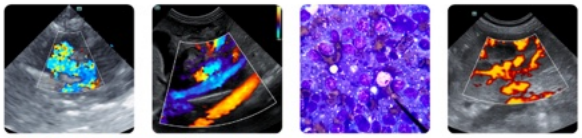

PATIENT

Olive Paillaman

SPECIES

Canine

BREED

Chihuahua Mix

SEX

Spayed female

AGE

10 years

WEIGHT

13.2 lbs

INTERPRETED BY

Bradley Harris, DVM, DACVECC, DACVIM (cardiology)

IMAGING PERFORMED BY

Shari, Reffi, CVT

HOSPITAL NAME

Animal General Hudson

REFERRING VET

Dr. Lang

INVOICE

70262

DATE

1/19/26

PRESENTING CLINICAL SIGNS

- R/O seizures vs syncope (had 1 episode last week), diarrhea
- Mild hypoglycemia on BW 1-13-26 BG: 53 mg/dl
  BP ~140mmHg
- Murmur appreciated on exam
- cardiomegaly on CXR

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The urinary 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, and anechoic urine is present. The ureteral papillae appear normal. There is no evidence of inflammatory, infiltrative, or neoplastic disease.

The kidneys are normal in size and structure, with appropriate corticomedullary definition and cortex to medulla ratio. The cortices are uniform in texture with normal echogenic relationship to liver and spleen. The medullary structure differed distinctly from the cortex and no evidence of pyelectasia is present. The capsules are uniform without significant irregularities noted. The left kidney measured 4.33 cm. The right kidney measured 4.46 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 measured 0.66 x 1.93 cm. The right adrenal gland measured 0.73 x 1.98 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 measured 1.03 cm at the hilus.

Liver

The liver is subjectively normal liver size, contour, and structure. Parenchymal echogenicity is naturally coarse and hypoechoic to the spleen. Vasculature is within normal limits with no evidence of congestion. The gallbladder contains a mild amount of suspended, echogenic debris and dependent sediment. The cystic and common bile ducts are normal. There is no evidence of intra- or extra-hepatic biliary dilation. There is no overt structural evidence of inflammatory, infiltrative or regenerative pathology evident.

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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

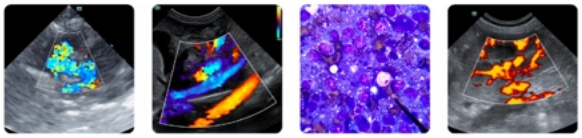
The pancreas is slightly prominent and mildly hypoechoic with slightly, irregular margins. There appears to be a slightly hypoechoic discrete, nodular mass lesion within the right pancreatic limb near the right kidney.

Free Abdomen

There is no significant hyperechogenic mesentery or omental fat or regional free peritoneal effusion noted. There are several enlarged and hypoechoic lymph nodes in the cranial abdomen. These are suspected to be hepatic or gastric nodes. They have irregular margins and distorted length to width ratios and lack discernable parenchymal detail.

ULTRASONOGRAPHIC EXAMINATION OF THE HEART

The left atrium is severely enlarged. The left ventricle is moderately enlarged, with marginal systolic function. The right atrium and ventricle are 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 minimal prolapse. There is evidence of moderate to severe mitral regurgitation. The tricuspid valve leaflets are minimally thickened, with trivial tricuspid regurgitation and no evidence of 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, and appropriate diameter and 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.



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CANINE CARDIAC PARAMETERS	Body Weight kg	HR BPM	LAD 4 ch Long	RAD 4 ch Long	La/Ao Heart Base	LVIDd	LVIDs
NORMAL PARAMETER		50-100			<1.6		
PATIENT	6.0 kg	210	4.46	1.67	1.95	3.75	2.17
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	42	0.2	1.0	1.4	5.7	3.1	NM

ULTRASONOGRAPHIC FINDINGS

These findings are consistent with degenerative/myxomatous mitral valve disease with moderate hemodynamic effects consistent with ACVIM Stage B2. If episodes are deemed syncopal in origin, the degree of systolic dysfunction is considered a possible etiology. Additionally, an occult dysrhythmia cannot be excluded.

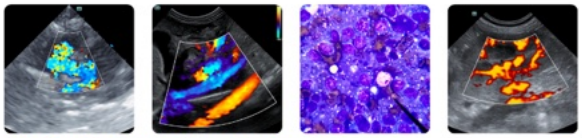
The gallbladder contains echogenic, suspended and dependent unorganized debris. This is not yet to the level of an organized mucocele, however early/developing mucocele cannot be ruled out. This dependent sediment is often an incidental finding, or may be associated with concurrent endocrine disease such as hyperadrenocorticism or diabetes mellitus.

The nodule in the right limb of the pancreas may represent infiltrative neoplastic disease given the noted hypoglycemia and insulinoma or pancreatic carcinoma. However, benign changes such as pancreatic hyperplasia cannot be definitively ruled out.

The enlarged, hypoechoic lymph nodes in the cranial abdomen are also concerning for infiltrative or metastatic neoplastic processes. Reactive lymphadenopathy is considered significantly less likely given the distortion in length to width ratio and hypoechoic parenchyma.

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. While there is an increased risk of IV fluids, corticosteroids, or anesthesia, there is no overt objection, as the need likely outweighs the risks. If not already performed, baseline thoracic radiographs and blood pressure are recommended. A repeat chest X-rays, BP, and chemistry should be performed again in 1-2 weeks. A repeat echo is indicated in 6 months. Diagnostic ECG and 24-48 hour ambulator Holter monitor should also be considered. 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.



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In the presence of hypoglycemia, an insulin level or insulin glucose ratio is recommended to further confirm suspicion of potential pancreatic insulinoma.

Additionally fine needle aspirates of the cranial abdominal lymph node 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.

A pre and post prandial bile acids is recommended to further evaluate the potential hypoglycemia. Additionally, UA and urine culture are recommended. Ultimately an abdominal CT and exploratory laparotomy may be required for further sampling or biopsy of the lesions and histopathology.

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

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 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.

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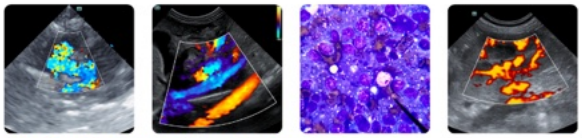

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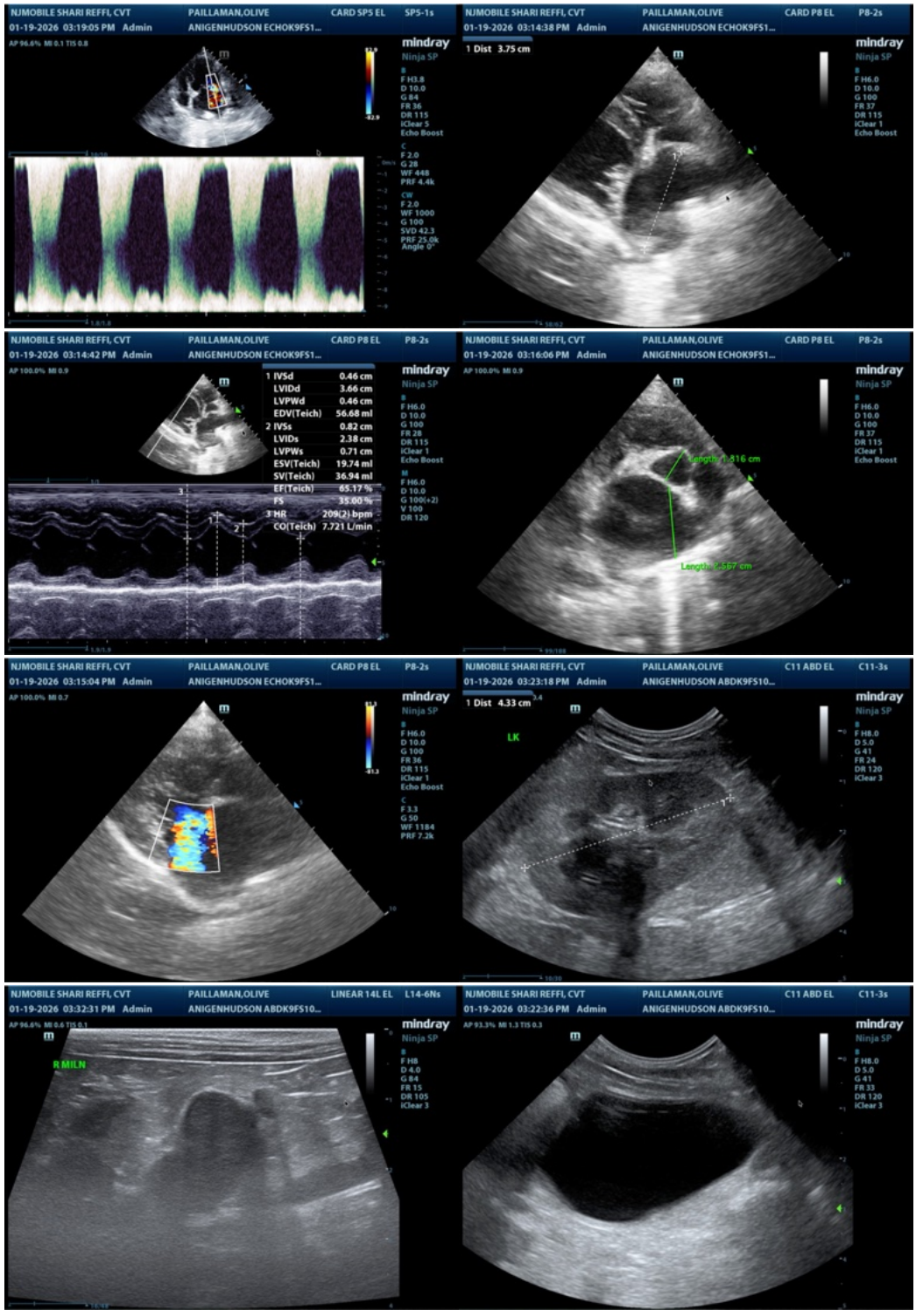

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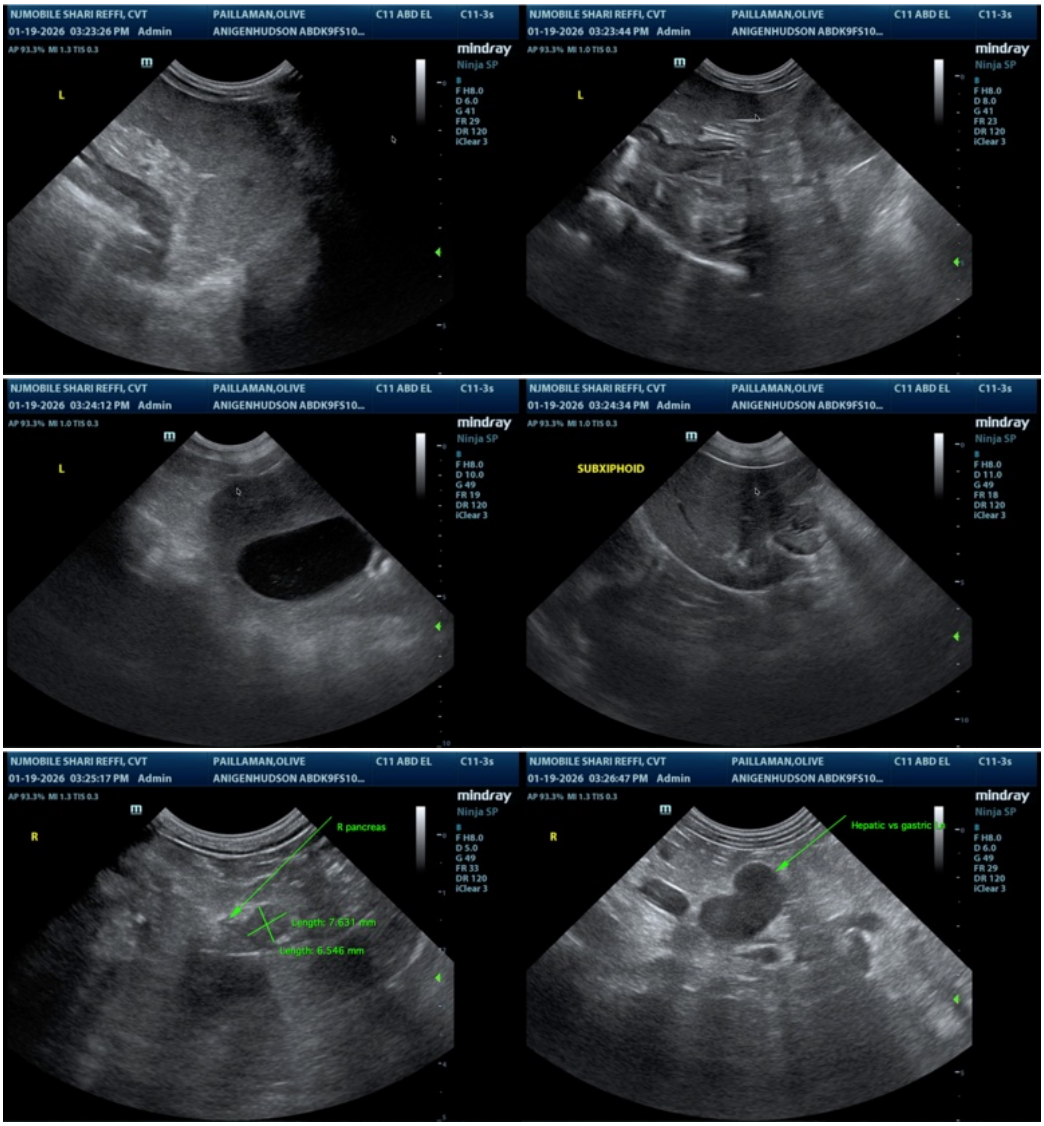

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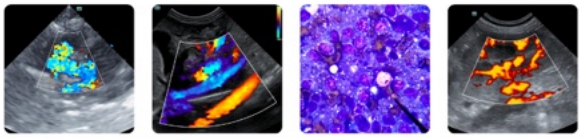

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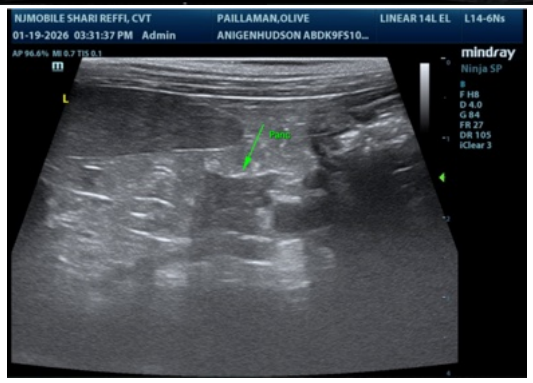

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Bradley Harris, DVM, DACVECC, DACVIM (cardiology)

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