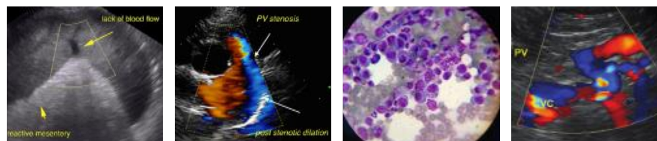


SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT

Louis DeVitis

SPECIES

Feline

BREED

DSH

SEX

MN

AGE

10 yrs

WEIGHT

12.4 lbs.

INTERPRETED BY

R. McKenzie Daniel, DVM, DABVP (Canine and Feline)

IMAGING PERFORMED BY

Jessica Miller

HOSPITAL NAME

SCC Landing

REFERRING VET

Dr. Villari

INVOICE

14755

DATE

8/30/22

PRESENTING CLINICAL SIGNS

Lethargic, uncontrolled DM. Current meds: Convenia on Sunday, lantus at 12:30pm
Abnormal PE/Chem/CBC/UA Results: BG 523, ALT 190, BUN 78, Ca 7.4, Chole 245 T Bili 1.6, Na 130, Cl 85, Lym 0.34, Neu 88.9%, Lym 3.9%, RBC 10.23, Hgb 15.9

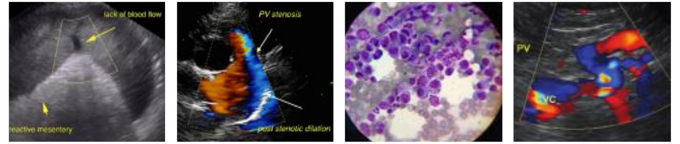
ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

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		92	0.53	1.47	0.51	43.5	78.1
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		1.6	1.6		1.0	0.7	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

Cardiac Presentation

The echocardiogram in this patient demonstrated normal to minor increased **left atrial** size based on 2 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 as 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 subjective borderline to mild increased size with normal structure and content. No evidence of masses was noted or overt chamber overload. **Tricuspid** valvular assessment demonstrated adequate linear morphology and kinetics. Mild TR was present on doppler. 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** free fluid was noted. Mild to moderate volume free pleural fluid was present. No overt evidence of cardiac tumors, obvious extracardiac pathology, or cranial mediastinum pathology was noted in the visible window. Subjective mild bradycardia in light of expected heart rate.



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Urinary System

The urinary bladder, trigone, cystourethral junction, and visible pelvic urethra to a depth of 2.0 cm exhibited normal thickness and tone. Primarily anechoic urine was present in the lumen. Mild, nondependent, particulate sediment was present without evidence of calculus formation. The ureteral papillae were normal. The ureters were not visible which is normal. No evidence of inflammatory or neoplastic mural changes were noted.

The area of the aortic trifurcation was free of pathology.

Both kidneys were mildly prominent in size exhibiting mild loss of corticomedullary border demarcation. Very scant pyelectasia was present in both kidneys. The left kidney measured 4.7 cm in length. The right kidney measured 4.7 cm in length.

Adrenal Glands

The bilateral adrenal glands were mildly prominent in size yet without evidence of significant adrenomegaly or tumors. The left adrenal gland measured 0.54 width and the right adrenal gland measured 0.58 width. This is nonspecific and may indicate a patient variant or possible mild stress hyperplasia.

Spleen

The spleen exhibited a finely textured and homogenous parenchyma which was hyperechoic to the liver and renal cortical parenchyma. The capsule was smooth and regular without apparent expansion. The splenic vasculature at the hilus was normal in volume with no evidence of congestion or thrombosis. Acute to chronic inflammatory, neoplastic, or benign parenchyma changes were not noted.

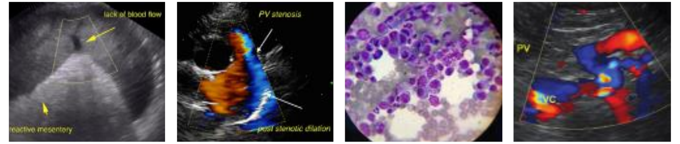
Liver/ Gallbladder

The liver presented mild to moderately increased in size. The parenchyma of the liver was subjectively increased in echogenicity compared to the spleen and renal cortices. The echotexture of the liver parenchyma was uniform with a mild coarse echotexture. The capsule of the liver was symmetrical in margination. The hepatic and portal vasculature were normal in appearance without signs of congestion. The gallbladder was subtly distended in size containing anechoic content. The proximal to mid common bile duct was moderately dilated and tortuous without overt post hepatic obstruction. The common bile duct dilation measured 0.41 cm diameter. Overt evidence of obstructive pathology i.e., calculi, mucus, neoplasia not noted.

Gastrointestinal

The stomach presented intact wall layering with a normal wall layer ratio. A moderate amount of retained anechoic fluid was present in the stomach.

The intestinal walls were sonographically normal, demonstrating intact wall layering and maintained 1:3 muscularis / mucosa ratio. The mucosa exhibited mild decreased echogenicity with occasional mucosal speckling. A segmental to diffuse ileus pattern consisting of mild fluid accumulation in the intestinal lumen was present without obstruction or foreign material.



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Normal visible colon wall layers were present with apparent formed feces in lumen.

Pancreas

The pancreas was mildly prominent in size exhibiting subtle areas of capsule asymmetry and mildly hypoechoic to nonhomogeneous parenchyma compared to adjacent mildly hyperechoic omentum.

Free Abdomen

No overt lymphadenopathy or omental masses were present. Scant peritoneal free fluid was present.

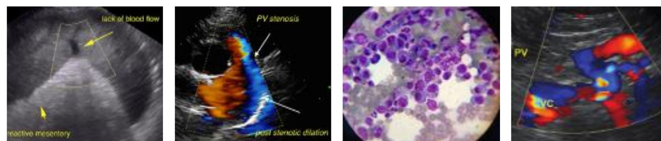
ULTRASONOGRAPHIC FINDINGS

- Normal to borderline increased LA
- Normal LV with adequate LV systolic function
- Subjective mild Increased RA size with mild TR - no evidence of overt pulmonary hypertension
- Subjective mild bradycardia
- Mild urinary bladder sediment
- Nonspecific mild chronic renal changes
- Hepatomegaly exhibiting parenchyma hyperechogenicity - metabolic / reactive / vacuolar (diabetic) hepatopathy, cholangitis / cholangiohepatitis, lipidosis, less likely infiltrative neoplasia
- Moderate common bile duct dilation - patient or age-related variant or cholangitis suspected, no obvious evidence of obstructive pathology, which is less likely
- Chronic active pancreatitis
- Gastroenteritis with gastric hypomotility
- Mild to moderate volume pleural and scant peritoneal free fluid

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Overall, given the lack of significant left or right heart enlargement, evidence of clinical pulmonary hypertension, and adequate LV function, the pleural effusion in this patient was not overtly consistent with cardiogenic origin. However, the possibility of emerging cardiomyopathy such as unclassified cardiomyopathy or similar cannot be definitively excluded. No overt indication for cardiac medications at this stage, yet sonographic monitoring is recommended with initial recheck echocardiogram in 3-4 months, sooner if strong clinical concern for CHF. ECG assessment Is recommended If possible.

Hospitalization with stabilization of serum glucose levels and with monitoring of renal and hepatic parameters going forward is recommended. Full urinalysis to assess for evidence of ketones, as well as urine culture and sensitivity on a sterile urine sample, given the likelihood of glucose urea or if evidence of inflammatory sediment, are suggested. Pleural effusion analysis, cytospin cytology, +/- culture and sensitivity if evidence of inflammatory cells, may be considered for further assessment.



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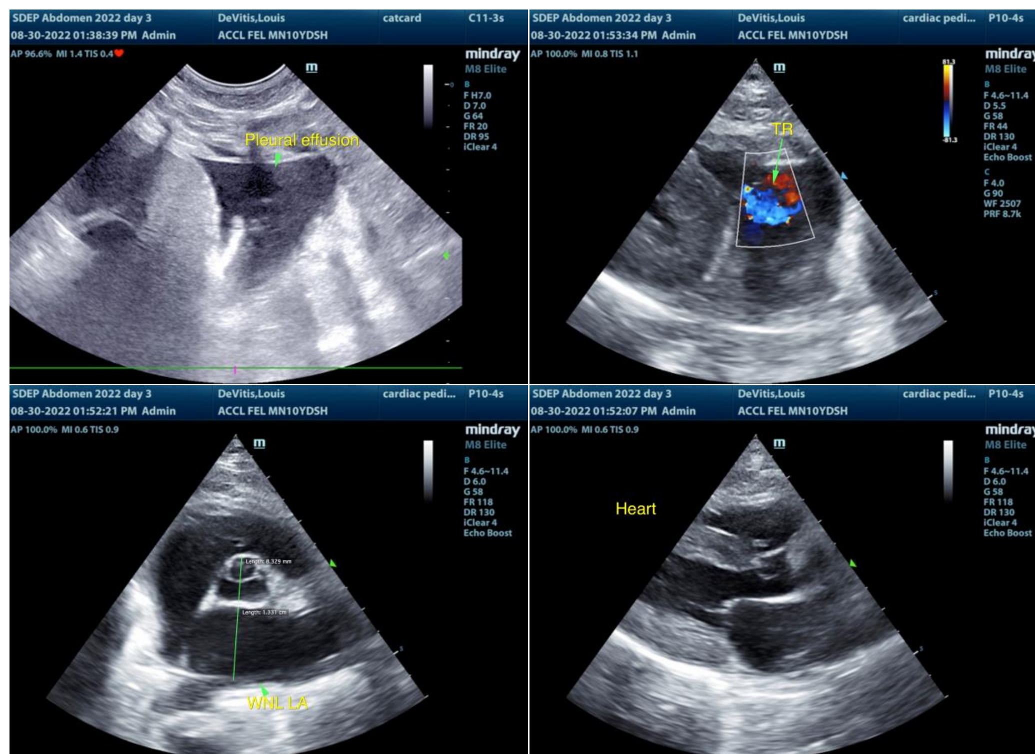
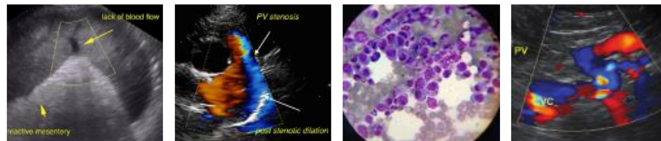
Likewise, if persistent / progressive hepatic enzyme elevations, and assuming normal clotting status, screening hepatic FNA cytology would be warranted.

This is a suggestive checkoff list when faced with an unregulated diabetic patient:

UTI
Dietary indiscretion/intolerance
Pancreatitis
Hyperthyroidism/hypothyroidism
Exogenous steroids (including topical eye meds)
Cushing's
Acromegaly
Owner compliance
Insulin quality issues
Antibodies to insulin
Underlying Neoplasia
Diffuse liver disease





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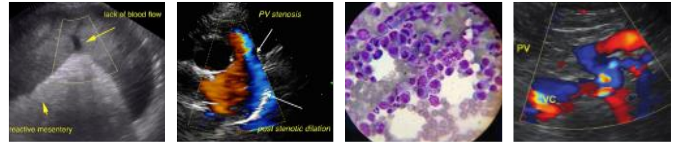
The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.



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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.

R. McKenzie Daniel, DVM, DABVP (Canine / Feline Practice)
info@SonoPath.com