

**PATIENT PRESENTING CLINICAL SIGNS**

Gabby Newman very distended abdomen, serosanguineous fluid. Episodes of syncope. MMpi bloodwork pending, Heart Rate and Respiratory Rates 70, panting Blood Pressure Measurements 171/75

**SPECIES**

Current Medications started furosemide, enalapril, pimobendan

Canine

Radiographic Findings chest xray shows very enlarged globoid heart Primary Question/Differential to Be Answered in This Exam R/o possible right sided heart failure vs heart based tumor with pericardial effusion and ascites secondary to heart disease vs neoplasia

**BREED**

Australian Shepherd  
Mix

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN AND HEART**

**SEX**

CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
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FS

**AGE**

10yr

**WEIGHT**

89

NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.3	28-40	40-100	<0.6
PATIENT		3.0	2.0	1.6	45	80	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	1.5		5.0	4.9	

**INTERPRETED BY**

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DVM, DABVP  
(Canine and Feline)

**IMAGING PERFORMED BY**

Jenna Walsh CVT

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Dr. Flanagan

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**Cardiac Presentation**

The echocardiogram for this patient presented excessive left atrial size expressed both in the LA/AO and LA max measurements. Subtle deviation of the interatrial septum towards the right atrium suggestive of mild increased left atrial pressure was noted. The cranial and caudal mitral valve leaflets presented mild thickening consistent with endocardiosis. Doppler indicated moderate centralized to eccentric insufficiency. The left ventricle presented thicknesses with linear contour and increased 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. The right atrium and auricle revealed increased size with normal structure and content. No evidence of masses was noted or chamber overload. Tricuspid valvular assessment demonstrated mild thickening with mild to moderate TR present on Doppler. The right ventricle exhibited increased volume compared to the LV. Pulmonic tract assessment revealed normal valve structure, laminar flow, and diameter (approx.1:1 pa/ao ratio). Normal measured RVOT. No visible pericardial or 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.



**PATIENT** *Urinary System*

Gabby Newman

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 uroliths or sediment. The ureteral papillae were normal. The ureters were not visible which is normal. No evidence of inflammatory or neoplastic changes were noted.

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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 6.6 cm in length. The right kidney measured 7.2 cm in length.

**SEX**

FS

The area of the aortic trifurcation was free of pathology.

**AGE**

10yr

The area of the iliac trifurcation was free of pathology including no evidence of medial, iliac or sublumbar lymphadenopathy.

*Adrenal Glands*

**WEIGHT**

89

The left and right adrenal glands were not definitively visualized. No obvious pathology was present in the area of the bilateral adrenal glands.

*Spleen*

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The spleen exhibited subnormal size with subtle parenchyma heterogeneity. 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.

*Liver/Gallbladder*

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The liver exhibited non-homogenous parenchyma with areas of capsule asymmetry and possible minor mid to right lobar swelling and/or ill-defined hepatomegaly. No definitive hepatic masses. The visualized hepatic and portal vasculature were normal in appearance without signs of congestion. No overt evidence of caudal vena cava thrombus. The gallbladder was non-distended in size with thin walls and primarily anechoic luminal content with minor hyperechoic debris. 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.

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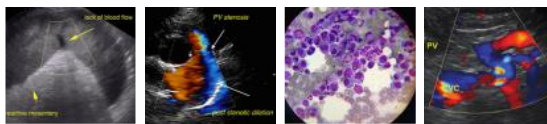
Normal visible colon wall layers were present with apparent formed feces in lumen.

*Pancreas*

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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.



**PATIENT** *Free Abdomen*

Gabby Newman Moderate to severe volume peritoneal effusion exhibiting subtle echogenic changes which may suggest minor cellularity.

**SPECIES** **ULTRASONOGRAPHIC FINDINGS**

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- Centralized to eccentric MR
- Moderate LA/LV enlargement
- Mild to moderate TR
- Concurrent RA/RV enlargement
- Heterogenous liver exhibiting potential for mid to right hepatomegaly/lobar swelling
- Non-distended gallbladder without evidence of wall edema
- Overtly normal volume cranial abdominal vena cava
- Moderate to severe volume ascites
- Mild chronic renal changes

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

A complicated case. The left sided cardiomegaly may predispose to pulmonary congestion while the right sided cardiomegaly with mild pulmonary hypertension may predispose to right heart failure. The hepatic presentation with subjective non-dilated caudal vena cava was not overtly consistent with hepatic congestive criteria indicating possible multifactorial component to the ascites. Potential for concurrent hepatopathy or end stage hepatic disease as a contributing factor could be possible.

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Correlation with full CBC/chemistry/UA to assess for evidence of hepatic pathology as well as serum protein levels is recommended. Abdominal effusion analysis is recommended. Pending additional diagnostics, Pimobendan 0.3 mg/kg PO BID, Lasix/spironolactone combo both at 1-2 mg/kg PO BID, as needed O2 therapy if indicated, ECG analysis, monitoring of systemic BP and exercise restriction are recommended. Continued ACE inhibitor medication suggested if systemic BP is >130. Echocardiographic monitoring based on clinical impression of the patient, recurrent episodes of CHF or clinical signs suggestive of progressive pulmonary hypertension is recommended.

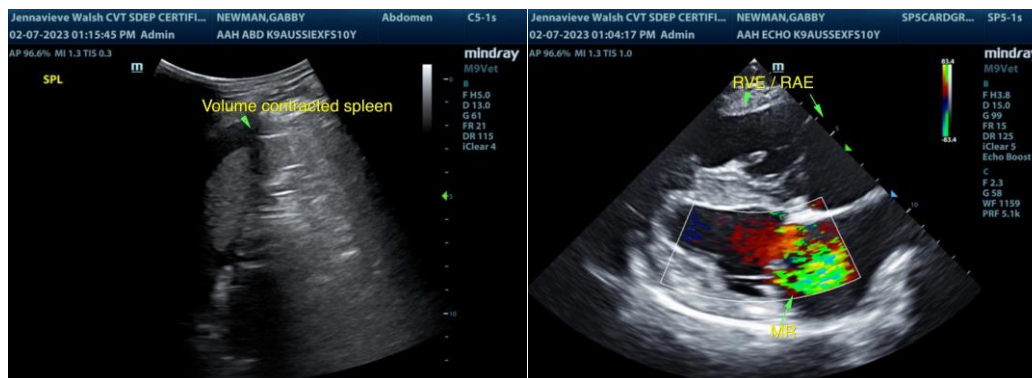
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A very guarded prognosis is indicated.

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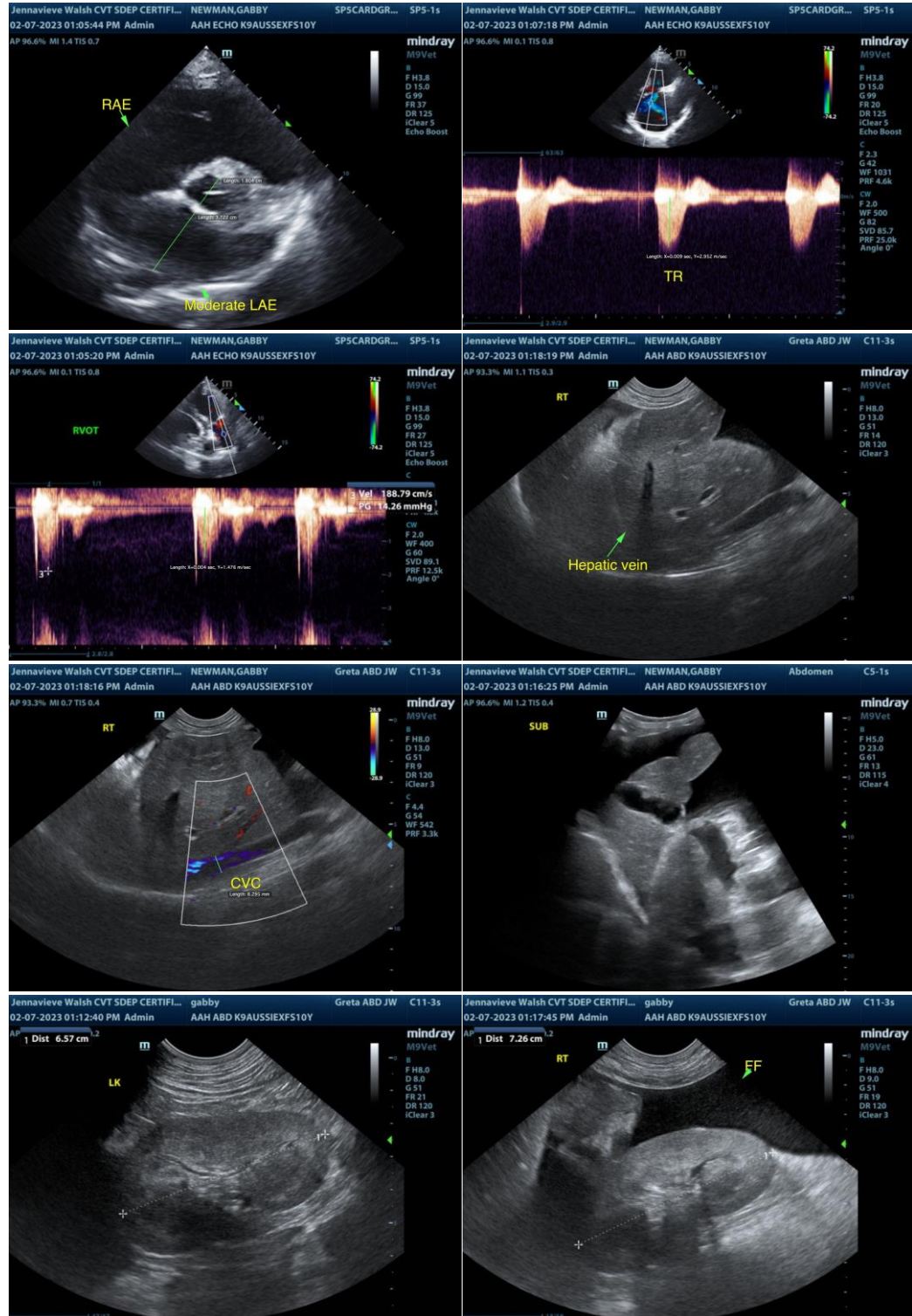
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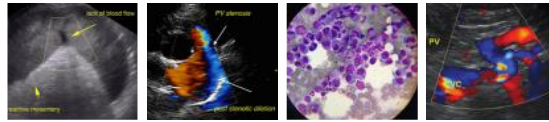
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not



**PATIENT** visible in the image/video clips provided.

Gabby Newman 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.

**SPECIES** R. McKenzie Daniel, DVM, DABVP (Canine / Feline Practice)

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