



PATIENT

Toby Jr McDowell

SPECIES

Canine

BREED

Shih Tzu

SEX

Neutered Male

AGE

6 Years

WEIGHT

13.4 Pounds

INTERPRETED BY

Lisa Carioto, DVM,
DVSc, Diplomate
ACVIM

IMAGING PERFORMED BY

Dr. Jo Goodman

HOSPITAL NAME

Evandale-Blue Ash Pet
Hospital

REFERRING VET

Dr. Jo Goodman

INVOICE

36567

DATE

3/29/22

PRESENTING CLINICAL SIGNS

Prev hx of struvite sand/debris and urethral obstruction. Presented today for an ultrasound due to an elevated ALT. Previous elevations in 2019 and 2020 but would trend back down into the normal range. Owner could not get patient in right away for a an ultrasound last month when bloodwork was performed 2/3/22, so we started amoxi tri clav and denamarin and recheck ALT on 2/25/22 and it remained elevated. Started ursodiol in meantime until ultrasound today. No signs of increased thirst, urination or hunger. Currently on HSD c/d wet food with water mixed in it.
Abnormal PE/Chem/CBC/UA Results: ALT trends: 3/25/19 - 94 6/5/19 - 129 7/6/19 - 85 1/4/20 - 221 2/8/20 - 156 3/7/20 - 110 1/5/21 - 56 3/3/21 - 79 2/3/22 - 195 2/25/22 - 312

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

A cystolith is present within the urinary bladder. It measures 3.3 mm. Another mineralization (without acoustic shadow) is evident at the trigone, as well as within the prostatic urethra, respectively. The urinary bladder is inadequately filled, therefore, the bladder wall cannot be adequately measured.

The left kidney is within normal limits in size (3.60 cm) for the patient's weight. The capsule is smooth. Its overall architecture, including the definition of the cortico-medullary junction, is preserved. Very small, punctate, mineralizations of the diverticulae are present; there are no signs of nephroliths or pyelectasia. The surrounding mesentery is not hyperechoic.

The right kidney findings are similar to the left.

Adrenal Glands

The left adrenal gland measures 0.38 cm at the cranial pole, 0.40 cm at the caudal pole, and 1.71 cm in length. No abnormalities are noted with the gland's shape, overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

The right adrenal gland measures 0.31 cm at the cranial pole, 0.34 cm at the caudal pole, and 1.70 cm in length. No abnormalities are noted with the gland's shape, overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

Spleen

The spleen is within normal limits in size, architecture, echotexture, and echogenicity. The capsule is smooth. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified.

Liver

There are no obvious signs of hepatomegaly from the portion of the liver evaluated and its borders are smooth and sharp. The liver's echotexture is mildly coarse with a granular pattern. It is diffusely hyperechoic; it is isoechoic to the spleen. Hyperechoic punctate foci are scattered throughout the entire parenchyma, which may be due to mineralization or fibrosis. Perivascular cuffing is also visualized, which is most likely due to deposition of fat. No obvious abnormalities are observed with the hepatic vessels visualized.

A moderate amount of echogenic material/debris (sludge) is present within the lumen, which appears inspissated and nodular. Furthermore, strings of mucus are attached to the gallbladder wall. Although



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these findings may be clinically insignificant, cholestasis cannot be excluded. There are no obvious signs of choleliths or neoplasia. Signs of cholecystitis are not appreciated

Gastrointestinal

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The gastric wall and pylorus are normal in thickness. There is no loss of definition of the normal architecture of the layers of the stomach wall. No obvious abnormalities are observed with its peristalsis.

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The duodenum presented no abnormalities.

Pancreas

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No overt abnormalities are observed with regard to the left limb of the pancreas' echogenicity or echotexture. There is no evidence of hyperechogenicity of the surrounding mesenteric fat.

The right pancreatic findings are similar to the left limb.

Other

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6 Years

Lymph nodes: No abnormalities are observed.

Abdominal effusion is not visualized.

ULTRASONOGRAPHIC FINDINGS

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- Cystoliths are present within the urinary bladder, as well as mineralizations at the level of the trigone and within the prostatic urethra. The latter two appear to be mineralizations rather than calculi as acoustic shadowing is not visualized. There are no signs of an obstruction.

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- Mineralizations are present in both kidneys, therefore, diet and/or genetics may be a component of the Toby's cystolithiasis.
- A moderate amount of echogenic material/debris (sludge) is present within the lumen, which appears inspissated and nodular. Strings of mucus are also attached to the gallbladder wall. Although these findings may be clinically insignificant, cholestasis cannot be excluded.

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- Both reactive and vacuolar hepatopathies are suspected. These sonographic changes are often due to underlying abnormalities, such as hepatitis, however, cholestasis and cholecystitis cannot be excluded. Hepatitis may be primary or secondary, therefore, an evaluation for exposure to medications, including non-steroidal anti-inflammatories, natural supplements, new products being used in the house, or possible inadvertent toxin exposure, etc. is suggested.

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

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A urinalysis and urine culture and sensitivity are recommended to exclude a urinary tract infection due to the presence of cystoliths.

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An in-house urinalysis is suggested to determine if crystalluria is present, and the type of crystals. If struvites are present, and the culture is positive, dietary dissolution may be attempted.

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If a cystotomy is performed, a liver biopsy is recommended at the same time. A coagulation profile prior to the procedure, in addition to administration of vitamin K, even if the coagulation profile is within normal limits, is suggested.

Ursodeoxycholic acid (Ursodiol) may be continued if it is well tolerated. A re-evaluation of the gall



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bladder is suggested in 3-4 months to evaluate the effect of Ursodiol.

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The adrenal glands are at the low end of the normal reference range. A baseline cortisol is suggested, particularly prior to pursuing a stressful procedure, such as a cystotomy, to exclude hypoadrenocorticism.

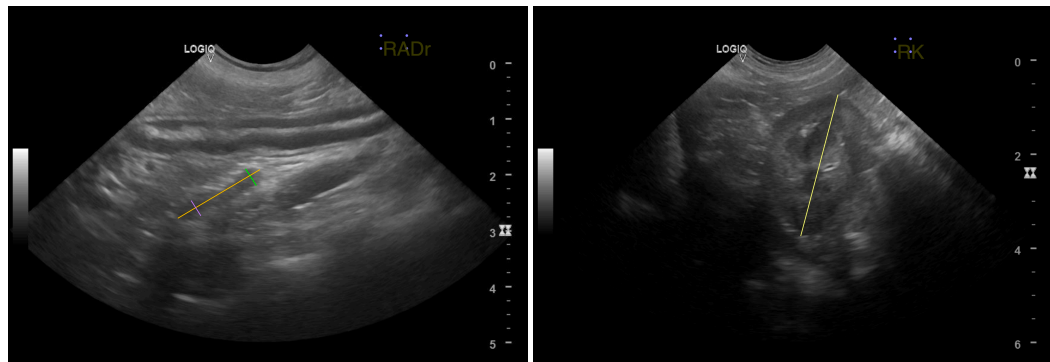
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A FNA of the liver may be pursued, however, a tissue biopsy is required to evaluate the hepatic architecture. Cholecystitis, cholangitis/cholangiohepatitis cannot be excluded despite the absence of abnormalities with the gallbladder and bile ducts. Secondary ascending bacterial infections are common. Although indiscriminate use of antibiotics is not recommended, one could start treatment with a broad-spectrum antibiotic and reassess liver enzyme activities, including a GGT, in a few weeks.

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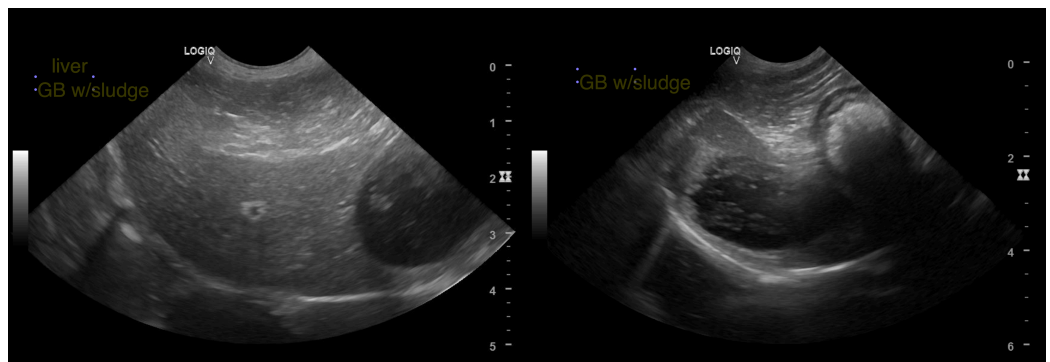
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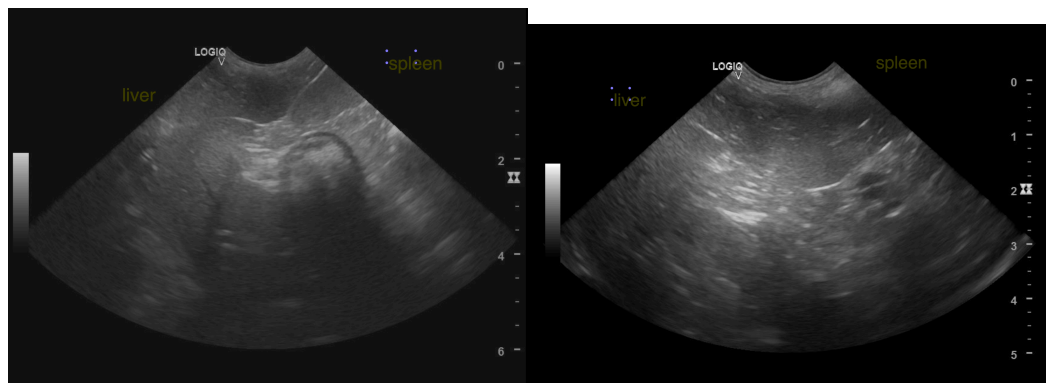


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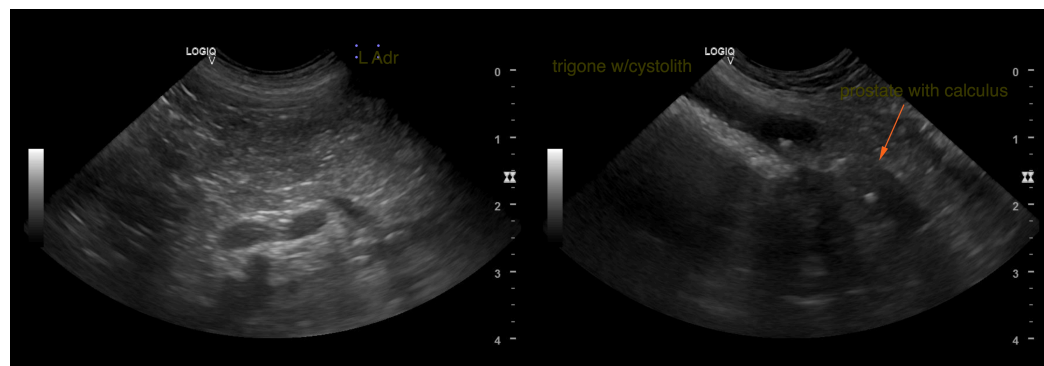
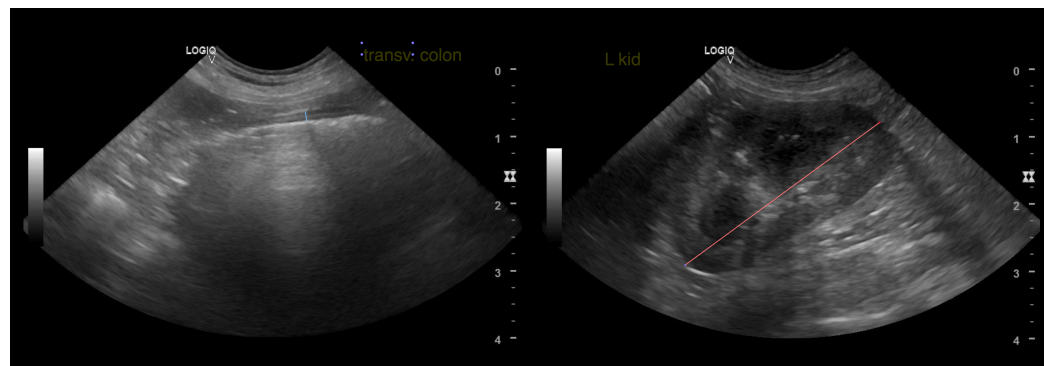
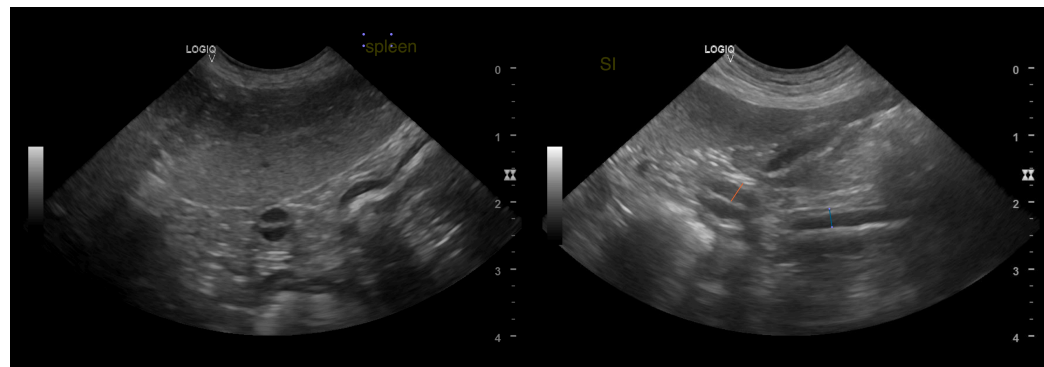
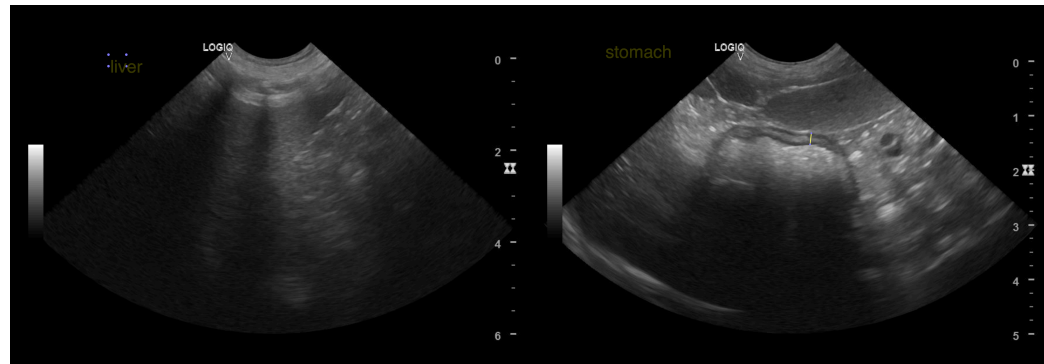
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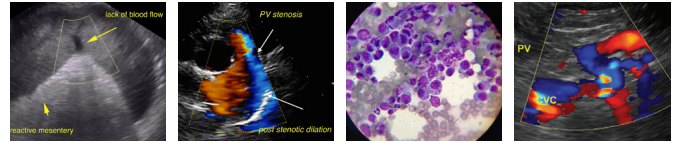
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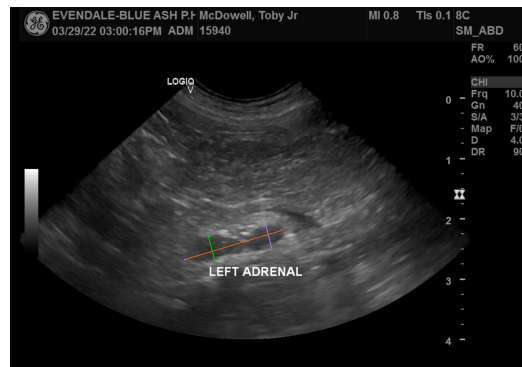
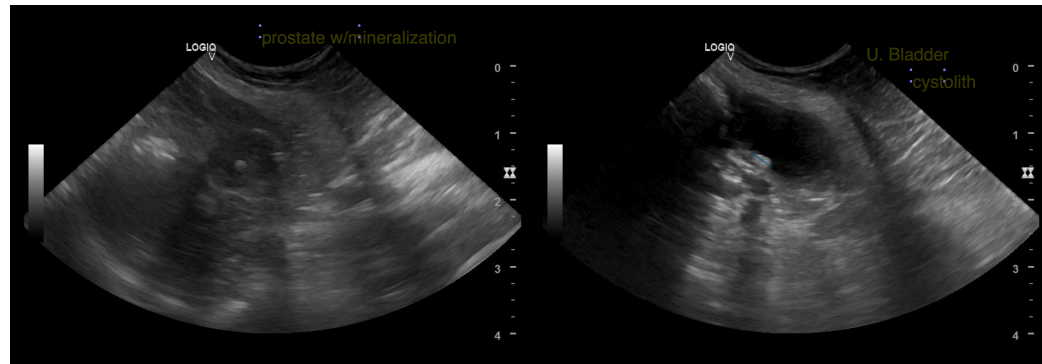
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

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