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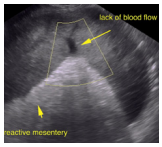

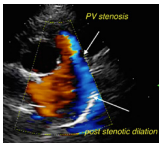

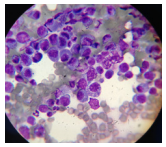
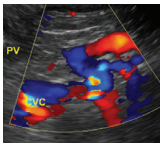


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1-800-838-4268 info@sonopath.com

**PATIENT**

Oliver Gruenfelder

**SPECIES**

Feline

**BREED**

DSH

**SEX**

Neutered Male

**AGE**

8 Years

**WEIGHT**

15.2 Pounds

**INTERPRETED BY**

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

**IMAGING PERFORMED BY**

Jenn

**HOSPITAL NAME**

Rockaway AH

**REFERRING VET**

Dr. Maniar

**INVOICE**

35640

**DATE**

2/14/22

## PRESENTING CLINICAL SIGNS

increased RR pancreatitis on bw

## 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 | | NM | 0.43 | 1.7 | 0.53 | 52.9 | 87.9 |
| **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 | 2.8 | 2.4 | 2.0 | | 0.9 | 0.75 | 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 enlarged **left atrial** size based on 3 separate LA measurements. The cranial and caudal **mitral** valve leaflets presented mild thickening with normal kinetics. Color doppler revealed mild eccentric insufficiency. The **left ventricular** septum and free wall revealed normal thicknesses, adequate contractility and normal left ventricular volume, yet some echogenic remodeling of the septum and free wall were noted consistent with some level of **myocardial fibrosis**. The **left ventricular outflow** tract demonstrated normal laminar flow and subjective structural integrity. The **right atrium** and auricle revealed increased size and normal content. No evidence of masses was noted or chamber overload. **Tricuspid** valvular assessment demonstrated adequate linear morphology and kinetics. The **right ventricle** was enlarged in size with normal 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.

### *Urinary System*

The urinary bladder, trigone, cystourethral junction, and visible pelvic urethra exhibited normal thickness and tone. Primarily anechoic urine was present in the lumen. Mild non-depndent, 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.

Normal renal size with asymmetrical margination was present in both kidneys. The renal cortex presented uniformly increased in echogenicity with uniform echotexture. The renal cortex appeared to be hypertrophied resulting in an altered cortex: medulla ratio. Mild loss of corticomedullary distinction was also present. The renal medullary volume was subjectively reduced. The left kidney measured 3.7 cm. The right kidney measured 3.8 cm.

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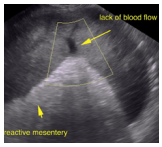

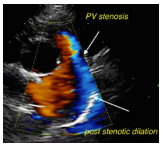

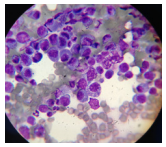
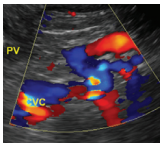


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### *Adrenal Glands*

No overt pathology in the area of the left and right adrenal glands.

### *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 generalized enlargement. The parenchyma of the liver was subjectively normal in echogenicity compared to the spleen and renal cortices. The liver parenchyma was uniform with a mildly coarse echotexture. The capsule of the liver was symmetrically rounded to mildly swollen in margination. The hepatic and portal vasculature were normal in appearance without signs of congestion. The gallbladder was non-distended in size with primarily anechoic luminal content. The cystic and common bile ducts were normal.

### *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 generalized propensity for mildly prominent muscularis layer. The lumen of the small intestine was empty with no signs of ileus, obstruction or foreign material. Jejunum wall measured 0.32 cm.

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

### *Pancreas*

The left limb, right limb, and base of the pancreas presented hypoechoic to heterogeneous echogenicity compared to adjacent omental fat. Mild asymmetrical capsule margination was present with mild variable parenchymal swelling and mild peripancreatic reactivity / inflammation. No overt evidence of neoplasia.

### *Free Abdomen*

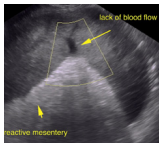
No omental masses, lymphadenopathy or effusion.

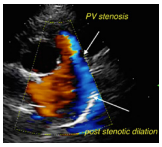
## ULTRASONOGRAPHIC FINDINGS

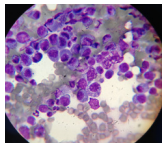
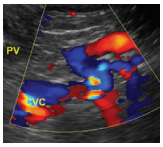
- Unclassified cardiomyopathy
- Mild urinary bladder sediment
- Bilateral mild interstitial nephrosis renal pattern
- Mild active to chronic active pancreatitis
- Suspect inflammatory enteropathy

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The finding of biatrial enlargement in the face of subjectively normal LV wall thickness is most suggestive of unclassified cardiomyopathy. However, burnout or end stage HCM/HOCM can also have this appearance. No overt evidence of atrial thrombus noted. However, this patient is at increased risk



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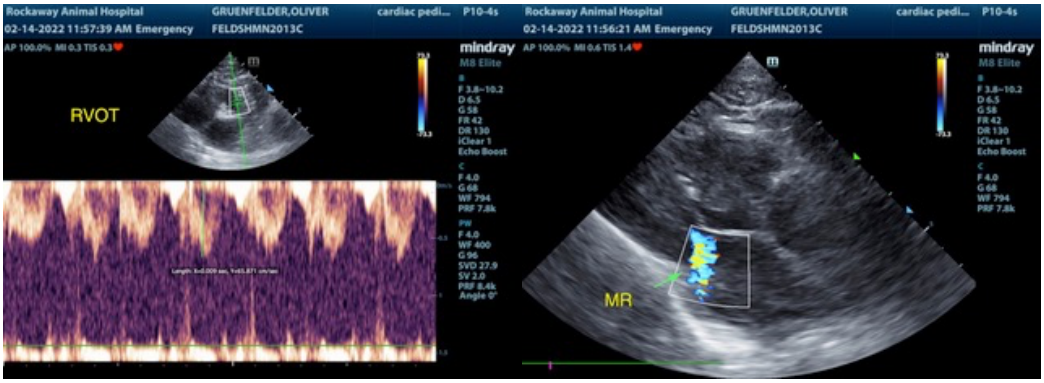
for thrombus formation, as well as for potential arrhythmogenic disease going forward. The reported elevated resting respiration rate in this patient may indicate potential for emerging cardiogenic edema.

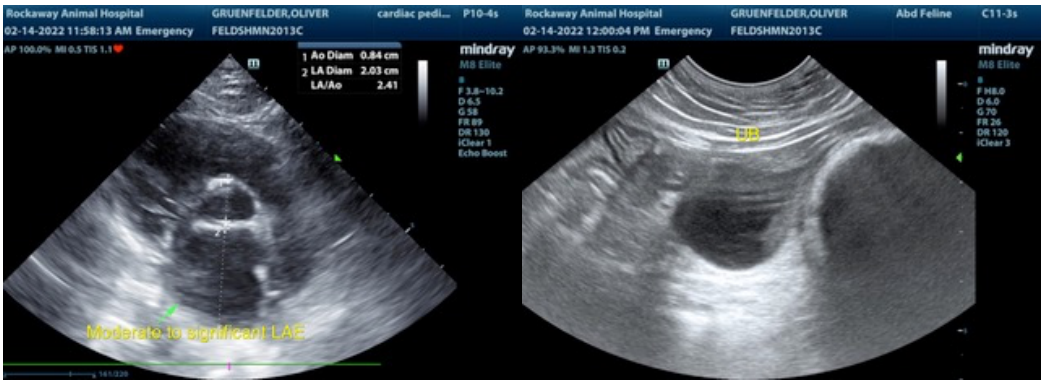
Consider hospitalization until patient resting respiration rate is stabilized. IV injectable Lasix may be considered based on thoracic radiograph assessment. Lasix 1-2 mg/kg PO BID, Clopidogrel 75 mg ¼ tab PO SID, as well as off-label Pimobendan at 1.25 mg PO BID recommended. Monitoring of renal values, blood pressure, and ideally ECG going forward suggested. Recheck echocardiogram recommend in 6 months, sooner if clinical signs progress.

The small intestine exhibited subtle mural changes, suggestive of inflammatory enteropathy. However, given the lack of reported gastrointestinal signs in this patient, this is a non-specific finding. Often, pancreatitis and underlying intestinal disease go together in cats. Further assessment may include GI panel to include PLI, TLI, cobalamin and folate.

The urinary bladder sediment may suggest cellular / crystalline debris or mucus. Cystocentesis for UA +/- C/S if evidence of inflammatory cells is recommended.

Potential for mild triad disease may be considered in this patient if history of gastrointestinal signs, weight loss, or elevated liver enzymes.



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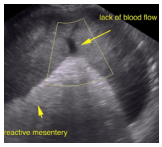
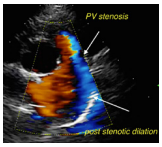
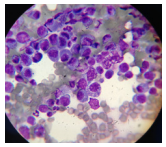
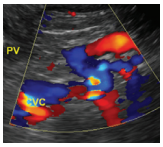

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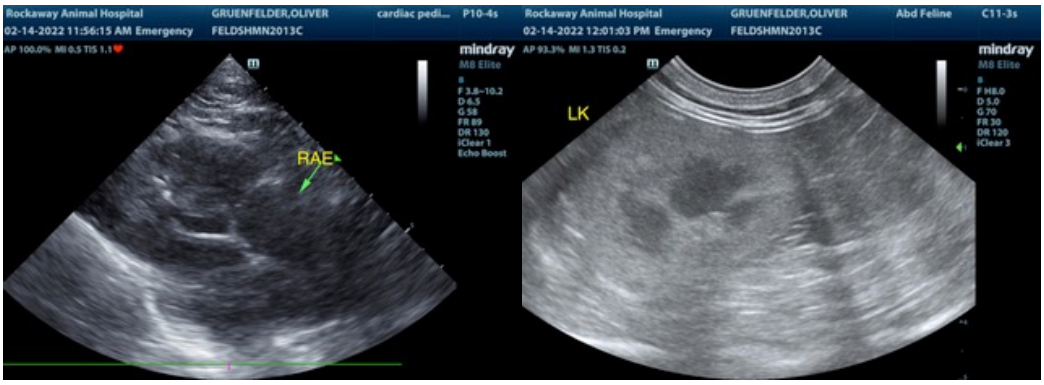


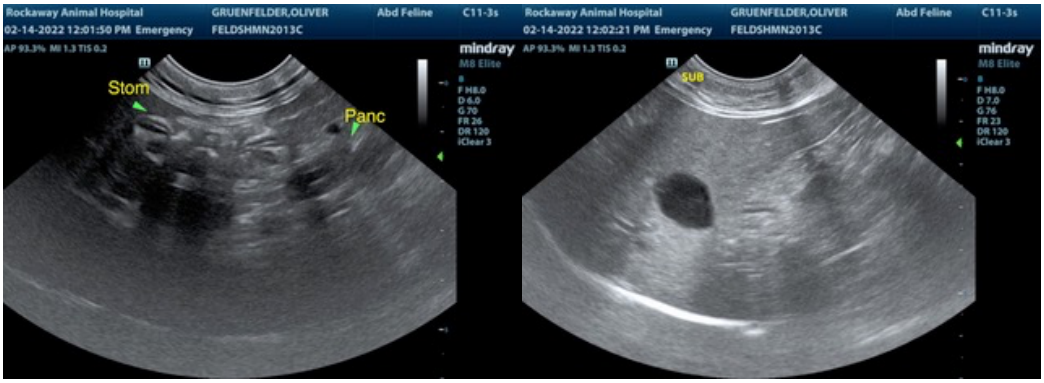


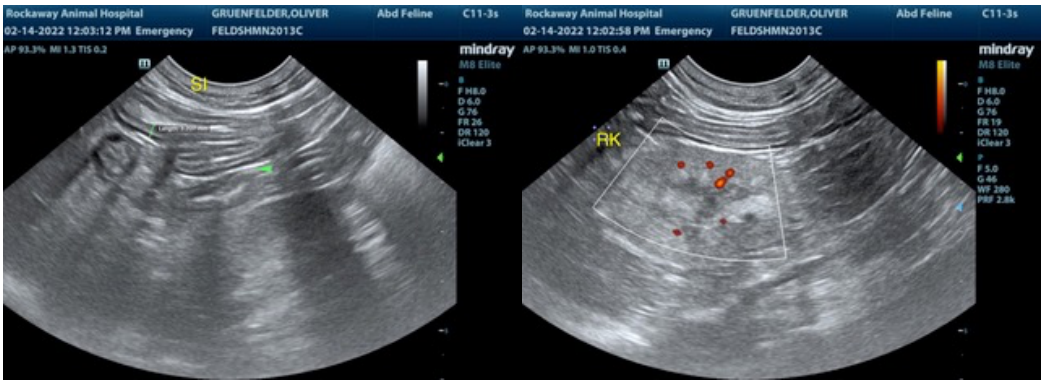


**The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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**