



**PATIENT**

Sophia Finkle

**SPECIES**

Canine

**BREED**

Pomeranian

**SEX**

Spayed Female

**AGE**

11 years

**WEIGHT**

13.6 lbs

**INTERPRETED BY**

Lisa Carioto, DVM,  
DVSc, Diplomate  
ACVIM

**IMAGING  
PERFORMED BY**

Dr. Harris

**HOSPITAL NAME**

TotalBond VH

**REFERRING VET**

Dr. Rowan

**INVOICE**

30058

**DATE**

5/2/22

**PRESENTING CLINICAL SIGNS**

Sophia is a 11yr FS Pomeranian that presents today for being uncomfortable at home and not eating. On PE she is anxious and but BAR. Her abdomen had a fluid wave and a previously noted grade 4/6 heart murmur but no other significant findings. She is currently on Keppra, hydrocodone, and temeril P long term. A FAST scan was performed on 4-29-22 and free fluid was found with no obvious cause and gallbladder sludge. Bloodwork and xrays were performed to determine next steps as well. BW revealed mild elevations in ALT, ALP, GGT, and total bili. Xrays revealed an enlarged heart and liver. Amoxicillin, metronidazole, Denamarin, and gabapentin were sent home. Patient had more difficulty breathing over the weekend and crackles ausculted today. Responded to one dose IV Lasix.

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**

**Urinary System**

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. A trivial amount of free floating sediment is present, however, obvious signs of cystitis are not noted.

**Kidneys**

The **left** kidney measures 4.20 cm. The capsule is smooth, however, the cortex is mildly hyperechoic and a mild 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. An accumulation of intrapelvic fat is noted. The surrounding mesentery is moderately hyperechoic, however, this is most likely due to the presence of ascites.

The **right** kidney measures 4.50 cm. Findings are similar to the left kidney.

**Aortic bifurcation/trifurcation**

No abnormalities observed.

**Adrenal Glands**

The **left** adrenal gland measures 0.31 cm in diameter x 1.08 cm in length. It is thinner than normal. No abnormalities are noted with the gland's overall echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

The **right** adrenal gland measures 0.34 cm in diameter x 0.90 cm in length. It is thinner than normal. No abnormalities are noted with the gland's overall echogenicity or echotexture. No abnormalities are noted with the gland's overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.



<b>PATIENT</b>	<b>Spleen</b>
Sophia Finkle	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.
<b>SPECIES</b>	
Canine	
<b>BREED</b>	<b>Liver</b>
Pomeranian	Subjectively, the liver appears enlarged, however, size is better characterized at the time of the ultrasound or with radiographs. The liver's borders are smooth, but slightly rounded. The liver is hyperechoic compared to normal, i.e., it is hyperechoic to the spleen. Anechoic fluid surrounds the spleen and liver. The echotexture is homogeneous. Perivascular cuffing is present, which may be due to fat, fibrosis, as well as some mild mineralization. The mesentery surrounding the liver and stomach is severely hyperechoic, however, it is difficult to determine whether this is due to the presence of ascites or hepatic inflammation.
<b>SEX</b>	
Spayed Female	
<b>AGE</b>	Multiple, very mildly ill-defined hypoechoic nodules of variable size are observed dispersed haphazardly throughout the parenchyma. Some of the nodules have pinpoint or punctate hyperechoic foci within the nodules. Target lesions are not noted.
11 years	0.89 cm in diameter x 1.32 cm in length 0.56 cm in diameter x 0.86 cm in length 0.53 cm in diameter x 0.64 cm in length
<b>WEIGHT</b>	Subjectively, the hepatic vessels are very mildly congested.
13.6 lbs	The gallbladder wall is within normal limits in thickness and echogenicity. A moderate amount of echogenic material is present within the GB. Mineralizations and calcifications (acoustic shadows are present) are noted within the intrahepatic ducts. The cystic and common bile ducts are not visualized, however, there are no obvious signs of an obstruction.
<b>INTERPRETED BY</b>	<b>Gastrointestinal</b>
Lisa Carioto, DVM, DVSc, Diplomate ACVIM	Ingesta and gas are 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.
<b>IMAGING PERFORMED BY</b>	
Dr. Harris	
<b>HOSPITAL NAME</b>	The small intestinal wall thickness, including the duodenum, is within normal limits and the definition of the wall layers is preserved.
TotalBond VH	The intestines are mildly dilated with a moderate amount of ingesta and fluid in the duodenum and jejunum. The mesentery surrounding duodenum is mildly to moderately hyperechoic.
<b>REFERRING VET</b>	The colonic wall is not thickened and mural detail is considered normal. Semi-soft stools are present within the colon.
Dr. Rowan	There are no obvious signs of a mass, foreign body, infiltrative disease or an obstruction in the gastrointestinal tract.
<b>INVOICE</b>	<b>Pancreas</b>
30058	
<b>DATE</b>	
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<b>PATIENT</b>	
Sophia Finkle	The pancreas has a mildly coarse echotexture, with hypoechoic nodules of various size. 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.
<b>SPECIES</b>	
Canine	<i>Other</i>
<b>BREED</b>	<i>Lymph nodes</i>
Pomeranian	No abnormalities are observed
<b>SEX</b>	<i>Abdominal effusion</i>
Spayed Female	Anechoic fluid surrounds the spleen and liver and ventral to the urinary bladder.
<b>AGE</b>	<b>ULTRASONOGRAPHIC FINDINGS</b>
11 years	<ul style="list-style-type: none"> <li>The hepatomegaly and diffuse hyperechogenicity of the liver are suggestive of a vacuolar hepatopathy, which may occur due to stress, chronic illness, and certain medications. Hyperadrenocorticism is not likely. Sonographic signs of mild venous congestion of the hepatic veins are noted. The hypoechoic nodules observed may be due to nodular hyperplasia, which is a benign, age-related change, however, neoplasia cannot be excluded. Target lesions are not appreciated. Differential diagnoses, such as hepatitis, is considered less likely, however, cholestasis, cholangitis/cholangiohepatitis and cholecystitis with a secondary bacterial infection must be considered.</li> </ul>
<b>WEIGHT</b>	<ul style="list-style-type: none"> <li>The presence of dyspnea, ascites, hepatomegaly and sonographic signs of mild venous congestion of the hepatic veins are noted. These abnormalities and Sophia's response to furosemide are suggestive of right sided heart failure. An echocardiogram is recommended.</li> </ul>
<b>INTERPRETED BY</b>	<ul style="list-style-type: none"> <li>The presence of sludge in the gallbladder is most likely 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 Sophia's history.</li> </ul>
Lisa Carioto, DVM, DVSc, Diplomate ACVIM	<ul style="list-style-type: none"> <li>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.</li> </ul>
<b>IMAGING PERFORMED BY</b>	<ul style="list-style-type: none"> <li>The adrenal glands are thinner than usual. Although this may be normal for Sophia, a baseline (random) cortisol is recommended to exclude hypoadrenocorticism.</li> </ul>
Dr. Harris	<ul style="list-style-type: none"> <li>Mild to moderate renal changes are present, which are suggestive of age related degeneration. However, glomerulonephritis and pyelonephritis cannot be excluded.</li> </ul>
<b>HOSPITAL NAME</b>	<ul style="list-style-type: none"> <li>A mild ileus is present.</li> </ul>
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**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

An echocardiogram is recommended. If one cannot be obtained on an emergency basis, a low dose of pimobendan (Vetmedin) may be administered at 0.075 – 0.1 mg/kg PO every 12 hours pending the echo, in addition to furosemide at 1 mg/kg PO every 12 hours for 3 days is recommended. The dose may then be decreased to 0.5 mg/kg PO every 12 hours thereafter. The dose is adjusted (may need to be re-increased) based on Sophia's sleeping (resting) respiratory rate.

For the client: She should be *sleeping soundly* when her respiratory rate is being calculated. One breath is equivalent to one inspiration (the rising of the chest) and one expiration (the lowering of the chest). The number of breaths may be counted during a 15 second period and multiplied by 4 to obtain the number of breaths per minute.

The application, My Pet's Heart2Heart, <https://apps.apple.com/ca/app/my-pets-heart2heart/id1564965551> is available through Boehringer Ingelheim, for both Apple and Android products. This application helps keep a log of your pet's respiratory rate.

The RRR should NOT EXCEED 30 breaths per minute (bpm). If her respiratory rate is greater than 30 bpm, or if there is a gradual increase (over a day or two) toward 30 bpm, *please contact a veterinarian as soon as possible as additional medications will likely be required.*

Fine needle aspirates of the liver, both normal parenchyma and hypoechoic nodules, may be performed to achieve a diagnosis.

A urinalysis and urine culture and sensitivity are recommended. The urine specific gravity will not be reliable due to the administration of furosemide. If negative for signs of an infection, a urine protein: creatinine (UPC) ratio is suggested to exclude glomerulonephritis.

A SNAP 4Dx, evaluation for leptospirosis, etc. may be needed depending on the results of the echocardiogram and the UPC ratio.

A baseline (random) cortisol is suggested to exclude hypoadrenocorticism depending on the results of the echocardiogram and the UPC ratio and Sophia's response to furosemide and pimobendan.

Anti-emetics are suggested; metoclopramide may be more effective than maropitant in Sophia's case as she also has a mild ileus. If her appetite does not improve, Denamarin may be discontinued as it can cause nausea, vomiting, cramps and diarrhea in some patients.



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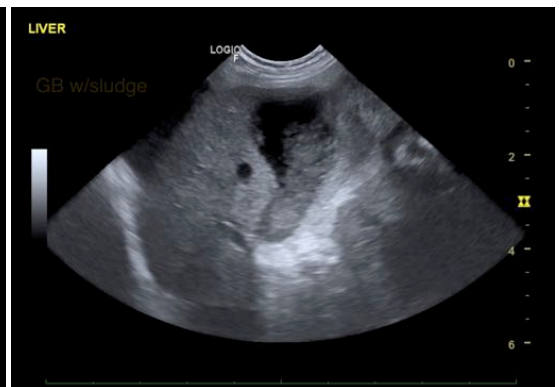
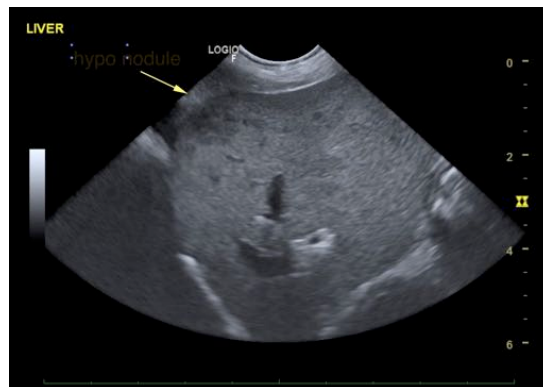
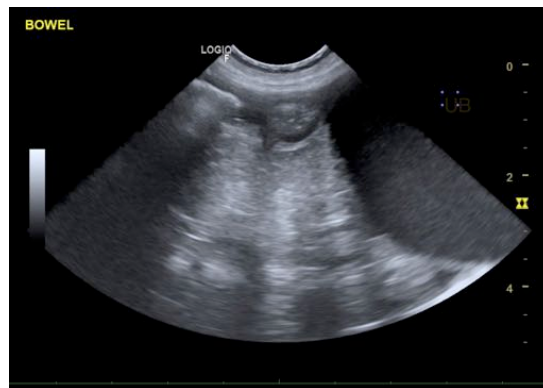
Dr. Rowan

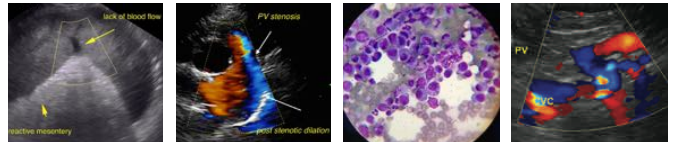
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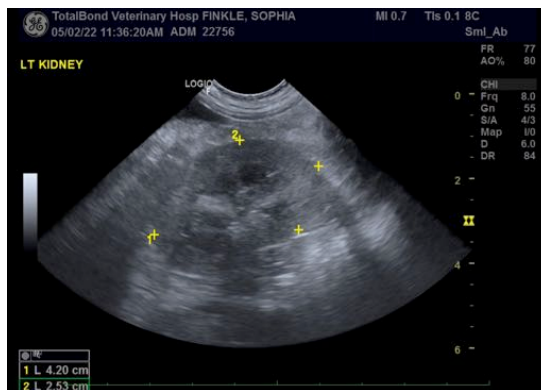
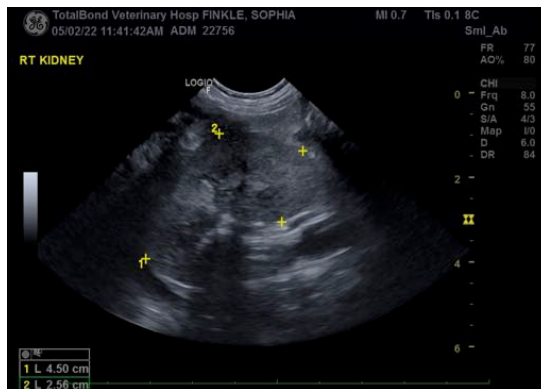
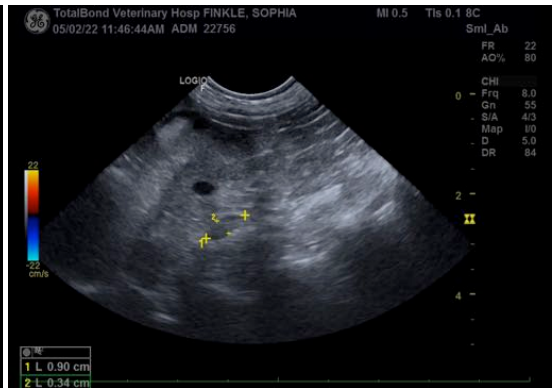
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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