



**PATIENT**

Chance Taylor

**PRESENTING CLINICAL SIGNS**

Elevated ALT Pre-Surg, no clinical signs Carprofen 75mg 1 BID  
Abnormal PE/Chem/CBC/UA Results: ALT-395 not normal UA- not done

**SPECIES**

Canine

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**

**Urinary System**

**BREED**

Pit Bull

The urinary bladder is well distended with anechoic contents. The wall is smooth and regular. No abnormalities are noted with the trigone or proximal urethra, and there is no evidence of sediment, cystoliths, polyps or a mass.

**Kidneys**

**SEX**

Neutered Male

The **left** kidney measures 6.98 cm. The capsule is smooth. The cortex is mildly hyperechoic and a mild to moderate loss of the normal definition of the cortico-medullary junction is present. Mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. Blood flow is adequate. The surrounding mesentery is not hyperechoic.

**AGE**

8 Years

The **right** kidney measures 7.81 cm. It has a more "rounded" appearance, however, the capsule is smooth. The cortex is mildly hyperechoic compared to what is considered normal, and a mild to moderate loss of the normal definition of the cortico-medullary junction is present. In addition to the previous findings, hyperechoic band-like lesions are observed along the medulla, traversing parallel to the corticomedullary junction. Mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. Blood flow is adequate. The surrounding mesentery is not hyperechoic.

**WEIGHT**

68.5 Pounds

**INTERPRETED BY**

Lisa Carioto, DVM,  
DVSc, Diplomate  
ACVIM

**Aortic bifurcation/trifurcation**

No abnormalities observed.

**Adrenal Glands**

The **left** adrenal gland measures 0.52 cm at the cranial pole, 0.48 cm at the caudal pole and 2.31 cm in length. No abnormalities are noted with the gland's overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

**IMAGING PERFORMED BY**

Dr. Carlos Abdul-Chani

The **right** adrenal gland measures 0.60 cm at the cranial pole, 0.70 cm at the caudal pole and 2.73 cm in length. The caudal pole is "plump" compared to the cranial pole, however, a nodule or mass is not noted. No abnormalities are observed with the gland's overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

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Byram Animal Hospital

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**Spleen**

The spleen is within normal limits in size, architecture and echogenicity. The capsule is smooth. Subjectively, a diffuse "grainy" or miliary echotexture is present, however, this may be due to the setting of the ultrasound machine. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified.

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**Liver**

There are no obvious signs of hepatomegaly and its borders are smooth and sharp. A diffuse, mildly to moderately coarse or granular echotexture is observed. The liver is very mildly hyperechoic, i.e. it is almost isoechoic to the spleen and the falciform fat. The walls of the portal veins are hyperechoic,

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which may be due to the presence of inflammation, deposition of fat and/or fibrosis. No obvious abnormalities are noted with the larger hepatic vessels.

**SPECIES**

Canine

The gallbladder wall is within normal limits in thickness and echogenicity. A small amount of echogenic material is present within the GB. The portions of the cystic and/or common bile ducts observed are not dilated or tortuous, i.e. there are no signs of an obstruction.

**Gastrointestinal**

**BREED**

Pit Bull

A large amount of gas and a small amount of ingesta and fluid are present within the lumen of the stomach. The gastric wall is within normal limits in thickness and the wall layers are well defined. A mild ileus is observed.

**SEX**

Neutered Male

The duodenum is within normal limits in thickness and the definition of the wall layers is preserved. However, mild stippling and striations of the mucosa is present.

No abnormalities are observed with the thickness or the definition of the wall layers of the small intestines.

**AGE**

8 Years

Abnormally dilated loops of bowel are not observed.

Gas is present in the transverse colon.

The colonic wall is not thickened and mural detail is considered normal.

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**Pancreas**

No overt abnormalities are observed with the echogenicity or echotexture of the left limb. There is no evidence of hyperechogenicity of the surrounding mesentery, i.e., signs of active pancreatitis are not present.

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The right limb is not well visualized due to the large amount of gas in the stomach and transverse colon.

**Other**

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**Lymph nodes**

No abnormalities are observed

**Abdominal effusion** is not visualized.

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**ULTRASONOGRAPHIC FINDINGS**

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- An obvious cause for the elevated for the elevated ALT enzyme activity is not identified on today's abdominal ultrasound. The diffuse, mildly to moderately coarse or granular echotexture and mild hyperechogenicity of the liver may be due to reactive and vacuolar hepatopathies, respectively. Differential diagnoses include chronic hepatitis. The latter may be primary (immune-mediated) or secondary in origin. Examples of secondary causes include, infectious agents, including parasites or viruses, toxins, including medications, such as non-steroidal anti-inflammatories, and natural supplements. A vacuolar hepatopathy may occur secondary to stress or chronic illness. Hyperadrenocorticism is considered highly unlikely. Other differential diagnoses for the mild hyperechogenicity include cholestasis, cholangitis/cholangiohepatitis, and cholecystitis. The latter disease processes usually cause an elevation of both the ALT and ALP, however, Chance's blood work only shows an elevated ALT enzyme activity, which is suggestive of hepatocellular damage. The hyperechoic walls of

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the portal veins are hyperechoic, which may be due to the presence of inflammation, deposition of fat and/or fibrosis.

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Canine

- The presence of sludge in the gallbladder is often clinically insignificant, however, some dogs may show clinical signs of gastroesophageal reflux disease (GERD), therefore, obtaining a history regarding signs of GERD from the client is suggested. Treatment with an anti-acid, proton pump inhibitor or ursodeoxycholic acid may be required depending on the patient's history.

**BREED**

Pit Bull

- A few subtle abnormalities are observed with the gastrointestinal tract. A large amount of gas and a small amount of ingesta and fluid are present within the lumen of the stomach, in addition to a mild ileus. Although the duodenum is within normal limits in thickness and the definition of the wall layers is preserved, mild stippling and striations of the mucosa is present. The latter may occur in patients suffering from inflammation of the GI tract, secondary to inflammatory bowel disease. There are no obvious signs of neoplasia. An evaluation of Chance's diet is suggested, inflammation of the GI tract can cause an elevated ALT enzyme activity.

**SEX**

Neutered Male

**AGE**

8 Years

- Subjectively, a very subtle and diffuse "grainy" or miliary echotexture is present, however, this may be normal and due to the setting of the ultrasound machine. No focal lesions are observed and no abnormalities are observed with its vasculature.

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- Mild renal changes are present, which are suggestive of age related degeneration.
- Signs of active pancreatitis or neoplasia are not appreciated.

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- Finally, an evaluation of the serum thyroxin concentration and TSH is suggested as hypothyroidism can cause an increase in the ALT enzyme activity without a concurrent elevation in the ALP.

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

A few options exist in trying to obtain a cause for the elevated ALT enzyme activity on Chance's blood work.

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A fine needle aspirate (FNA) of the liver may be pursued, however, a tissue biopsy is required to evaluate the hepatic architecture.

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Please note, a FNA of the spleen may be warranted depending on the experience with your ultrasound machine and interpretation of "normal spleens". The "miliary" or granular architecture is extremely subtle and may be normal for your ultrasound machine. However, if there is a doubt, a FNA of the spleen is suggested.

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A coagulation profile is suggested prior to performing a FNA. Administration of vitamin K (0.5 mg/kg SQ q8-12h for 1-3 doses) is suggested even if the results of the PT/PTT are within normal limits.

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If further, more "invasive" diagnostics are not pursued for the moment, the following options are possible:

Obtaining a history regarding signs of GERD from the client is suggested. Treatment with an anti-acid, proton pump inhibitor or ursodeoxycholic acid may be required depending on the patient's history.

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Ideally, the carprofen should be discontinued. In order to prevent rebound pain as a result, the drug



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should be gradually weaned over one week, while gabapentin is introduced. Cartophen may also be introduced to help decrease discomfort associated with osteoarthritis, in addition to natural supplements, which contain curcumin, omega-3 fatty acids, glucosamine chondroitin, collagen, etc. Laser therapy and/or acupuncture may also be considered.

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If Chance is in severe pain due to OA, an opioid could be added to the above as an adjunct therapy, in addition to a low dose of a different non-steroidal anti-inflammatory, such as grapiprant (Galliprant).

**BREED**

Pit Bull

+/- A hepatoprotectant may also be prescribed, with a re-evaluation of liver enzyme activities, including a GGT, in 4 to 6 weeks. Although if too many changes are performed at the same time, it will be difficult to ascertain the cause of the improvement (or lack of).

**SEX**

Neutered Male

An evaluation of Chance's diet is suggested, inflammation of the GI tract can cause an elevated ALT enzyme activity.

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Cholestasis, cholangitis/cholangiohepatitis and cholecystitis cannot be excluded and secondary ascending bacterial infections may occur. Although indiscriminate use of antibiotics is not normally recommended, one could begin treatment with a broad-spectrum antibiotic and reassess liver enzyme activities, including a GGT, in approximately 4 weeks, while Chance is *still receiving* the antibiotics. If an improvement is observed, the antibiotic should be continued for an additional two weeks.

**WEIGHT**

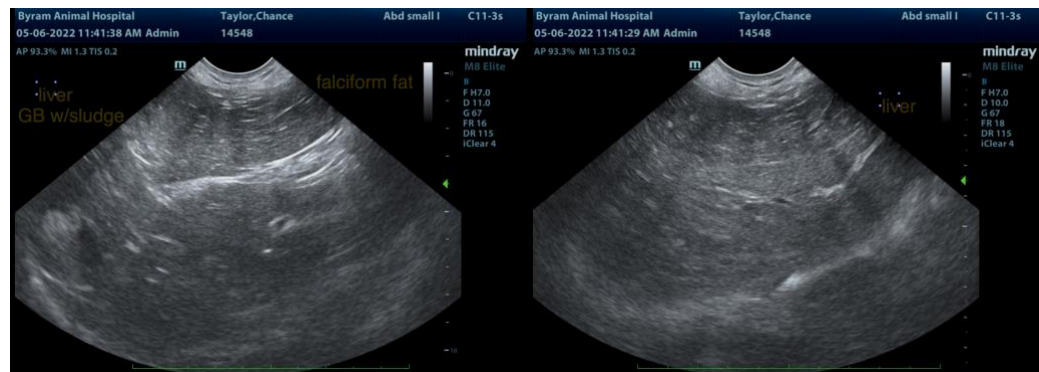
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Finally, an evaluation of the serum thyroxin concentration and TSH is suggested as hypothyroidism can cause an increase in the ALT enzyme activity without a concurrent elevation in the ALP.

Signs of age related degeneration of both kidneys are observed. A urinalysis is suggested. The sample may be collected by free catch, but the first morning sample is suggested to obtain the most concentrated urine specific gravity.

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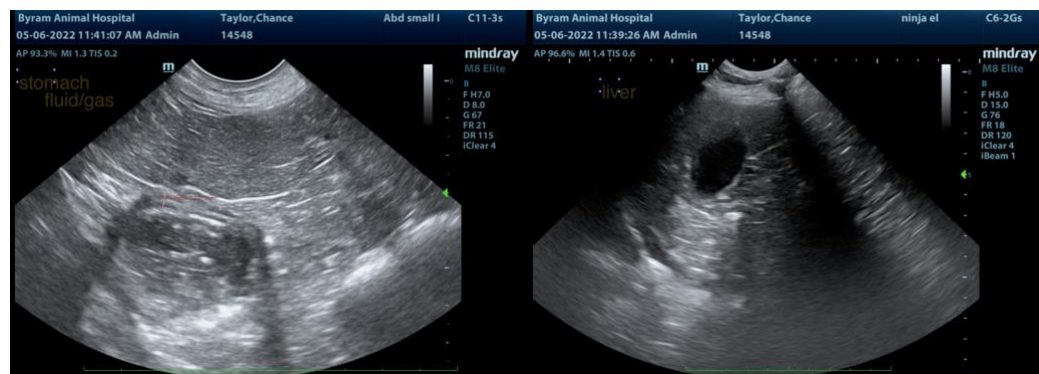
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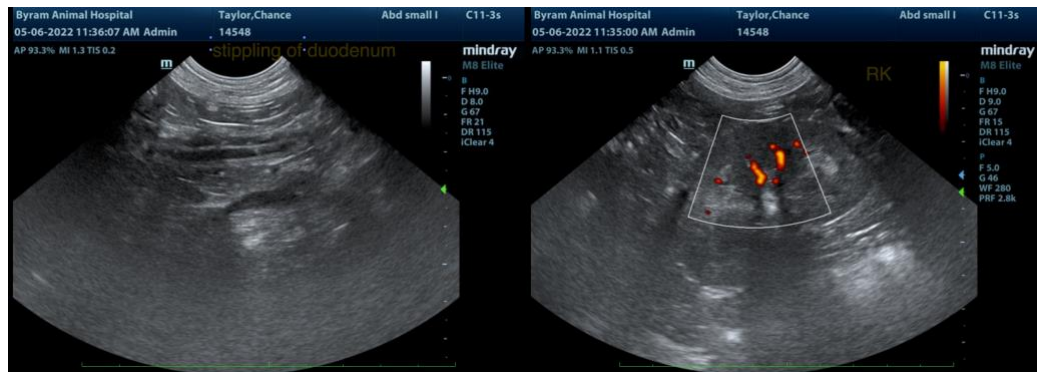
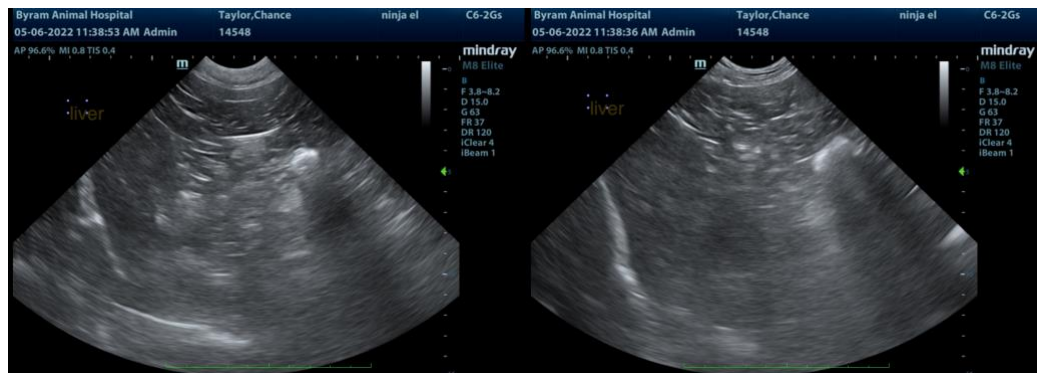
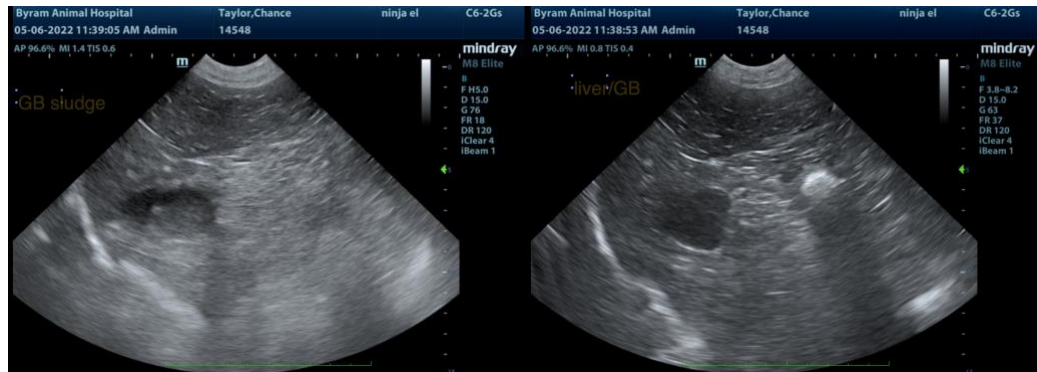
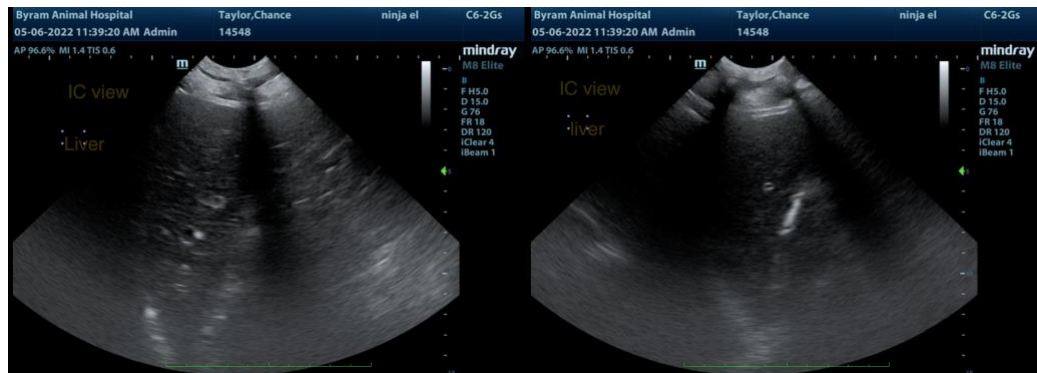
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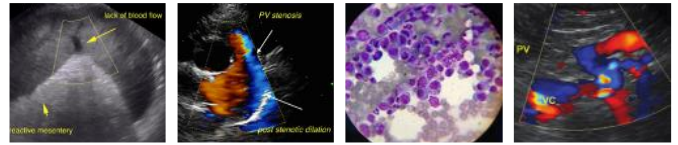
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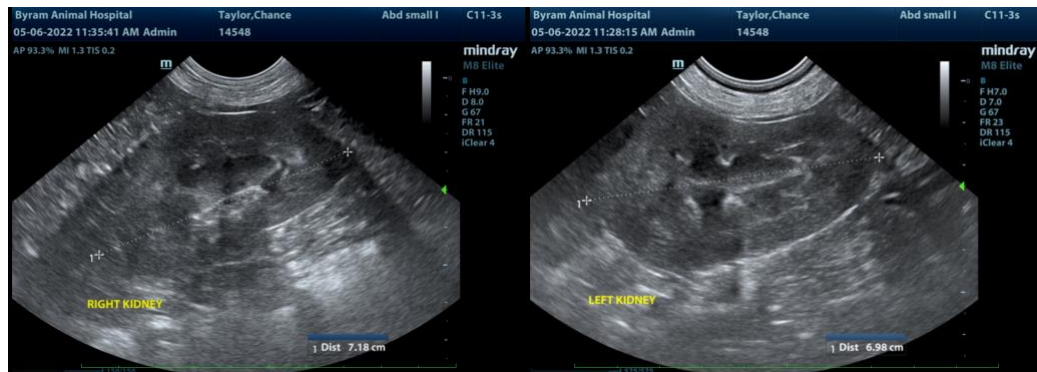
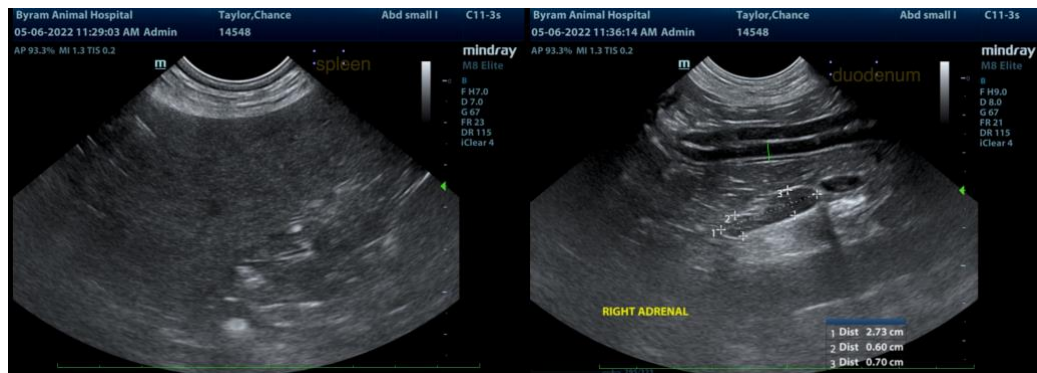
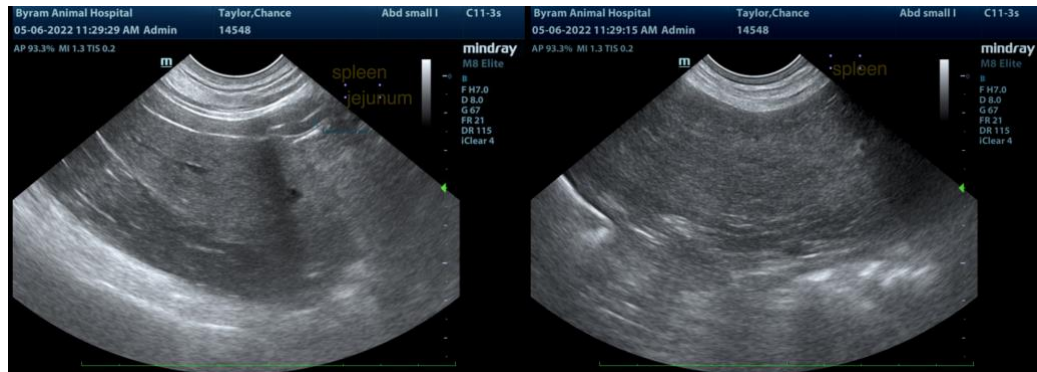
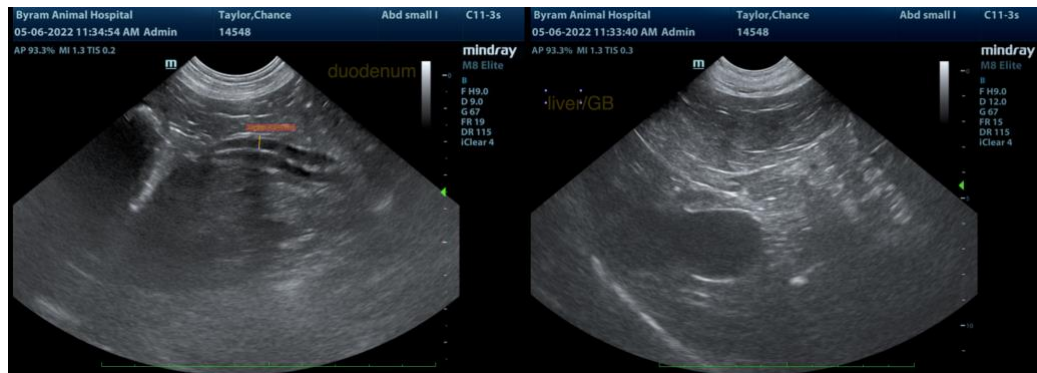
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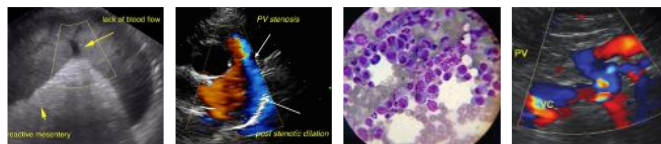
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**SEX**

Neutered Male

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.

**AGE**

8 Years

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.

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

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