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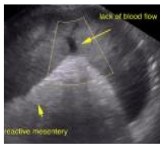
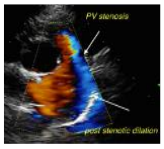
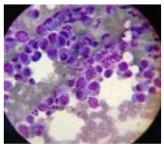
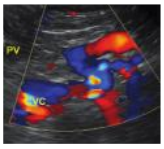

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1-800-838-4268 info@sonopath.com

PATIENT
Lino Caruso

SPECIES
Canine

BREED
Chihuahua

SEX
Intact Male

AGE
13 Years

WEIGHT
13.5 Pounds

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

IMAGING PERFORMED BY
Kelly Vazquez

HOSPITAL NAME
Westwood Regional VH

REFERRING VET
Dr. Giammanco

INVOICE
14127

DATE
3/1/22

PRESENTING CLINICAL SIGNS

History: Pulmonary edema; history of heart murmur (grade3/6) - suspect CHF. Given single dose of Lasix (3mgs/kg IV + Benazapril 2.5 mgs PO. Patient is dyspneic and in O2 therapy cage. History of cholecystitis since 2/24/22; treating with Baytril 12 mgs PO SID, Cerenia 8 mgs PO SID, Gabapentin 15 mgs PO BID.

Abnormal PE/Chem/CBC/UA Results: Elevated ALT, WBC 35.37, neuts 31.28, mono 1.48.

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	--	4.0	NM	1.36	52	87.3	0.1
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	97	0.9	0.7	--	2.0	1.3	--

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 vegetative thickening consistent with endocardiosis. Doppler indicated mild eccentric insufficiency. The **left ventricle** presented mild increased thicknesses with maintained 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 mild subjective increased size with normal overall structure and content. No evidence of masses was noted or chamber overload. **Tricuspid** valvular assessment demonstrated potential for mild thickening along with mild to moderate insufficiency on doppler. The **right ventricle** was of normal size (1/3 diameter of LV), chordae structure, myocardial echogenicity and thickness. **Pulmonic** tract assessment revealed overall normal valve structure, laminar systolic flow, and diameter with trace insufficiency on doppler. No visible **pericardial** or free pleura fluid was noted. No echographically detectable evidence of infiltrative disease was visible. Suspect focal yet indistinct area of possible pulmonary consolidation/pneumonia or indistinct nodule adjacent to the heart, measuring 2.0 cm in diameter.

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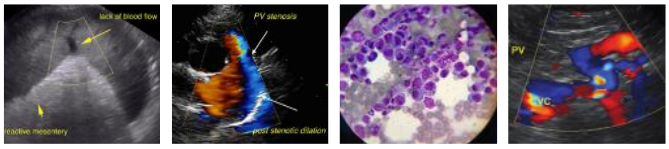

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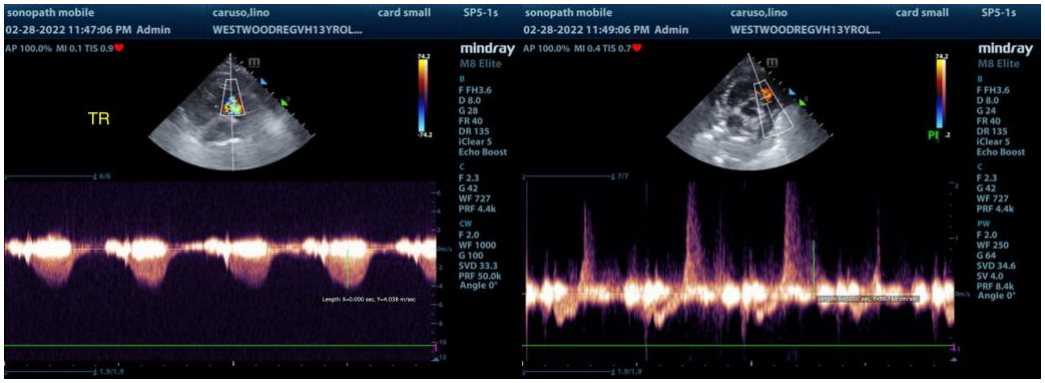
ULTRASONOGRAPHIC FINDINGS

- Mild LV hypertrophy/pseudohypertrophy
- Moderate pulmonary hypertension
- Concurrent compensated mitral valve disease with normal left atrium
- Possible yet indistinct focal pulmonary consolidation pneumonia or potential nodule

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The mild LV hypertrophy/pseudohypertrophy may potentially be owing to diuretic therapy. Assessment of systemic blood pressure recommended to rule hypertension out as a contributing factor. The lack of left atrium enlargement indicates that the risk owing to MVD is relatively low and also indicates that the pulmonary edema in this patient is not associated with left heart volume overload. The respiratory signs and dyspnea in this patient are most likely secondary to clinical pulmonary hypertension (estimated pulmonary pressure gradient approximately 64 mm of Mercury). Aside from known heartworm disease or left heart volume overload (not present in this case), the underlying etiology of pulmonary hypertension is often misunderstood yet in this case may potentially be owing to chronic or primary lower airway disease.

As needed respiratory support, oxygen therapy along with sildenafil at 1-3 mg/kg PO BID, ideally titrating up from initial dose of 1 mg/kg PO BID with assessment of clinical response is recommended. Exercise restriction is advised, as potential exercise induced syncope or possibly sudden death may be possible. Additional causes of noncardiogenic pulmonary edema may be considered. Recheck echocardiogram suggested in 4-6 weeks or sooner if persistent or progressive clinical signs of pulmonary hypertension are noted.



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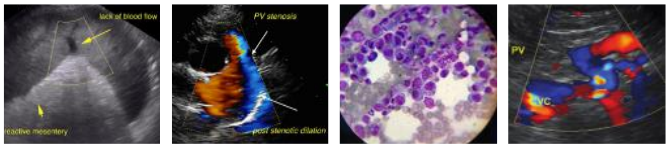

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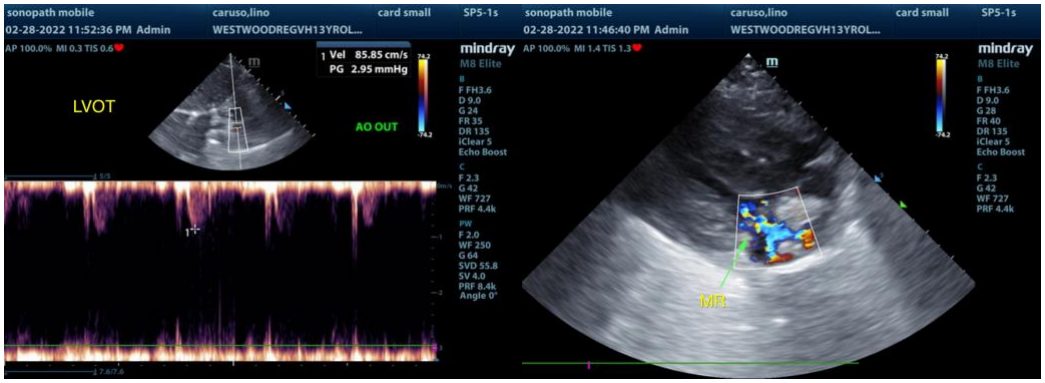

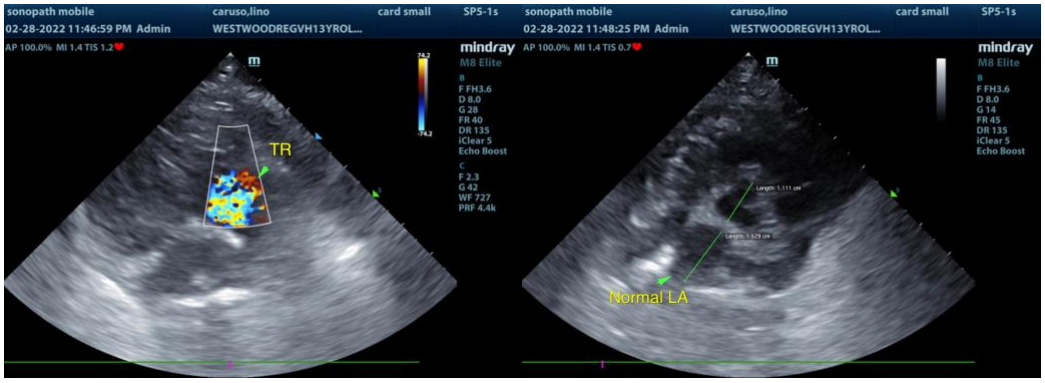

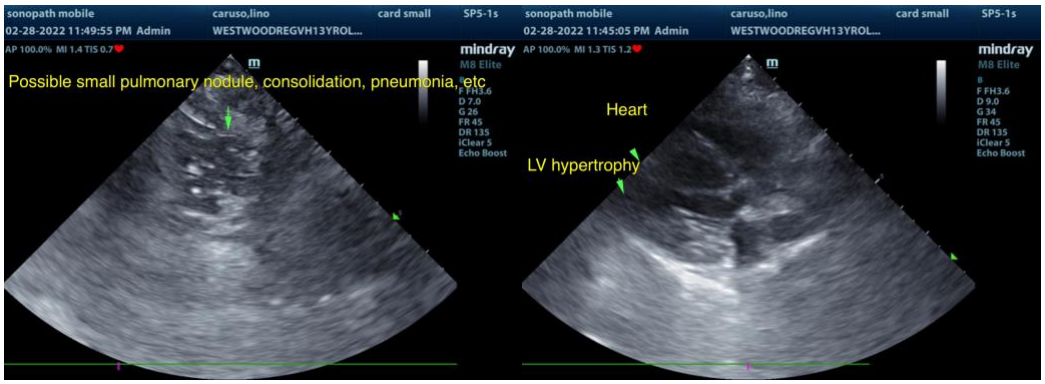

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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