



PATIENT

G.W. Allen

SPECIES

Canine

BREED

Terrier X

SEX

Neutered Male

AGE

13.5 Years

WEIGHT

42 Pounds

INTERPRETED BY

Beth Johnson, DVM
DACVIM

IMAGING PERFORMED BY

Dr. Amanda Favis

HOSPITAL NAME

Ruidoso AC

REFERRING VET

Dr. Amanda Favis

INVOICE

44309

DATE

1/18/23

PRESENTING CLINICAL SIGNS

Hx of treatment for Cushing's disease, intermittent diarrhea that has currently resolved, PU/PD, weight loss. Good energy.

Abnormal PE/Chem/CBC/UA Results: ALT 1593, ALP 2815, calcium 12.2, GGT 23, cholesterol 604, TG 474, proteinuria, CBC – NSF

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is moderately distended with anechoic contents. No masses, inflammatory changes, echogenic sediment or cystoliths are observed. The urinary bladder, trigone and visible pelvic urethra are normal in thickness with a smooth mucosal surface.

Prostate is normal in size, echotexture and echogenicity for a neutered male.

Kidneys are overall normal in size and shape with smooth peripheral margination. A normal 1:3 cortex to medulla ratio is maintained. The medulla and cortices are uniform in texture with some mild increased cortical echogenicity and mild loss of corticomedullary distinction, expected in this age patient. There is no evidence of pyelectasia, mineral or infarcts observed. Cortical cysts are noted bilaterally in the kidneys. The left kidney measures 6.0 cm. The right kidney measures 6.64 cm.

Adrenal Glands

The right adrenal gland is enlarged (1.91 cm at the cranial pole, 1.87 cm at the caudal pole) with mild heterogenous parenchymal changes. Swollen capsular expansion is noted with some evidence of caudal capsular escape and suspicion for possible early vascular invasion.

The left adrenal gland is plump/swollen in size, measuring 0.87 cm at the cranial pole and 0.73 cm at the caudal pole. Normal shape and contour are maintained without evidence of capsular invasion. Corticomedullary structure is unremarkable. Visible surrounding vasculature appears normal.

Spleen

The spleen is subjectively normal in size with a normal smooth capsular contour. Parenchyma is appropriately finely textured and homogenous with normal echogenicity relative to surrounding tissue (hyperechoic to liver). A 0.50 cm non-capsule disrupting, hypo- to anechoic nodule is noted in the mid body. Splenic vasculature appears normal.

Liver

Liver is subjectively enlarged with mildly irregular margins. Parenchyma is heterogenous characterized by multiple poorly defined hypoechoic nodules within otherwise hyperechoic liver parenchyma. Visible vasculature and biliary tree appear normal without distension or congestion.

The gallbladder is non-distended in size. The wall is smooth without visible thickening. Luminal contents are primarily anechoic. There is no evidence of cystic or common bile duct dilation.

Gastrointestinal

Diffusely, the stomach wall is normal in thickness (canine < 0.5 cm and feline < 0.4 cm) and layering. However, focally, approaching the pylorus, there is a focal approximately 1.0 cm x 2.0 cm intramural hypoechoic nodule. The lumen of the stomach is empty with no evidence of obstruction, foreign material or infiltrative disease. Pyloric outflow tract appears patent.



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The visible small intestines are normal in wall thickness and layering. Hyperechoic mucosal fogging or speckling is noted. Small intestinal motility appears adequate (1-3 contractions per min). The lumen is empty with no evidence of obstruction or foreign material.

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The visible colon is normal in wall thickness (< 0.2 cm) and layering. Contents are consistent with normal formed feces and gas.

Pancreas

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The pancreatic parenchyma is appropriately isoechoic to surrounding tissue. Visible capsule is smooth and normal in contour. There is no visible pancreatic duct dilation. There is no evidence of active peripancreatic inflammation.

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Free Abdomen

There is no evidence of free peritoneal effusion noted in these images.

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There is no apparent lymphadenopathy noted in these images.

PRIMARY FINDINGS

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- **Bilateral adrenomegaly** – consistent with this patient’s reported history of hyperadrenocorticism. However, the appearance of the right adrenal gland is concerning for a more aggressive adrenal mass, potentially adrenal adenocarcinoma or pheochromocytoma. Benign adenoma or adrenal hyperplasia secondary to pituitary dependent hyperadrenocorticism is still likely, but considered less likely, given the concerning capsular escape and possible vascular invasion.
- **Heterogenous Liver** – These changes are most consistent with benign processes such as nodular hyperplasia, steroid (vacuolar) hepatopathy, extramedullary hematopoiesis or possibly chronic inflammatory disease, and, especially given this patient’s concurrent pathology, infiltrative neoplasia such as round cell neoplasia (i.e., lymphoma).
- **Gastric intramural nodule/mass** – concerning for infiltrative neoplasia such as round cell neoplasia (i.e., lymphoma) versus adenocarcinoma, versus leiomyosarcoma, versus other. Benign polyp, nodule, leiomyoma, etc. is possible but considered slightly less likely.
- **Mucosal speckling** – Mucosal speckling is often present with inflammatory bowel disease (IBD). It is not specific for type or severity of disease. Mild speckling change can occur as a normal patient variant in the post-prandial state.

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SECONDARY FINDINGS

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- Age related kidney changes with bilateral cortical cysts
- **Hypo to anechoic splenic nodule** – likely represents a benign lesion such as a cyst, hematoma, nodular hyperplasia, extramedullary hematopoiesis, etc., however while considered less likely, infiltrative neoplasia can mimic benign lesions, and cannot be ruled out.

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

This patient has a variety of pathologies that could reasonably be contributing to clinical signs and may or may not be related. Given the weight loss, diarrhea, gastrointestinal changes, and hypercalcemia, lymphoma may be the primary differential causing all the clinical signs, with the polyuria/polydipsia coming from the hypercalcemia, etc. In that case, recommendations include PTH/PTHrP and ionized calcium for further evaluation of the reported hypercalcemia, as well as a gastrointestinal



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malabsorption panel (including cobalamin, folate, TLI and PLI) to Texas A&M GI Laboratory, and a fine needle aspirate of the gastric nodule/mass (+/- the liver) if patient's coagulation status is appropriate.

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Additionally, however, this patient's right adrenal gland is suggestive of a more aggressive disease than pituitary dependent hyperadrenocorticism, and the right adrenal mass may no longer be responsive to medical management and may be contributing to ongoing clinical signs of hyperadrenocorticism. It is possible that over suppression of cortisol is contributing to the clinical signs and hypercalcemia as well. Therefore, an ACTH stimulation test to further assess cortisol levels, and medical control of the reported hyperadrenocorticism is also recommended.

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Ultimately, further management of hyperadrenocorticism may have to include a right adrenalectomy, which, if pursued, a pre-surgical planning abdominal CT scan is recommended. However, given the concurrent gastrointestinal disease, this may be considered too aggressive of an approach.

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In the meantime, while awaiting results, supportive/symptomatic medical management recommendations include empirical deworming with a 5-day course of Panacur, a probiotic such as Visbiome or Provable, and potentially transition in diet (if tolerated) to a bland, easy to digest or low-fat diet.

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Three view thoracic radiographs are recommended for further assessment of cardio-pulmonary status as well as to further evaluate for any evidence of metastatic disease, if not recently evaluated.

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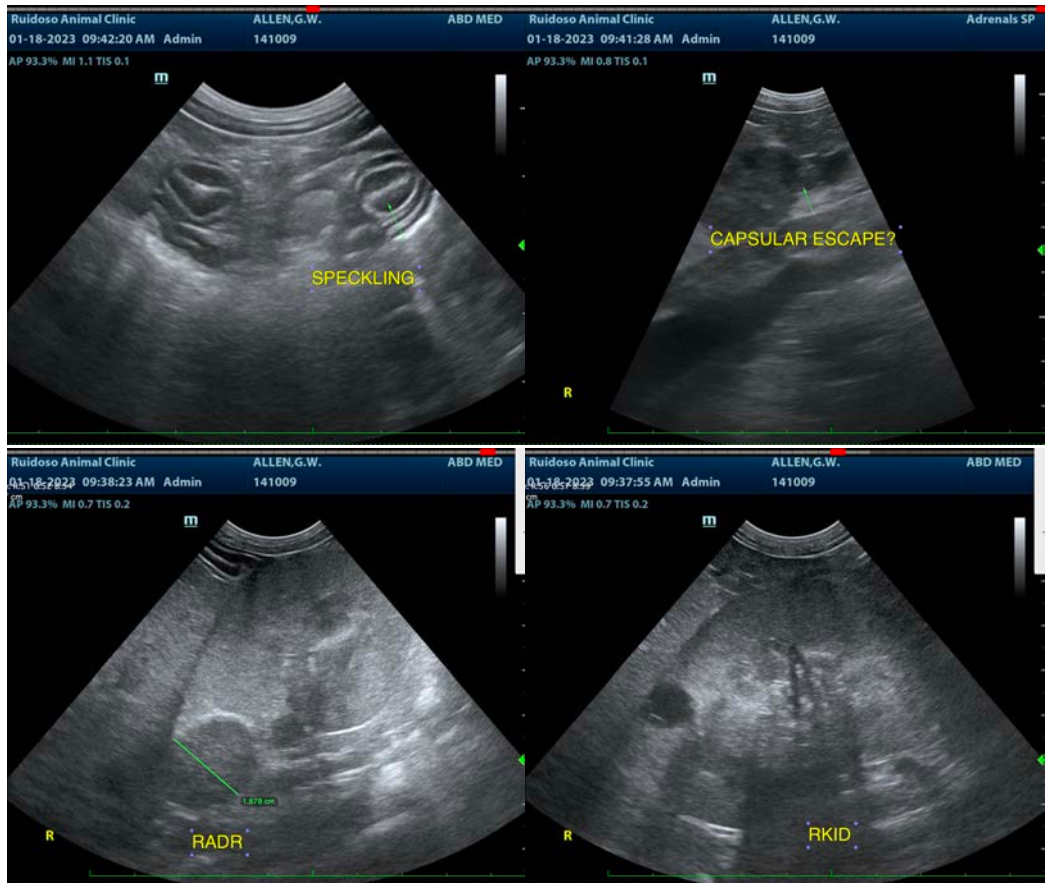
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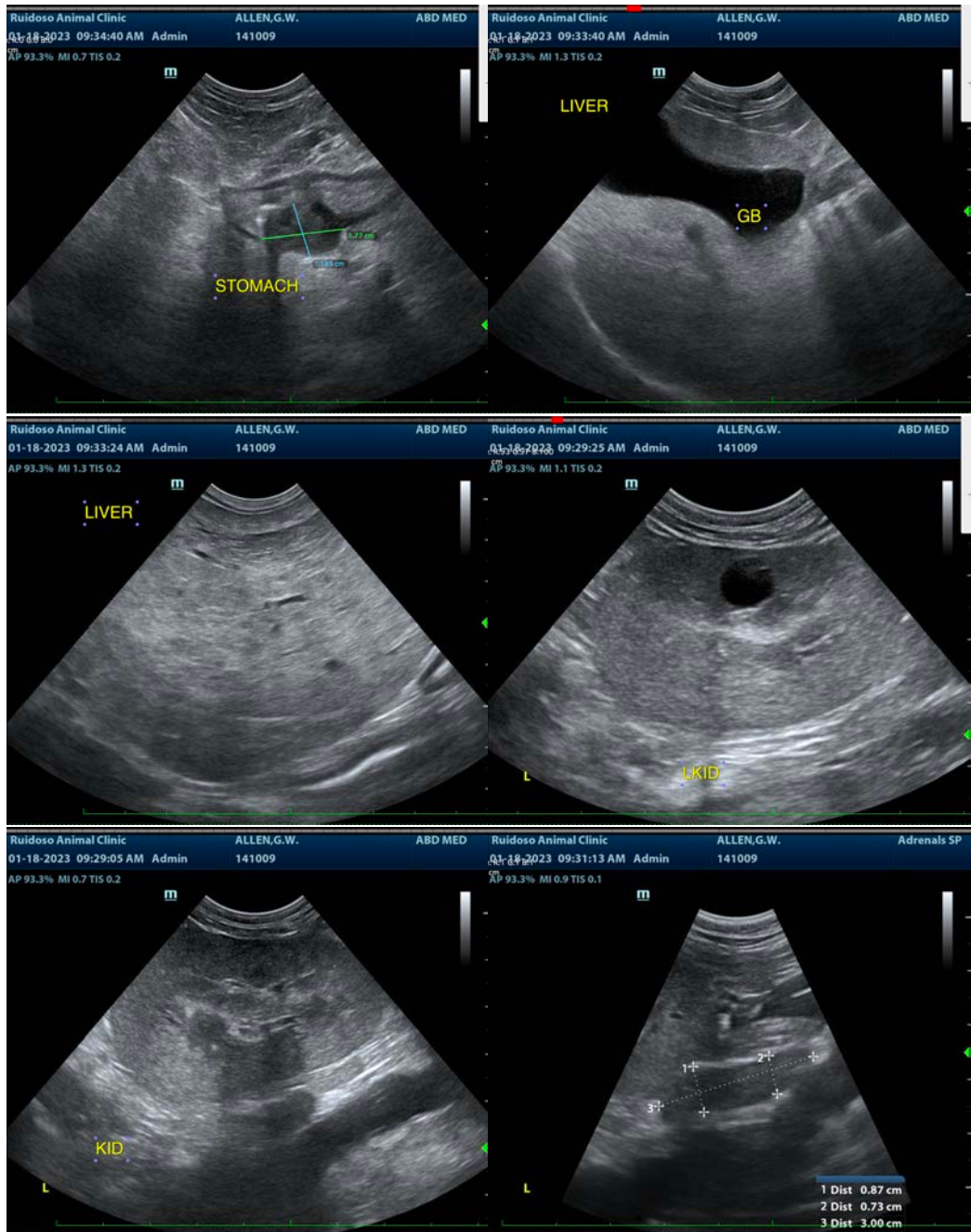
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Beth Johnson, DVM, DACVIM
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