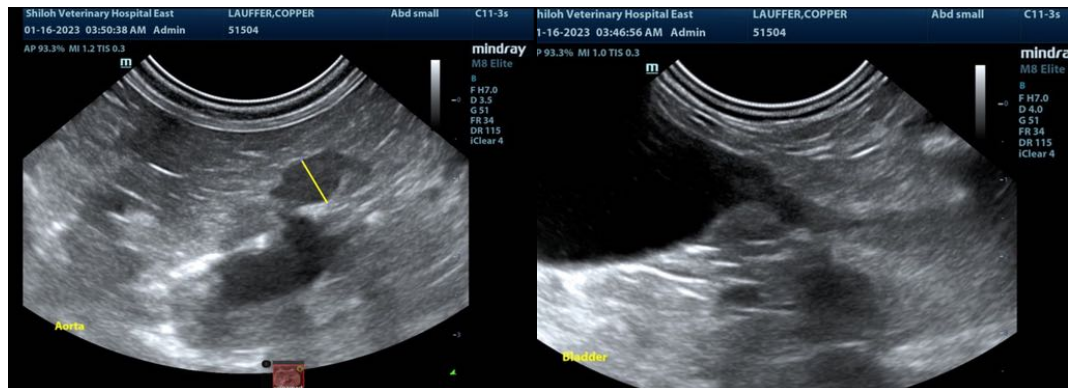
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

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