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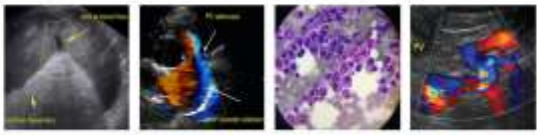


SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
1-800-838-4268 info@sonopath.com SonoPath.com

PATIENT

Paco Arnoldi

SPECIES

Canine

BREED

Terrier Mix

SEX

Neutered Male

AGE

10 years

WEIGHT

13.2 Pounds

INTERPRETED BY

R. McKenzie Daniel, DVM, DABVP (Canine and Feline)

IMAGING PERFORMED BY

Rebekah Jakum, CVT ARDMS/RVT

HOSPITAL NAME

New Britain VC

REFERRING VET

Dr. Bandekar

INVOICE

12108

DATE

8.10.2021

PRESENTING CLINICAL SIGNS

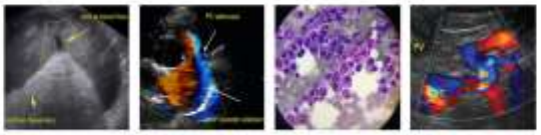
History: ~3/6 heart murmur, painful abdomen, history of crystalluria, occasional cough

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	5.6	2.6	NM	1.1	--	--	0.2
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	BELOW	BELOW	BELOW	BELOW
PATIENT	--	1.5	--		--	--	

Cardiac Presentation

The echocardiogram in this patient demonstrated normal **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 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** valvular assessment demonstrated adequate linear morphology. 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 immediate pericardial regions were free of overt masses in the visible window.



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Urinary System

A solitary, dependent calculus measuring 0.52 cm in diameter was noted in the urinary bladder. The bladder contained mild dependent to nondependent hyperechoic sediment. The urethra exhibited normal thickness and tone to a depth of 3.0 cm.

The residual prostate was symmetrically normal in size with uniform parenchyma and slight coarse echotexture measuring 0.83 cm in diameter.

The area of the aortic trifurcation was free of pathology.

Normal size and margination were present in the kidneys. A normal 1:3 cortex / medulla ratio was maintained. The medulla and cortices were uniform in texture with some increased echogenicity and mild loss of corticomedullary symmetry and definition expected for the age of the patient. Medullary mineralization primarily noted in the lateral diverticuli of both kidneys, was present. No evidence of pyelectasia was present. The left kidney measured 3.9 cm in length. The right kidney measured 4.1 cm in length.

Adrenal Glands

The left adrenal gland was uniform in size and contour with a uniformly hypoechoic parenchyma. The left adrenal gland measured 0.41 cm width at the caudal pole and 0.30 cm width at the cranial pole. The right adrenal gland was uniform in size and contour with a uniformly hypoechoic parenchyma. The right adrenal gland measured 0.38 cm width at the caudal pole and 0.48 cm width at the cranial pole.

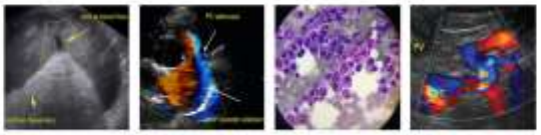
Spleen

The spleen exhibited primarily finely textured parenchyma which was hyperechoic to the liver and renal cortical parenchyma. Mild generalized parenchyma heterogeneity was present without evidence of nodular changes. The capsule was smooth and regular without apparent expansion. The splenic vasculature at the hilus was normal in volume with no evidence of congestion or thrombosis. The parenchymal heterogeneity is likely consistent with benign changes such as extramedullary hematopoiesis or age-related remodeling with minor potential for inflammatory or neoplastic disease.

Liver/ Gallbladder

The liver was subjectively normal in size, structure, and contour. The liver parenchyma was uniform and hypoechoic to the spleen with a mild coarse echotexture. The hepatic and portal vasculature were normal in appearance without signs of congestion. The gallbladder was non distended in size with mild to moderate, congealed to nondependent, luminal debris primarily in the caudal lumen. The cystic duct and common bile ducts were normal without evidence of dilation.

Gastrointestinal



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The stomach presented intact wall layering with a normal wall layer ratio. The lumen of the stomach was empty with no signs of ileus, obstruction, or foreign material. The pylorus wall width measured 0.47 cm.

The small intestine presented intact wall layering with 1:3 muscularis/mucosa ratio. The lumen of the small intestine was empty with no signs of ileus, obstruction, or foreign material. The duodenum wall measured 0.31 cm width.

Normal visible colon wall layers were present with apparent formed feces in lumen.

Pancreas

The parenchyma of the left limb, body, and right limb of the pancreas presented isoechoic to the adjacent omental fat. A normal curvilinear capsule contour of the pancreas was present. The visible pancreatic duct was normal. No signs of active inflammation or neoplastic disease were evident.

Free Abdomen

No overt lymphadenopathy or peritoneal effusion was present.

ULTRASONOGRAPHIC FINDINGS

Primary Findings

- Probable chronic mitral valve disease (ACVIM B1)
- Bilateral chronic renal changes with nonobstructive medullary mineralization
- Urinary bladder calculi and concurrent dependent to nondependent sediment
- Mild congealed gallbladder debris (non-mucocele)

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The cause of the murmur is most likely consistent with chronic degenerative valvular changes with secondary mitral valve insufficiency. The lack of left atrium enlargement indicates that the risk secondary to mitral valve Insufficiency is low at this time, although the prognosis is highly variable. No other clinical Issues such as systolic dysfunction or overt clinical pulmonary hypertension were noted (estimated pulmonary pressure gradient based on tricuspid valve insufficiency not consistent with clinical pulmonary hypertension). Given these findings, cardiac medications are not indicated while the overall heart was not suggestive of a cardiogenic origin for the cough. Primary lower airway disease may be considered. Three view chest radiographs are suggested to assess for evidence of pulmonary or thoracic pathology. Recheck echocardiogram is recommended in 6 months, sooner If clinical signs suggestive of heart disease (exercise intolerance, elevated resting respiration rate, etc.) are noted.

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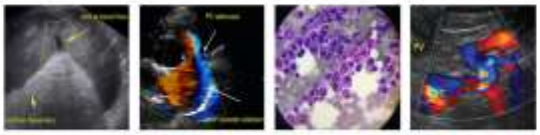

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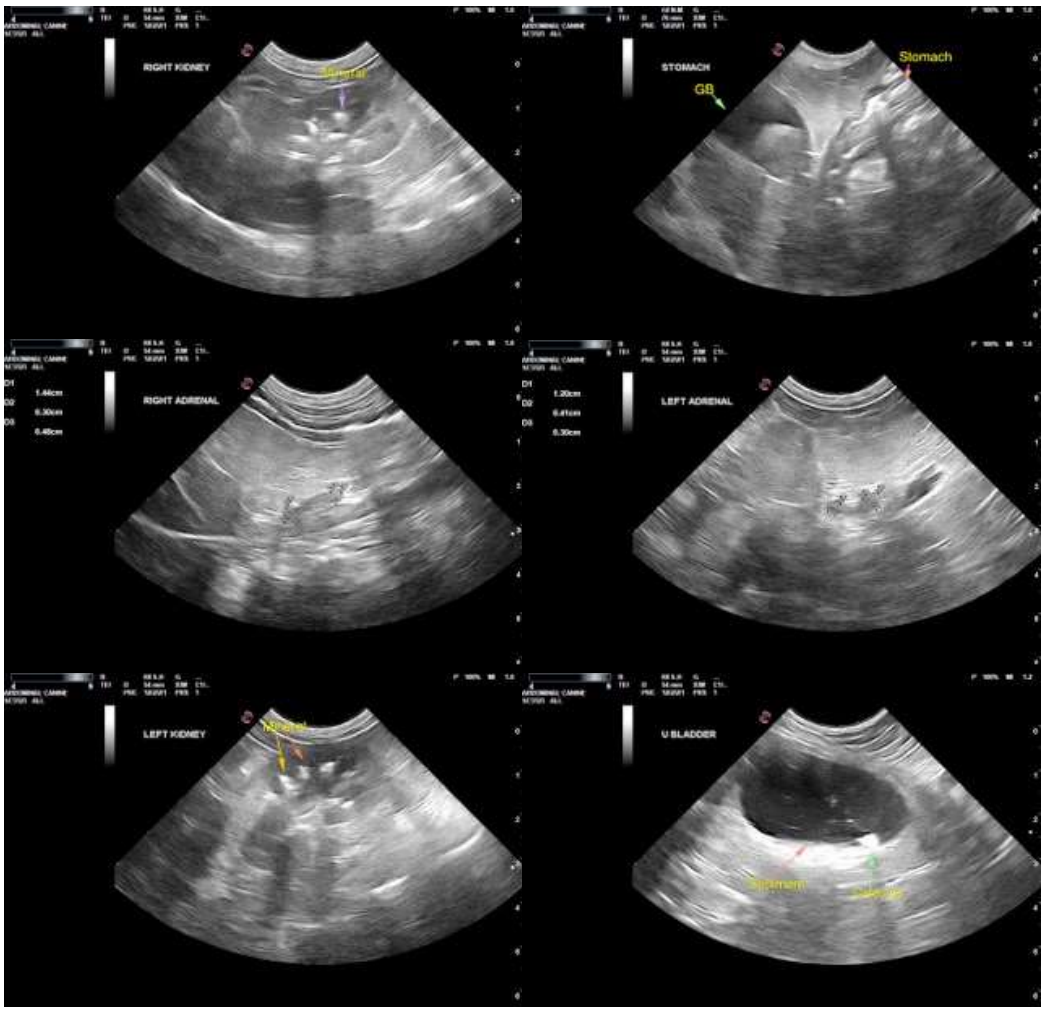
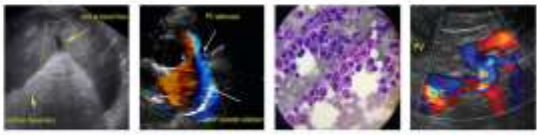
This patient is suspected to be passing small amounts of mineral from the kidneys into the urinary bladder. Further renal staging to include urine C/S and protein: creatinine ratio on sterile urine sample may be considered.

The mild congealed gallbladder debris was not overtly consistent with a mature gallbladder mucocele, though the possibility of emerging to partial gallbladder mucocele is possible. Although not definitive, potential discomfort associated with the gallbladder may be present if evidence of discomfort in the cranial abdominal or subxiphoid area. Correlation with hepatic enzyme assessment is recommended. Ursodiol +/- Denamarin would be warranted empirically. Sonographic monitoring of the gallbladder is recommended, especially if evidence of increasing cholestasis.

No overt evidence of active pancreatitis, although the potential for low-grade pancreatitis which may present as sonographically normal cannot be definitively excluded.





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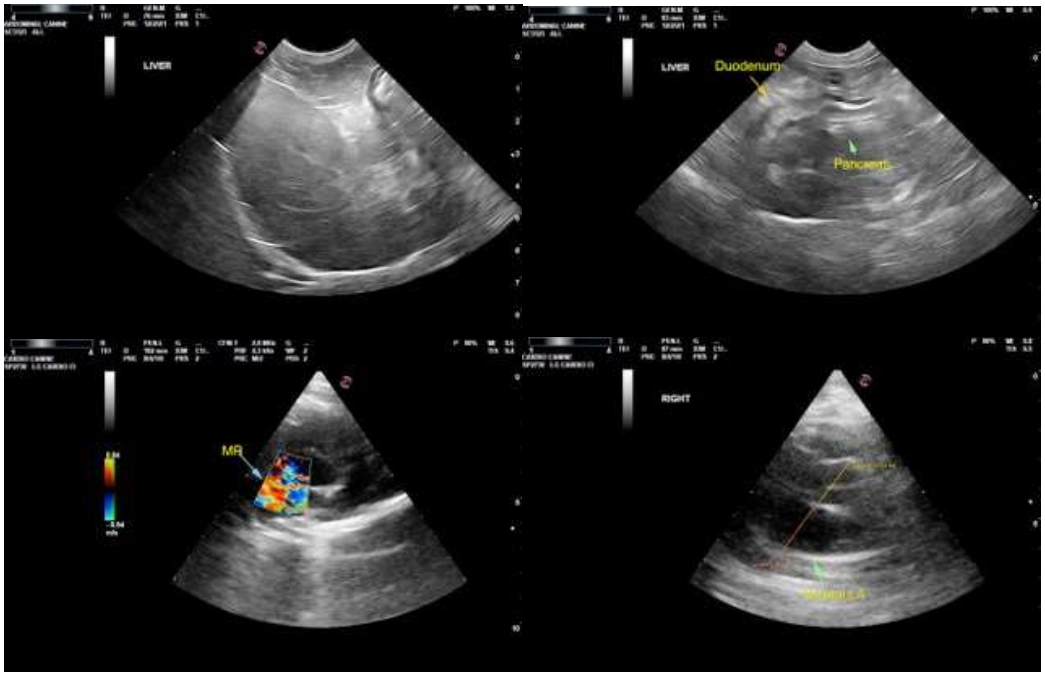

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

R. McKenzie Daniel, DVM, DABVP (Canine/Feline Practice)
mac.daniel@sonopath.com