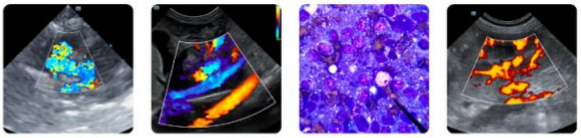

PATIENT

Guinness Reilly

SPECIES

Canine

BREED

Chihuahua

SEX

Neutered Male

AGE

14 Years 5 Months

WEIGHT

Not Provided

INTERPRETED BY

Bradley Harris, DVM, DACVECC, DACVIM (cardiology)

IMAGING PERFORMED BY

Chloe Lowe CVT

HOSPITAL NAME

Newton Veterinary Hospital

REFERRING VET

Dr. Barron

INVOICE

16233

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06/01/26

PRESENTING CLINICAL SIGNS

Heart murmur grade 4, crackles, suspect abdominal mass.

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	NP	170	3.51	2.3	1.64	2.49	1.57
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	37	0.1	1.1	1.6	5.1	3.6	NM

Cardiac Presentation

The left atrium appears mild to moderately enlarged. The left ventricle is subjectively normal with adequate systolic function. The right atrium and ventricle are upper limits of normal in dimension, with normal systolic function. The anterior and posterior mitral valve leaflets are thickened and redundant consistent with myxomatous changes, and there is moderate prolapse. There is moderate mitral regurgitation identified. The tricuspid valve leaflets are appropriately thin with adequate apposition, intact chordae, with mild to moderate tricuspid regurgitation and evidence of mild 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 appropriate main pulmonary artery diameter and right pulmonary artery distensibility. There is no pulmonic and no aortic valve insufficiency identified. There is no visible pericardial, pleural, or free peritoneal fluid documented. No evidence of hepatic venous congestion is noted. The cardiac chambers, pericardial and visible extra-cardiac regions were free of masses, spontaneous echo contrast, or thrombi.

**Without a bodyweight provided, assessment of canine chamber dimensions and function are largely performed on a subjective basis. **

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 prostate is normal.

The kidneys are normal in size and structure. The cortices are hyperechoic with a loss of corticomedullary distinction. Normal cortex to medulla ratio with mild dystrophic mineralization bilaterally. No significant pyelectasis or pelvic dilation. Minimally irregular renal capsules. The left kidney measures 4.12 cm. The right kidney measures 4.17 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 0.54 cm x 1.77 cm. The right adrenal gland measures 0.41 cm x 1.24 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 0.85 cm at the hilus.

Liver

The liver is subjectively enlarged with rounded margins and a diffusely hyperechoic and heterogeneous parenchymal echotexture. The vasculature is normal with no evidence of congestion. There are ill-defined hypoechoic nodular changes throughout the parenchyma. No hepatic lymphadenopathy is documented,

The gallbladder has thin walls which contain anechoic bile. There is no evidence of intra- or extra-hepatic biliary dilation. The cystic and common bile ducts were normal. No hepatic lymphadenopathy is documented. There is no overt structural evidence of inflammatory, infiltrative or regenerative pathology evident.

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 moderately enlarged with irregular margins. There is mixed hyper- and hypoechoic nodular changes throughout. The parenchyma is diffusely hypoechoic. There is a mild to moderate degree of hyperechoic mesenteric and omental fat.

Free Abdomen

There is no significant lymphadenopathy or free fluid.

ULTRASONOGRAPHIC FINDINGS

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- The cardiac findings are consistent with degenerative/myxomatous mitral valve disease with moderate hemodynamic effects consistent with ACVIM Stage B2. The patient also has mild to moderate pulmonary hypertension likely from a combination of left-sided heart disease and possibly underlying lung disease. Correlate these findings with thoracic radiographs.
- The kidneys are relatively normal in size and structure, and cortex:medulla ratio (cortex 1/3 of medulla) is essentially maintained. There is age-related loss of the normal smooth capsular contour and C/M junction definition. The cortices are largely uniform in texture with mild hyperechogenicity expected for this patient's age. Dystrophic mineralization was noted and appears non-obstructive at this time, with no evidence of pyelectasis.
- 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 prominent, hypoechoic pancreas with an irregular contour and mixed ill-defined hyper and hypoechoic changes is most consistent with pancreatic remodeling and nodular hyperplasia. This may be secondary to active or acute-on chronic inflammatory disease or pancreatitis.
- The suspected abdominal mass effect, suspected to be an enlarged and irregular pancreas cranial to the right kidney, there are several fleeting images of said mass effect but no definitive communication or origin of the pancreas is identified.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Given the degree of chamber dilation, cardiac therapy with enalapril (0.5 mg/kg BID assuming normotension and lack of renal insult) and Vetmedin (0.25-0.35 mg/kg BID) is recommended. Given the degree of pulmonary hypertension, sildenafil (2 mg/kg BID) is also recommended. While there is an increased risk of IV fluids, corticosteroids, or anesthesia, there is no overt objection, as the need likely outweighs the risks. Thoracic radiographs, blood pressure, and chemistry should be performed now for a baseline, and repeated again in 1-2 weeks. A repeat echo is indicated in 6 months. Owners should monitor resting respiratory rate at home. Values above 30 breaths/minute or an increase in respiratory rate 10% above baseline should prompt veterinary re-evaluation.

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. Dobutamine (2.5-10 μ g/kg/min as a CRI, starting at 2.5 μ g/kg/min and increasing the dosage incrementally) may be used in lieu of fluid boluses to augment systemic blood pressure.

Diet:

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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 an optimal body condition is recommended. Consider omega-3 fatty acid supplementation. Avoid any boutique, exotic, or grain-free diets.

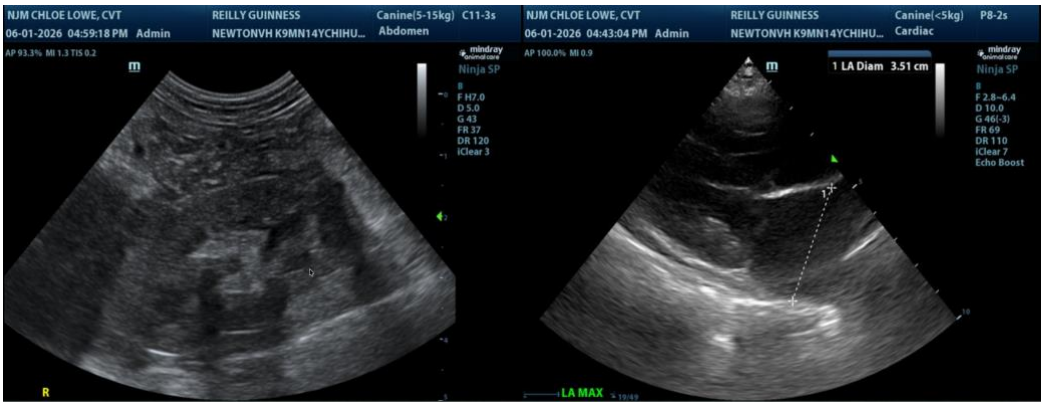
Activity:

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.

A urinalysis and urine culture via cystocentesis are recommended to evaluate the urinary tract changes for potential urinary tract infection.

A spec cPLI is recommended to further evaluate the pancreas for evidence of active inflammation or pancreatitis.

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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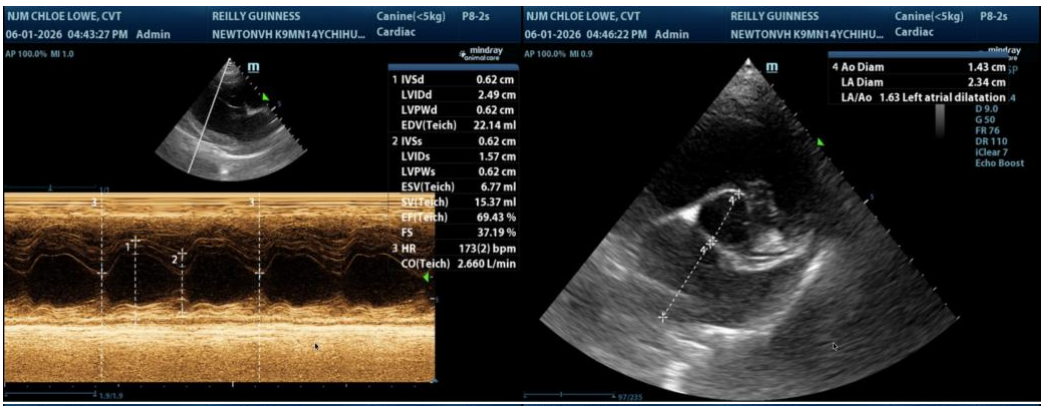

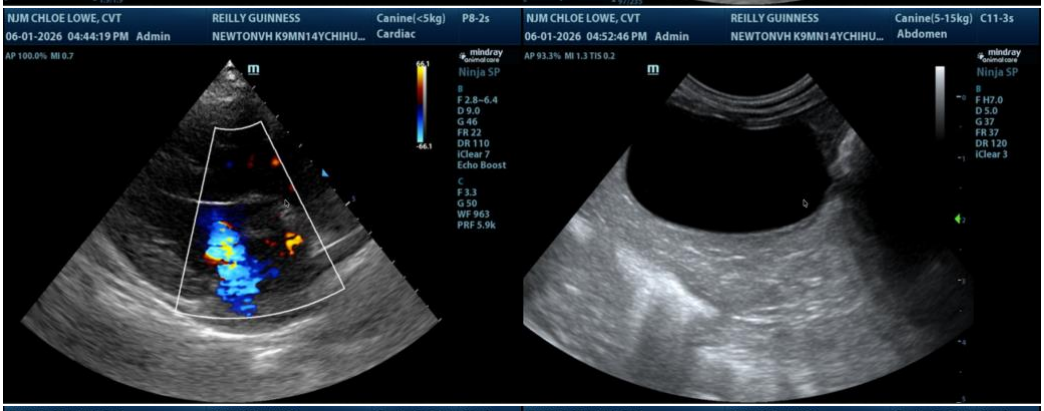

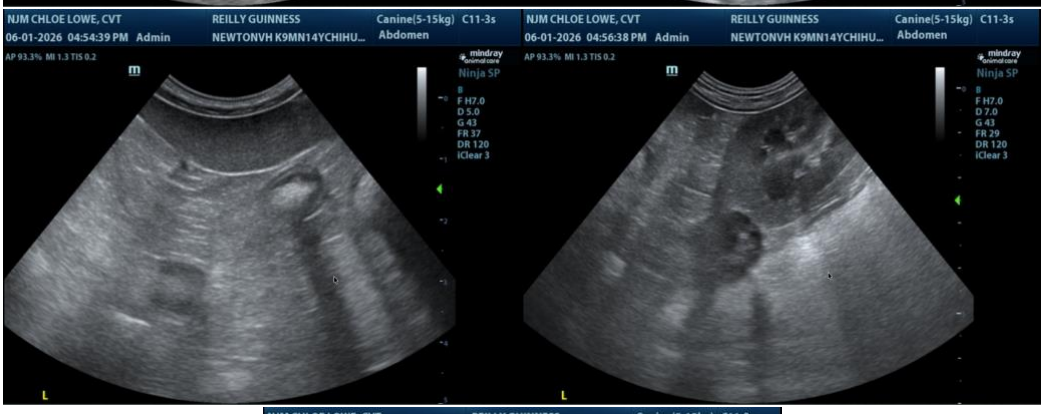

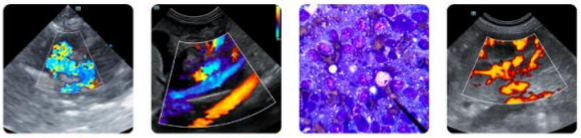

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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