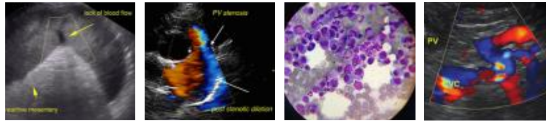

PATIENT
Sadie Wheeler

SPECIES
Canine

BREED
Yorkie

SEX
FS

AGE
13 years

WEIGHT
15.13 lbs.

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

IMAGING PERFORMED BY
Sara Hansen

HOSPITAL NAME
Companion Pet Clinic

REFERRING VET
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INVOICE
15246

DATE
10/25/22

PRESENTING CLINICAL SIGNS

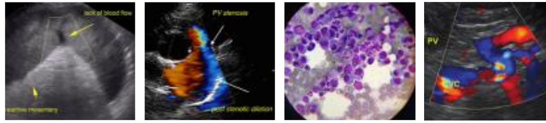
GRADE 1-2 SYSTOLIC MURMUR ASCITES NO CRACKLES AUSCULTED STARTED ON VETMEDIN AND FUROSEMIDE 10/17/2022
Abnormal PE/Chem/CBC/UA Results: Heart Rate and Respiratory Rates HR 120 RR 40 Blood Pressure Measurments N/A Current Medications VETMEDIN 1.25MG 1 PO Q12H, FUROSEMIDE 12.5MG 1PO Q12H

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	5.0	3.5		1.36	50	85	0.2
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	NM	1.9	1.3		2.8	2.2	

Cardiac Presentation

The echocardiogram in this patient demonstrated normal **left atrial** size based on 3 different LA measurement methods. Chamber volumes and echogenicity were normal. The cranial and caudal **mitral** valve leaflets presented thickening consistent with endocardiosis. No evidence of valvular prolapse. Doppler indicated measurable mild 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 thickening with mild 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). No visible **pericardial** or



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free pleura fluid was noted. No echographically detectable evidence of infiltrative disease was visible. 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 to a depth of 3.0 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 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 was maintained. The medulla and cortices were uniform in texture with some increased echogenicity and mild loss of corticomedullary symmetry and definition expected for the age of the patient. No evidence of pelvic dilation was present. The left kidney measured 4.3 cm in length. The right kidney measured 4.5 cm in length.

Adrenal Glands

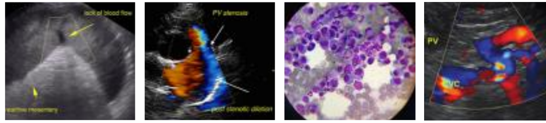
The bilateral adrenal glands were normal in size. Mild parenchyma heterogeneity and mild capsule asymmetry was present without suspicion for overt neoplasia. The left adrenal gland measured 0.47 cm width in the cranial pole and 0.59 cm width in the caudal pole. The right adrenal gland measured 0.43 cm width in the cranial pole and 0.55 cm width in the caudal pole. No evidence of overt adrenomegaly or adrenal tumor was noted.

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 subjective mild 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. A solitary, nondisruptive, nonhomogeneous, mildly hyperechoic intraparenchymal nodule was present measuring 2.5 cm in diameter. 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 hepatic vascular congestion. The cranial abdominal caudal vena cava was normal in volume without evidence of congestion or dilation. The gallbladder was non-distended in size with minor, congealed yet nonorganized debris. No evidence of gallbladder or peripheral gallbladder inflammatory criteria was noted. The cystic and common bile ducts were normal.



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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 were evident.

Free Abdomen

No evidence of peritoneal free fluid or ascites was present. No overt lymphadenopathy or omental masses were noted.

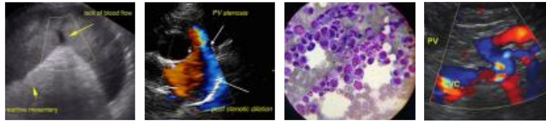
ULTRASONOGRAPHIC FINDINGS

- Chronic mitral valve disease (ACVIM B1)
- Normal RA/RV
- TR - estimated pulmonary pressure gradient (~49 mm Hg MAX)
- Non-congestive mild hepatomegaly with benign intraparenchymal nodule - nodule most suggestive of benign hyperplasia or lipogranuloma
- Minor gallbladder debris (non-mucocele)
- Mild age-related kidneys

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The cause of the murmur is most consistent with chronic degenerative valvular changes with secondary mitral and tricuspid valve insufficiency. The lack of left atrium enlargement indicates that the current and future risk of complication secondary to mitral valve insufficiency is low. The estimated pulmonary pressure gradient based on tricuspid valve insufficiency was equivalent to approximately 49 mm Hg MAX, which suggests mild to emerging moderate pulmonary hypertension. However, the lack of RA/RV enlargement, hepatic congestion, current ascites, as well as lack of reported clinical signs suggestive of clinical pulmonary hypertension i.e., exertional syncope, coughing, exercise intolerance, etc., indicate that the degree of pulmonary hypertension is likely nonclinical.

Given this presentation, no overt indication for cardiac medications at this stage. Prognosis is variable and serial sonographic monitoring is required for further assessment. Recheck echocardiogram is recommended in 6 months, sooner if clinical signs suggestive of left-sided congestion or clinical pulmonary hypertension arise.



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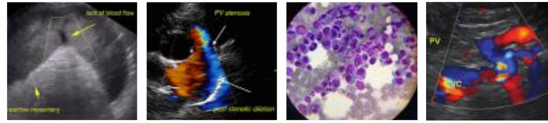

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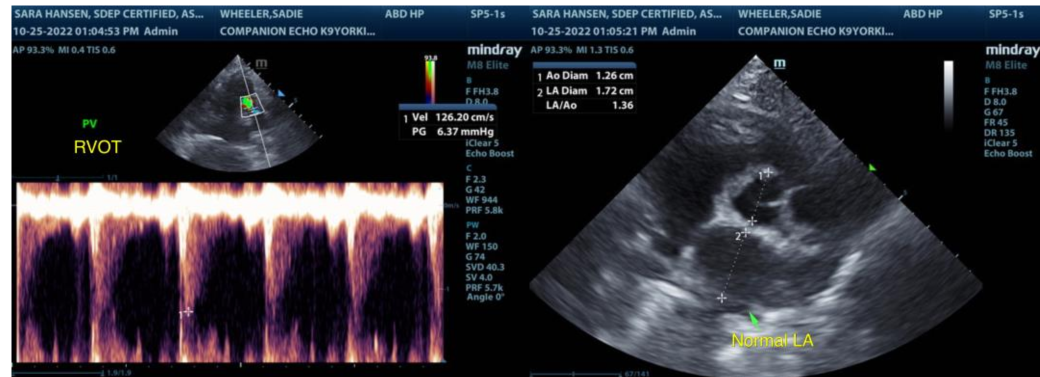

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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