



PATIENT	PRESENTING CLINICAL SIGNS
Atlas Regan	History: has always vomited a couple of times a month, but recently the vomiting has increased to 3x/week and sometimes has flecks of blood present; bloodwork revealed elevated liver enzymes
SPECIES	Abnormal PE/Chem/CBC/UA Results: CBC - WNL Chem - ALT 155 U/L (10-125) ALP 227U/L (23-212) remainder WNL
Canine	
BREED	ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN
Husky mix	Video clips of the liver and gall bladder are provided. Still images are available for the remainder of the abdominal organs.
SEX	Urinary System
Neutered male	The urinary bladder is well distended. The wall is smooth and regular. No abnormalities are present with the trigone or proximal urethra, and there is no evidence of cystoliths, polyps or a mass. A very mild amount of free floating sediment is present, however, obvious signs of cystitis are not noted.
AGE	The prostate is homogenous and measures 0.97 cm, which is within normal limits for a neutered male.
12 years	The left kidney measures 5.72 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 are present, without evidence of nephroliths or pyelectasia. The surrounding mesentery is not hyperechoic.
WEIGHT	The right kidney measures 5.95 cm. Findings are similar to the left kidney.
34.4 kg	
INTERPRETED BY	Adrenal Glands
Lisa Carioto, DVM, DVSc, Diplomate ACVIM	The left adrenal gland measures 0.55 cm at the cranial pole, 0.61 at the caudal pole and 2.34 cm in length. No abnormalities are noted with the gland's overall architecture, echogenicity or echotexture. The surrounding mesentery is unremarkable. Cine loops were not available to evaluate the vasculature.
IMAGING PERFORMED BY	The right adrenal gland measures 0.71 cm at the caudal pole. The gland is at the high end of the normal reference range, and is mildly "plump", however, no abnormalities are observed with its overall echogenicity or echotexture. The surrounding mesentery is unremarkable. Cine loops were not available to evaluate the vasculature.
Dr. Trudeau	
HOSPITAL NAME	
Petworks VH	
REFERRING VET	Spleen
Dr. Trudeau	The splenic capsule is smooth and the overall echogenicity is within normal limits. However, it is heterogeneous, characterized by a diffuse "miliary" or mottled echotexture is observed. The mottled echotexture is more apparent in certain views. Very small hypoechoic nodules of variable size are noted throughout the liver, in addition to ill-defined, "patches" of various sizes that have a generalized, multicentric pattern throughout the parenchyma. The head and tail appear more severely affected, however, this may be due to artifact.
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PATIENT	Liver
Atlas Regan	Subjectively, the liver appears mildly enlarged, with smooth, but mildly rounded borders. It is mildly hyperechoic. The portal veins are more prominent due to the hyperechoic walls. The hepatic vessels visualized do not show any abnormalities.
SPECIES	
Canine	Gall bladder
BREED	The gall bladder is moderately distended with echogenic material (sludge) within the lumen. The sludge is both free floating and gravity-dependent. It is also inspissated, forming nodules, which are also adhered to the wall. Thick strings of mucus are noted arising from the luminal wall and attaching to the debris. The sludge is of mixed echogenicities, which cast an acoustic shadow, which is consistent with cholelithiasis. At least one large cholelith is present, however, smaller ones are based on the acoustic shadowing observed from different angles. The largest acoustic shadow noted measures approximately 4.1 cm. The gall bladder wall measures approximately 1.7 mm. Free fluid is not observed surrounding it, i.e. there is no evidence of a rupture. The cystic and common bile ducts are not visualized, however, the remainder of the biliary tree is not dilated or distended and is not suggestive of an obstruction.
Husky mix	
SEX	
Neutered male	
AGE	
12 years	Gastrointestinal
WEIGHT	The gastric wall is within normal limits in thickness and the wall layers are well defined. No obvious abnormalities are observed with its peristalsis.
34.4 kg	No abnormalities are noted with the duodenum, with regard to thickness or definition of the wall layers. Some segments of the small intestine, particularly the jejunum, are very mildly thickened at 0.61 cm. Although the definition of the wall layers is well preserved, the mucosa and submucosa are more prominent than what is considered normal. Abnormally dilated loops of bowel are not observed.
INTERPRETED BY	The transverse colon is filled with ingesta and gas, albeit not excessive. The colonic wall is not thickened and mural detail is considered normal. Formed stools are present within the colon.
Lisa Carioto, DVM, DVSc, Diplomate ACVIM	
IMAGING PERFORMED BY	There are no obvious signs of a mass, foreign body, infiltrative disease or an obstruction in the gastrointestinal tract.
Dr. Trudeau	
HOSPITAL NAME	Pancreas
Petworks VH	The left limb of 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.
REFERRING VET	The right limb of the pancreas was not visualized.
Dr. Trudeau	
INVOICE	Other
99197	Lymph nodes No abnormalities are observed.
DATE	Abdominal effusion is not visualized.
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PATIENT	ULTRASONOGRAPHIC FINDINGS
Atlas Regan	<ul style="list-style-type: none"> Although the splenic echotexture is most likely benign in nature, i.e. it may be due to hypersplenism, extramedullary hematopoiesis or splenitis, one cannot exclude early infiltrative disease, such as lymphoma, a mast cell tumour or histiocytic sarcoma. Therefore, an ultrasound-guided fine needle aspirate (FNA) is recommended.
SPECIES	
Canine	<ul style="list-style-type: none"> Mild degenerative changes of both kidneys, which are suggestive of age related degeneration.
BREED	
Husky mix	<ul style="list-style-type: none"> The free floating sediment within the lumen of the urinary bladder is most likely composed of mucus, crystalline material and exfoliated cells. The debris is likely clinically insignificant given the lack of inflammatory changes to the bladder wall, however, findings should be correlated with clinical signs and a urinalysis.
SEX	
Neutered male	<ul style="list-style-type: none"> The diffuse hyperechogenicity of the liver is highly suggestive of a vacuolar hepatopathy, which may occur due to stress or an underlying, chronic illness, as well as hyperadrenocorticism. Differential diagnoses, such as hepatitis, is considered less likely, however, cholestasis and cholangitis/cholangiohepatitis with a secondary bacterial infection cannot be excluded.
AGE	
12 years	<ul style="list-style-type: none"> Cholecystitis, possibly with a secondary bacterial infection, is suspected based on the sonographic signs of the gall bladder. As mentioned above, cholestasis and cholangitis/cholangiohepatitis cannot be excluded. At least one large cholelith is present, however, smaller ones may also be present. An abdominal radiograph would offer more information regarding the number of choleliths present. Clinical signs of gastroesophageal reflux disease (GERD) are highly likely; obtaining a history regarding signs from the client is suggested. Treatment with ursodeoxycholic acid may be required depending on the patient's history (see below).
WEIGHT	
34.4 kg	<ul style="list-style-type: none"> The mildly coarse echotexture of the left limb of the pancreas is 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.
INTERPRETED BY	
Lisa Carioto, DVM, DVSc, Diplomate ACVIM	<ul style="list-style-type: none"> Inflammatory bowel disease cannot be excluded based on the intestinal changes observed. Although there are no obvious signs of neoplasia, biopsies are required to exclude such a diagnosis with certainty.
IMAGING PERFORMED BY	
Dr. Trudeau	<ul style="list-style-type: none"> The "plump" caudal pole of the right adrenal gland may be due to adrenal hyperplasia secondary to stress (chronic illness), development of a benign adenoma, or may be normal for Atlas. Hyperadrenocorticism (HAC) is considered unlikely based on the absence of clinical signs. Further diagnostics are not recommended as Atlas is not demonstrating clinical signs of HAC.
HOSPITAL NAME	
Petworks VH	<p style="text-align: center;"><u>INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS</u></p> <p>A urinalysis, +/- a urine culture and sensitivity, may be performed to exclude a urinary tract infection based on the presence of the sediment.</p> <p>An ultrasound-guided FNA of the spleen is recommended.</p> <p>The evaluation of fasting triglycerides is suggested to rule out hyperlipidemia, which may be predisposing Atlas to cholelithiasis. Depending on the results, a low fat, easily digestible diet that is</p>
REFERRING VET	
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PATIENT

Atlas Regan

moderately restricted in fibre is recommended to help decrease gas and bloating. Smaller, frequent meals are also suggested, including a small snack prior to bed time.

SPECIES

Canine

Analgesia for the treatment of visceral pain, such as gabapentin, is strongly recommended.

The administration of omeprazole at 0.7 mg/kg-1 mg/kg PO BID is also suggested.

BREED

Husky mix

A veterinary prescription brand low fat, hypoallergenic diet, may eventually be required, as IBD cannot be excluded.

The choleliths and possible GERD are causing irritation of the gastrointestinal tract and possible esophagitis. Ideally, an exploratory laparotomy would be performed, with the goal of performing a cholecystectomy, as well as a splenectomy, depending on the results of the FNA.

SEX

Neutered male

If further diagnostics are not pursued, although not ideal, empirical treatment with a very low dose of ursodeoxycholic acid (Ursodiol) may be tried (3 mg/kg/day) for one week to assess Atlas's response. The dose may then be up-titrated once a week thereafter. However, it is of utmost importance that the clients understand the risk of using Ursodiol if an obstruction occurs, and they should be prepared for a possible emergency surgery.

AGE

12 years

Although some treatment recommendations have been described, an internal medicine consult may be requested to describe all possible options in further detail. This may be done by email or telephone.

WEIGHT

34.4 kg

INTERPRETED BY

Lisa Carioto, DVM,
DVSc, Diplomate
ACVIM

IMAGING PERFORMED BY

Dr. Trudeau

HOSPITAL NAME

Petworks VH

REFERRING VET

Dr. Trudeau

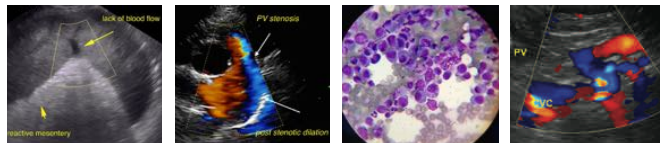
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SPECIES

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BREED

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SEX

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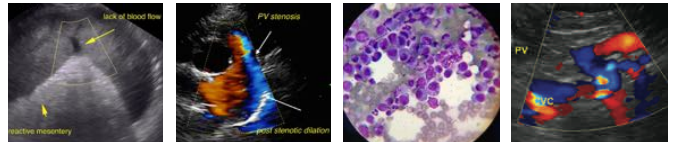
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BREED

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SEX

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AGE

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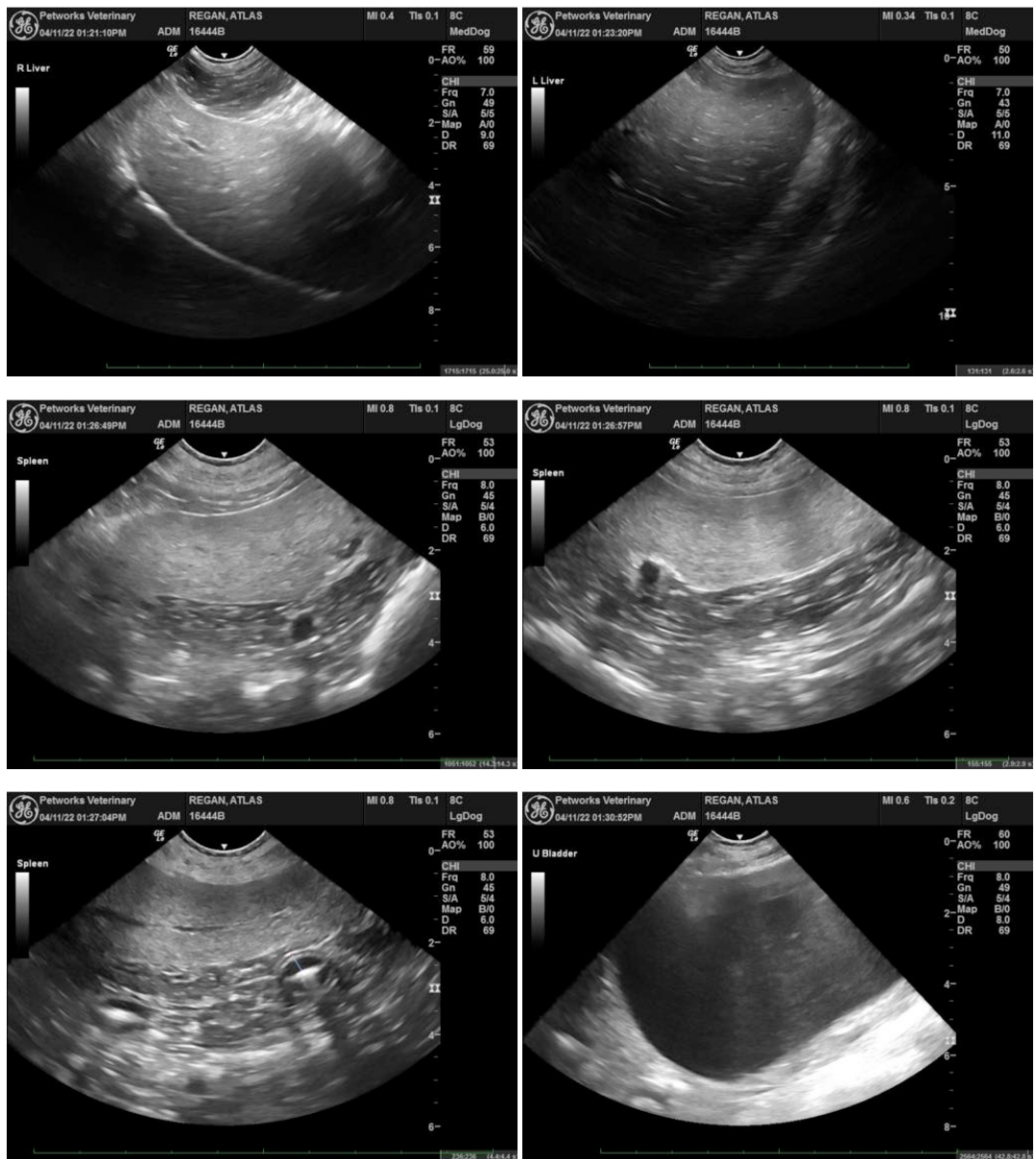
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PATIENT

Atlas Regan

SPECIES

Canine

BREED

Husky mix

SEX

Neutered male

AGE

12 years

WEIGHT

34.4 kg

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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.