

**PATIENT**

Sierra Peroune

**SPECIES**

Canine

**BREED**

Sheltie

**SEX**

Spayed female

**AGE**

12 years

**WEIGHT**

32.8 lbs

**INTERPRETED BY**

Eric Lindquist, DMV  
DABVP, Cert. IVUS

**IMAGING  
PERFORMED BY**

Crystal Hill, RVT

**HOSPITAL NAME**

Smithville AH

**REFERRING VET**

Dr. Hagar

**INVOICE**

47916

**DATE**

6/22/23

**PRESENTING CLINICAL SIGNS**

History: Coughing for about 3-4 months, owner wondering about risks for GA as she needs a dental. Has been on Vetmedin and Furosemide for about 4 weeks.

Abnormal PE/Chem/CBC/UA Results: Retics low, Platelets high, Magnesium high, Potassium high, Na:K ratio low, ALT elevated, AST elevated, ALP elevated Creatine Kinase elevated, T4 normal.

**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 adrenal gland measured 4.5 cm.

**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 left adrenal gland measured 2.02 x 0.54 cm at the caudal pole and 0.58 cm at the cranial pole.

**Spleen**

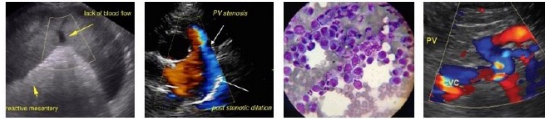
The **spleen** presented a smooth homogeneous parenchyma hyperechoic to liver and renal cortical parenchyma. The capsule was smooth without noticeable expansion or deviation from within the spleen or adjacent pathology. The splenic vasculature demonstrated normal volume without signs of congestion or thrombosis. No sonographic evidence of acute or chronic inflammatory, neoplastic, or infarctual changes was noted.

**Liver**

The **liver** presented heterogenous parenchyma with increased portal markings and coarse architecture. Slight undulating capsular contour was noted. The gallbladder and common bile duct were unremarkable. This is consistent with chronic inflammatory hepatopathy.

**Gastrointestinal**

Examination of the **gastrointestinal tract** revealed a stomach and intestine free of stasis, of normal wall thickness, acceptable curvilinear mural detail, and peristaltic activity. Small and large intestine



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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.

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***Free Abdomen***

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Subcutaneous imaging was noted with a shadowing structure.

**ULTRASONOGRAPHIC EXAMINATION OF THE HEART**

**AGE**

12 years

The echocardiogram in this patient demonstrated enlarged **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 measurable insufficiency. 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** and auricle revealed normal size, structure and content. No evidence of masses was noted or chamber overload. **Tricuspid** insufficiency was noted. The **right ventricle** was of normal size (1/3 diameter of LV), chordae structure, myocardial echogenicity and thickness. **Pulmonic** tract assessment revealed normal valve structure, laminar flow, and diameter (approx. 1:1 pa/ao ratio). 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.

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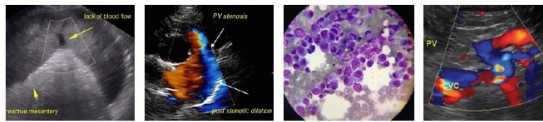
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CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base;)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	5.8	2.1	NM	1.8	61	90	0.1
CANINE CARDIAC PARAMETERS	HR (BPM)	AV VMAX (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	190	1.6	0.96	32.8 lbs	3.94 max	4.61	

## ULTRASONOGRAPHIC FINDINGS

Benign abdomen, age related changes.

Non-specific inflammatory hepatopathy.

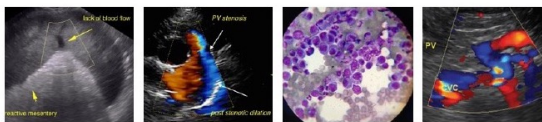
Subcutaneous structure, consistent with dense foreign body or mineralization.

Partially compenetrated Stage C1 valvular disease given the patient's history and echocardiogram performed on current Vetmedin and Furosemide.

Mitral and tricuspid insufficiency.

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Pimobendan can be initiated at 0.3 mg/kg b.i.d. EKG is warranted given the tachycardia to ensure that tachyarrhythmia is not an issue. Blood pressure measurements are warranted. I recommend continuation of the current Vetmedin, Furosemide but also adding ace inhibitor at 0.5 mg/kg s.i.d. and Spironolactone at 1-2 mg/kg b.i.d. There is still some left atrial enlargement in this patient. Recheck is recommended in a month to adjust medications.



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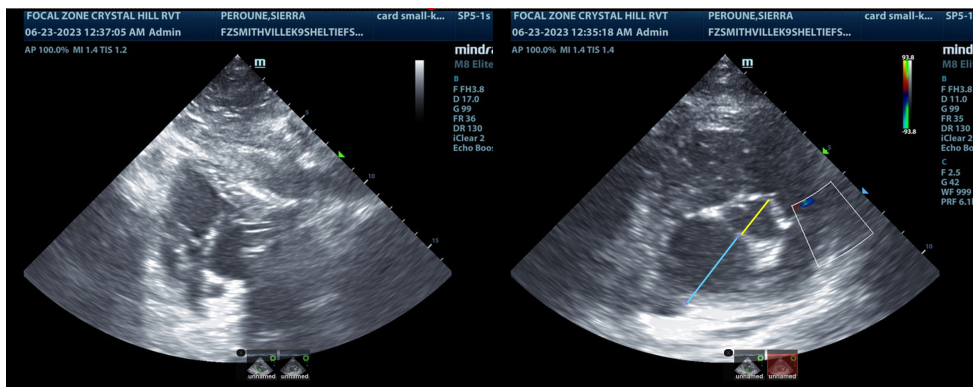
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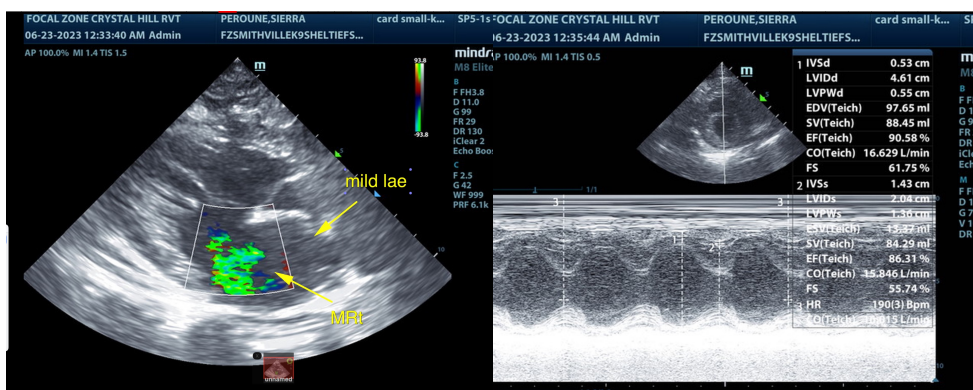
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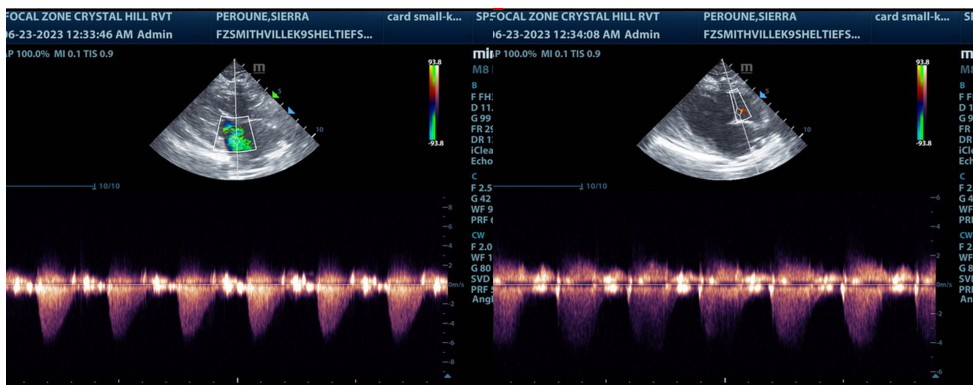
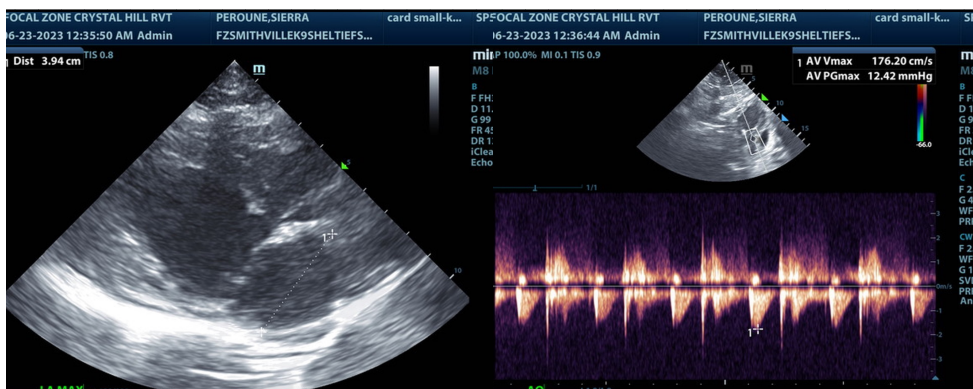
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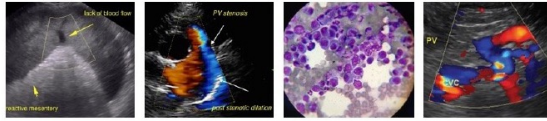
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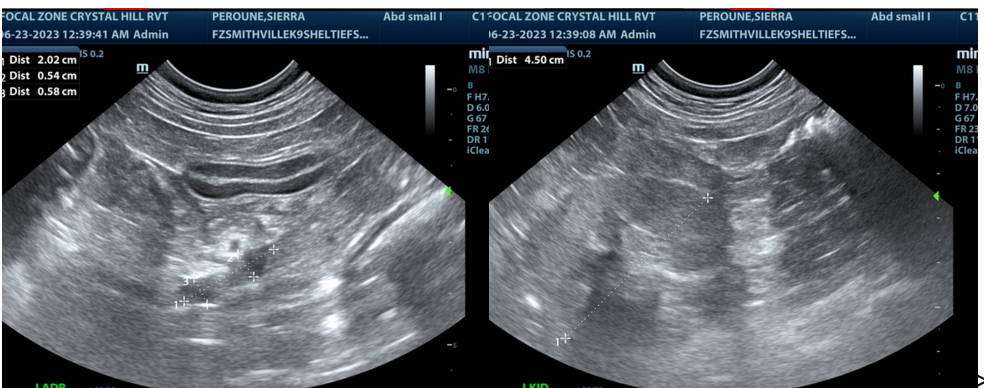
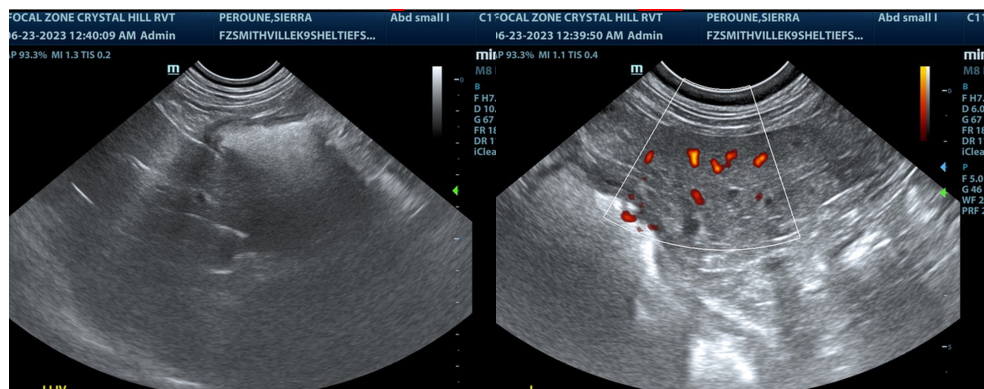
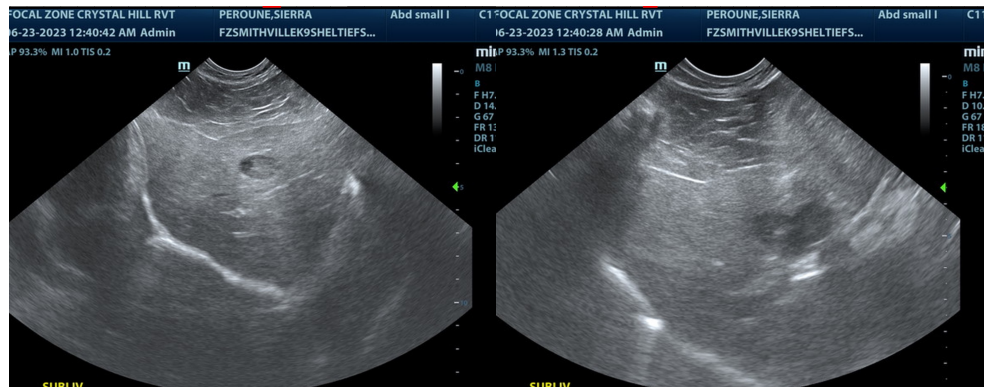
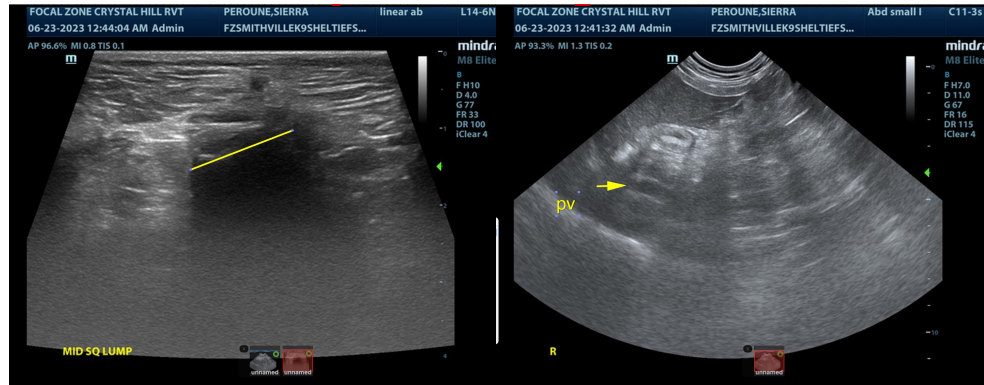
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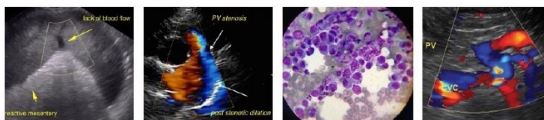
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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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**Eric Lindquist**, DMV, DABVP, Cert. IVUSS, CEO of SonoPath.com  
info@SonoPath.com

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