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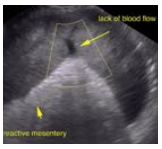
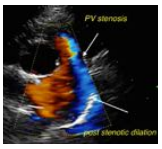
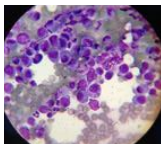
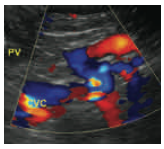

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1-800-838-4268 info@sonopath.com

**PATIENT**
Jacob Long

**SPECIES**
Canine

**BREED**
Shetland Sheepdog

**SEX**
Neutered male

**AGE**
10 years

**WEIGHT**
17 kg

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

**IMAGING PERFORMED BY**
Dr. Gumley

**HOSPITAL NAME**
Cedarview AH

**REFERRING VET**
Dr. Gumley

**INVOICE**
99283

**DATE**
4/13/22

## PRESENTING CLINICAL SIGNS

Referred for abdominal US after rDVM noticed mass effect in cranial abdomen on radiographs. Had previously been seen for vomiting but has since resolved. Hypothyroid and treated with thyroxine. Abnormal PE/Chem/CBC/UA Results: Positive for Anaplasma on 4DX but not anemic. Other blood work not performed since June 21 and had mild elevation in ALP, high cholesterol at that time. FNA taken from right and left liver lobes during US today. Current BW pending.

## ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

### *Urinary System*

The **urinary bladder** is inadequately filled, thereby affecting the ability to accurately measure wall thickness. The wall is very mildly irregular, however. No abnormalities are noted with the trigone or proximal urethra. There is no evidence of sediment, cystoliths, polyps, or a mass.

The **prostate** is homogenous and measures 0.73 cm in diameter x 1.01 cm in length, which is within normal limits for a neutered male.

### *Aortic Bifurcation/Trifurcation*

No abnormalities observed.

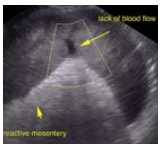
### *Kidneys*

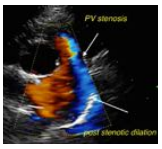
The **left** kidney measures XXX cm. The capsule is smooth and its overall architecture, including the The **left** kidney measures 5.02 cm. The capsule is smooth, however, the cortex is mildly hyperechoic and a mild loss of the normal definition of the cortico-medullary junction is present. Mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. An accumulation of intrapelvic fat is noted. A very small anechoic structure, consistent with a cyst, and pinpoint mineralizations, are also observed in the cortex. The surrounding mesentery is not hyperechoic.

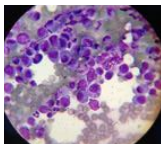
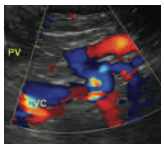
The **right** kidney measures 5.68 cm. The capsule is smooth, however, the cortex is mildly hyperechoic and a mild loss of the normal definition of the cortico-medullary junction is present. Mineralizations of the diverticulae and pelvis are present, without evidence of nephroliths or pyelectasia. An accumulation of intrapelvic fat is noted. A mineralization is also observed as the ureter exits the kidney (no acoustic shadowing). There is no evidence of hydroureter. Pinpoint mineralizations are also observed in the cortex. The surrounding mesentery is not hyperechoic.

### *Adrenal Glands*

The **left** adrenal gland measures 0.60 cm at the cranial pole, 0.63 cm at the caudal pole and 2.68 cm in length. No abnormalities are observed with its overall architecture, echogenicity. or echotexture. A few punctate, hyperechoic foci are noted within the medulla. These areas do not cast a shadow and are likely due to mineralization, fibrosis or nodular regeneration. There are no signs of neoplasia. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.



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The **right** adrenal gland measures 0.45 cm at the cranial pole, 0.52 cm at the caudal pole and 2.06 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.

### *Spleen*

Mild to moderate splenomegaly. The spleen is folded upon itself. No major abnormalities are observed with its overall architecture, echotexture, or echogenicity other than two subtle hypoechoic nodules that are similar in size, 4.5 mm x 5.1 mm. The capsule is smooth. No abnormalities are observed with its vasculature, i.e. congestion and thrombi are not identified. Mild to moderate perivascular cuffing consistent with myelolipomas is observed, which is not considered clinically significant.

### *Liver*

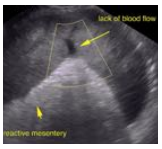
Hepatomegaly is possibly present, however, this is better characterized at the time of the ultrasound or with radiographs. The liver's borders are smooth, but rounded, while some lobes have scalloped contours. The liver is diffusely hyperechoic, but is also mildly to moderately heterogeneous, i.e. coarse or granular echotexture is observed, in addition to occasional hyperechoic nodules of variable size (right sagittal view); a. 0.73 cm x 1.07 cm (casts a slight shadow); b. 1.56 cm x 1.53 cm. Two slightly cavitary-like lesions (right sagittal view) 0.59 cm x 0.54 cm; b. Another was visualized, but not measured. Two target like lesions with an anechoic center, possibly cystic in origin, surrounded by a hyperechoic "wall" (transverse view): a. 6.6 mm x 9.8 mm; b. 8.6 mm in diameter. An anechoic lesion (sagittal view) 0.78 cm x 0.87 cm. Occasional ill-defined hyperechoic "patches" dispersed haphazardly throughout the parenchyma, in addition to pinpoint hyperechoic foci, most likely mineralizations. The walls of the portal veins are hyperechoic. These latter hyperechoic patches may be due to fat, fibrosis and mineralization. The hepatic veins do not show any abnormalities or congestion. The surrounding mesentery is mildly to moderately hyperechoic.

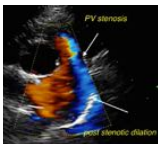
The gall bladder (GB) is moderately distended with a moderate amount of echogenic material (sludge) within the lumen. The sludge is free floating, gravity-dependent, and inspissated, forming nodules, which are adhered to the wall. The wall is not overtly hyperechoic or thicker than normal. Its luminal surface is mildly irregular. Thick strings of mucus are also noted. There is no evidence of edema and/or free fluid surrounding the GB. The common bile duct is dilated, measuring 4.0 mm, but there is no evidence of tortuosity or an obstruction.

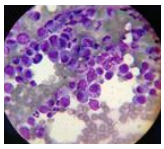
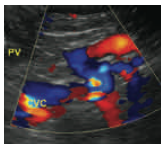
### *Gastrointestinal*

Fluid 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, however, the mucosa is more prominent than normal. The mesentery surrounding the liver and stomach is hyperechoic.

The duodenum is at the high end of the normal reference range (0.50 cm) at the junction of the CBD and duodenum. Fogging of the duodenal mucosa is evident, and the lumen is mildly dilated with liquid. There is no evidence of a mass at the junction of the CBD and duodenum. Fogging of the duodenum is also noted along its length in the region of the pylorus. The fogging is not present as one moves distally along the GI tract until certain loops of jejunum, some of which are also corrugated. An obvious mass or foreign body is not visualized within the corrugated loops of jejunum and they are not abnormally dilated.



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The small intestinal wall thickness is otherwise within normal limits in thickness and definition of wall layering. The ileo-cecal-colic junction and the surrounding mesentery are unremarkable.

Gas and formed stools are observed within the descending colon. The colonic wall is not thickened and mural detail is considered normal.

### *Pancreas*

Pinpoint and small punctate hyperechoic foci are dispersed haphazardly throughout the parenchyma. These changes are suggestive of fibrosis. It is slightly hypoechoic to the surrounding mesentery, which is not abnormally hyperechoic. No abnormalities are observed at the junction of the duodenum and the pancreatico-duodenal duct.

### *Other*

**Lymph nodes**: iliac lymph nodes are within normal limits. A jejunal lymph node is at the high end of the normal reference range to very mildly increased (0.54 cm), but remains within normal limits in echogenicity and echotexture. The mesentery surrounding the lymph node is very mildly hyperechoic, however, the loops of jejunum in the region are unremarkable. There is no evidence of lymphadenomegaly.

**Abdominal effusion** is not visualized.

The liver and kidneys are both hyperechoic compared to normal, and they remain isoechoic to one another.

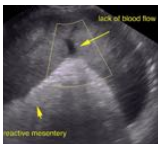
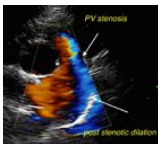
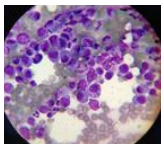
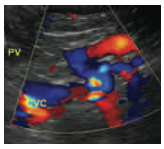
The spleen is isoechoic to the cortex of the left kidney.

## ULTRASONOGRAPHIC FINDINGS

- The diffuse hyperechogenicity of the liver and mildly coarse echotexture may be due to vacuolar and reactive hepatopathies, respectively. A vacuolar hepatopathy may occur due to stress (chronic illness). Differential diagnoses for a diffusely hyperechoic liver include, hepatitis, cholestasis and cholangitis/cholangiohepatitis. The hyperechoic nodules are likely due to mineralization, fat and possibly nodular hyperplasia. The hypoechoic nodules may be due to nodular regeneration, which is a benign, age-related change. However, “target” lesions cannot be excluded for those that have an anechoic centre and hyperechoic exterior, i.e. neoplasia cannot be excluded with certainty. Results of fine needle aspirates are pending.

- Cholecystitis and cholangitis could explain the abnormalities observed with the duodenum and stomach, i.e. Jacob’s recent bout of vomiting may have been associated with a gastroenteritis. A secondary bacterial infection (suppurative cholecystitis, cholangitis/cholangiohepatitis) cannot be excluded. Although the presence of gall bladder sludge is often clinically insignificant, Shetland sheepdogs are predisposed to the development of mucocoeles. Also, some dogs may show clinical signs of gastroesophageal reflux disease as a result of the sludge, therefore, obtaining a history regarding signs of GERD from the client is suggested. Treatment with ursodeoxycholic acid may be required depending on the patient’s history.

- The jejunal abnormalities may be due to a foreign body he may have ingested, however, an obvious foreign body or mass is not visualized on today’s ultrasound.

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- Mild to moderate splenomegaly, which may be due to antigenic stimulation and inflammation (splenitis), for example, an infectious cause, such as anaplasmosis, as well as immune-mediated induced inflammation. Extramedullary hematopoiesis is also possible. Neoplasia, such as lymphoma, mast cell tumour, or other round cell tumour, is considered unlikely. The hypoechoic nodules have a benign appearance and are most likely due to nodular or lymphoid hyperplasia. Extramedullary hematopoiesis is yet another possible cause for the two nodules.

- The pancreatic changes are most likely due to fibrosis, which may secondary to age-related changes, as well as previous episodes of pancreatitis. Signs of active pancreatitis or neoplasia are not appreciated.

- A urinary tract infection cannot be excluded based on the very mild irregular mucosa of the urinary bladder, however, it may also be clinically insignificant as the urinary bladder was not fully distended at the time of the exam.

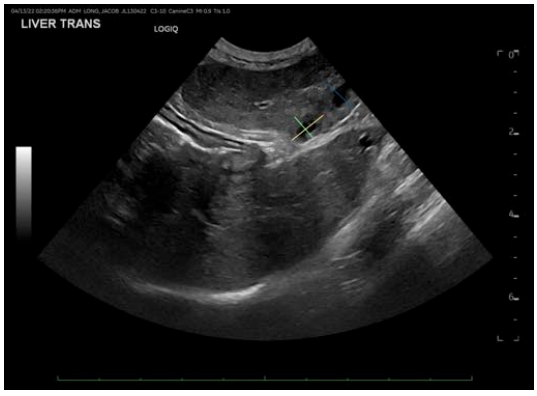
- Mild degenerative changes of both kidneys are observed, which are suggestive of age related degeneration.

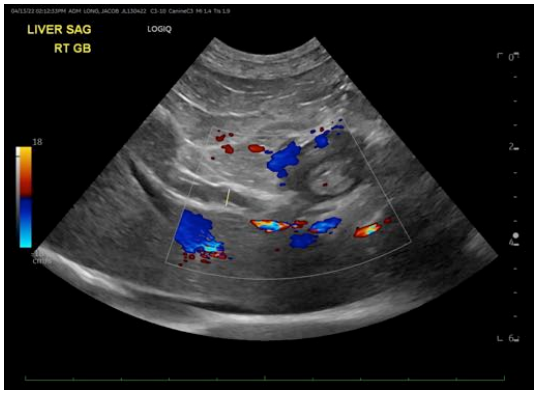
## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

A urine culture and sensitivity may be performed to exclude a urinary tract infection.

Recommendations may change depending on the hepatic cytology results, as well as whether Jacob is suffering from clinical signs of GERD.

Further diagnostics for inflammatory bowel disease, such as deworming and dietary trials may be warranted in the future depending on whether Jacob is suffering from signs of GERD and the hepatic cytology results.



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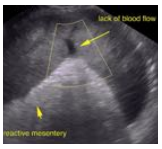
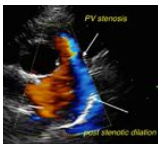
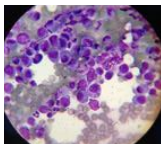
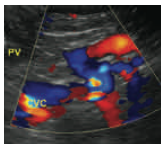

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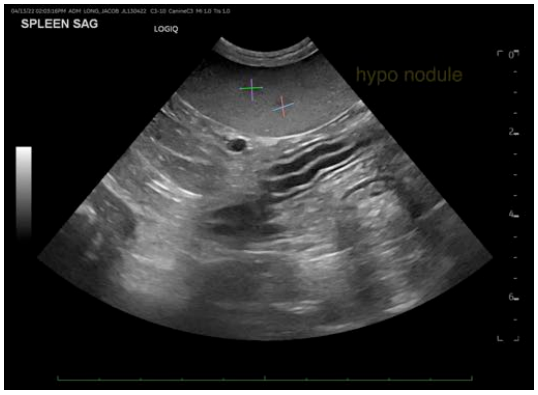







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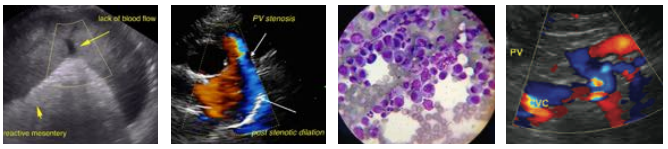


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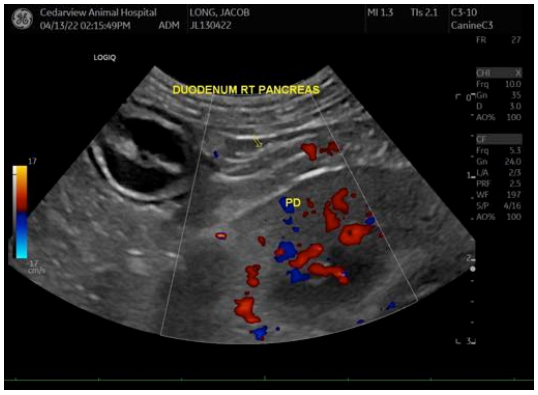


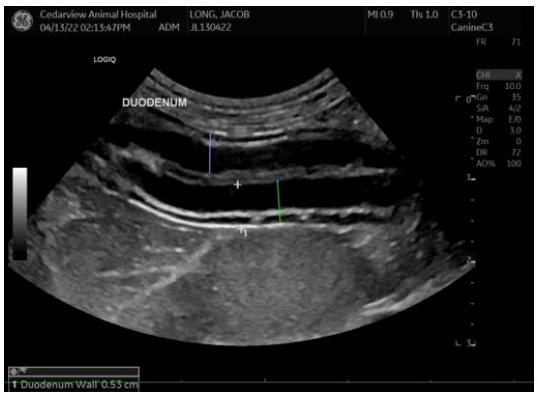






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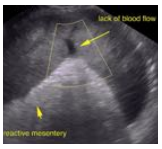
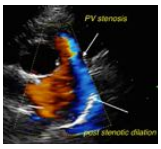
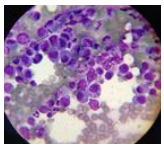
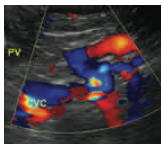

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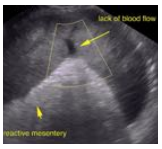

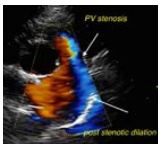

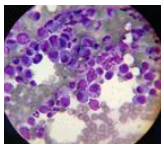
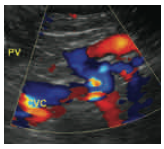


SonoPath.com
1-800-838-4268 info@sonopath.com

**PATIENT**

Jacob Long

**SPECIES**

Canine

**BREED**

Shetland Sheepdog

**SEX**

Neutered male

**AGE**

10 years

**WEIGHT**

17 kg

**INTERPRETED BY**

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

**IMAGING PERFORMED BY**

Dr. Gumley

**HOSPITAL NAME**

Cedarview AH

**REFERRING VET**

Dr. Gumley

**INVOICE**

99283

**DATE**

4/13/22

**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**

Lisa.Carioto@sonopath.com