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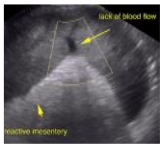
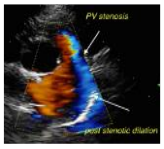
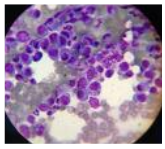
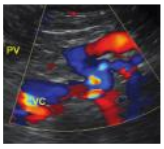





SonoPath.com
1-800-838-4268 info@sonopath.com

**PATIENT**

Ryder Molissu

**SPECIES**

Canine

**BREED**

N/A

**SEX**

MN

**AGE**

8 years

**WEIGHT**

100 lbs.

**INTERPRETED BY**

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

**IMAGING PERFORMED BY**

Diane McFadden

**HOSPITAL NAME**

Newton VH

**REFERRING VET**

Dr. Chun

**INVOICE**

13654

**DATE**

4/14/22

## PRESENTING CLINICAL SIGNS

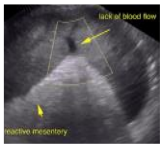
acute collapse; not on any meds.
Abnormal PE/Chem/CBC/UA Results: WBC 22.3 with neutrophilia (19); HCT 57.2%, BUN 31.8; crea 1.7, ALKP 264, K+ 3.2

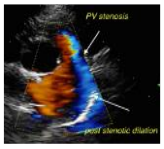
## ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

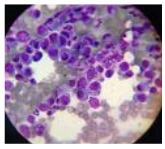
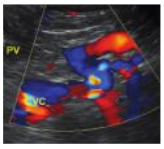
| CANINE CARDIAC PARAMETERS | MR VMAX (m/s) | TR VMAX (m/s) | LA/AO (Boon method) | LA/AO (Heart Base; Swe) | FS (%) | EF (%) | EPSS (cm) |
|---|---|---|---|---|---|---|---|
| NORMAL PARAMETER | 4.5-5.5 | <2.7 | 1.3 | <1.3 | 28-40 | 40-100 | <0.6 |
| PATIENT | | | | 1.3 | 33.3 | 65.6 | 0.33 |
| **CANINE CARDIAC PARAMETERS** | **HR** (BPM) | **AV VMAX** (m/s) | **PV MAX** (m/s) | **BODY WEIGHT** (kg) | **LA** 2D short axis Base view (cm) | **LVIDd** Avg; 2D and m-mode short axis (cm) | **LVIDs** Avg; 2D and m-mode short axis (cm) |
| NORMAL PARAMETER | 50-100 | 0.7-1.7 | 0.7-1.6 | | | | |
| PATIENT | 141 | 1.65 | 0.95 | | 4.1 | 3.9 | |

### *Cardiac Presentation*

The echocardiogram in this patient demonstrated normal **left atrial** size based on 3 separate methods of LA evaluation. The cranial and caudal **mitral** valve leaflets presented normal linear structure, extension in systole, and union in diastole with normal kinesis. The **left ventricle** presented 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 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 in the area of the right atrium or auricle were visualized. Subtle diastolic collapse of the right atrial free wall consistent with minor cardiac tamponade was present. **Tricuspid** valvular assessment demonstrated adequate linear morphology and kinesis. No detectable TR was present. The **right ventricle** was of normal size (1/3 diameter of LV), chordae structure, myocardial echogenicity and thickness. **Pulmonary outflow** tract assessment revealed normal valve structure, laminar flow, and diameter (approx.1:1 pa/ao ratio). Mild to moderate volume pericardial free fluid without overt evidence of free pleura fluid was noted. The pericardial free fluid was subjectively anechoic without overt evidence of cellular component. The cranial **mediastinum and pericardial and extra-cardiac regions** were free of masses in the visible window.



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## *Urinary System*

The urinary bladder, and trigone, cystourethral junction 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 was noted.

The area of the aortic trifurcation was free of pathology.

Normal size and margination were present in the kidneys. A normal 1:3 cortex / medulla ratio and normal corticomedullary definition were maintained. The echogenicity of the cortex was similar to or slightly less than normal liver parenchyma while the medulla echogenicity was hypoechoic to the cortex with no evidence of pelvic dilation. The left kidney measured 7.4 cm in length. The right kidney measured 7.6 cm in length.

## *Adrenal Glands*

The left adrenal gland was uniform in size and contour with a uniformly hypoechoic parenchyma. The left adrenal gland measured 3.0 cm length x 0.98 cm width at the caudal pole. The right adrenal gland was uniform in size and contour with a uniformly hypoechoic parenchyma. The right adrenal gland measured 3.6 cm length x 0.67 cm width at the caudal pole.

## *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 exhibited generalized enlargement with symmetrical yet swollen contour. The parenchyma exhibited conserved uniform parenchyma with normal echogenicity isoechoic to the spleen and falciform fat. Subtle hepatic vasculature congestion, most notable at the hepatic vein / caudal vena cava junction, along with subjective mild cranial abdominal caudal vena cava distention was present. No overt evidence of thrombosis was noted. The gallbladder was non-distended in size. The gallbladder wall was thickened in appearance consisting of an echogenic double rim corresponding to the inner and outer portions of the wall. This is consistent with gallbladder wall edema. Possible causes may include acute inflammation, edema and anaphylaxis. The gallbladder was otherwise normal in size containing anechoic content.

## *Gastrointestinal*

The stomach presented intact wall layering with a normal wall layer ratio. The lumen of the stomach contained mild, retained, nonshadowing ingesta / chyme most consistent with post prandial presentation without signs of ileus, obstruction or foreign material. The stomach was otherwise normal.

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.

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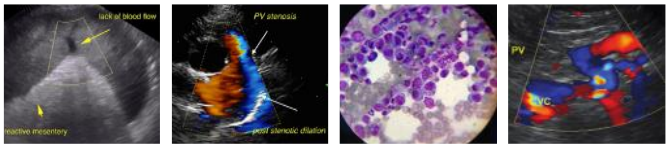


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### *Pancreas*

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 were evident.

### *Free Abdomen*

Mild volume, subjectively anechoic concurrent peritoneal free fluid was noted. Subtle generalized reactive mesentery was present. No evidence of omental masses or lymphadenopathy was noted.

## ULTRASONOGRAPHIC FINDINGS

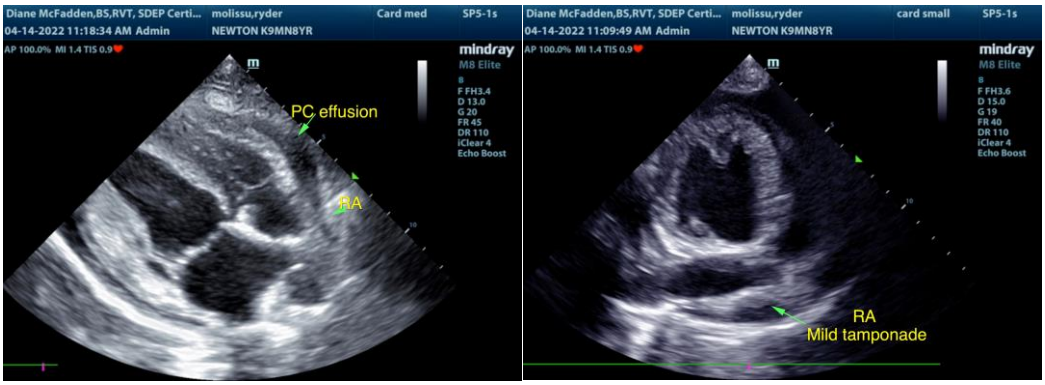
- Overall normal cardiac structure and function
- Mild to moderate volume pericardial effusion - unknown etiology, neoplastic, inflammatory / infectious, idiopathic, or other
- Hepatomegaly exhibiting mild evidence of vascular congestion
- Gallbladder wall edema

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

A definitive cause of the pericardial effusion was not overtly evident. Although a definitive cardiac mass was not visualized, the potential for neoplasia in this patient, i.e., small non-visualized mass or subtle infiltrative neoplasia, cannot be excluded. Subtle cardiac tamponade was present yet not overtly to the degree of causing significant diastolic collapse of the right atrium to obviously result in hepatic congestion and gallbladder wall edema. Therefore, the possibility of a more multicentric process such as Inflammation or nonobvious neoplasia could be present. Further assessment may include pericardiocentesis for pericardial effusion analysis, as well as abdominocentesis for peritoneal effusion analysis cytology +/- culture and sensitivity if clinically indicated.

An alternative differential diagnosis for the gallbladder wall edema may include occult anaphylaxis. Assuming normal clotting status, hepatic FNA for screening cytology is warranted primarily to assess for or rule out potential occult neoplasia.

If recurrent or progressive pericardial effusion is noted, thoracic CT could be considered for further assessment of the cardiac and pericardial regions.



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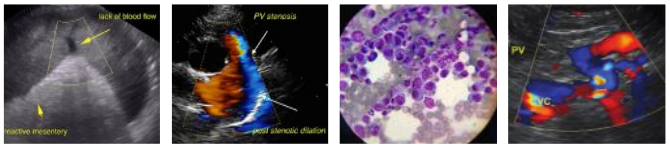

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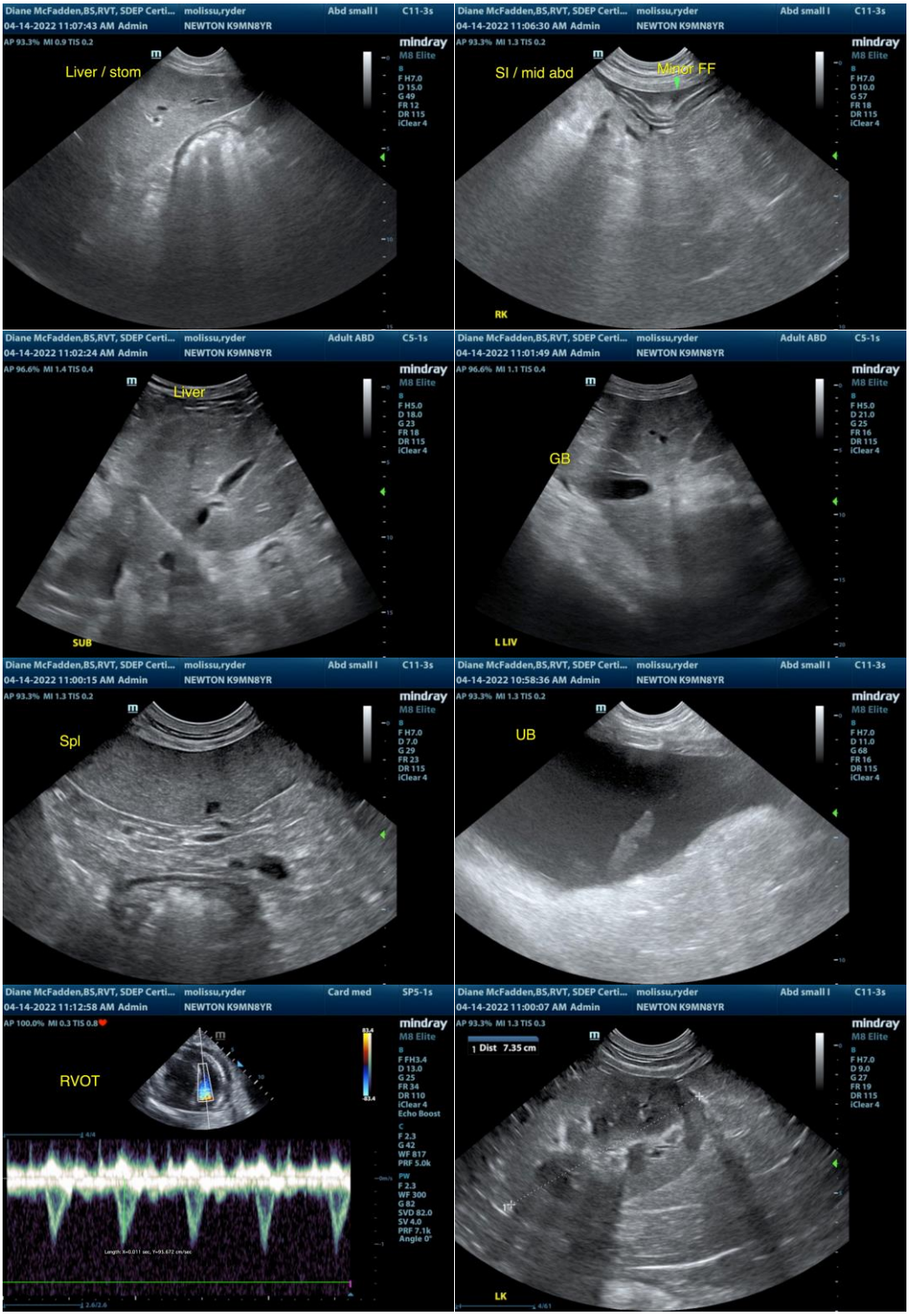

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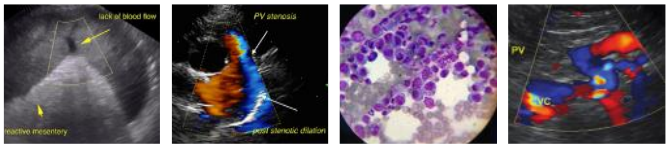


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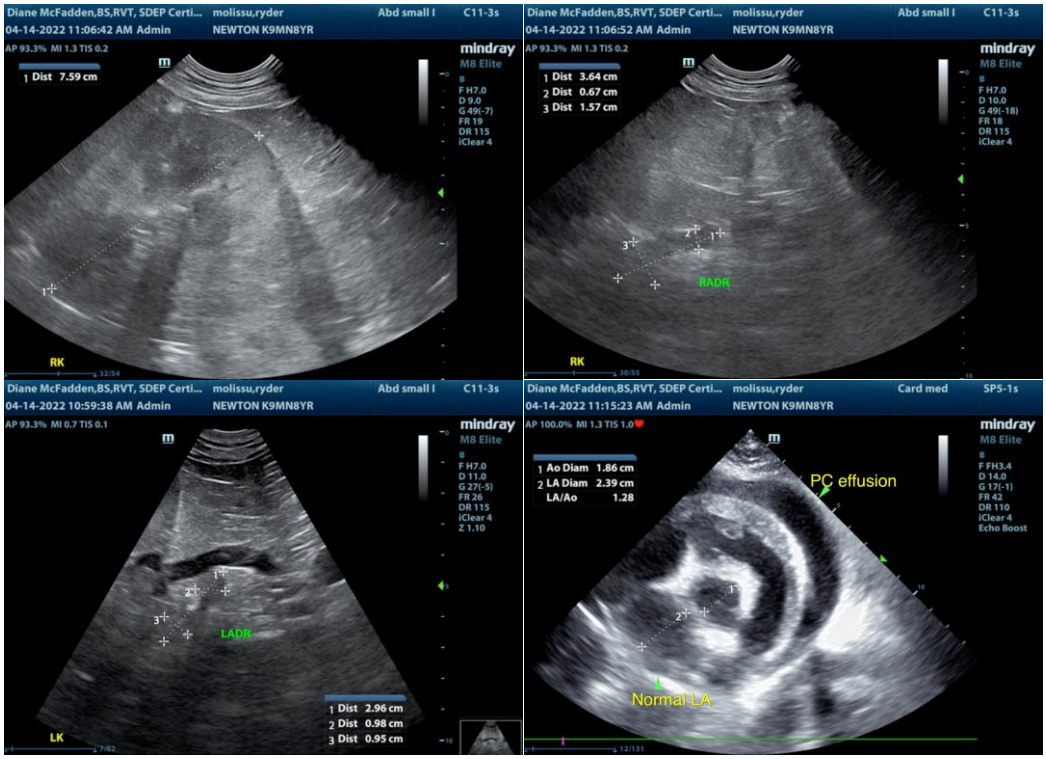


**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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.

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