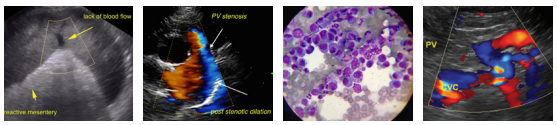

PATIENT

Hobbes Okray

SPECIES

Canine

BREED

Mini Australian Shepherd

SEX

Neutered Male

AGE

10 Years

WEIGHT

25.4 Pounds

INTERPRETED BY

Eric Lindquist, DMV

DABVP, Cert. IVUSS

IMAGING PERFORMED BY

Jenna Walsh, CVT

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PRESENTING CLINICAL SIGNS

Clinical Exam Findings: Coughing for 3 weeks. Heart Rate and Respiratory Rates 130-145 with auscultable occ vpc confirmed on our ECG Blood Pressure Measurements avg systolic 135 avg diastolic 85 map 98 Current Medications none yet Radiographic Findings cardiomegaly obvious with perihilar/lobar edema suspected. However we had definite impression of not just hepatomegaly, but actual mass effect displacing the stomach and visible radiographically. Primary Question/Differential to Be Answered in This Exam Appropriate cardiac disease management and any significant co-morbidity that would influence owners decisions

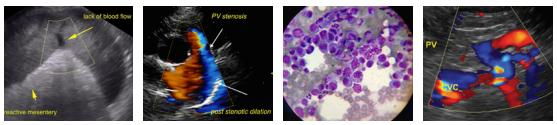
Generalized cardiomegaly and hilar edema noted on radiographs.

ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

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	5.0		2.07	2.2	35	80	NM
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	120	1.2	1.07		4.54	3.5	

Cardiac Presentation

The echocardiogram for this patient presented excessive **left atrial size** expressed both in the LA/AO and LA max measurements Chamber volumes and echogenicity were normal. The cranial and caudal **mitral** valve leaflets presented vegetative thickening consistent with endocardiosis. Doppler indicated measurable insufficiency. Prolapse of the anterior mitral valve leaflet noted. The **left ventricle** presented 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 noted at 1.67 m/sec. 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



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detectable evidence of infiltrative disease was visible. The cranial **mediastinum and pericardial regions** were free of masses in the visible window.

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 were noted. Ureteral papillae were normal. The pelvic urethra was imaged 3.0 cm beyond the cystourethral junction.

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 kidneys measured 5.0 cm each.

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 1.7 cm x 0.37 cm at the cranial pole and 0.56 cm at the caudal pole. The right adrenal gland measured 1.94 cm x 0.54 cm at the caudal pole and 0.34 cm at the cranial pole.

Spleen

The **spleen** presented a focal hypoechoic nodule measuring 5.0 mm, non-disruptive.

Liver

The **liver** presented uniform enlargement. The gallbladder was overdistended with striating bile, consistent with gallbladder mucocele. Mild enhanced gallbladder wall noted. Mild increased portal markings noted.

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 demonstrated normal luminal chyme and stool consistency respectively. No obstructive or overt infiltrative disease was noted. No associated abnormal lymphatic activity was noted.

Pancreas

Heterogeneous right **pancreatic** limb changes noted, consistent with remodeling. History of pancreatitis likely. However, level of active inflammation is debatable. Subxiphoid palpation is recommended to assess for pain or discomfort associated with the pancreas.

ULTRASONOGRAPHIC FINDINGS

- Early Stage C1 valvular disease
- Gallbladder mucocele with pancreatic remodeling
- Mild hepatic remodeling

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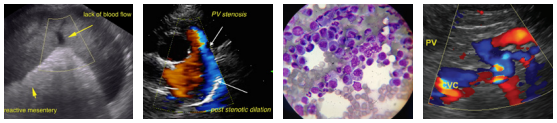

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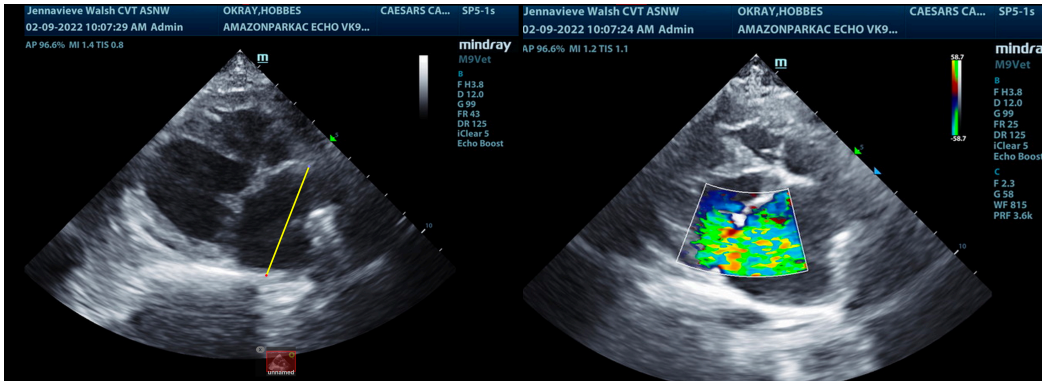
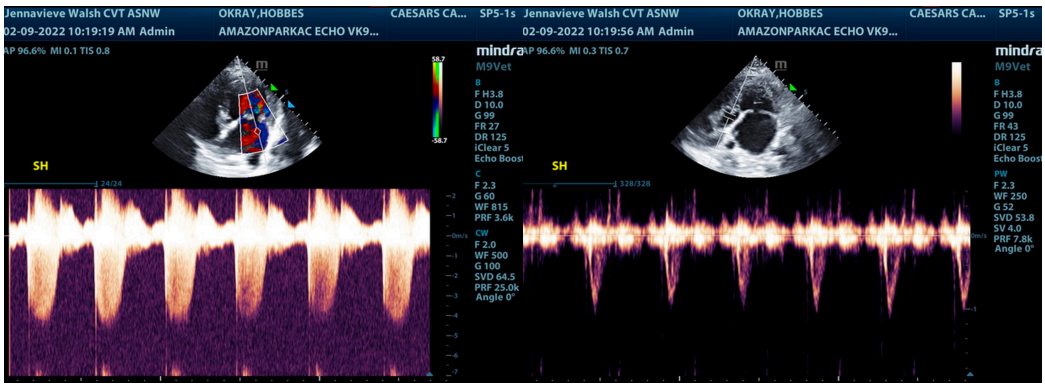
INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Stable gallbladder mucocele. However, eventual cholecystectomy will be necessary in this patient. Ursodiol therapy could be considered from a palliative standpoint. Gallbladder motility study would be ideal. However, stabilizing the heart followed by cholecystectomy would be appropriate.

Recommend triple therapy in this patient with Pimobendan 0.3 mg/kg BID, ACE inhibitor 0.5 mg/kg SID progressing to BID, and Spironolactone at 1-2 mg/kg BID as well as Lasix at 1-2 mg/kg BID.

C1: The heart is in a somewhat precarious state with volume overload and a heart that is working to compensate for the valvular insufficiency. Target respiratory rate is < 20 resp/minute after therapy. After initiating therapy, I recommend recheck on the clinical exam, BUN, Creatinine, USG, Chest radiographs & Blood pressure in 5-7 days. Recheck echo in 1 month. Earlier if clinical decompensation is occurring. I do not recommend anesthesia at this time until stabilization has occurred on the recommended medications. Repeat preanesthetic echo is ideal if anesthesia is eventually necessary.





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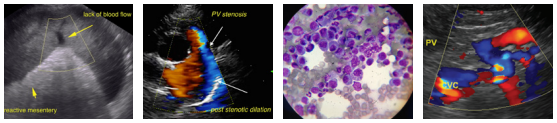

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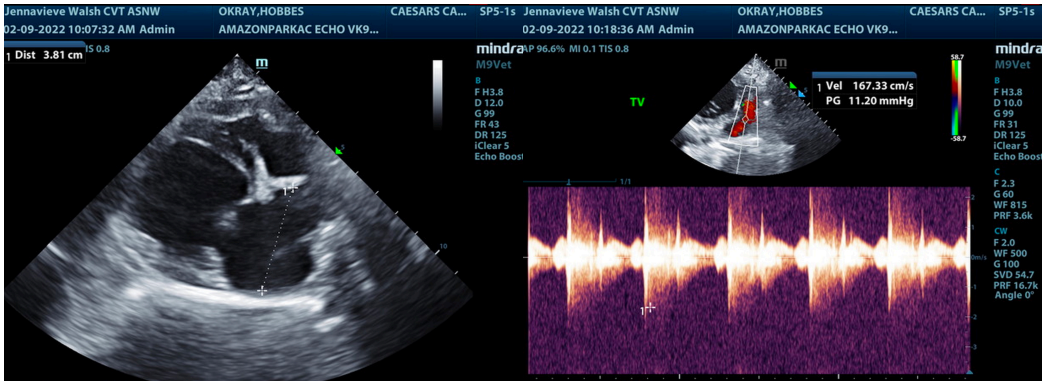

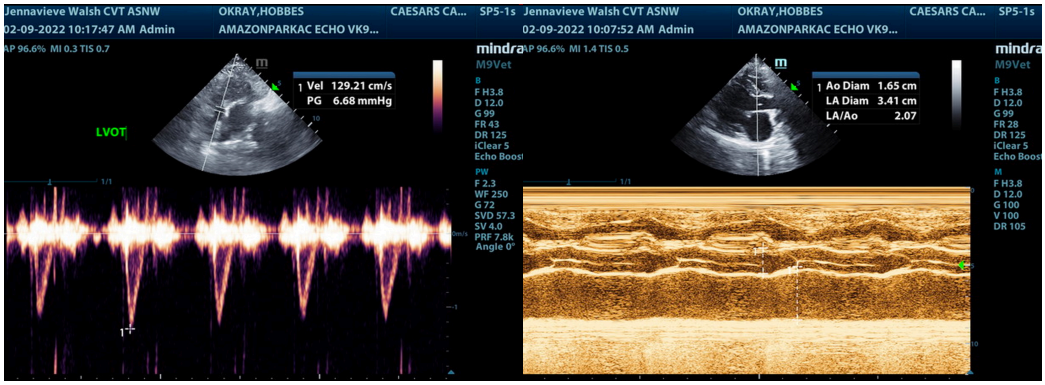

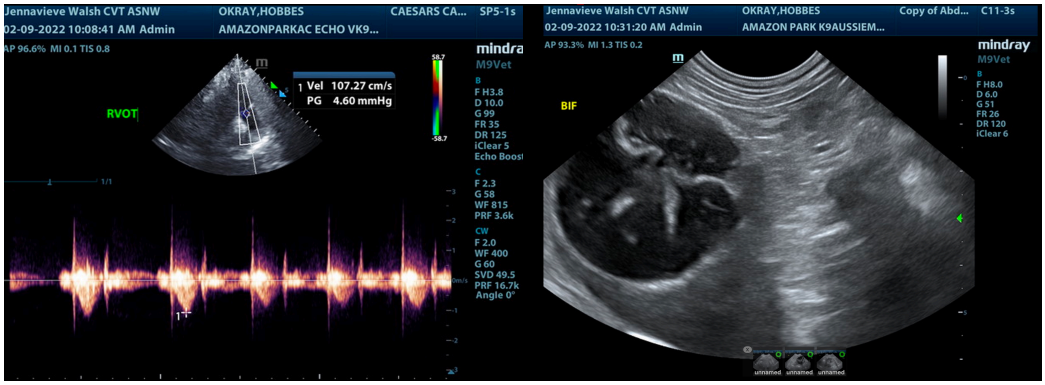

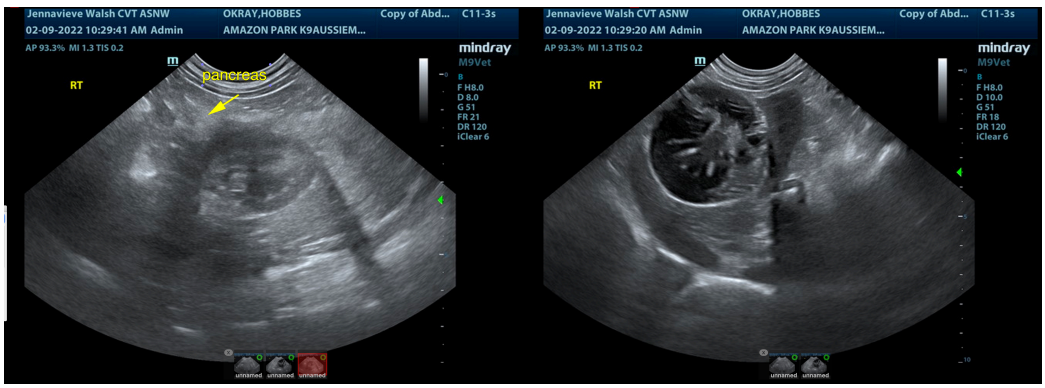

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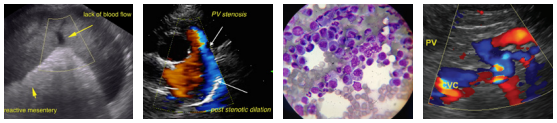

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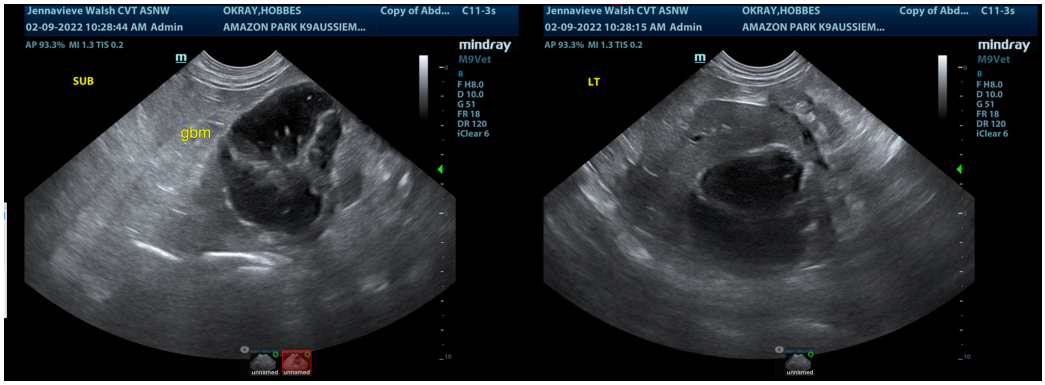

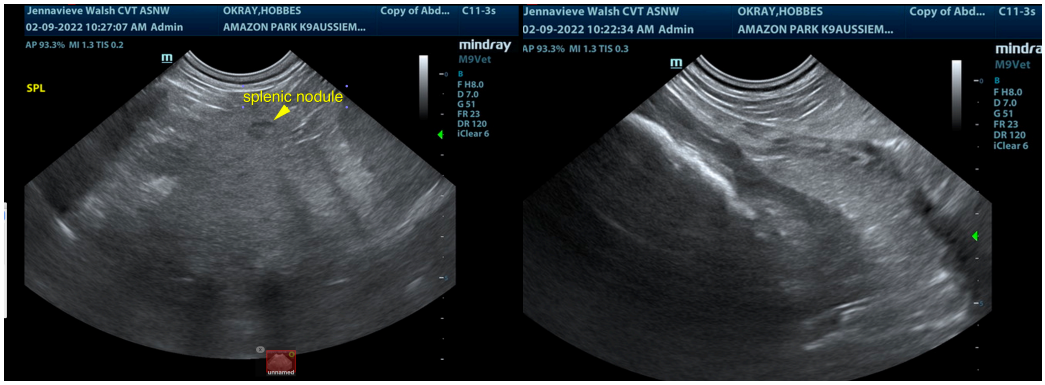

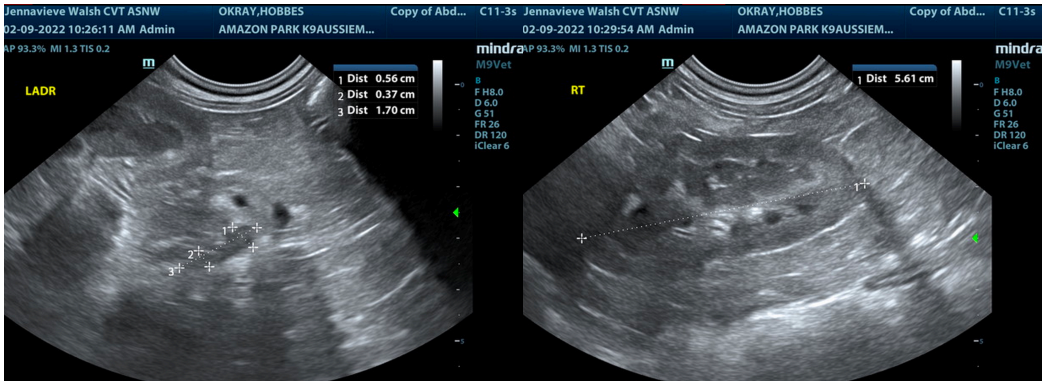

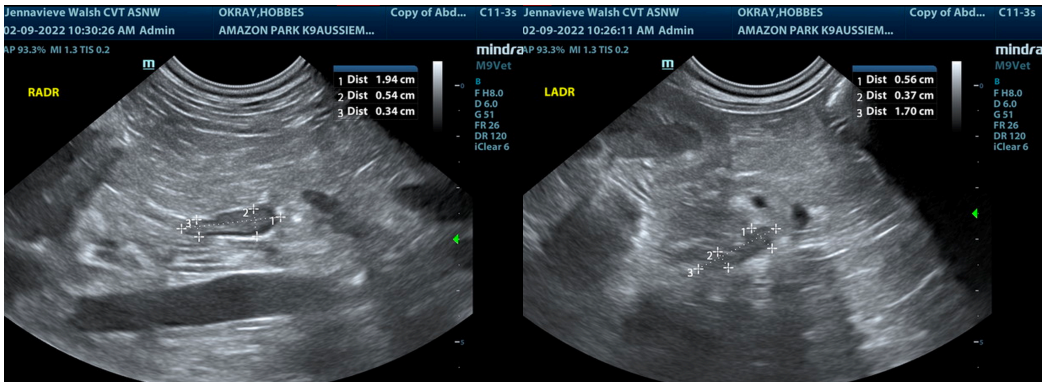

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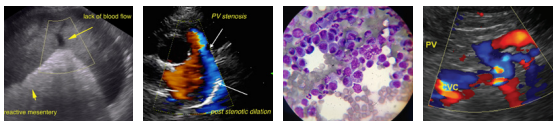

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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

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