

**DATE PRESENTING CLINICAL SIGNS**

5/24/22 Elevated liver enzyme values, losing weight.

**PATIENT**

Hamilton Dixon

Current Medications: None.  
 Lab Results: ALT 642, AST 791, ALKP 304.  
 Date of Previous IntraPet Ultrasound: No previous.  
 Sedation: Not required to complete full diagnostic ultrasound.  
 Stat Report: Not requested.

**SPECIES**

Canine

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN****BREED** *Urinary System*

Golden X

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.

**SEX**

Neutered Male

The prostate is normal in size (1.1 cm) and shape for this neutered male dog. The parenchyma is homogenous and the external margins are smooth. The prostatic urethra appears normal with no evidence of irregularity, invasion, mass effect or calculi.

**AGE**

2/18/12

The left kidney has a normal shape and size (6.99 cm). Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of perinephric inflammation or effusion. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

**WEIGHT**

70 Pounds

The right kidney has a normal shape and size (6.0 cm). Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of perinephric inflammation or effusion. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

**INTERPRETED BY**

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

**Adrenal Glands**

The left adrenal gland is normal in size measuring 0.73 cm at the caudal pole. It is observed in its normal position cranial to the left renal artery. It is normal in appearance (uniformly hypoechoic) and shape with no evidence of a mass effect.

**IMAGING PERFORMED BY**

Rachel Brilhart RDMS

The right adrenal gland is normal in size measuring 0.68 cm at the caudal pole. It is observed in its normal position between the cranial aspect of the right kidney and the caudal vena cava. It is normal in appearance (uniformly hypoechoic) and shape with no evidence of a mass effect.

**HOSPITAL NAME**

Madonna Vet Clinic

**Spleen**

The spleen is subjectively normal in size. The spleen echotexture is heterogenous and mottled, the splenic capsule is smooth with no irregularities. The blood flow through the hilus and splenic parenchyma appears normal. There are ill-defined, hypoechoic regions within the splenic parenchyma. Some of these are more defined and create hypoechoic, ill-defined nodules. Two such lesions are visualized measuring 1.03 cm and 1.16 cm.

**REFERRING VET**

Dr. Cangro

**INVOICE**

37903

**Liver**

The liver is subjectively normal in size, and echogenicity with smooth peripheral 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 poorly defined hyperechoic mass lesion measuring 3.81 cm x 3.5 cm deep in the liver.

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 and some very mild irregularity along the gallbladder wall with very early signs of possible mucocele development. There is no evidence of bile duct dilation.

### ***Gastrointestinal***

The stomach is moderately dilated with fluid and irregular shadowing material most consistent with normal ingesta and gas. 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 layering 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. The duodenum measured as normal (between 0.3-0.5cm in wall thickness) and the jejunum measured as normal (between 0.2-0.47cm.) 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.

### ***Other***

A brief view of the heart was submitted. No significant pericardial effusion was seen.

## **ULTRASONOGRAPHIC FINDINGS**

- Large, mottled spleen with ill-defined hypoechoic nodules – The diffuse splenic changes are non-specific and could be consistent with lymphoid hyperplasia, extramedullary hematopoiesis, infiltrative neoplasia, inflammation, other. Cytology or histopathology would be necessary to get a definitive diagnosis.
- Heterogeneous liver with ill-defined hyperechoic mass effect – 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 ill-defined mass lesion could represent a benign or neoplastic lesion. This does not appear to deviate the hepatic margins and is likely too deep for easy cytologic sampling.
- Large gallbladder debris with very early organization of bile at the gallbladder wall – The significance of the aggregated gallbladder sludge is unclear. This could represent an early mucocele, cholestasis, or may be secondary to fasting. The mild irregularity along the gallbladder wall is consistent with possible very early mucocele development. Consider starting Ursodiol and continued monitoring.

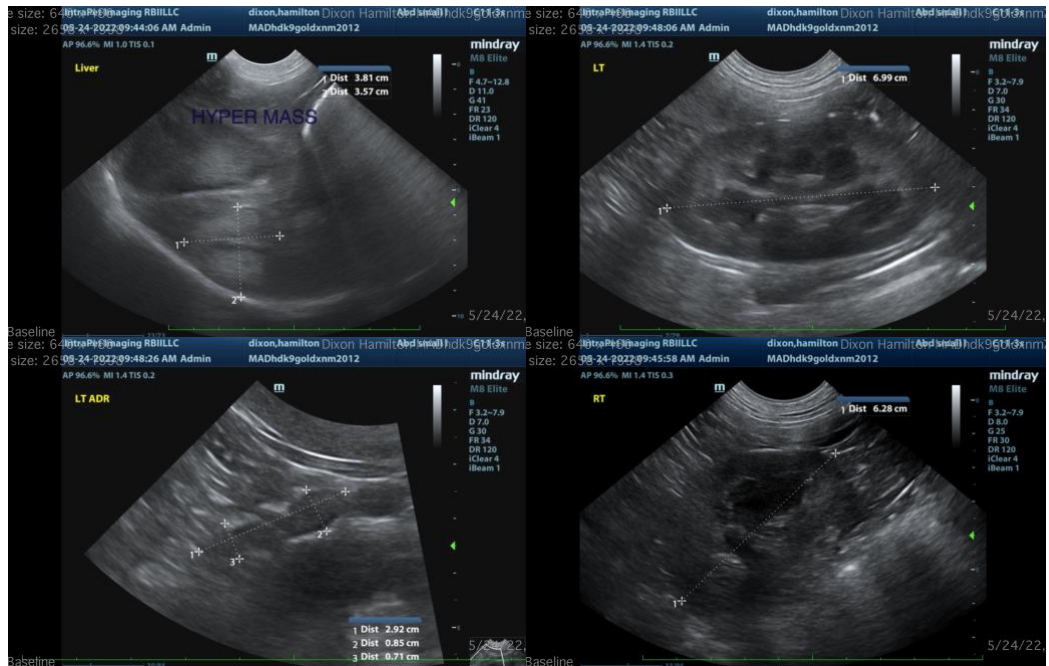
## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

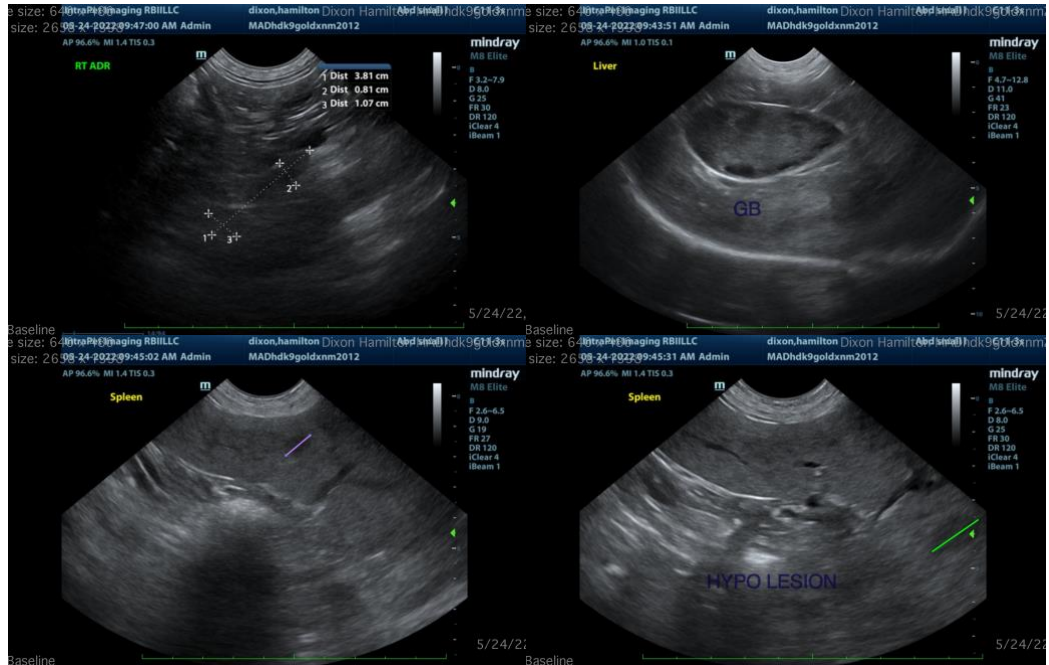
The spleen is large and the parenchyma is mottled with ill-defined, hypoechoic regions. These changes could represent benign or neoplastic changes. Consider a fine needle aspirate of the spleen.

There is a focal hyperechoic region deep within the liver, which likely represents a large nodule or small mass effect. Options moving forward regarding this lesion include a contrast CT scan to better delineate margins and to evaluate for possible surgical removal, or continued monitoring with ultrasound. It is not 100% clear if the liver enzyme elevations are secondary to this mass lesion, secondary to a primary hepatopathy, or possibly (but much less likely) due to some of the gallbladder changes observed. I would consider evaluation for primary hepatopathy with a liver function test and a fine needle aspirate of the liver, as well as continued monitoring of the gallbladder with ultrasound and empirical treatment with Ursodiol. If removal of the mass lesion would be considered, then a biopsy of both the mass lesion and "normal" hepatic tissue is recommended.

Additionally, if you feel that this patient could be at risk for Leptospirosis, evaluation for this disease process could be considered prior to diagnostic sampling.

Consider three view thoracic radiographs to rule out concurrent thoracic disease/involvement.





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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