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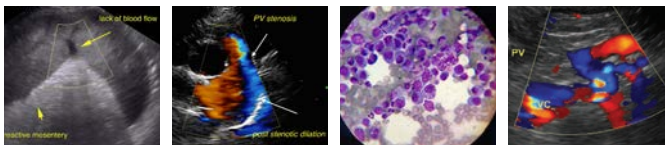


PATIENT
Gizmo Imbo

SPECIES
Feline

BREED
DSH

SEX
Spayed Female

AGE
15 Years

WEIGHT
10 Pounds

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

IMAGING PERFORMED BY
Jessica Miller

HOSPITAL NAME
Newton Vet Hospital

REFERRING VET
Not Provided

INVOICE
26163

DATE
10/11/21

PRESENTING CLINICAL SIGNS

Pleural effusion +/- peritoneal effusion. Presented for flea anemia- received transfusion. Current meds: lasix, doxycycline
Abnormal PE/Chem/CBC/UA Results: BUN 68.6, Cr 2.6, ALT 712, PCV 20

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		199	0.68	1.72	0.61	60.8	92.2
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		1.98	1.8		1.3	1.0	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

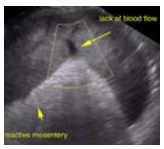
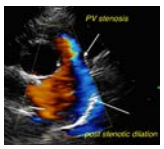
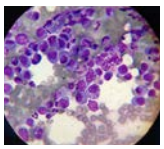
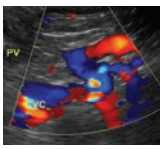
Cardiac Presentation

The echocardiogram in this patient demonstrated mild to moderate increased **left atrial** size with no evidence of "smoke" or thrombi. The cranial and caudal **mitral** valve leaflets appeared mildly thickened with some insufficiency noted on Doppler. The **left ventricle** presented borderline to mild excessive free wall and septal thicknesses with subtle hypertrophic tendency compared to normal for this species. The **myocardium** presented essentially normal echogenicity without immediate signs of fibrotic or ischemic disease. **Contractility** of the ventricular walls was considered excessive for this patient evidenced by the elevated fractional shortening measurement. The **left ventricular outflow** tract demonstrated minor subjective turbulent laminar flow. Subjective assessment of the **right atrium** and auricle revealed normal size, structure and content. No evidence of masses was noted. **Tricuspid** valvular assessment demonstrated linear morphology. Color doppler assessment revealed minor tricuspid valve insufficiency. The **right ventricle** was of normal size with normal chordae structure, myocardial echogenicity and thickness. **Pulmonic** tract assessment revealed normal valve structure, laminar flow, and diameter. Mild visible free pleural fluid was present without evidence of concurrent pericardial effusion. No overt echographically detectable evidence of infiltrative disease (i.e., pericardial masses) visible. The mediastinum was free of masses in the visible window.

Urinary System

The urinary bladder, trigone, cystourethral junction, and visible pelvic urethra to a depth of – cm exhibited normal thickness and tone. Anechoic urine was present in the lumen with no uroliths or sediment. The ureteral papillae were normal. The ureters were not visible which is normal. No evidence of inflammatory or neoplastic changes were noted.

Normal size and margination were present in the kidneys. A normal 1:3 cortex / medulla ratio was maintained. The medulla and cortices were uniform in texture with some increased echogenicity and

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loss of corticomedullary symmetry and definition expected for the age of the patient. No evidence of pelvic dilation was present. The kidneys measured 3.6 cm each.

The area of the aortic trifurcation was free of pathology.

Adrenal Glands

The adrenal glands were uniform in size and contour with a uniformly hypoechoic parenchyma. The left adrenal gland measured 0.5 cm in width. The right adrenal gland measured 0.33 cm in width.

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

The liver exhibited potential for mild subjective enlargement, maintained symmetrical contour, and overall hepatic parenchyma echogenicity with moderate coarse echotexture. Subtle evidence of subjective mild prominent hepatic vasculature noted primarily in the area of the hepatic vein/caudal vena cava junction. No overt evidence of thrombosis or hepatic neoplasia. The gallbladder was non distended in size with moderate, echogenic, nonmineralized biliary sludge. The cystic duct and common bile ducts were normal without evidence of dilation.

Gastrointestinal

The stomach presented intact wall layering with a normal wall layer ratio. The lumen of the stomach was empty with no signs of ileus, obstruction or foreign material.

The small intestine presented intact wall layering with 1:3 muscularis/mucosa ratio. The lumen of the small intestine was empty with no signs of ileus, obstruction or foreign material.

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

Pancreas

The parenchyma of the left limb, body and right limb of the pancreas presented isoechoic to the adjacent omental fat. A normal curvilinear capsule contour of the pancreas was present. The visible pancreatic duct was normal. No signs of active inflammation or neoplastic disease was evident.

Free Abdomen

Small pockets of scant to minor peritoneal free fluid were present. No evidence of concurrent lymphadenopathy. The omentum was of uniform echogenicity.

ULTRASONOGRAPHIC FINDINGS

- Borderline to mild hypertrophic IVS and LV free wall changes
- Mild to moderate left atrial enlargement
- Mild MR/TR
- Subjective minor hepatic vasculature congestion, subjective minor hepatomegaly
- Moderate chronic renal changes
- Mild pleural and peritoneal free fluid

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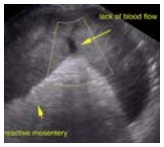
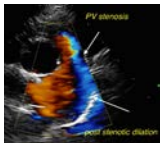
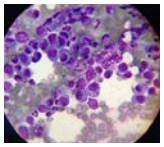
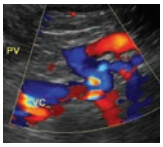

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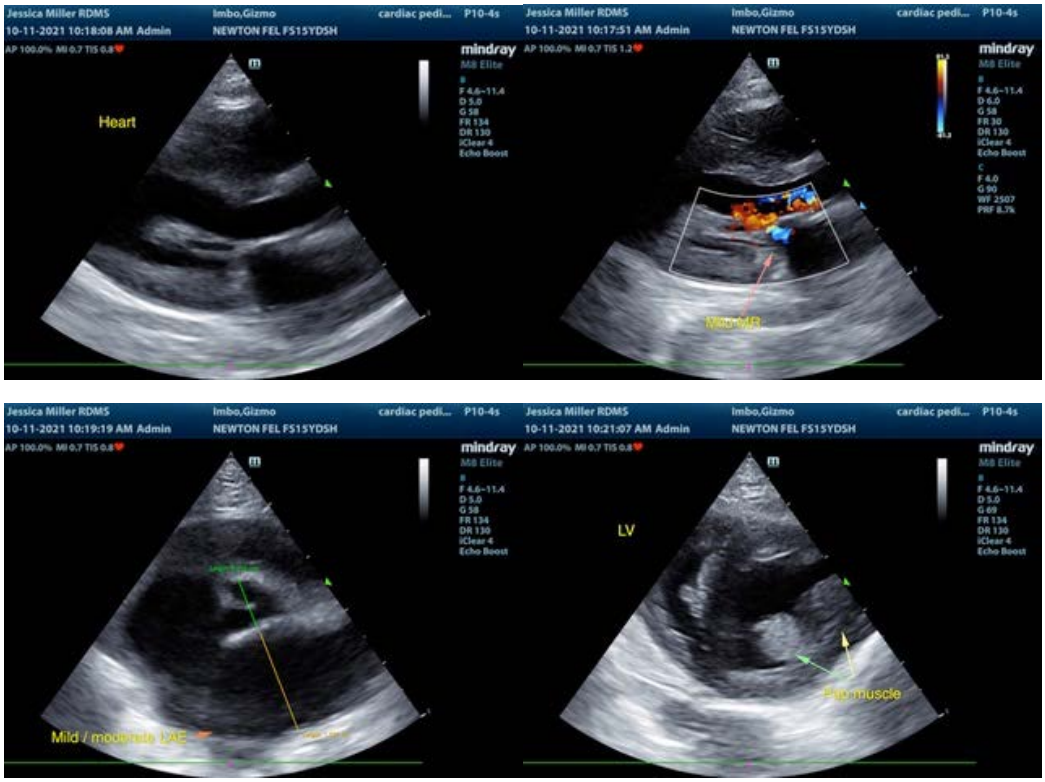
INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Primary emerging to mild HCM is a rule out diagnosis. Assuming no evidence of systemic hypertension, dehydration or underlying endocrine disease (i.e., hyperthyroidism). The left atrium exhibited mild to moderate enlargement, yet was not significantly enlarged, often seen in cats with decompensation. The exception to this rule may include iatrogenic or stress induced changes, which may lead to spontaneous decompensation even with normal to mild increased left atrial dimensions. Having said that, assuming normal albumin levels and without other overt causes of bicavitary effusion, cardiogenic effusion may be considered a top differential. Therefore, continued as needed Lasix, assessment of blood pressure, and ECG assessment with continued monitoring is recommended. Correlation with effusion analysis (if possible) would be ideal. Additional cardiac medications such as Pimobendan or Plavix are not clearly indicated at this time. This patient may be at increased risk of decompensation going forward, yet sonographic monitoring is required for prognosis. Recheck echocardiogram suggested in 6 months, sooner if continued or increasing congestion is noted.

Monitoring of renal parameters is considered essential on Lasix given the current azotemia. Further renal staging to include urine C/S and protein: creatinine ratio on sterile urine sample may be considered.



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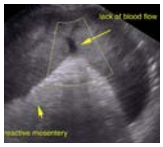
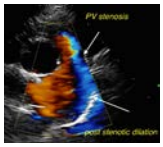
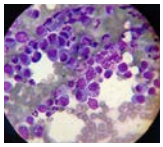
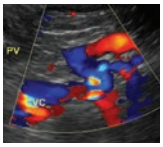

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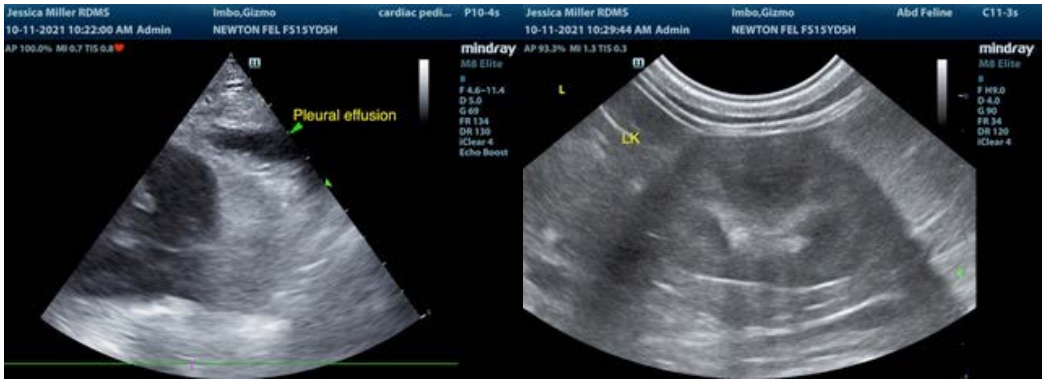

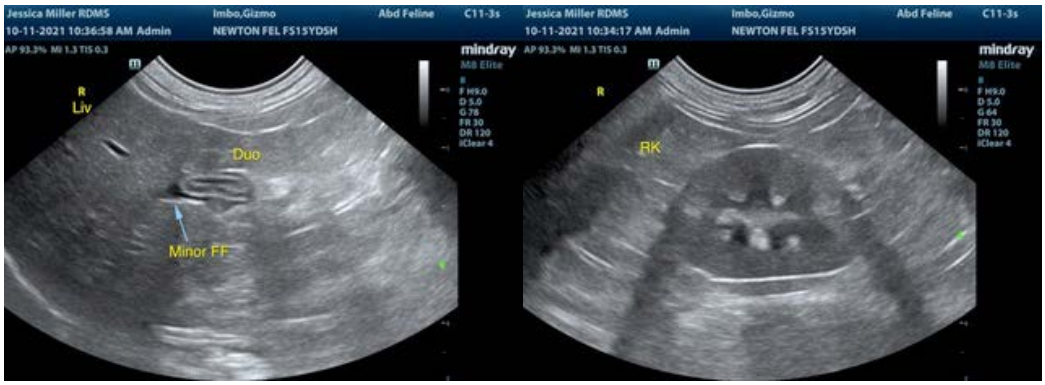

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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