



PATIENT

Leroy Murphy Hensley

SPECIES

Feline

BREED

Domestic Shorthair

SEX

Neutered male

AGE

14 years

WEIGHT

9.5 lbs

PRESENTING CLINICAL SIGNS

History of vomiting and weight loss, recent anorexia and lethargy
 Abnormal PE/Chem/CBC/UA Results: subdued, hypothermic, grade ii/vi systolic murmur
 CHEMISTRY: amylase=1331 (300-1100) U/L, BUN=108 (10-30) mg/dL, P=3.2 (3.4-8.5) mg/dL, Cr=2.3 (0.3-2.1) mg/dL, K=2.1 (3.7-5.8) mmol/L
 Rads: Bronchoalveolar lung pattern

ULTRASONOGRAPHIC EXAMINATION OF THE HEART

The echocardiogram in this patient demonstrated normal **left atrial** size based on 3 separate LA measurements. The cranial and caudal **mitral** valve leaflets presented normal linear structure and kinetics. The **left ventricle** presented normal thicknesses with linear contour and was not dilated nor restricted. The **myocardium** presented normal echogenicity without subjective evidence of significant fibrotic or ischemic disease. **Contractility** of the ventricular walls was adequate and in normal range for this patient evidenced by the fractional shortening measurement and subjective evaluation of the different regions and angles of the myocardium. The **left ventricular outflow** tract demonstrated normal laminar flow and subjective structural integrity. The **right atrium** and auricle revealed normal size, structure and content. No evidence of masses was noted or chamber overload. **Tricuspid** valvular assessment demonstrated adequate linear morphology and kinetics. The **right ventricle** was of normal size (1/3 diameter of LV), chordae structure, myocardial echogenicity and thickness. **Pulmonic** tract assessment revealed normal valve structure, laminar flow, and diameter (approx.1:1 pa/ao ratio). No visible **pericardial** or free pleura fluid was noted or extra cardiac pathology in the visible planes. The cranial **mediastinum** and **pericardial** regions were free of masses in the visible window.

INTERPRETED BY

Eric Lindquist, DMV
 DABVP, Cert. IVUSS

IMAGING PERFORMED BY

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FELINE CARDIAC PARAMETERS	BODY WEIGHT (kg)	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		NM	0.4	1.5	0.4	50	
FELINE CARDIAC PARAMETERS	LA/AO (Boon)	LA/AO HEART BASE (Sisson)	LA 2D 4-chamber long axis AS to FW (Sisson) (cm)	LVOT VEL. (m/s)	RVOT VEL. (m/s)	IVRT (m/)	
NORMAL PARAMETER	<1.5	0.88-1.79	0.7-1.7	<1.6	<1.3	40-60	
PATIENT	1.4		1.4				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 EXAMINATION OF THE ABDOMEN

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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.

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The **kidneys** presented a relatively uniform cortical hyperechogenicity when compared to the renal medulla, spleen and liver. No overt masses were noted. Corticomedullary definition was nebulous and the ratio favored the cortex slightly. The ureters were not visible and assumed to be normal. These changes are most consistent with chronic interstitial nephritis yet infiltrative disease could not be entirely ruled out without biopsy though neoplasia is not suspected. Pelvic mineralization was noted. The left kidney measured 4.0 cm. The right kidney measured 4.5 cm.

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Adrenal Glands

WEIGHT

9.5 lbs

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 left adrenal gland measured 0.4 cm. The right adrenal gland measured 0.4 cm.

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Spleen

The **spleen** in this patient was mildly enlarged with uniform parenchyma and was folded upon itself caudally. This is a positional variant and is not pathological. There was no evidence of significant disease.

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Liver

The **liver** revealed increased portal markings with a slightly thickened gallbladder. This is not likely a clinical issue. The right lateral liver revealed a mixed, hypoechoic, moderately complex mass that measured approximately 2.5 cm. Transdiaphragmatic view revealed comet tail lung pattern that is indicative of alveolar disease.

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Gastrointestinal

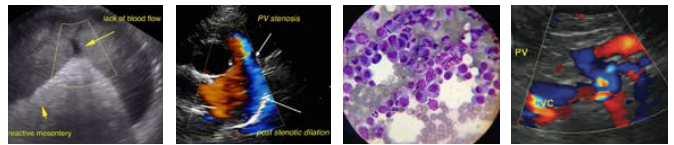
Examination of the **gastrointestinal tract** revealed a stomach and intestine free of stasis, of normal wall thickness, acceptable curvilinear mural detail, and peristaltic activity. Minor distal small intestinal thickening was noted without loss of detail. Small and large intestine demonstrated normal luminal chyme and stool consistency respectively. No obstructive or overt infiltrative disease was noted. No associated abnormal lymphatic activity was noted.

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Pancreas

The base and limbs of the **pancreas** were observed to be largely isoechoic to surrounding omental fat. Some parenchymal remodeling, however, with mild deviation from curvilinear normalcy was observed. Pancreatic duct and capsular irregularities were present consistent with age related changes. If pain upon imaging (+ Murphy sign) was present or if the patient is focally painful in subxiphoid palpation then low-grade smoldering chronic pancreatitis should be suspected.

ULTRASONOGRAPHIC FINDINGS

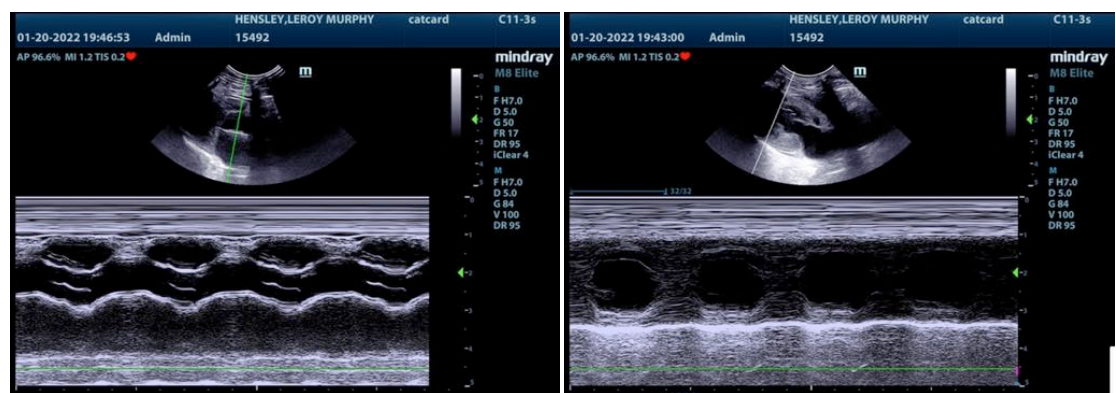
Right cranial liver mass with comet tail lung pattern.

Trace pericardial effusion. This may be a metastatic manifestation as it is not related to the heart.

Slight amount of pleural effusion.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Chest and abdominal CT would be ideal in this patient. Given the liver mass I am concerned for early metastatic manifestation to the chest. Chest CT and cranial abdominal CT is recommended to assess if the liver mass is resectable and if there is evidence of metastatic changes in the lung fields. 25-gauge ultrasound-guided FNA of the liver mass is recommended. There is a minor potential that the liver mass is not neoplastic and it is abscessation; however, carcinoma is the primary concern. The thoracic radiographs reveal bronchoalveolar pattern, I am concerned for metastatic disease given the hepatic lesion.





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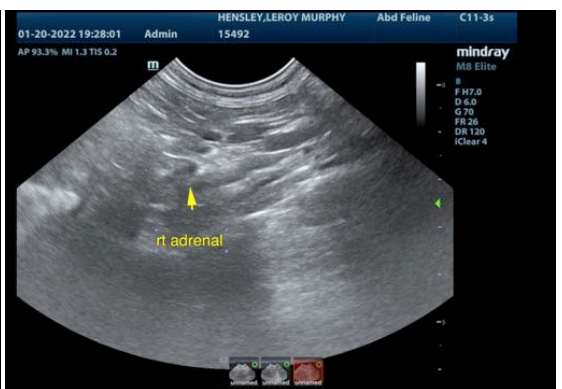
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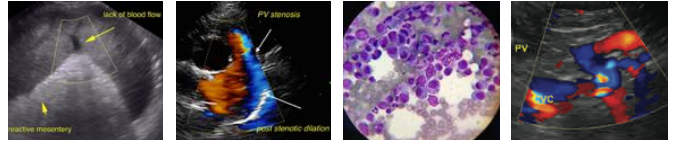
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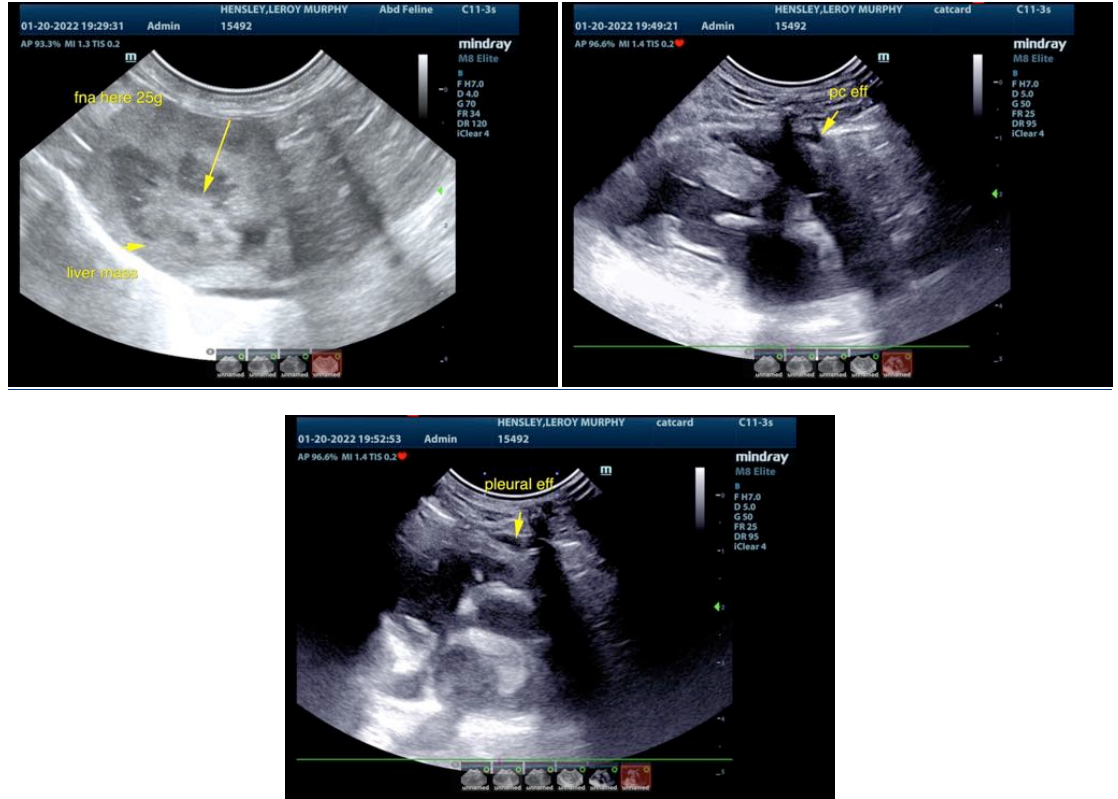
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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