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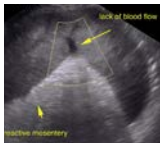
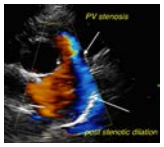
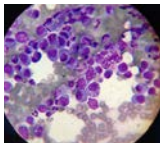
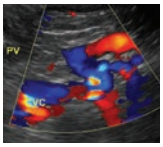
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™

SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT

Daisy Lama

SPECIES

Canine

BREED

Shih Tzu

SEX

Spayed Female

AGE

13 Years

WEIGHT

13.5 Pounds

INTERPRETED BY

Kathleen Sennello DVM, MS, Diplomate ACVIM (Small Animal Internal Medicine)

IMAGING PERFORMED BY

Dr. Michelle Bartus

HOSPITAL NAME

Valley Vet Service

REFERRING VET

Dr. Michelle Bartus

INVOICE

41170

DATE

9/8/22

PRESENTING CLINICAL SIGNS

Abnormal liver enzymes identified on routine Senior bloodwork. No symptoms.
Abnormal PE/Chem/CBC/UA Results: ALT 830 (10-125), ALKP 297 (23-212), GGT 50 (0-11), SDMA 17 (0-14), BUN 31 (7-27)

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary bladder is moderately distended with anechoic urine. The Bladder wall, trigone, ureteral papillae and visible urethra (to a depth of 2cm) appear normal with no evidence of wall thickening, mucosal irregularities, masses or cystic calculi.

The left kidney has a normal shape and size (3.75 cm). Overall echogenicity is slightly hyperechoic with poor corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of focal perinephric inflammation or effusion. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (4.1 cm). Overall echogenicity is slightly hyperechoic with poor corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of focal perinephric inflammation or effusion. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

Adrenal Glands

The left adrenal gland is large measuring 0.94 cm at the cranial pole, 1.27 cm at the caudal pole, and 2.24 cm in length. It is observed in its normal position cranial to the left renal artery. It is somewhat atypical in appearance in that the caudal pole is large with a mixed echogenic region/nodule. Findings are most consistent with a left adrenal mass. There is impingement on local vasculature but no evidence of severe invasion.

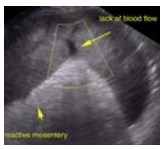
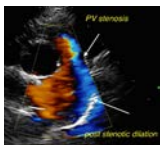
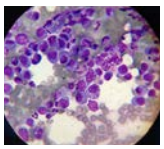
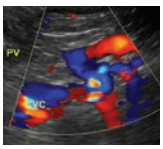
The right adrenal gland is large measuring 1.41 cm at the cranial pole, 1.24 cm at the caudal pole, and 3.0 cm in length. It is observed in its normal position between the cranial aspect of the right kidney and the caudal vena cava. No evidence of vascular invasion. Findings are consistent with an enlarged right adrenal gland/mass.

Spleen

The spleen is subjectively normal in size, echotexture is homogenous. The blood flow through the hilus and splenic parenchyma appears normal. There is a large, hyperechoic, discrete nodule visualized in the spleen, which deviates the splenic capsule somewhat. This lesion measures 0.94 cm x 1.34 cm.

Liver

The liver is large in size, and normal in echogenicity with rounded margins. The parenchyma is heterogenous in echotexture with subtle, indistinct focal mottling. The visible portions of the vasculature and biliary tract appear normal. There is a hyperechoic nodule visualized within the parenchyma measuring 1.06 cm x 1.21 cm. Additionally, there is an ill-defined hyperechoic region measuring 2.57 cm x 1.84 cm. There is an area of what appears to be a hypoechoic tubular structure visualized, which I suspect may be dilated bile duct, but a connection to the gallbladder cannot be seen, and color flow is needed to differentiate from possible vasculature.

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The gall bladder lumen is significantly distended. Some areas of the wall appear mildly thickened with adherent debris. There is a large amount of primarily non-organized echogenic debris. There is tortuous tubular structure visualized distal to the gallbladder, which could represent a dilated bile duct.

Gastrointestinal

The stomach contains minimal luminal contents. It measures at a normal thickness of <0.7cm with some variability due to the presence of rugal folds. The distinction of the gastric wall layers is adequate and there is no impression of reduced peristaltic activity. No masses or focal lesions were observed.

The visualized areas of duodenum, jejunum and ileum have a relatively uniform diameter with minimal fluid distension. Wall thickness is normal. Bowel loops follow a curvilinear path with distinct wall layering maintaining the typical 1:3 muscularis:mucosa layer ratio. Jejunum wall meaures 0.45 cm. Visualized peristalsis appears appropriate. There were no focal lesions consistent with obstruction or a mass effect observed.

The ileocecal junction was visualized and exhibited normal intact wall layering and is subjectively of normal thickness. Sections of colon are visualized with formed fecal material and gas shadowing distally. There is no observed focal or generalized colon wall thickening or loss of layering.

Pancreas

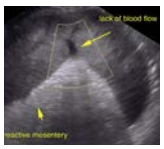
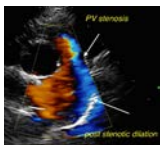
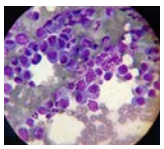
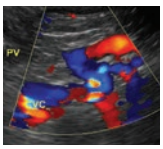
The pancreas is normal and isoechoic to surrounding mesentery. There is no evidence of nodules or cystic lesions. There is no evidence of regional mesenteric inflammation or fluid.

Free Abdomen

Evaluation of the peritoneal cavity did not reveal any evidence of effusion, or subjective lymphadenomegaly. The Medial iliac nodes appear normal and there was no evidence of a caudal aortic thrombus at the bifurcation. The omentum is of normal uniform echogenicity.

ULTRASONOGRAPHIC FINDINGS

- Large left adrenal gland with a mass effect at the caudal pole – This could represent a benign or neoplastic mass effect.
- Symmetrically enlarged right adrenal gland – This could represent a mass effect or hyperplasia.
- Heterogeneous liver with ill-defined hyperechoic lesions – The diffuse hepatic changes are non-specific and could be consistent with vacuolar hepatopathy, nodular hyperplasia, inflammatory/immune-mediated disease, fibrosis, extramedullary hematopoiesis, toxic hepatopathy (e.g., copper), infiltrative neoplasia (less likely) or other hepatopathy. The two hyperechoic lesions are ill-defined and trend towards benign lesions, although underlying neoplasia cannot be ruled out.
- Hyperechoic lesion in the spleen – Hyperechoic lesions tend to be more benign in nature, but this does deviate the splenic capsule somewhat.
- Decreased corticomedullary distinction in both kidneys – The bilateral renal findings are consistent with age-related change.
- Large gallbladder debris and possible dilated bile duct – A large amount of debris is evident in the gall bladder with no evidence of a mucocele or associated inflammation at this time. This could represent an early mucocele or cholestasis, with minimal evidence of associated inflammation at this time. Continued monitoring of labwork and ultrasound are warranted for

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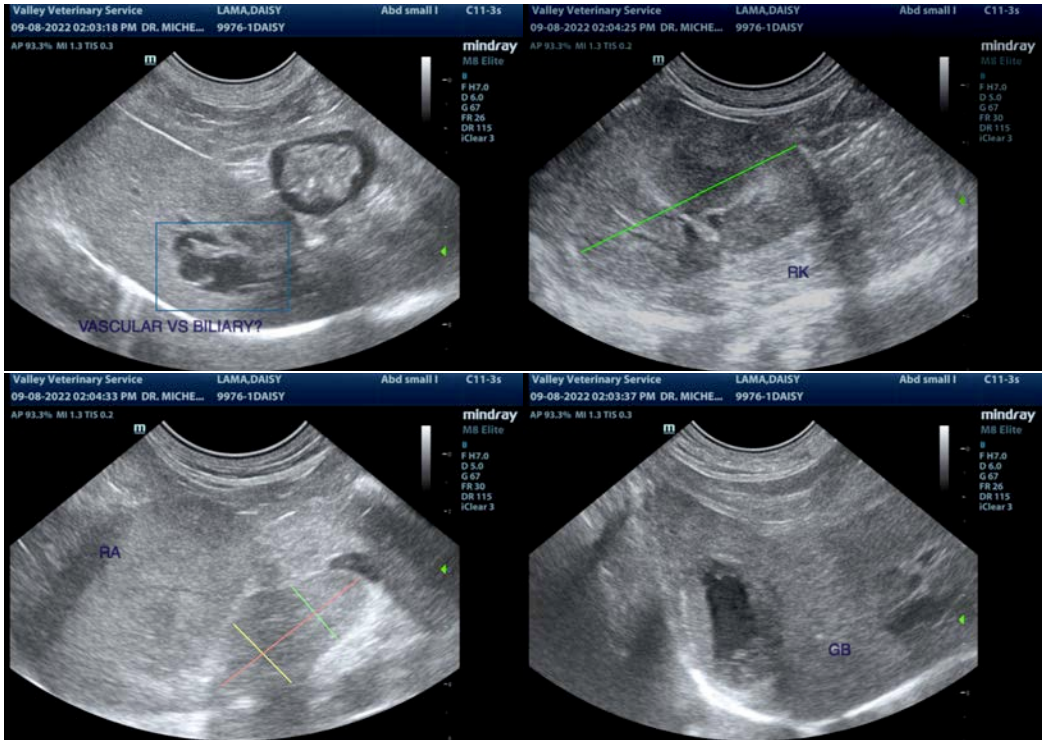
progression of this lesion. Ursodiol therapy could be considered.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The liver is large and heterogeneous with rounded margins and some ill-defined hyperechoic lesions. Additionally, the gallbladder has a large amount of adherent debris to the wall, and there is the possibility of a dilated bile duct. A direct connection between the gallbladder and bile duct was not visualized, although this is suspected. Color flow may help with these suspicions. Based on the appearance, there is the possibility of a concurrent hepatopathy and biliary disease. Consider a liver function test, a fine needle aspirate of the liver, and starting chronic Ursodiol therapy with continued monitoring of the gallbladder.

Additionally, there are lesions in both adrenal glands. This could represent very atypical bilateral hyperplasia, it could represent bilateral hyperplasia with a left-sided adrenal nodule, or it could represent bilateral adrenal masses. The ideal scenario would be a contrast CT scan of the abdomen to further evaluate both adrenal glands and the gallbladder in addition to a blood pressure evaluation and possible screening for Cushing's disease, if clinically appropriate (I prefer the University of Tennessee adrenal panel with an ACTH stimulation test to test for additional hormones other than cortisol). If surgical removal would not be considered, then options are to continue to monitor with ultrasound +/- medical management if cortisol levels are elevated.

Recommend three view thoracic radiographs to evaluate for possible concurrent thoracic disease/involvement.



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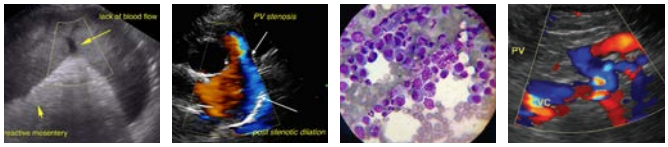

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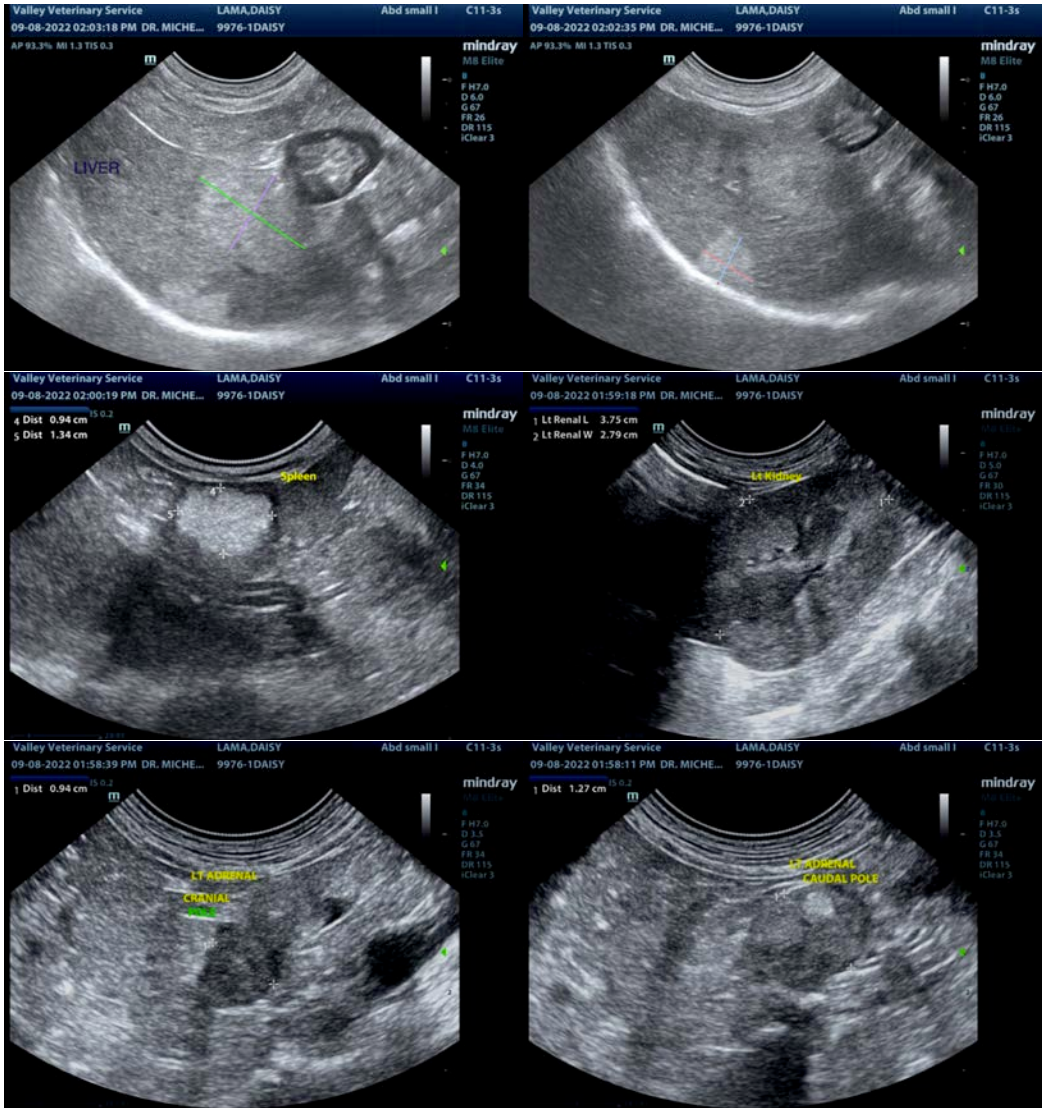

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Kathleen Sennello DVM,MS, Diplomate ACVIM (Small animal Internal Medicine)

kathleen.sennello@sonopath.com