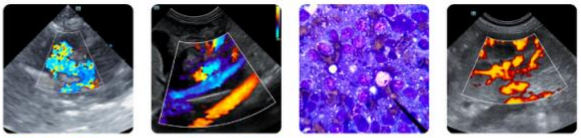

PATIENT

Tobi Rodriguez

SPECIES

Canine

BREED

Terrier Mix

SEX

Neutered Male

AGE

10 Years 5 Months

WEIGHT

23.5 pounds

INTERPRETED BY

Bradley Harris, DVM, DACVECC, DACVIM (cardiology)

IMAGING PERFORMED BY

Rebecca Hamilton

HOSPITAL NAME

Farview Animal Clinic

REFERRING VET

Dr. Kanwar

INVOICE

12683

DATE

12/15/25

PRESENTING CLINICAL SIGNS

Lethargy, coughing, grade 3 heart murmur, tense pot belly abdomen. radiographs show enlarged cardiac silhouette, enlarged liver/ spleen. Meds: Pimobendan 1.25 mg 1 tab PO BID

Abnormal PE/Chem/CBC/UA Results: ALT (SGPT) 386^, ALKP 3120^, GGTP 58^, Total Bilirubin 0.4 ^, Creatine 0.4 low, BUN/Creat ratio 53^, Chloride 101 Low, Cholesterol 1257 ^, Triglicerides 756^, PLT 640^, Platelet estimate increase

ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

CANINE CARDIAC PARAMETERS	BW	HR BPM	LAD 4 ch Long	RAD 4 ch Long	La/Ao Heart Base	LVIDd	LVIDs
NORMAL PARAMETER		50-100			<1.6		
PATIENT	10.68	NM	1.83	2.55	1.01	1.95	0.58
CANINE CARDIAC PARAMETERS	**FS**	**EPSS**	**PV V MAX (m/s)**	**AV V Max (m/sec)**	**MR Vmax**	**TR Vmax**	**RPA distensibility (normal >30%)**
NORMAL PARAMETER	28-40	<0.6	0.7-1.6	0.7-1.7	4.5-5.5	< 2.7	
PATIENT	70	0.1	1.4	1.7	5.3	5.0	NM

Cardiac Presentation

The left atrium is normal in dimension. The left ventricle is normal in dimension, with normal systolic function. The right atrium and ventricle are severely enlarged with reduced systolic function. The mitral valve is thickened and redundant consistent with myxomatous changes, and there is no significant prolapse. There is evidence of trivial mitral regurgitation. The tricuspid valve leaflets are thickened and redundant with moderate tricuspid regurgitation and evidence of severe pulmonary hypertension. The left ventricular outflow tract demonstrated normal laminar flow, and the visible aorta is unremarkable. The right ventricular outflow tract assessment revealed normal laminar flow, with a dilated main pulmonary artery and reduced distensibility. There is no evidence of semilunar valve insufficiency. There is no visible pericardial, pleural, or free peritoneal fluid noted. The cardiac chambers, pericardial and visible extra-cardiac regions were free of masses, spontaneous echo contrast, or thrombi.

Urinary System

The urinary bladder is adequately distended with anechoic urine. The bladder, trigone, and pelvic urethra are unremarkable with normal wall thicknesses and normal tone. The ureters were not visualized, which is a normal finding. There are no uroliths or sediment noted. The ureteral papillae appear normal. There is no evidence of inflammatory, infiltrative, or neoplastic disease.

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The kidneys are normal in size and structure. The cortices are hyperechoic with a loss of corticomedullary definition. There are multiple cortical cystic changes with no significant pyelectasis or pelvic dilation. The capsules are mildly irregular. The left kidney measures 5.44 cm. The right kidney measures 5.94 cm.

Adrenal Glands

Both adrenal glands are visualized and have 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 measures 0.66 cm x 2.86 cm. The right adrenal gland measures 0.77 cm x 1.91 cm.

Spleen

The spleen is smooth with homogeneous parenchyma and hyperechoic to liver and renal cortical parenchyma. The capsule is without noticeable irregularity or deformation. The splenic vasculature is normal without signs of congestion, spontaneous echo contrast, or thrombosis. No evidence of acute or chronic inflammatory, neoplastic, or infarct are documented. The spleen measures 1.13 cm at the hilus.

Liver

The liver is subjectively enlarged with a diffusely mottled parenchyma and slightly rounded hepatic margins. The hepatic veins are mild to moderately dilated as well as the caudal vena cava.

The gallbladder contains a mild to moderate amount of suspended echogenic debris and dependent sediment.

Gastrointestinal

The stomach and intestines are free of stasis and peristaltic activity, with no significant dilation noted. There is normal wall thickness and acceptable curvilinear mural detail. The pyloric-duodenal junction and ileocecocolic junction are patent, and the colon contains normal shadowing feces. There is no evidence of shadowing obstructive material or overt infiltrative disease noted. No associated abnormal lymphatic activity is documented.

Pancreas

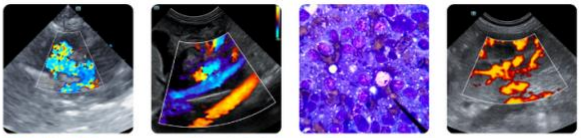
The pancreas is isoechoic to surrounding omental fat. The pancreatic duct and capsular contour are normal. There is no overt evidence of active inflammatory or neoplastic disease.

Free Abdomen

There is no significant lymphadenopathy or free fluid.

ULTRASONOGRAPHIC FINDINGS

- These findings identify significant pulmonary hypertension in conjunction with degenerative mitral disease. The lack of chamber enlargement is consistent with ACVIM stage B1, making the PH more likely related to primary respiratory disease or other etiology (non-type 2 PH). Pulmonary hypertension in dogs is most commonly secondary to primary respiratory disease (chronic bronchitis, pulmonary fibrosis, or other forms of pulmonary interstitial disease). Pulmonary hypertension can also develop in dogs with severe heartworm disease or secondary to pulmonary thromboembolism (PTE). Less commonly, pulmonary hypertension is



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identified in dogs as an idiopathic condition. Pulmonary hypertension commonly causes syncope, and a patient's signs may be attributable to this condition.

- There is increased renal cortical echogenicity and thickening with a mildly irregular capsular contour. Multifocal cystic cortical changes are noted. This is secondary cystic formation consistent with chronic age-related degeneration and remodeling. There is no evidence of abscessation or suspicion of neoplasia.
- The diffuse hepatic changes are non-specific and could be consistent with vacuolar hepatopathy, nodular hyperplasia, inflammatory, immune-mediated, metabolic, or endocrine disease. Infiltrative neoplasia or acute hepatitis cannot be ruled out.
- The hepatic venous congestion and dilated caudal vena cava is indicative of potential right-sided cardiac disease.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Given the degree of right sided cardiac enlargement, cardiac therapy is reasonable at this time. Treatment for the PH/presumed respiratory disease is also warranted, as clinical signs are present. Therapy should include Vetmedin (0.25-0.35 mg/kg BID), sildenafil (2 mg/kg BID), and enalapril (0.5 mg/kg BID assuming normotension and lack of renal insult). Baseline thoracic radiographs, blood pressure and chemistry panel should be performed now, and again in 1-2 weeks. A repeat echocardiogram, thoracic radiographs, blood pressure, and chemistry panel is indicated in another 3-6 months, or sooner if progression is suspected, clinical signs develop/worsen, or additional cardiac therapy is being contemplated.

Anesthesia considerations:
While there is no CHF present, there is likely an increased anesthetic risk which must be considered prior to any anesthetic procedure. If anesthesia is necessary, then alpha-2 agonists, ketamine, high dose acepromazine, and Telazol should be avoided. If an ACE inhibitor (enalapril, benazepril) or spironolactone is being given, it should not be administered on the morning of general anesthesia. Other cardiac medications should be administered per the normal dosing schedule. Fluid therapy during anesthesia should be considered at a reduced rate (e.g., 5 ml/kg/hour) if possible. A shorter anesthetic duration will reduce the risk of complications. Pre-oxygenation is advised. Premedication with an opioid (i.e., butorphanol, hydromorphone, oxymorphone) with or without a benzodiazepine is generally the safest protocol. An induction agent such as Propofol, alfaxalone, or diazepam/etomidate can be used to effect. Maintenance of anesthesia with isoflurane or sevoflurane is reasonable.

Diet:
A high-quality food from Hills, Royal Canin, Science Diet, Eukanuba, Iams, or Purina that is highly palatable with adequate protein and calories for maintaining optimal body condition with mild dietary sodium restriction (<100 mg/100 kcal) is recommended. Consider omega-3 fatty acid supplementation. Ensure the patient is not currently receiving a boutique, exotic, or grain-free diet.

Activity:
Moderate physical activity (meandering walks, exploring the backyard, playing with toys inside, getting excited when family gets home, etc.) is encouraged, but periods of strenuous aerobic activity (jogging, strenuous outdoor ball play, prolonged play at the dog park, etc.) should be avoided, especially during periods of high heat (> 80 F) and humidity. Dogs with heart disease tend to tolerate cool and cold temperatures much better than high temperatures. Avoid sudden increases in activity (e.g. 2 block walks during the week but 2 mile walks followed by 30 minutes at the dog park on the weekends) as this may be difficult for the cardiovascular system to deal with.

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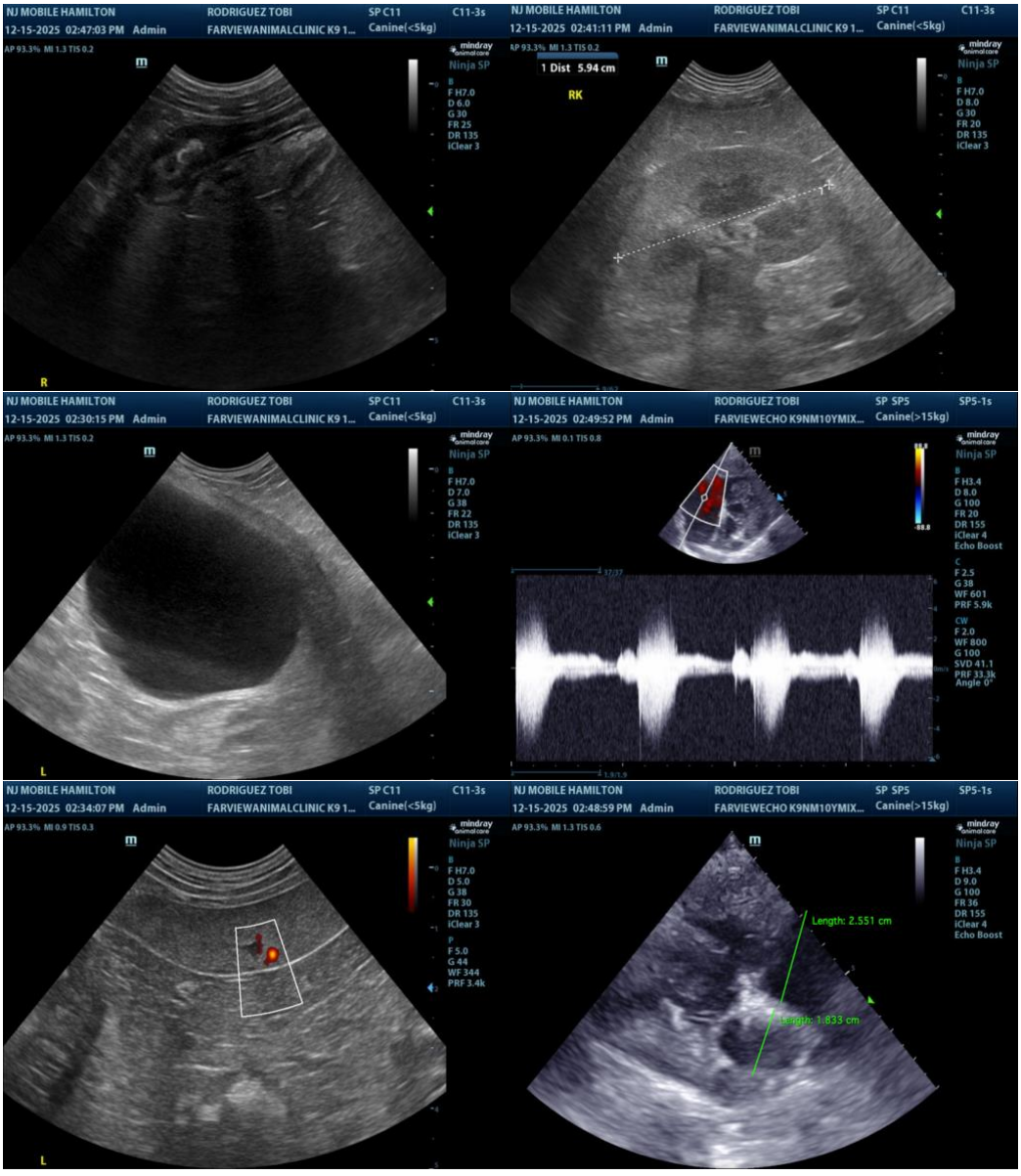
A urinalysis and urine culture via cystocentesis are recommended to evaluate the urinary tract changes for potential urinary tract infection. Fine needle aspirates of the liver with cytology are recommended. A coagulation profile and platelet estimate prior to sampling are indicated to ensure the absence of coagulopathy. Occasionally some tissues are poorly exfoliative, or cytology is non-specific, in which case biopsy with histopathology may be required for a definitive diagnosis.



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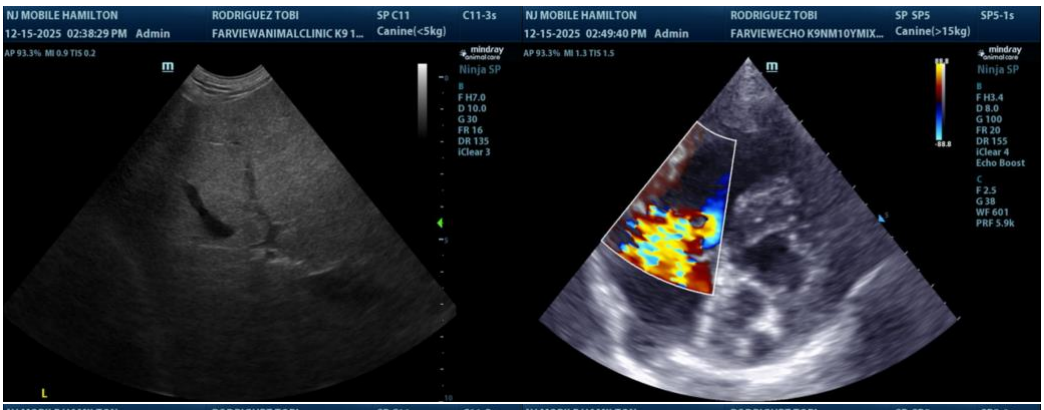

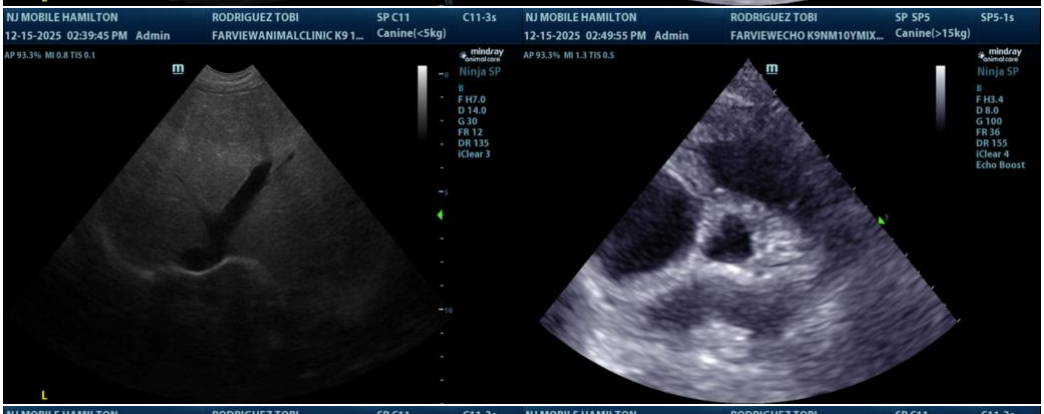

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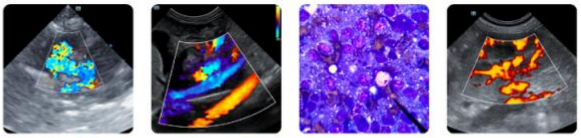
FUELED BY SONOPATH VETERINARY ULTRASOUND



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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.

Bradley Harris, DVM, DACVECC, DACVIM (cardiology)

info@SonoPath.com