

PATIENT

Edward Kline

SPECIES

Canine

BREED

Chihuahua Mix

SEX

MN

AGE

9 years

WEIGHT

13.4 lbs.

INTERPRETED BY

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

IMAGING PERFORMED BY

Jenna Walsh, CVT

HOSPITAL NAME

Edgewood AC

REFERRING VET

Dr. Kimball

INVOICE

15550

DATE

11/22/22

PRESENTING CLINICAL SIGNS

Presented last week for colitis and gastroenteritis with blood and mucous in stool. Low appetite and low energy. Responded partially to Cerenia, SQ LRS and metronidazole but abdomen became tense and he began to strain to defecate. Radiographs on 11/21/22 show free fluid in abdomen and abdominocentesis produced serosanguinous fluid. Heart murmur present on last exam only

Current Medications Metronidazole 125mg PO q12h Radiographic Findings Radiographs sent Primary Question/Differential to Be Answered in This Exam Cause of free fluid

ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

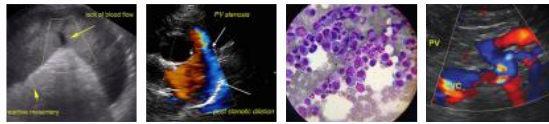
CANINE	MR	TR	LA/AO	LA/AO	FS	EF	EPSS
CARDIAC PARAMETERS	VMAX (m/s)	VMAX (m/s)	(Boon method)	(Heart Base; Swe)	(%)	(%)	(cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.3	28-40	40-100	<0.6
PATIENT		2.6 MAX	1.1	1.1	44.2	80	0.2
CANINE	HR	AV	PV	BODY WEIGHT	LA	LVIDd	LVIDs
CARDIAC PARAMETERS	(BPM)	VMAX (m/s)	MAX (m/s)	(kg)	2D short axis Base view (cm)	Avg; 2D and m-mode short axis (cm)	Avg; 2D and m-mode short axis (cm)
NORMAL PARAMETER	50-100	0.7-1.7	0.7-1.6				
PATIENT	NM	1.0	0.6		1.2	2.2	

Cardiac Presentation

The echocardiogram in this patient demonstrated normal to mildly subnormal **left atrial** size based on 2 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. Possible mild compensated MR, although not definitive. The **left ventricle** presented thicknesses with linear contour and was not dilated nor restricted with mild subnormal LV volume. 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. Normal measured LVOT velocity was noted. The **right atrium** and auricle revealed markedly increased size with mild RA bulbous appearance containing anechoic content. RA Diameter measured 3.0 cm. No evidence of masses was noted. **Tricuspid** valvular assessment demonstrated mild thickening with mild to moderate TR on Doppler. The **right ventricle** exhibited markedly



PATIENT	increased size compared to the LV with subjective subnormal RV function. Normal RV free wall thickness was noted. Pulmonary outflow tract assessment revealed normal valve structure, laminar flow, and diameter (approx.1:1 pa/ao ratio). Mild decreased RVOT velocity was noted. No visible pericardial or free pleura fluid was noted. No visible heartworms. The cranial mediastinum and pericardial and extra-cardiac regions were free of masses in the visible window. No evidence of arrhythmia.
Edward Kline	
SPECIES	
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BREED	Urinary System
Chihuahua Mix	The urinary bladder, trigone, cystourethral junction, and visible pelvic urethra to a depth of 2.0 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.
SEX	
MN	The residual prostate was free of pathology.
AGE	The area of the aortic trifurcation was free of pathology.
9 years	
WEIGHT	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 4.1 cm in length. The right kidney measured 4.3 cm in length.
13.4 lbs.	
INTERPRETED BY	Adrenal Glands
R. McKenzie Daniel, DVM, DABVP (Canine and Feline)	The left adrenal gland was uniform in size and contour with a uniformly hypoechoic parenchyma. The left adrenal gland measured 2.1 cm length x 0.53 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 1.5 cm length x 0.52 cm width at the caudal pole.
IMAGING PERFORMED BY	Spleen
Jenna Walsh, CVT	The spleen was subnormal in size, consistent with volume contraction. The spleen maintained a symmetrical capsule contour and homogeneous splenic parenchyma with normal splenic vascularity.
HOSPITAL NAME	Liver/ Gallbladder
Edgewood AC	The liver presented enlarged in size with symmetrical yet swollen contour. The parenchyma exhibited conserved uniform parenchyma with normal echogenicity isoechoic to the spleen and falciform fat. The hepatic vasculature was dilated in appearance, most notable at the level of the hepatic vein / caudal vena cava junction, without evidence of caudal vena cava thrombus. Concurrent distended cranial abdominal caudal vena cava at the liver of the liver and diaphragm was noted measuring 1.1 cm diameter. The gallbladder was non-distended in size with subtle evidence of gallbladder wall edema. Anechoic content was present. The cystic and common bile ducts were normal.
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Gastrointestinal

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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 ileus, obstruction, or foreign material.

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

SEX

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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.

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Free Abdomen

Moderate to significant volume anechoic ascites was present with mild generalized hyperechoic mesentery. No omental masses or lymphadenopathy was noted.

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13.4 lbs.

ULTRASONOGRAPHIC FINDINGS

- Marked RA/RV enlargement
- Mild to moderate TR
- Normal LA/LV
- Congestive hepatopathy
- Moderate to significant volume ascites

INTERPRETED BY

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

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The markedly enlarged RA/RV in conjunction with congestive hepatopathy and moderate to significant volume ascites are consistent with right heart failure. The measured TR velocity is suggestive of pulmonary pressure gradient (~27 mm Hg) consistent with mild pulmonary hypertension yet not overtly consistent with clinical pulmonary hypertension.

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Pimobendan 0.3 mg/kg PO BID, diuretic therapy with monitoring of systemic BP and renal parameters +/- as-needed prophylactic abdominocentesis is recommended. Heartworm check could be considered if clinically indicated, although no visible heartworms were detected. Sonographic monitoring is required for further assessment yet overall long-term prognosis is very guarded to potentially unfavorable, as this patient is at significantly increased risk for recurrent RHF and/or development of malignant arrhythmias. Recheck echocardiogram is recommended in 4-6 months, sooner if progressive RHF or clinical signs suggestive of progressive pulmonary hypertension are noted.

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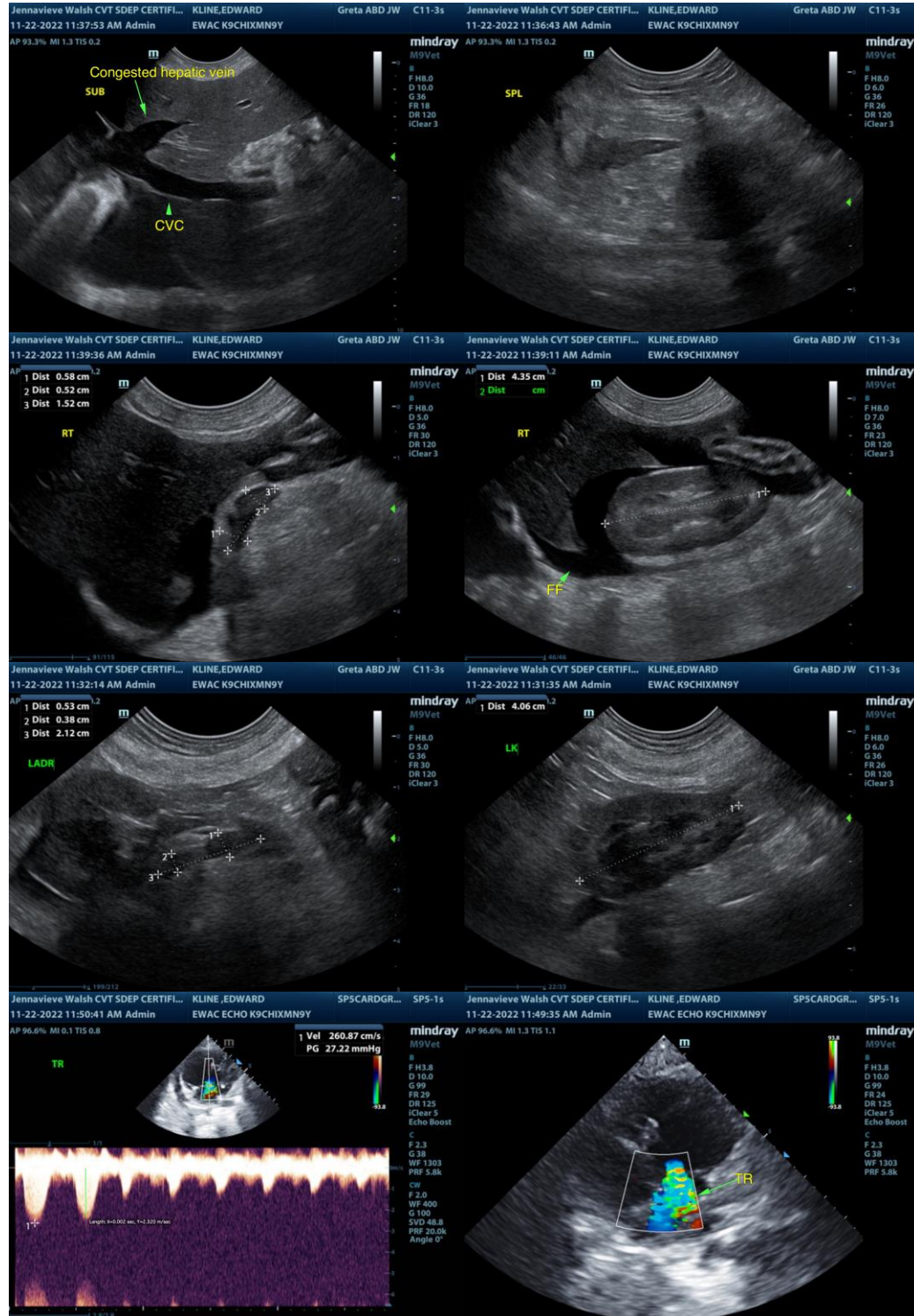
Dr. Kimball

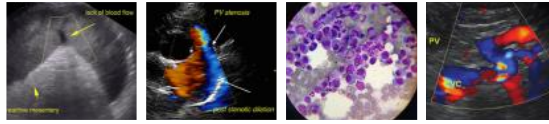
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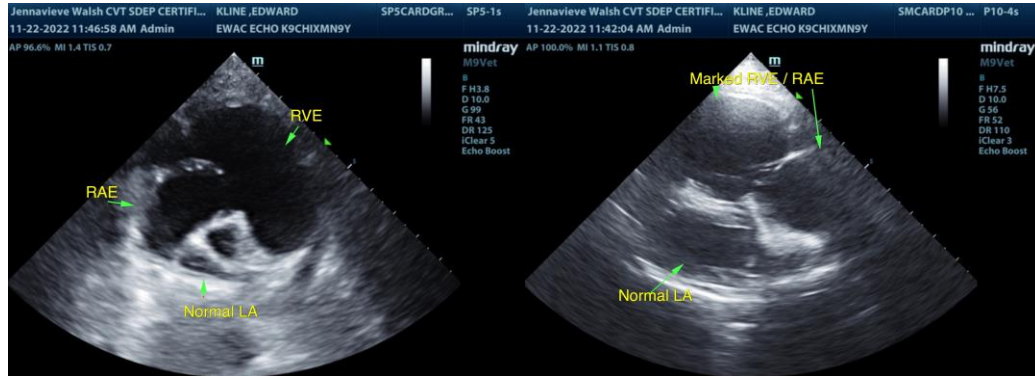
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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