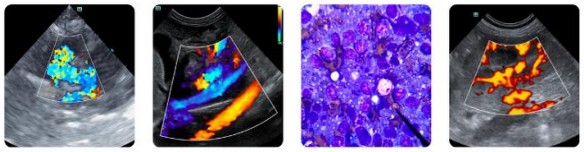


Clinical Sonography & Telecytology
Educational Teleconsultation Services™

**PATIENT**
Sandy Scanion

**SPECIES**
Canine

**BREED**
Shih Tzu

**SEX**
FS

**AGE**
10yr

**WEIGHT**
10.3lb

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

**IMAGING PERFORMED BY**
Chloe Lowe CVT

**HOSPITAL NAME**
Newton Veterinary Hospital

**REFERRING VET**
Dr Hipkin

**INVOICE**
24851

**DATE**
05/18/2026

## PRESENTING CLINICAL SIGNS

Presented on 5/15 for dyspnea, responded to furosemide and oxygen support. Grade.VI/VI heart murmur, crackles (resolved); suspected pulmonary edema on radiographs. clavamox, enrofloxacin.

Abnormal PE/Chem/CBC/UA Results: Phos 9.9, Tp7.8, glob 4, BUN 61.9, Ca 5.3. USG after lasix 1.015

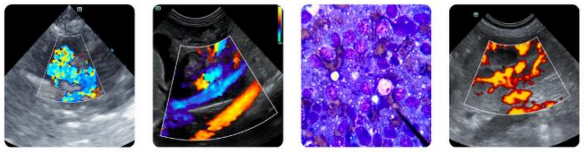
## ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN AND HEART

| CANINE CARDIAC PARAMETERS | MR VMAX (m/s) | TR VMAX (m/s) | LA/AO M-mode | LA/AO (Heart Base; Swe) | FS (%) | EF (%) | EPSS (cm) |
|---|---|---|---|---|---|---|---|
| NORMAL PARAMETER | 4.5-5.5 | <2.7 | 1.3 | Up to 1.6 | 28-40 | 40-100 | <0.6 |
| PATIENT | 5.8 | 3.1 | -- | 1.63 | 45 | 80 | 0.2 |
| **CANINE CARDIAC PARAMETERS** | **HR** (BPM) | **AV VMAX** (m/s) | **PV MAX** (m/s) | **BODY WEIGHT** | **LAD** LA MAX 4 Chamber | **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 | 179 | -- | 0.7 | 10.3lb | 2.6 | 2.1 | -- |

### *Cardiac Presentation*

The echocardiogram in this patient demonstrated mild increased left atrial size based on 2 different LA measurement methods. Maintained linear interatrial septum. The cranial and caudal mitral valve leaflets presented mild thickening consistent with mild endocardiosis. No evidence of chordae tendineae rupture or valvular prolapse. Doppler indicated measurable severe eccentric insufficiency. 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 was noted or chamber overload. Tricuspid valvular assessment demonstrated mild thickened with TR 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). Minor pulmonic insufficiency on Doppler. No visible pericardial or free pleura fluid was noted. No echographically detectable evidence of cardiac / pericardial tumors was visible. No evidence of arrythmia. Pericardial pulmonary comet tail artifact present.

### *Urinary System*





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The urinary bladder, trigone, cystourethral junction, and visible pelvic urethra to a depth of 3 cm exhibited normal thickness and tone. Anechoic urine was present in the lumen with no evidence of urine/lumen sediment, mineral, or calculi. The ureteral papillae were normal. The ureters were not visible which is normal. No evidence of inflammatory or neoplastic changes was noted.

Normal size and margination were present in the kidneys. A normal 1:3 cortex / medulla ratio was maintained. Increased lateral medullary to corticomedullary echogenicity with indistinct corticomedullary border demarcation. No evidence of pelvic dilation was present. The left kidney measured 3.2 cm in length. The right kidney measured 3.4 cm in length.

The area of the aortic trifurcation was free of pathology.

### *Adrenal Glands*

Variably sized, non-homogenous hyperechoic, non-mineralized cranial and caudal left adrenal nodules were present. The nodules did not exhibit signs of mineralization or vascular invasion. The larger nodule at the caudal pole measured 0.93 cm x 0.73 cm with concurrent mild to caudal left adrenomegaly measuring 1.9 cm x 0.89 cm caudal pole.

The right adrenal gland was normal in size. Mild parenchyma heterogeneity and mild capsule asymmetry was present without suspicion for overt neoplasia. The right adrenal gland measured 1.7 cm length and 0.43 cm width in the caudal pole. Normal caudal pole size was present.

### *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.

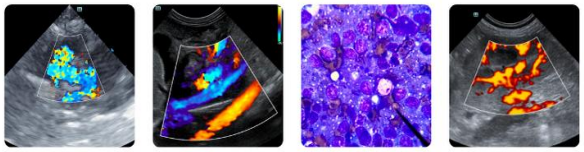
### *Liver/Gallbladder*

The liver was subjectively normal in size, structure, and contour. The liver parenchyma was uniform and hypoechoic to the spleen with a mild coarse echotexture. Normal vascular volume. The hepatic and portal vasculature were normal in appearance without signs of congestion. The gallbladder was non-distended in size with thin walls and mild non-organized debris. No evidence of gallbladder/peripheral gallbladder inflammation or wall edema was present. The cystic and common bile ducts were normal.

Transdiaphragmatic view revealed comet tail lung pattern, which is echogenic sound wave interface with microconsolidations within the caudal lung field. The lung field should not be visualized by sonogram unless pathology is present. Chest radiographs are recommended to rule out alveolar/lung disease such as neoplasia, thromboembolic disease, chronic inflammatory disease with microconsolidation.

### *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.





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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 mechanical/metabolic 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*

No omental masses, overt lymphadenopathy or peritoneal effusion/ascites was present.

## ULTRASONOGRAPHIC FINDINGS

### Primary

- Chronic mitral valve disease (ACVIM B2)
- Tricuspid insufficiency- estimated pulmonary pressure gradient consistent with mild pulmonary hypertension
- Minor pulmonic valve insufficiency
- Non-congested liver
- Pericardial and transdiaphragmatic comet tail artifact
- Bilateral chronic renal changes
- Non-homogenous/ nodular adrenal glands

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The degree of LA enlargement indicates the current and future risk of complication secondary to mitral valve insufficiency is at least mildly elevated, yet overall, no obvious evidence of definitive left heart volume overload. This suggests lower airway disease or potential non-cardiogenic pulmonary edema as a contributing factor to the patient's dyspnea, although emerging left heart congestion is not definitively excluded.

Continued lowest effective dose diuretic therapy with respiratory support and Pimobendan 0.3 mg/kg PO BID with continued clinical monitoring indicated. Monitoring of thoracic radiographs, resting RR, renal parameters and UA on diuretic therapy is recommended. Adrenal screening and monitoring of systemic BP for evidence of hypertension warranted if clinical signs consistent with adrenal disease as well as assessment for evidence of hypertension which may potentially allude to left / right pheochromocytoma.

Echocardiographic monitoring required for further prognosis with recheck echo suggested in 4-6 months, sooner if progressive clinical signs or evidence of pulmonary hypertension. Likewise sonographic monitoring of the adrenal glands for evidence of progressive changes with initial recheck in 4-6 weeks is indicated.

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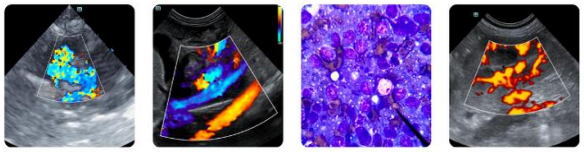

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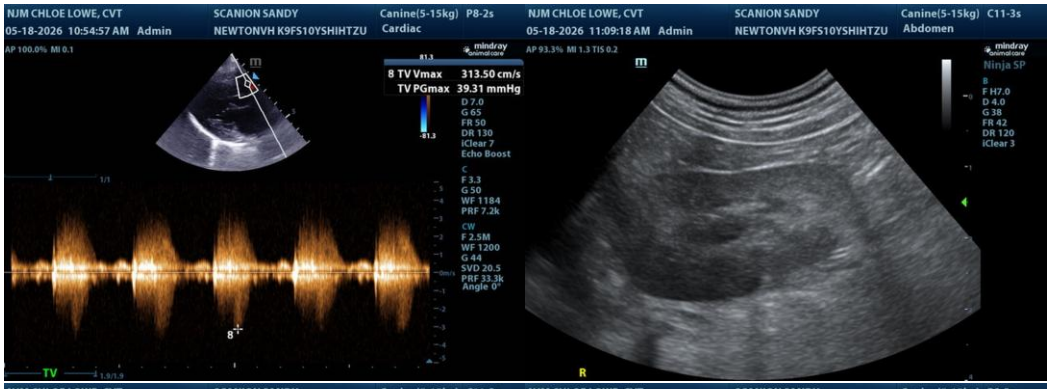


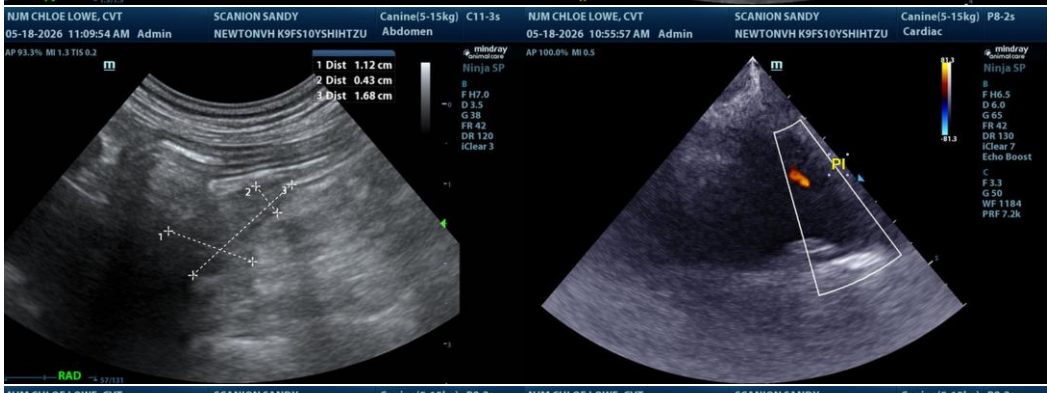


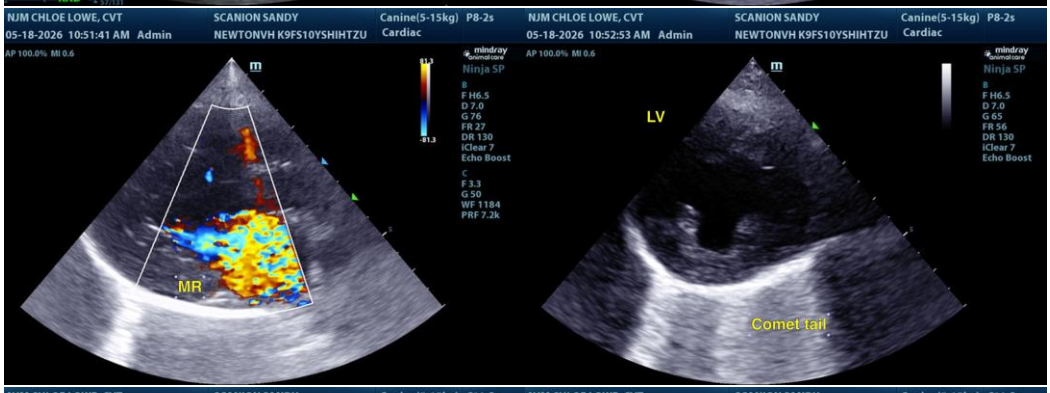


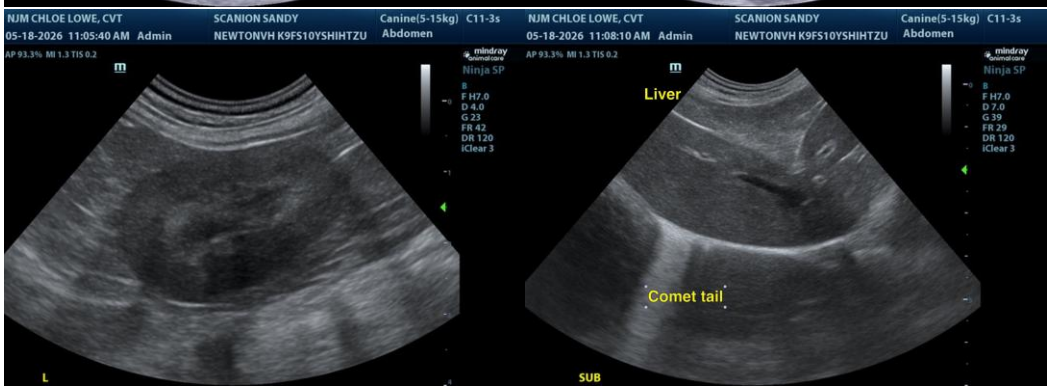

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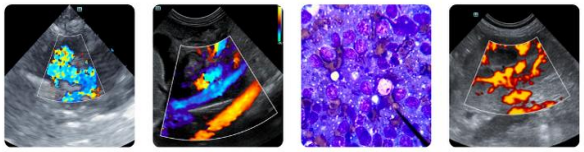

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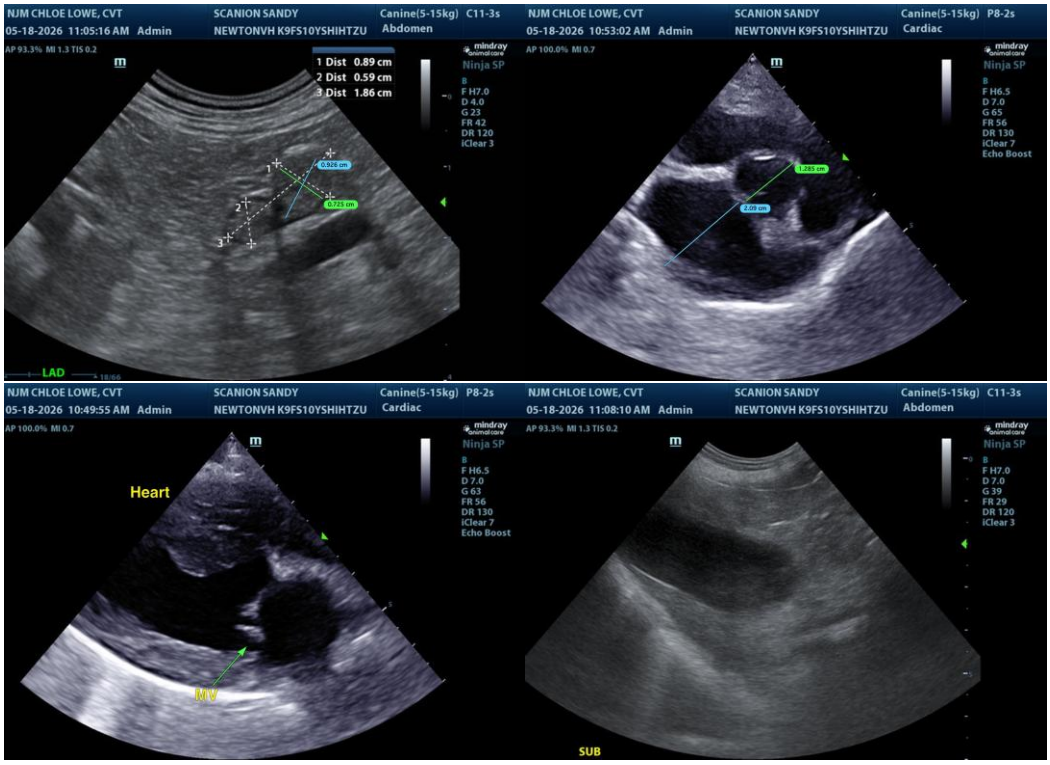


**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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