

**PATIENT**

Demidji Stone

**SPECIES**

Feline

**BREED**

Siamese

**SEX**

Neutered Male

**AGE**

13 Years

**WEIGHT**

2.54 kg

**INTERPRETED BY**Beth Johnson, DVM  
DACVIM**IMAGING PERFORMED BY**

Tom McNeill

**HOSPITAL NAME**

SVS Imaging CT

**REFERRING VET**

Dr. Patton

**INVOICE**

20853

**DATE**

1/30/23

**PRESENTING CLINICAL SIGNS**

History: Demidji presented to the MVS Emergency Service on Jan 28, 2023, at 9:50am, for evaluation of elevated liver/kidney values, inappetent. A couple weeks ago Demidji's breath started to smell so owner made an appointment of PCDVM. PCDVM drew blood and got the results back Thursday which showed elevated kidney/liver values and a high neutrophil count. PCDVM gave a convenia injection and SQ fluids yesterday then sent home. Today Demidji has had no interest in food but is still drinking milk. He has been hospitalized over the weekend pending abdominal ultrasound.

Abnormal PE/Chem/CBC/UA Results: pDVM bloodwork 1/26: ALT 890, T. Bili 10.5 1/28: T. Bili 8.9 1/29: T. Bili 7.6 1/30: T. Bili 8.2

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

Urinary bladder is adequately distended. It has a normal uniform wall thickness. Contents include primarily anechoic fluid with occasional echogenic non-shadowing debris, most consistent with incidental suspended lipid in a cat, possibly combined with exfoliated cells, mucous and/or small blood clots. Both sterile inflammation as well as urinary tract infection can also present with echogenic debris. No masses or cystoliths are observed. The trigone and visible pelvic urethra are normal in thickness with a smooth mucosal surface.

Kidneys are bilaterally uniformly enlarged/swollen, with an overall hyperechoic echogenicity and marked loss of corticomedullary distinction. Normal smooth peripheral margination and shape are maintained. The renal pelvis is dilated with anechoic fluid and hyperechoic thickened pelvic fat. No overt evidence of neoplasia or mineral is observed. The perinephric area is enhanced by hyperechoic fat and mesentery. The left kidney measures 4.36. The right kidney measures 4.14 cm. Both proximal ureters are mildly dilated as well, the left measuring 0.17 cm, the right measuring 0.15 cm without a visible obstructive cause noted in either ureter.

**Adrenal Glands**

Left adrenal gland is normal in size (0.55 cm), shape and overall architecture, echogenicity and echotexture. Visible surrounding vasculature appears normal.

Right adrenal gland is normal in size (0.42 cm), shape and overall architecture, echogenicity and echotexture. Visible surrounding vasculature appears normal.

**Spleen**

Spleen is subjectively large in size with a mildly swollen but smooth capsule. Parenchyma is normal and homogenous in echogenicity and echotexture. No focal nodules or masses are observed. Splenic vasculature appears normal.

**Liver**

Liver is subjectively enlarged (swollen contour) without disruption of architecture. It has a normal homogenous echotexture. Parenchyma is diffusely hyperechoic characterized by less prominent than normal portal vein walls and increased echogenicity relative to the spleen and falciform fat. No focal lesions are observed. Visible vasculature appears normal without distension or congestion. The intrahepatic biliary tree is diffusely mildly dilated.

Gallbladder is moderately overdistended with echogenic debris, including some gravity dependent debris, as well as more organized aggregated centralized non-gravity-dependent sludge. The wall is

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mildly thick, irregular and hyperechoic. Dorsal to the gallbladder, there is an approximately 2.0 cm in diameter cystic structure, believed to be a markedly dilated cystic duct. The common bile duct is also tortuous in appearance and mildly dilated all the way to the level of the duodenal papilla, where there contains intraluminal echogenic density, consistent with debris and sludge, however, a small nodule or tissue cannot be definitively ruled out.

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***Gastrointestinal***

The visible stomach wall is normal in thickness and layering. The lumen of the stomach is mildly distended with echogenic non-shadowing luminal contents and gas consistent with normal ingesta. There is no evidence of obstruction, foreign material or infiltrative disease. Pyloric outflow tract appears patent.

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The visible small intestine demonstrates areas of mildly thick muscularis layer relative to mucosa (disruption of the normal 1:3 muscularis:mucosa ratio), most notable at the level of the ileum/ileocecocolic junction. Small intestinal submucosa is slightly irregular, thick and hyperechoic, without evident loss of layering appreciated. The lumen of the small intestine is mildly distended with echogenic non-shadowing luminal contents and gas consistent with normal ingesta. There is no evidence of obstruction or foreign material noted.

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The visible colon is normal in wall thickness and layering. Contents are consistent with normal formed feces and gas.

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***Pancreas***

The observed pancreas is prominent (enlarged) in size, hypoechoic to surrounding tissue and irregular in shape with a swollen undulating contour. Pancreatic duct dilation is noted. Enhanced hyperechoic ill-defined surrounding fat is noted.

**INTERPRETED BY**Beth Johnson, DVM  
DACVIM***Free Abdomen***

A small amount of anechoic free fluid is noted, as are prominent gastric pancreaticoduodenal mesenteric and medial iliac lymph nodes.

**ULTRASONOGRAPHIC FINDINGS****IMAGING PERFORMED BY**

Tom McNeill

**Primary Findings**

- These ultrasound findings are consistent with cholangitis/acute pancreatitis and likely, at least mild infiltrative bowel disease, consistent with classic "triaditis". However, given the concurrent appearance of the spleen, liver, and diffuse lymphadenopathy, etc., an infiltrative disease, including potentially infiltrative neoplasia, such as lymphoma, is also considered a differential.
- Hyperechoic hepatomegaly – This appearance is most consistent with benign hepatic lipidosis. Infiltrative disease such as amyloidosis or round cell neoplasia, such as mast cell tumor or less likely, lymphoma, is also possible.
- Hypersplenism – can be associated with congestion caused by sedation (if sedated) but can also be associated with diffuse infiltrative disease. Both benign conditions such as extramedullary hematopoiesis, lymphoid hyperplasia, amyloidosis (leave amyloidosis out if canine) as well as infiltrative neoplastic diseases such as round cell neoplasia should be considered.

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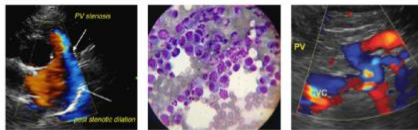
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- Additionally, there is concern for pyelonephritis – These changes are most consistent with chronic pyelonephritis. Chronic scarring and fibrosis and/or chronic nephrolith passage can also result in these pelvic dilation changes. Early infiltrative disease cannot be ruled out but is considered less likely.

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**Secondary Findings**

- Urinary bladder debris

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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

Further diagnostic recommendations vs immediate treatment, followed later by diagnostics, depends on patient stability. Having said that, if not recently evaluated, urinalysis and, if indicated based on urinalysis results, urine culture is recommended. If protein is present in an otherwise quiet sediment, protein quantification with a urine protein to creatinine ration is recommended. Additionally, a gastrointestinal malabsorption panel (including cobalamin, folate, TLI and PLI) to Texas A&M GI Laboratory is recommended for further evaluation of GI and pancreatic function. Additionally, if the patient is stable enough, a fine needle aspirates of the spleen, liver and enlarged lymph nodes could be considered if patients coagulation status is appropriate.

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In the meantime, treatment recommendations include fluid therapy, anti-emetics, gastroprotectants, hepatic nutraceuticals such as ursodiol and/or Denamarin, and broad-spectrum antibiotics. Nutritional support is critical to prevent/manage concurrent hepatic lipidosis, so appetite stimulants and/or, if indicated, feeding tube placement is also recommended. However, given the reported treatment so far and static, only mild improvement in the increased total bilirubin, combined with the appearance of what is believed to be this patients cystic bile duct, surgical intervention may be warranted now to help further evaluate the biliary system and alleviate post hepatic obstruction. If surgery is performed, biopsies of the enlarged lymph nodes, bowel, liver, +/- spleen, etc., should be considered.

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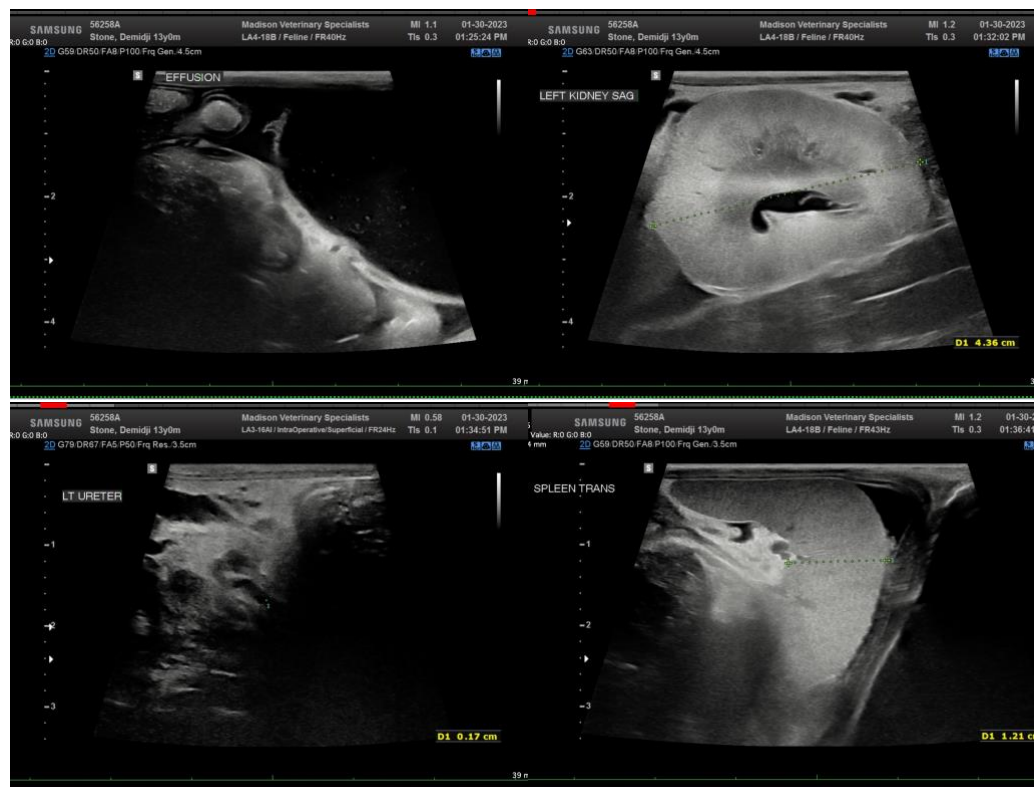
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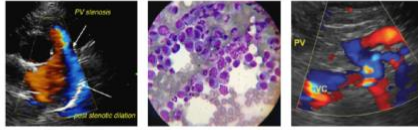
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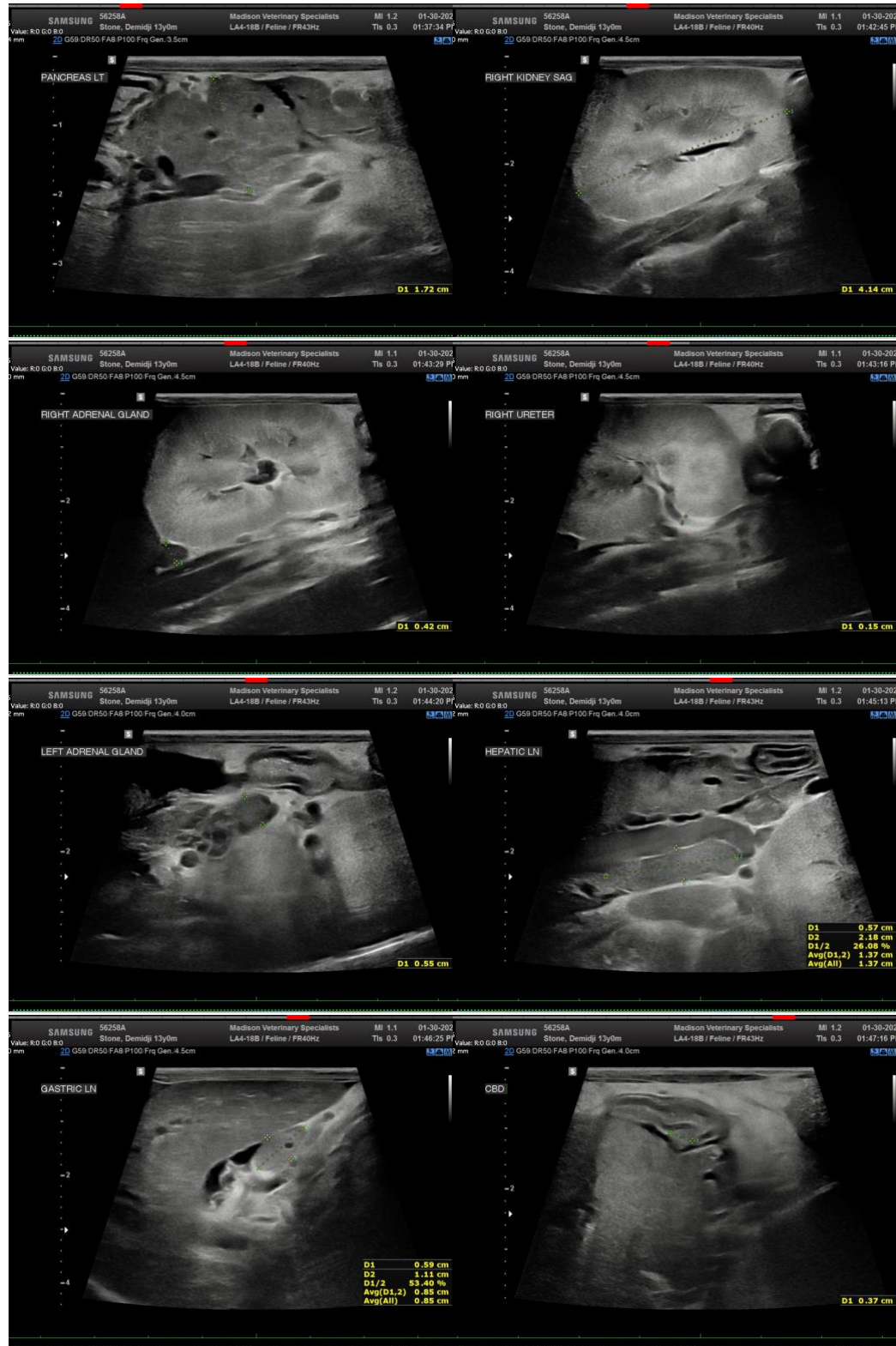
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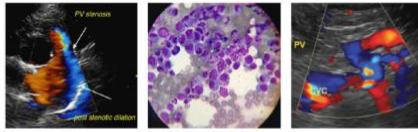
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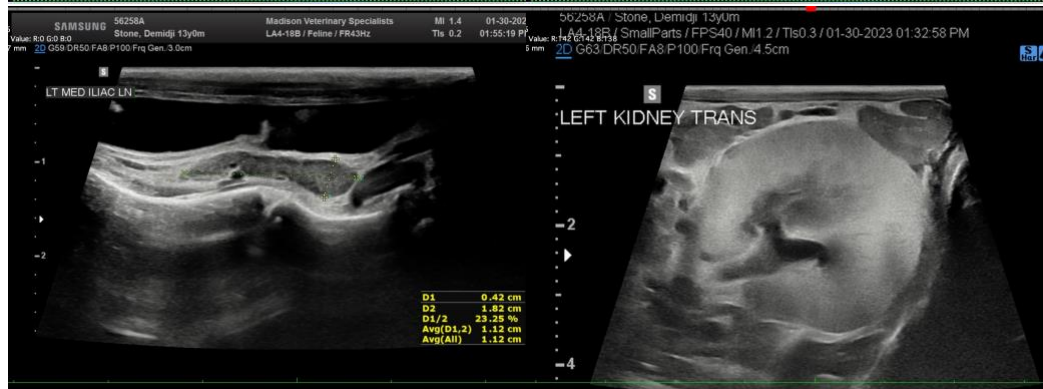
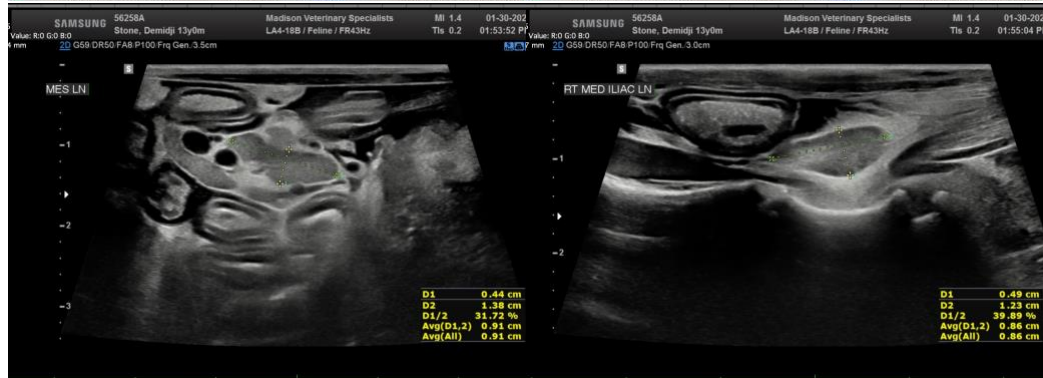
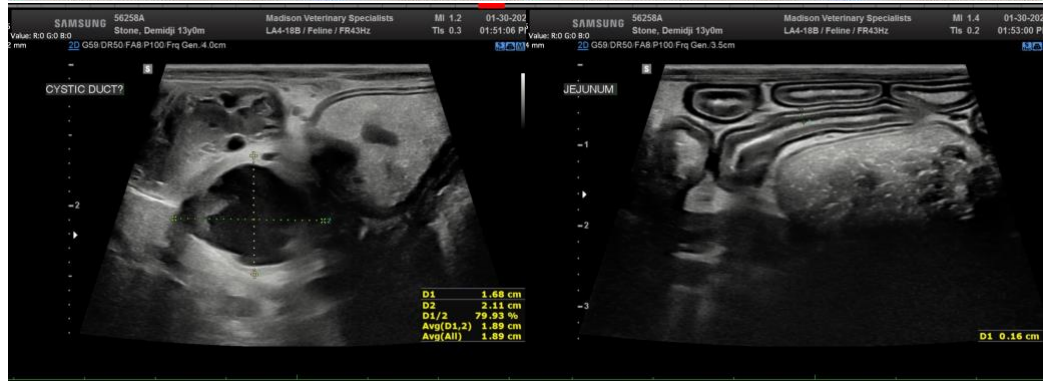
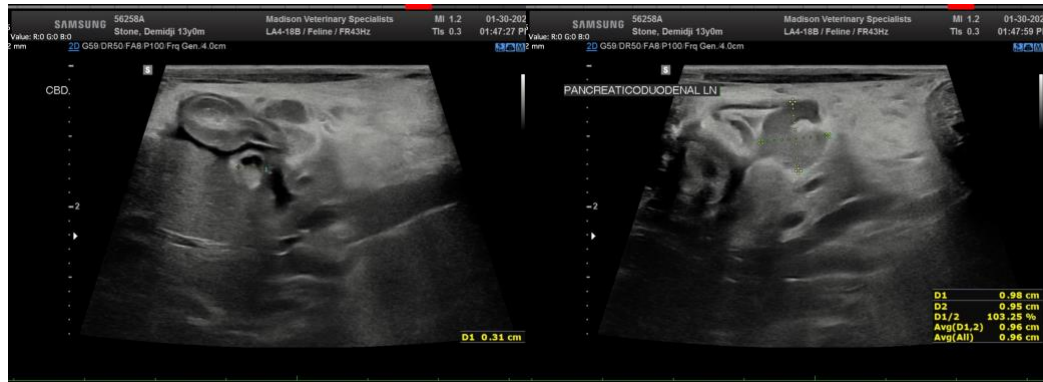
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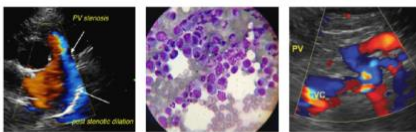
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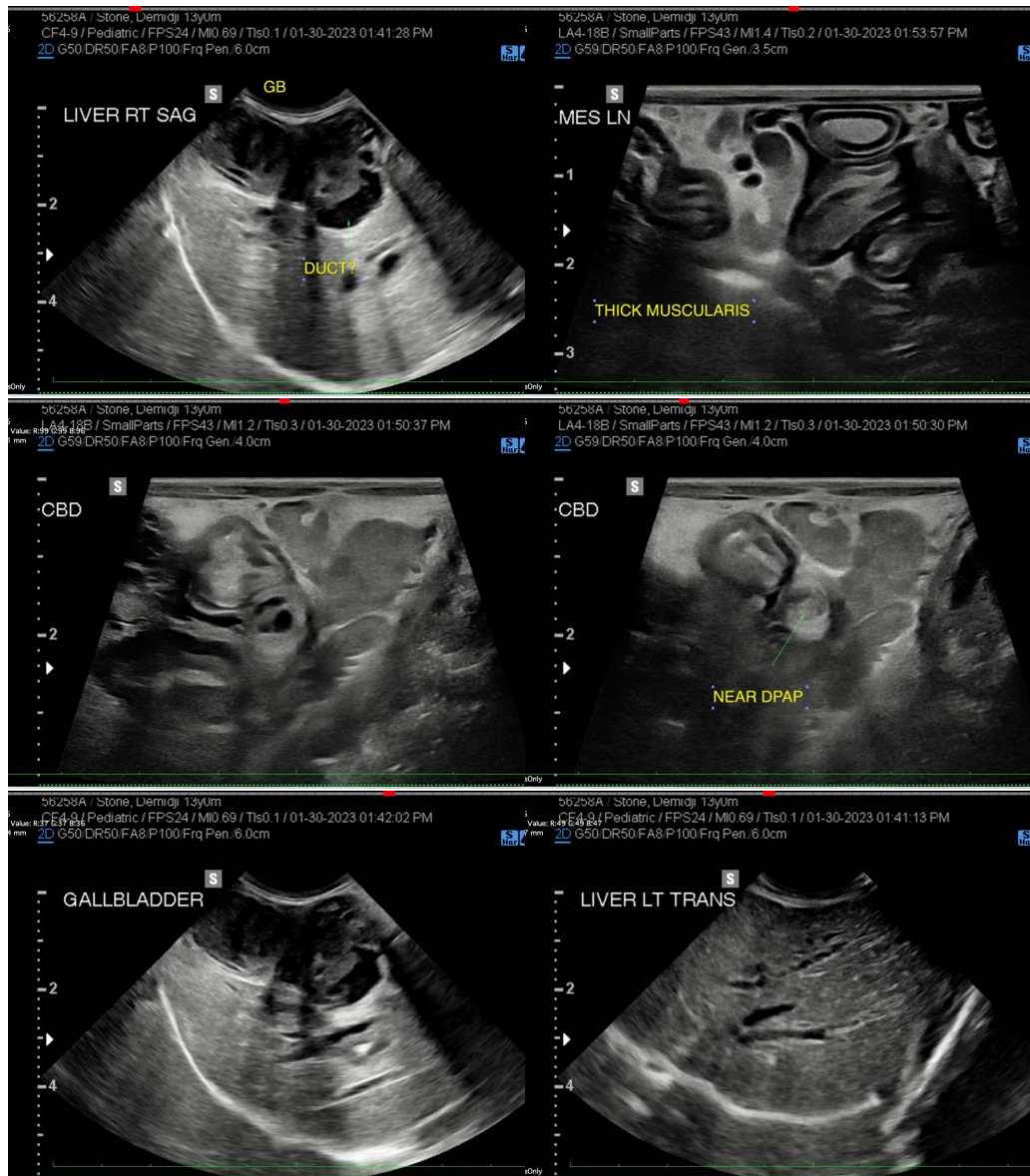
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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