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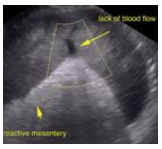

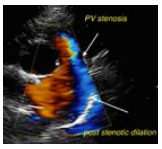

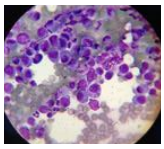
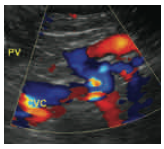


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1-800-838-4268 info@sonopath.com

**PATIENT**
Charlie Gebhardt

**SPECIES**
Canine

**BREED**
Lab Mix

**SEX**
Neutered male

**AGE**
10 ½ years

**WEIGHT**
36.5 lbs

**INTERPRETED BY**
Lisa Carioto, DVM, DVSc, Diplomate ACVIM

**IMAGING PERFORMED BY**
Emily Kirk

**HOSPITAL NAME**
Shiloh AH

**REFERRING VET**
Dr. Eyrich

**INVOICE**

**DATE**
4/29/22

## PRESENTING CLINICAL SIGNS

Patient was diagnosed with a ruptured liver mass and incidental splenic nodule in April 2020. P underwent left lateral liver lobectomy and splenectomy after developing a hemoabdomen due to acute tumor rupture. Patient also had a nodule on the caudal pole of the left adrenal gland which was incidentally found during work-up for his ruptured liver mass. Owner is interested in pursuing abdominal ultrasound for continued monitoring to ensure that there are not masses recurring within P's abdomen. Overall, P has been doing well at home with no changes in behavior, thirst, or appetite. Abnormal PE/Chem/CBC/UA Results: ALK 1,042 on routine lab work at wellness visit. Previously 1,600 at time of liver tumor mass diagnosis. Remainder of lab work WNL.

## ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

### *Urinary System*

The urinary bladder is underfilled, thereby affecting the ability to accurately measure wall thickness. The wall is very mildly irregular. No abnormalities are noted with the trigone and there is no evidence of sediment, cystoliths, polyps, or a mass. The proximal urethra is not visualized.

### *Prostate*

The prostate is homogenous and within normal limits for a neutered male.

### *Kidneys*

The **left** kidney measures 5.77 cm. The capsule is smooth. A thick hyperechoic band is observed along the medulla, traversing parallel to the corticomedullary junction, which accentuates the definition of the cortico-medullary junction. Very mild mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. The surrounding mesentery is not hyperechoic.

The **right** kidney measures 6.05 cm. Findings are similar to the left kidney.

### *Aortic bifurcation/trifurcation*

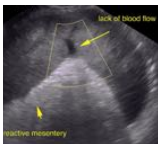
No abnormalities observed.

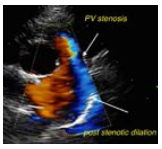
### *Adrenal Glands*

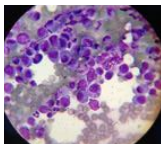
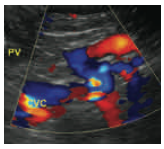
The **left** adrenal gland measures 0.89 cm at the cranial pole,, 0.71 cm at the caudal pole and 2.87 cm in length. In another view, the cranial pole measures up to 1.41 cm. A well circumscribed nodule is observed, which is homogeneous and similar in echogenicity or echotexture to the remainder of the gland. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

The **right** adrenal gland measures 0.68 cm in diameter. No abnormalities are noted with the gland's overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

### *Spleen*



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Splenectomy performed April 2020 following an incidental finding of a nodule. Splenectomy performed at the same time a liver lobectomy was performed, due to a ruptured hepatic mass.

### *Liver*

High index of suspicion of hepatomegaly, however, size is better characterized at the time of the ultrasound or with radiographs. The liver's borders are smooth and sharp, with some lobes very mildly rounded. A diffuse, moderately coarse or granular echotexture is observed, which may be due to a reactive hepatopathy. An obvious mass is not visualized.

The gall bladder is moderately to markedly distended with echogenic material (sludge) within the lumen. The sludge is free floating, gravity-dependent, and inspissated. 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*

A moderate amount of gas is present within the lumen of the stomach. The gastric wall is within normal limits in thickness and the wall layers are well defined. No obvious abnormalities are observed with its peristalsis.

The small intestinal wall thickness, including the duodenum, is within normal limits and the definition of the wall layers is preserved. Abnormally dilated loops of bowel are not observed.

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

There are no obvious signs of a mass, foreign body, infiltrative disease or an obstruction in the gastrointestinal tract.

### *Pancreas*

The left and right limbs and body are visualized. The pancreas has a mildly coarse echotexture. These changes are most likely due to nodular hyperplasia and areas of fibrosis, which are considered secondary to age and possibly to previous episodes of pancreatitis, respectively. Signs of active pancreatitis or neoplasia are not appreciated.

**Other**

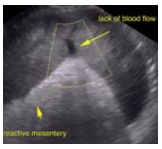
**Lymph nodes**

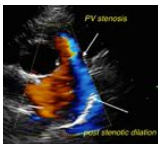
No abnormalities are observed

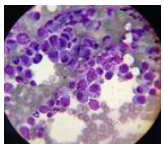
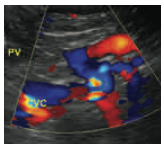
**Abdominal effusion** is not visualized.

## ULTRASONOGRAPHIC FINDINGS

- Splenectomy performed April 2020 following an incidental finding of a nodule. Splenectomy performed at the same time a liver lobectomy was performed, due to a ruptured hepatic mass.



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- An obvious cause for the elevated ALP enzyme activity is not identified on today's abdominal ultrasound. The hepatic changes observed are suggestive of vacuolar and reactive hepatopathies. The former may occur secondary to chronic illness or stress, including HAC. Labrador retrievers and Labrador mix breeds are predisposed to copper hepatopathy, which may be exacerbated due to diet, therefore evaluation of Charlie's diet is recommended. Cholestasis is possible, particularly with the accumulation of sludge in the gallbladder. Cholecystitis cannot be excluded despite the absence of sonographic signs. Other differential diagnoses, such as immune mediated hepatitis, hepatitis due to infectious causes, toxin exposure, medications, and natural supplements are considered less likely. If hyperbilirubinemia or a decreased urea, cholesterol or albumin have ever been identified on blood work, further work up should be pursued. A liver biopsy with copper quantification of tissue is required to diagnose copper hepatopathy.

- The presence of sludge in the gallbladder may not be clinically significant, 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 may be required depending on Charlie's history. Treatment with ursodeoxycholic acid should be considered.

- A homogeneous nodule is observed at the cranial pole of the left adrenal gland. The right adrenal gland is "plump", but remains within the normal reference range, measuring 0.68 cm. Differential diagnoses include a benign adenoma, as well as an adenoma and hyperplasia due to pituitary dependent hyperadrenocorticism (HAC). Although obvious sonographic signs of malignancy are not present, and neoplasia is considered less likely, one cannot exclude a pheochromocytoma or adenocarcinoma. Sonographic results should be correlated with clinical signs, i.e., further diagnostics are not necessary if a patient is not demonstrating clinical signs of HAC. However, an evaluation of Charlie's arterial blood pressure and a urine protein: creatinine ratio are recommended (see below).

- The pancreas' coarse, mildly heterogeneous echotexture are most likely due to nodular hyperplasia and areas of fibrosis, which are considered secondary to age and possibly to previous episodes of pancreatitis, respectively. There are no signs of active pancreatitis or neoplasia.

- Mild renal changes are present, which are suggestive of age related degeneration.

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

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 a few weeks.

A history regarding signs of GERD from the client is suggested. Treatment with an anti-acid, proton pump inhibitor may be required depending on Charlie's history. Treatment with ursodeoxycholic acid should be considered.

A re-evaluation of the gallbladder is strongly suggested 3-4 months following the initiation of ursodeoxycholic acid to ensure it is effective.

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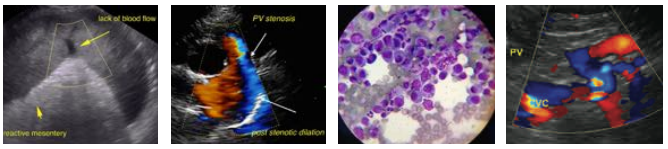


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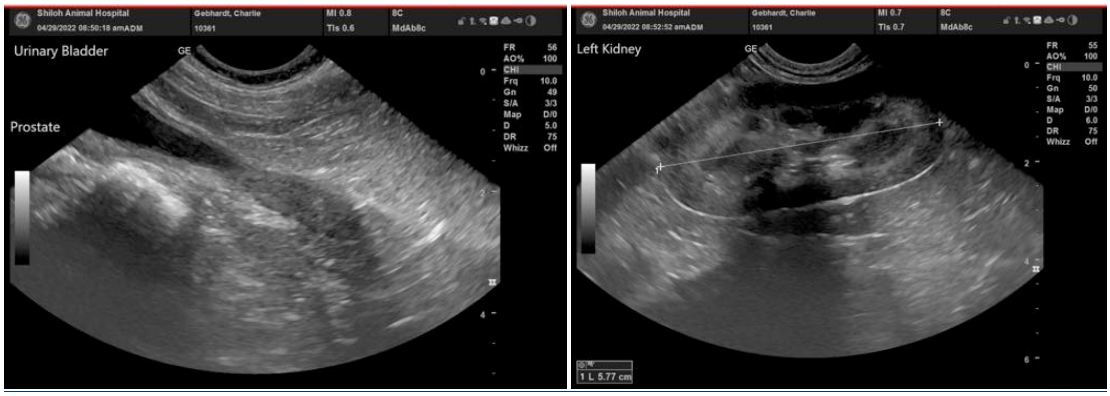
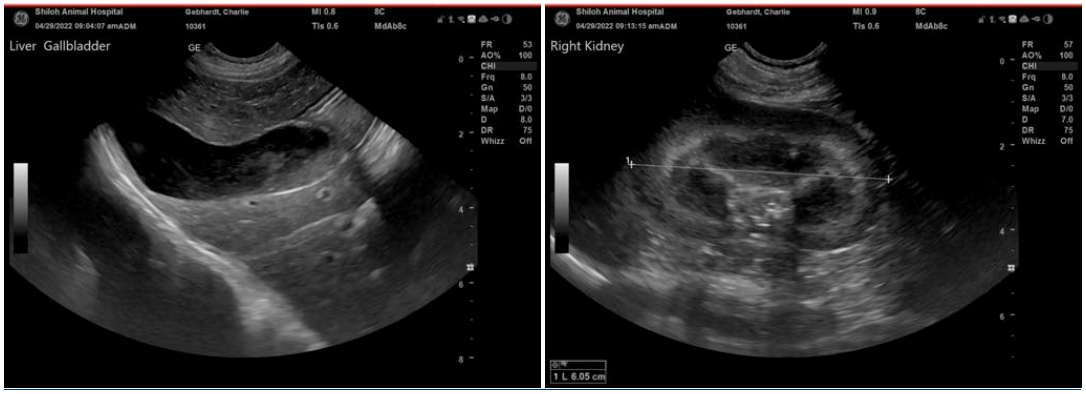
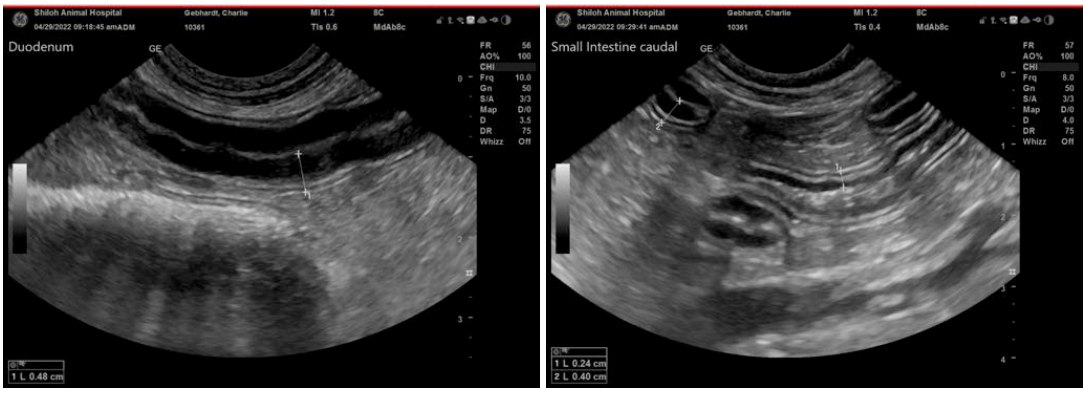
A urinalysis is suggested, +/- a urine culture and sensitivity (i.e., subclinical bacteriuria often occurs in patients suffering from HAC). If there are no signs of an infection, a urine protein: creatinine ratio is suggested.

An arterial blood pressure is recommended to rule out hypertension associated with hyperadrenocorticism, ideally in the presence of the client to minimize the effects of stress.

Further diagnostics for HAC are suggested if proteinuria and/or hypertension are present, or if Charlie is demonstrating clinical signs of HAC.



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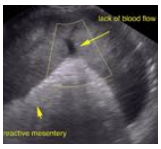
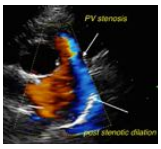
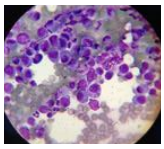
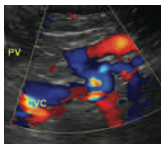

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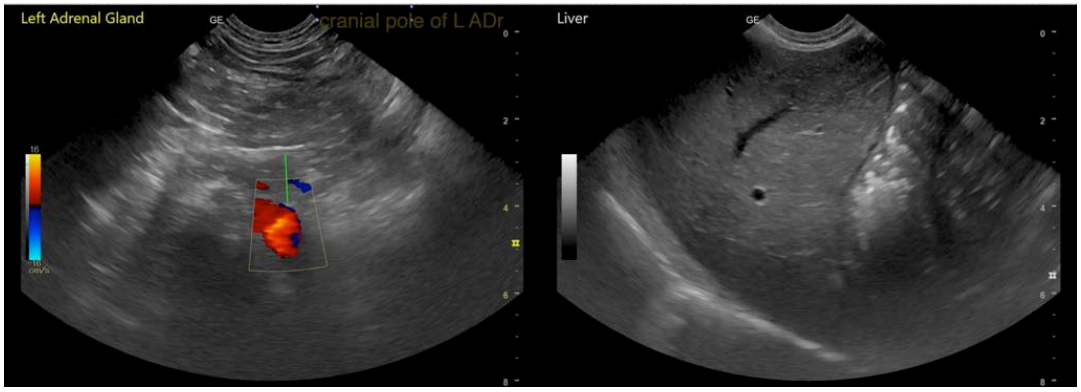


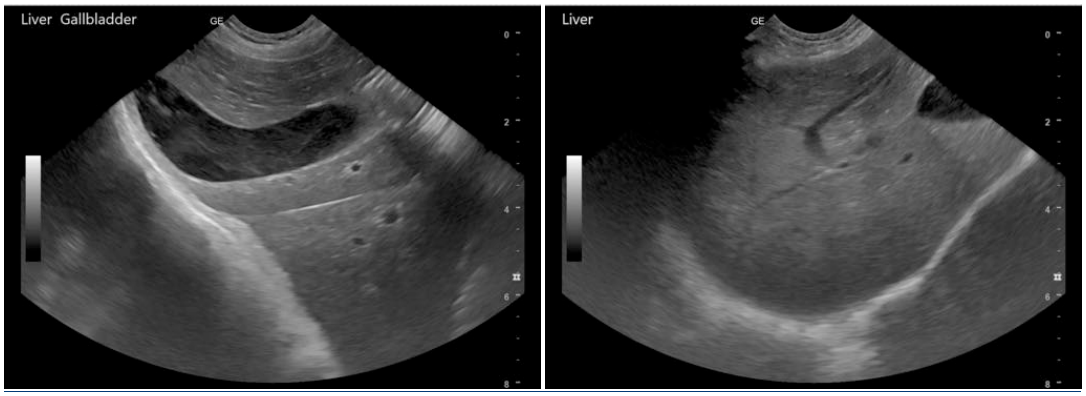


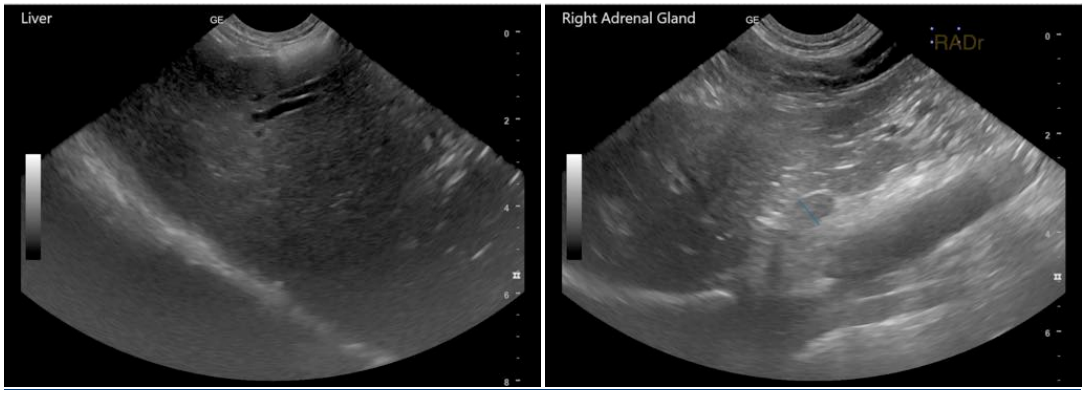


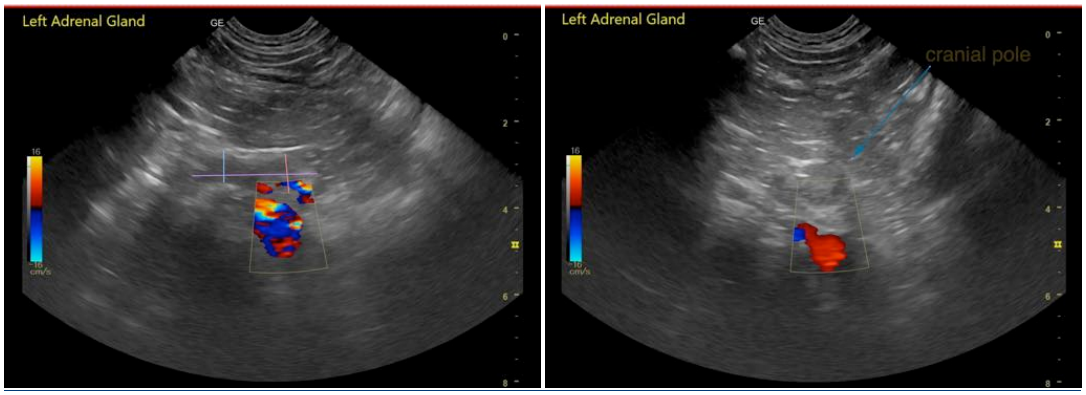

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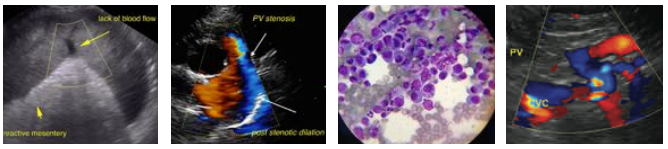


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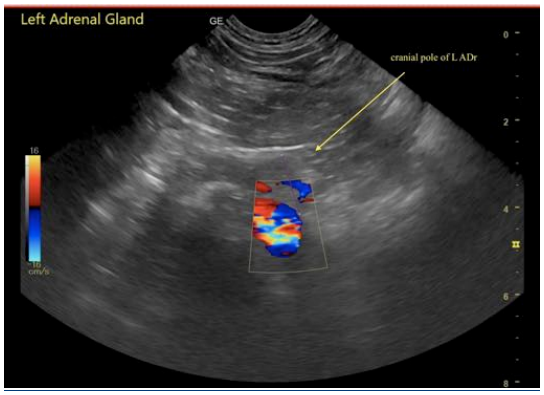


**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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.

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