



## PATIENT

Zoey Almendarez

## SPECIES

Canine

## BREED

Bulldog

## SEX

FS

## AGE

10 years

## WEIGHT

44 lbs.

## INTERPRETED BY

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

## IMAGING PERFORMED BY

Dr. Gromalak

## HOSPITAL NAME

SVS Imaging

## REFERRING VET

Dr. Sobon

## INVOICE

12703

## DATE

12/3/21

## PRESENTING CLINICAL SIGNS

-Ventral edema for about 5 days. hyporexic

Abnormal PE/Chem/CBC/UA Results: Significant upper respiratory noise and crackles ventrally. chest and abdomen ventral edema. moderate plueral effusion, scant abdominal effusion. cardiomegaly on X-ray. vpc's seen.

## ULTRASONOGRAPHIC EXAMINATION OF THE HEART

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	<1.6	28-40	40-100	<0.6
PATIENT		2.5	NM	1.4	46.3	79.6	0.19
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	BELOW	BELOW	BELOW	BELOW
PATIENT	210	2.0	0.9		3.5	2.6	

## 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 normal thicknesses with maintained linear contour with subjective mild decreased left ventricle volume and flattening of the interventricular septum. 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 severely increased size with anechoic content. No evidence of right atrium spontaneous contrast or thrombosis, as well as no evidence of overt masses, were noted. **Tricuspid** valvular assessment demonstrated subjective mild thickening yet normal kinesis. Color doppler assessment of the tricuspid valve revealed subjective moderate insufficiency. The **right ventricle** exhibited moderate to marked increased size compared to the left ventricle with normal myocardial echogenicity and subjective thickness. **Pulmonary outflow** tract assessment revealed normal valve structure, laminar flow, and diameter (approx. 1:1 pa/ao ratio). No visible **pericardial** free fluid was noted while the possibility of minor free pleura fluid cannot be definitively excluded. The cranial **mediastinum and pericardial and extra-cardiac regions** were free of masses in the visible



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window. Subjective tachycardia was present. Brief sonographic assessment of the cranial abdomen revealed caudal vena cava distention without evidence of thrombosis with concurrent subjective hepatic vein dilation. No evidence of cranial abdominal ascites.

**ULTRASONOGRAPHIC FINDINGS**

**Primary Findings**

- Severe right atrium enlargement with moderate to marked right ventricle enlargement
- Normal left atrium
- Prominent to distended caudal vena cava with concurrent emerging hepatic congestion

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

The severely enlarged right atrium with concurrent right ventricle enlargement and evidence of caudal vena cava and hepatic congestion are consistent with emerging congestive right heart failure, given the lack of evident ascites. This may be primary in nature owing to myocardial failure or systolic dysfunction or may be secondary in nature owing to chronic tricuspid valve dysplasia, tricuspid regurgitation, pulmonary hypertension, or other diseases.

The measured tricuspid valve insufficiency was not overtly consistent with clinical pulmonary hypertension yet this may be underestimated. A heartworm test is suggested if not recently done.

Even with medical therapy, this patient is at risk for continued episodes of right-sided congestive failure. Pimobendan 0.3 mg/kg PO BID along with low-dose diuretic therapy including furosemide / spironolactone combination both at 1.0 mg/kg PO BID are recommended. If strong clinical concern for pulmonary hypertension, i.e., clinical signs of coughing, syncope especially during exercise, a trial with Sildenafil initial dose 0.5-1.0 mg/kg PO BID may be warranted. ECG assessment is recommended for further assessment of the tachycardia. Recheck echocardiogram is suggested in 4-6 months, sooner if continued clinical signs consistent with congestive right heart failure are noted. A guarded long-term prognosis is warranted.





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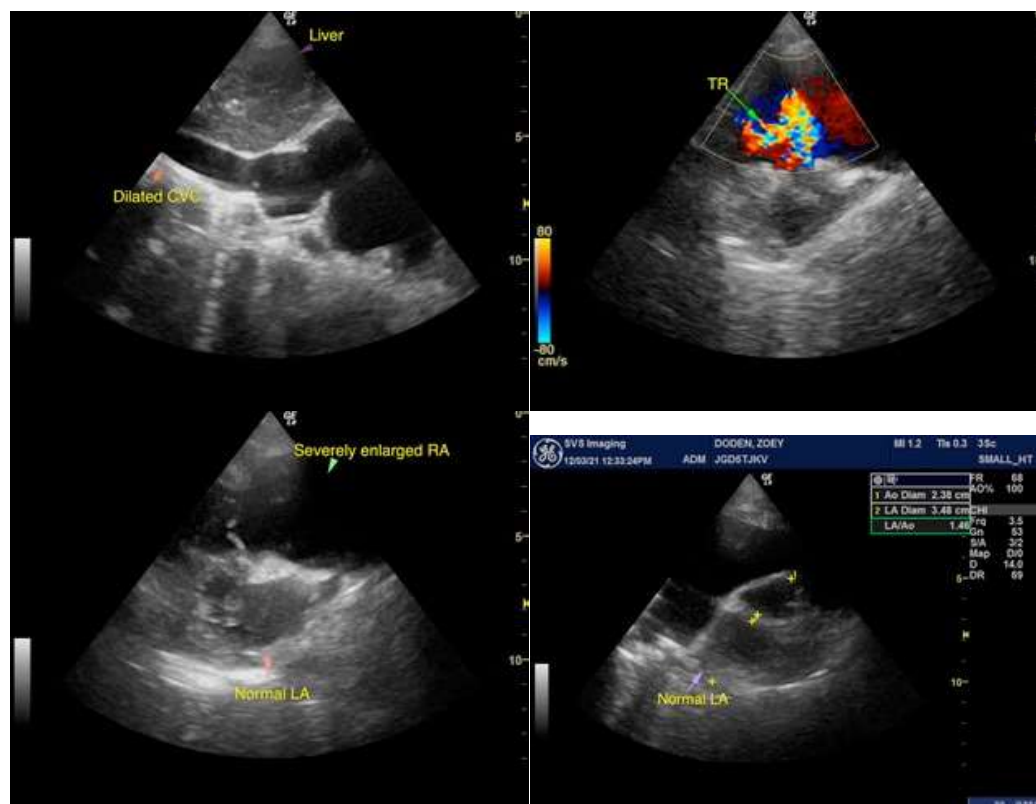
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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