



## PATIENT

Loki Eberhardt

## SPECIES

Ferret

## BREED

Domestic

## SEX

Female

## AGE

6 years

## WEIGHT

2.3 lbs

## INTERPRETED BY

Eric Lindquist, DMV  
DABVP, Cert. IVUSS

## IMAGING PERFORMED BY

Christensen

## HOSPITAL NAME

Tranquility VC

## REFERRING VET

Dr. Antonelli

## INVOICE

71507

## DATE

2/11/26

## PRESENTING CLINICAL SIGNS

- Grade 3/6 murmur; increased lung sounds; cardiac enlargement; loss of serosal detail in the abdomen; decreased appetite and lethargy.
- Deslorin implant administered last Feb (2025).
- Grade 3/6 systolic murmur.
- Radiographs revealed severe gastric gas accumulation and splenomegaly. Mild cardiac enlargement.

## ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

### Urinary System

The **urinary bladder**, trigone, and pelvic urethra presented normal thicknesses and normal tone. The ureters were not visible which is normal. No uroliths or sediment were visualized and anechoic urine was present. No evidence of inflammatory or neoplastic changes was noted. Ureteral papillae were normal.

The **kidneys** revealed largely normal size and structure, corticomedullary definition and ratio (cortex 1/3 of medulla) were essentially maintained with some age-related loss of curvilinear patterns regarding the capsule and C/M junction. The cortices presented largely uniform texture with some increased echogenicity expected for this age patient. Medullary structure differed distinctly from that of the cortex and no evidence of pelvic dilation was present. Mineralization was noted in the kidneys. The left kidney measured 2.83 cm and the right kidney measured 2.7 cm.

### Adrenal Glands

Both **adrenal glands** were visualized and recognized as having normal shape, size, position and echogenicity for this breed. The phrenic vasculature, glandular echogenicity and detail were unremarkable. Capsule, cortex, and medullary definition were normal for this age patient. The right adrenal gland measured 0.4 cm. The left adrenal gland measured 0.3 cm.

### Spleen

Severe **splenomegaly** was noted with irregular contour and micronodular changes. The splenic width measured up to 2.7 cm.

### Liver

The **liver** was enlarged and hypoechoic. The vena cava and hepatic veins were mildly dilated. The portal vein to vena cava was 1:1. The gallbladder presented acceptably thin walls with primarily anechoic content. The cystic and common bile ducts were normal. The hepatic lymph nodes were mildly enlarged. No overt structural evidence of inflammatory, infiltrative or regenerative pathology was evident.



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**Gastrointestinal**

There was some residual chyme and gas was noted in the **stomach**, yet not pathological. This is consistent with post prandial presentation. Transit of chyme into the small intestine was normal. Curvilinear patterns were maintained throughout the GI tract. No evidence of pathology. Small and large intestine demonstrated normal luminal chyme and stool consistency respectively. No obstructive or overt infiltrative disease was noted.

**Pancreas**

The base and limbs of the **pancreas** were observed to be largely isoechoic to surrounding omental fat. Pancreatic duct and capsular contour were acceptably normal and parenchyma respected normal curvilinear patterns. No overt evidence of active inflammatory or neoplastic disease was noted.

**Free Abdomen**

A large amount of abdominal fat was noted.  
Cranial abdominal lymph nodes were mildly enlarged.  
No ascites was noted at the time of the sonogram.

**ULTRASONOGRAPHIC EXAMINATION OF THE HEART**

The echocardiogram in this patient revealed normal septal and free wall thicknesses with mild volume overload of the left ventricle measuring 1.0 cm. The left atrium was borderline normal. Mitral insufficiency was noted on spectral Doppler. The right atrium and right ventricle were enlarged as well.

CARDIAC PARAMETERS	BODY WEIGHT	HR (BPM)	IVSd (cm)	LVIDd (cm)	LVWd (cm)	FS (%)	EF (%)
NORMAL PARAMETER	-----	150-240	0.3-0.6	1.0-2.1	0.25-0.6	35-67	80-100
PATIENT	2.3 lbs	NM	0.3	0.9	0.4	35	
CARDIAC PARAMETERS	LA/AO (M-mode)	LA/AO HEART BASE (Sisson)	LAD LA MAX 4 Chamber		LVOT VEL. (m/s)	RVOT VEL. (m/s)	IVRT (m/)
NORMAL PARAMETER	<1.5	1.6	0.7-1.7		<1.6	<1.3	40-60
PATIENT	1.6	1.5				0.6	NM
Adapted from June Boon, Veterinary Echocardiography, 1998 Sisson D et al. JVIM 1991; 5: 232, Jacobs et al. Am J Vet Res 1985; 46:1705							



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## ULTRASONOGRAPHIC FINDINGS

Age related renal changes with mineralization.

Severe splenomegaly with micronodular changes.

Enlarged hypoechoic liver with slightly dilated hepatic veins.

Full stomach.

Mildly enlarged cranial abdominal lymph nodes.

Mild volume overload of the left ventricle.

Mitral insufficiency.

Enlarged right atrium and right ventricle.

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The cardiac presentation is largely right-sided enlargement with mild, left-sided enlargement and mitral insufficiency. This is not likely the primary issue in this patient, yet ace inhibitor therapy could be justified.

My primary concern is the splenomegaly. FNA of the spleen and liver is indicated. The liver may represent a benign hepatopathy with mild passive congestion owing to potential emerging right-sided failure. However, early round cell neoplasia is a potential.

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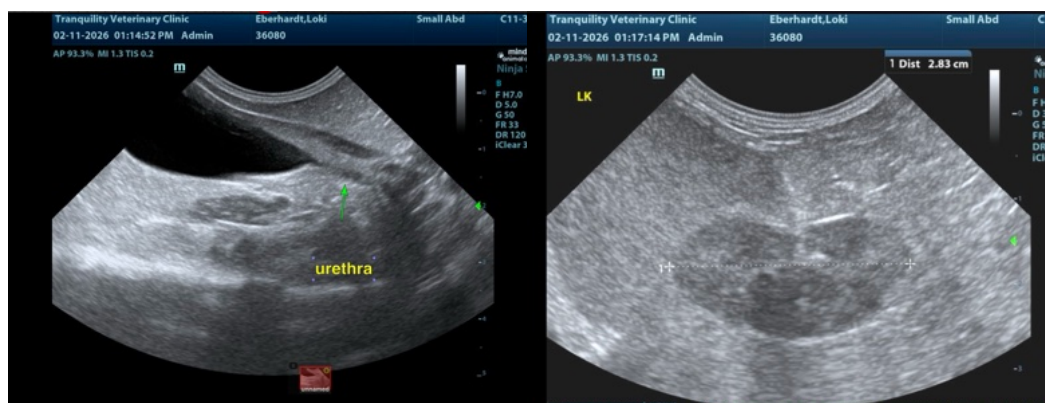
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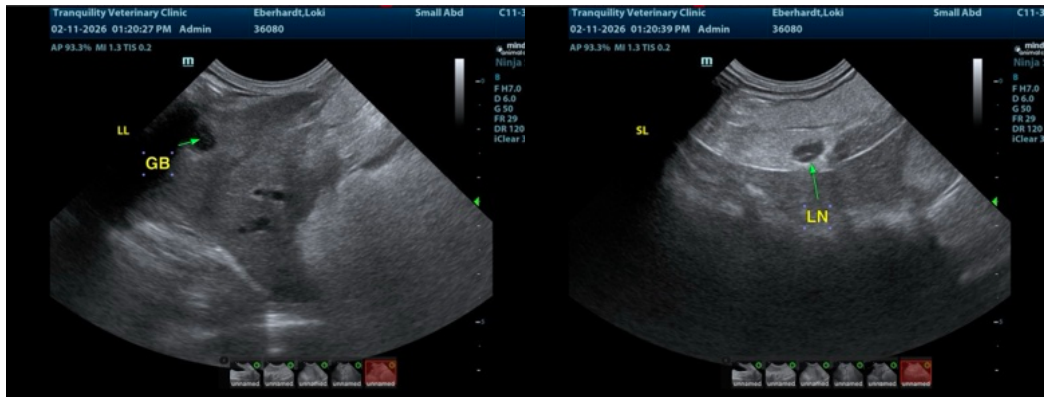
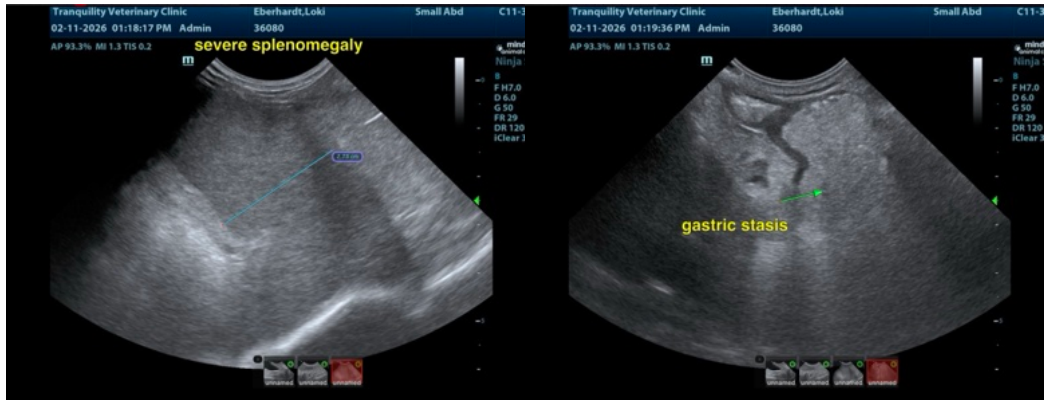
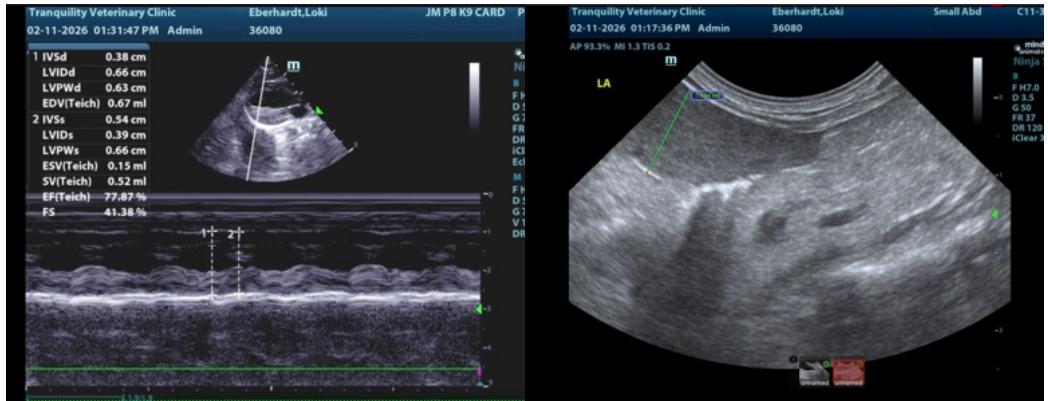
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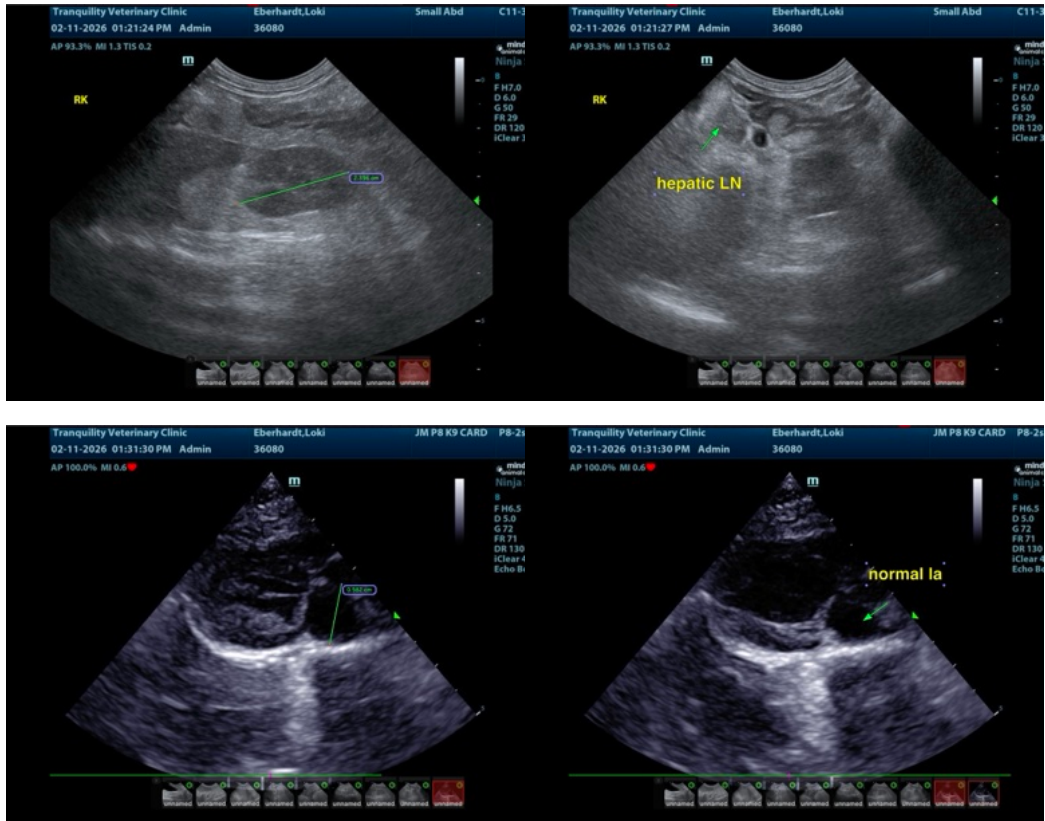
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Eric Lindquist, DMV, DABVP (CFM), Cert. IVUSS, CEO of SonoPath.com

[info@SonoPath.com](mailto:info@SonoPath.com)