

**PATIENT PRESENTING CLINICAL SIGNS**

Pickles Garcia

**SPECIES**

Canine

**BREED**

Mix

**SEX**

Spayed female

**AGE**

9 months

**WEIGHT**

24 lbs

History: HR 150 RR PANT HARSH LUNG SOUNDS PALE PINK MUCUS MEMBRANES, CRT 2 SEC PERIPHERAL LYMPHADENOPATHY CHRONIC ENLARGED SPLEEN PET ORIGINATED IN MEXICO Abnormal PE/Chem/CBC/UA Results: CBC/ CHEM/ T4/ UA/TICK PANAL PENDING Heart Rate and Respiratory Rates 150/ PANT Blood Pressure Measurements NONE Current Medications PANACURE Radiographic Findings RADS FROM EMERGENCY CLINIC- MIIARY LUNG PATTERN, ENLARGED LIVER / SPLEEN

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**

**Urinary System**

The **urinary bladder**, trigone, and pelvic urethra presented normal thicknesses and normal tone. The ureters were not visible which is normal. No uroliths or sediment were visualized and anechoic urine was present. No evidence of inflammatory or neoplastic changes was noted. Ureteral papillae were normal.

The **kidneys** revealed normal size and structure, corticomedullary definition and ratio for this age. The cortices presented largely uniform texture with normal echogenic relationship to liver and spleen. Medullary structure differed distinctly from the cortex and no evidence of pelvic dilation was present. The capsules were acceptably uniform without significant irregularities. The left kidney measured 8.08 cm. The right kidney measured 7.1 cm.

**INTERPRETED BY**

Eric Lindquist, DMV, DABVP, Cert. IVUSS

**IMAGING PERFORMED BY**

Sara Hansen

**Adrenal Glands**

Both **adrenal glands** were visualized and recognized as having normal shape, size, position and echogenicity for this breed. The phrenic vasculature, glandular echogenicity and detail were unremarkable. Capsule, cortex, and medullary definition were normal for this age patient. The right adrenal gland measured 2.03 x 0.73 cm at the cranial pole and 0.42 cm at the caudal pole. The left adrenal gland measured 2.23 x 0.4 cm at the caudal pole and 0.32 cm at the cranial pole.

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Edgewood AC

**Spleen**

The **spleen** was mildly enlarged with subtle micronodular changes. The spleen was folded upon itself cranially. The mesentery was enhanced.

**REFERRING VET**

Dr. Callahan

**Liver**

The **liver** revealed uniform enlargement. The hepatic veins were mildly dilated. The gallbladder presented acceptably thin walls with primarily anechoic content. The cystic and common bile ducts were normal. No pathological hepatic lymphadenopathy was evident. No overt structural evidence of inflammatory, infiltrative or regenerative pathology was evident. Multi focal B lines were noted through the diaphragm.

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## PATIENT

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## Gastrointestinal

There was some residual chyme and gas was noted in the **stomach**, yet not pathological. This is consistent with end post prandial presentation. Transit of chyme into the small intestine was normal. Curvilinear patterns were maintained throughout the GI tract. No evidence of pathology. Small and large intestine demonstrated normal luminal chyme and stool consistency respectively. No obstructive or overt infiltrative disease was noted. No associated abnormal lymphatic activity was noted.

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## Pancreas

The base and limbs of the **pancreas** were observed to be largely isoechoic to surrounding omental fat. Pancreatic duct and capsular contour were acceptably normal and parenchyma respected normal curvilinear patterns. No overt evidence of active inflammatory or neoplastic disease was noted.

## SEX

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## ULTRASONOGRAPHIC EXAMINATION OF THE HEART

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 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, right ventricle, and pulmonary artery** were dilated in this patient. **Tricuspid** insufficiency was severe. No overt heartworm was visible, yet cannot be ruled out. Diffuse miliary lung pattern with secondary pulmonary hypertension.

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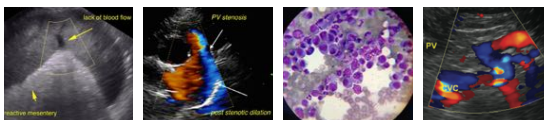
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CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT		4.0	1.15	1.15	68	95	0.18
CANINE CARDIAC PARAMETERS	HR (BPM)	AV VMAX (m/s)	PV MAX (m/s)	BODY WEIGHT	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		1.4	1.2	24 lbs	2.9	1.92	

## ULTRASONOGRAPHIC FINDINGS

### WEIGHT

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Pulmonary hypertension.

Enlarged right atrium, right ventricle and pulmonary artery.

Hepatic vein dilation, consistent with emerging right-sided heart failure.

Slightly enlarged spleen with micronodular changes.

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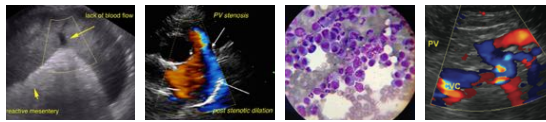
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## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

It appears that primary respiratory disease is the issue in this patient. Heartworm testing is indicated. Sildenafil should be considered at 1 mg/kg b.i.d. However, bronchoalveolar lavage and fecal test are recommended. I cannot completely rule out an atrial septal defect, yet was not obvious. This would not be the primary cause of the right-sided enlargement in this patient. The increased respiratory pressure in this patient is causing right-sided cardiac enlargement and secondary pulmonary hypertension. An infectious agent given the patient's history should be considered such as leishmania or other respiratory disease. Leishmania testing is indicated along with broad spectrum anti-parasitic protocol. Bronchodilators are recommended as well as Clindamycin or similar respiratory antibiotic is also indicated. FNA of the spleen and liver is indicated to assess for infectious agents. There is a minor potential for underlying neoplasia.



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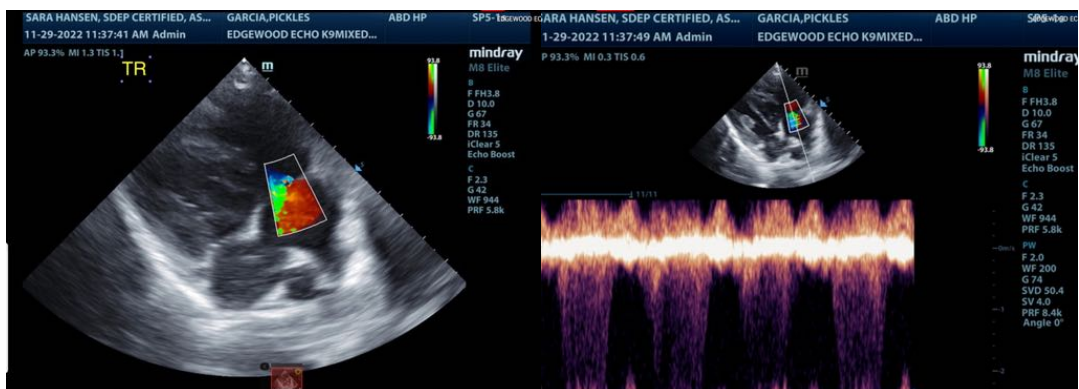
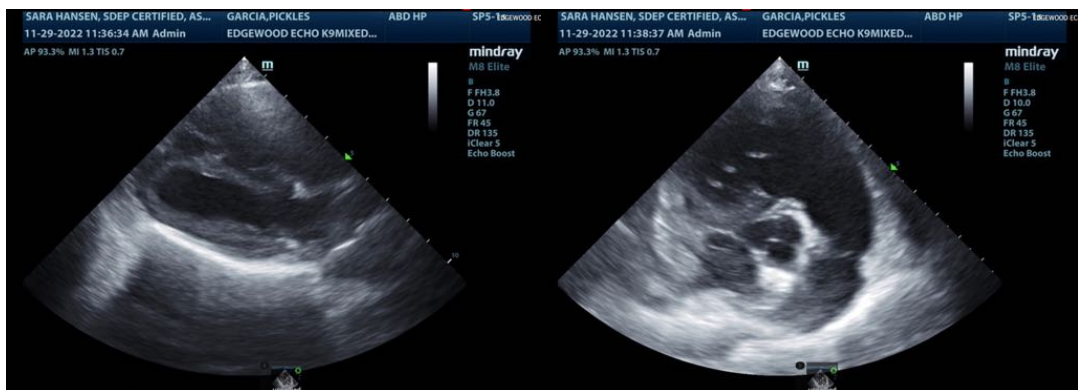
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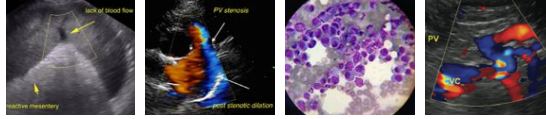
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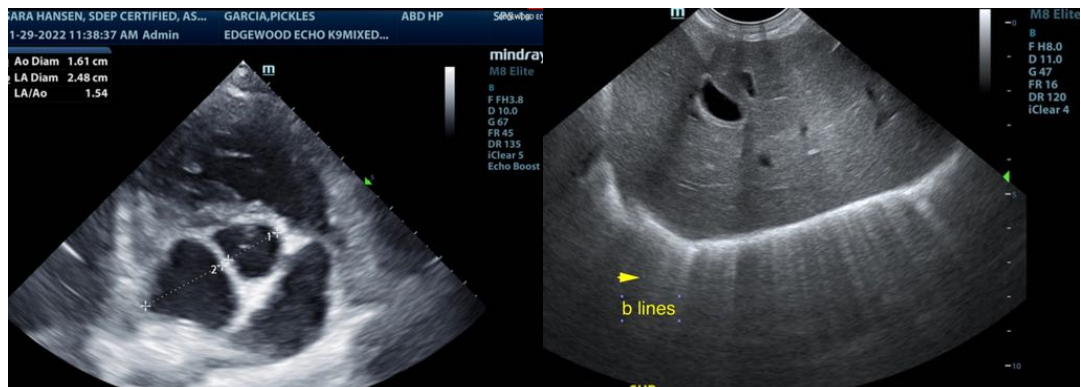
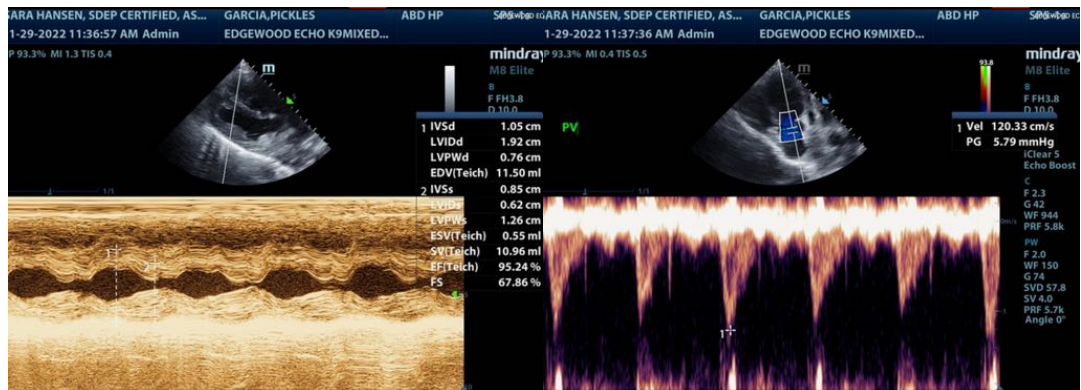
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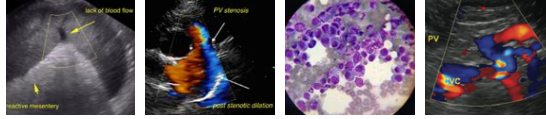
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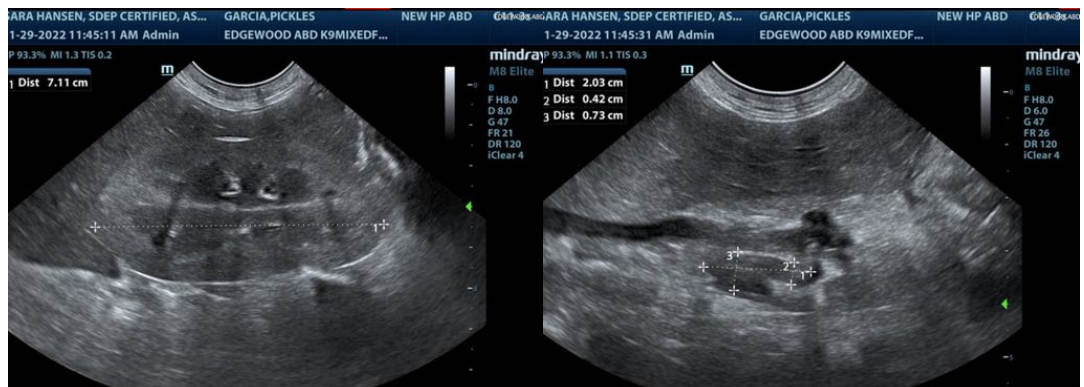
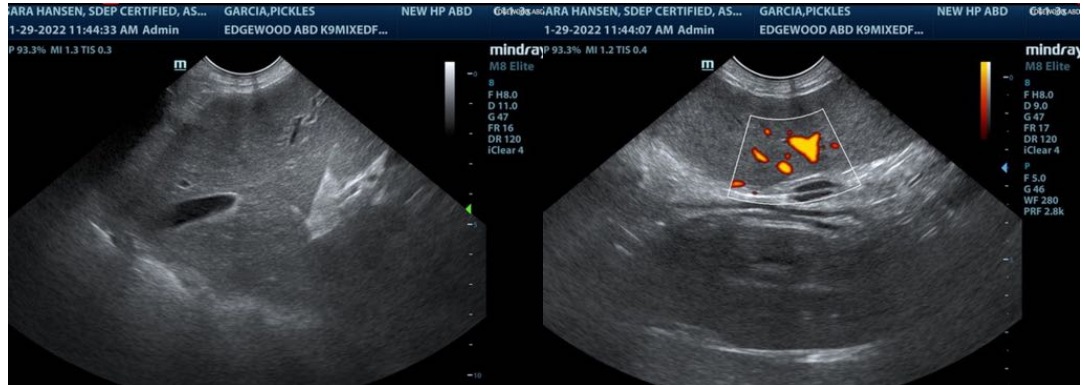
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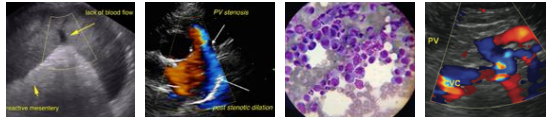
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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