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Clinical Sonography & Telecytology
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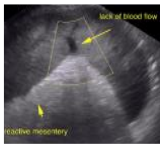
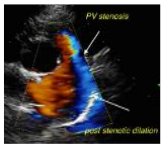
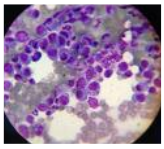
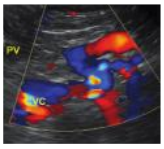





SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT

Baby Young

SPECIES

Canine

BREED

Havanese

SEX

Spayed Female

AGE

9 Years

WEIGHT

6.4 kg

INTERPRETED BY

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

IMAGING PERFORMED BY

Dr. Belan

HOSPITAL NAME

Chestermere AC

REFERRING VET

Dr. Lees

INVOICE

14230

DATE

3/7/22

PRESENTING CLINICAL SIGNS

History: 3/6 murmur on wellness exam nonclinical for heart disease and not on any cardiac meds. History of bladder stones. Elevated ALP. Sedated butorphanol IV for scan. Two Cavity scan two separate submissions ab 47 images and echo 60 images 107 total
Abnormal PE/Chem/CBC/UA Results: Mild elevation of ALP other values normal.

ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

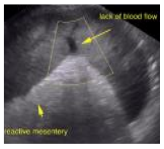
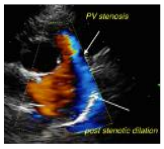
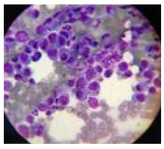
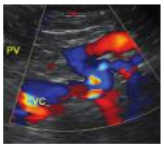
CANINE CARDIAC PARAMETERS	**MR VMAX** (m/s)	**TR VMAX** (m/s)	**LA/AO** (Boon method)	**LA/AO** (Heart Base; Swe)	**FS** (%)	**EF** (%)	**EPSS** (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	5.3	1.0	NM	1.66	56	87.8	0.22
CANINE CARDIAC PARAMETERS	**HR** (BPM)	**AV VMAX** (m/s)	**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	116	1.3	1.0	--	2.7	2.8	--

Cardiac Presentation

The echocardiogram for this patient presented mild 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 eccentric 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** valve revealed mild thickening with minor TR.
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 cranial **mediastinum and pericardial regions** were free of masses in the visible window.

Urinary System

The urinary bladder was normal in size and tone. Multiple, small, dependent calculi were present in the urinary bladder lumen as well as several calculi noted within the proximal urethral lumen. The proximal urethral calculi did not appear to be obstructive. Mild, ventral apical wall thickening noted, consistent

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with mild concurrent cystitis, secondary to the calculi. An example of a calculus measured 0.40 cm in diameter. The ventral apical urinary bladder wall measured 0.32 cm in width.

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. No evidence of pelvic dilation was present. Pinpoint areas of medullary mineral were present in both kidneys. The left kidney measured 3.8 cm in length. The right kidney measured 4.2 cm in length. Aortic trifurcation was normal.

Adrenal Glands

Both adrenal glands were normal without evidence of hyperplasia or tumors. The left adrenal gland measured 0.44 cm at the cranial pole and 0.43 cm at the caudal pole. The right adrenal gland measured 0.53 cm at the caudal pole.

Spleen

The spleen exhibited a finely textured and homogenous parenchyma which was hyperechoic to the liver and renal cortical parenchyma. 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. Acute to chronic inflammatory, neoplastic, or benign parenchyma changes were not noted.

Liver

The liver presented enlarged in size. The parenchyma of the liver was subjectively normal in echogenicity compared to the spleen and renal cortices. The liver parenchyma was uniform with a mildly coarse echotexture. The capsule of the liver was symmetrically rounded to mildly swollen in margination. The hepatic and portal vasculature were normal in appearance without signs of congestion.

The gallbladder was non distended in size with moderate, primarily dependent yet nonorganized gallbladder debris. The cystic duct and common bile ducts were normal without evidence of dilation.

Gastrointestinal

The stomach presented intact wall layering with a normal wall layer ratio. The lumen of the stomach contained moderate gastric ingesta- this is likely consistent with postprandial presentation, unless documented NPO prior to the ultrasound.

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.

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

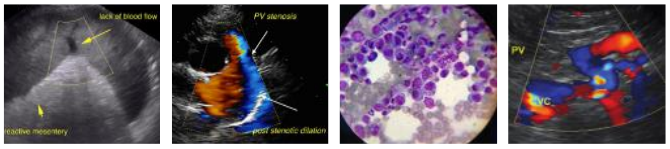
Pancreas

The pancreas was normal in size and contour with isoechoic to heterogeneous parenchyma compared to adjacent omentum. No signs of active inflammation or neoplasia.

Free Abdomen

No overt lymphadenopathy or peritoneal effusion was present.

ULTRASONOGRAPHIC FINDINGS



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- Chronic mitral valve disease (ACVIM B-1- early B-2)
- Minor TR- no evidence of clinical pulmonary hypertension
- Multiple, small urinary bladder nonobstructive proximal urethral calculi, concurrent to secondary mild ventral apical cystitis
- Mild age-related kidneys with pinpoint medullary mineral
- Benign hepatopathy- subjective vacuolar hepatopathy pattern
- Moderate gallbladder debris (non-mucocele)
- Minor pancreatic remodeling

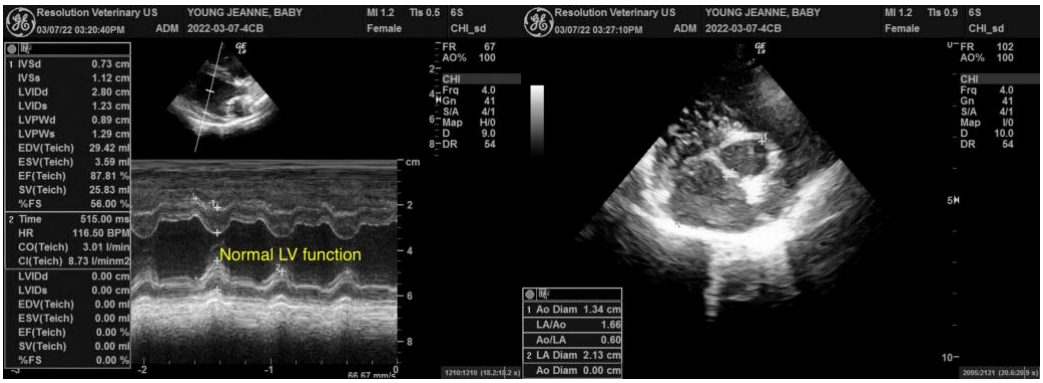
INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The cause of the murmur is chronic degenerative valvular changes with secondary eccentric mitral valve insufficiency. The lack of left atrial enlargement implies that the risk of complication secondary to mitral valve insufficiency is low at this time and, without current clinical signs, indicates that medical therapy is not required. Conservative monitoring is recommended with a recheck echocardiogram in 6-12 months, sooner if clinical signs suggestive of heart disease develop.

Urine culture and sensitivity on sterile urine sample, to rule out underlying infection is recommended. The urinary bladder and proximal urethral calculi did not appear to be a clinical issue at this point yet monitoring for evidence of stranguria, pollakiuria or similar clinical signs, which. may indicate inflammation or potential proximal urethral obstruction is recommended.

Potential for adrenal hyperfunctionality is considered unlikely given the lack of reported clinical signs.

Baseline UCCR could be considered as a screening test if clinically indicated. Hepatosupportive medications, including Denamarin and Ursodiol given the presence of gallbladder debris recommended with continued liver enzyme monitoring. Recheck sonogram recommended if increasing evidence of cholestasis or cranial abdominal/subxiphoid discomfort on palpation is noted.



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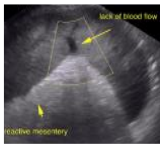
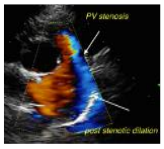
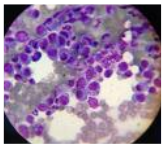
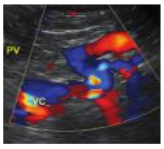

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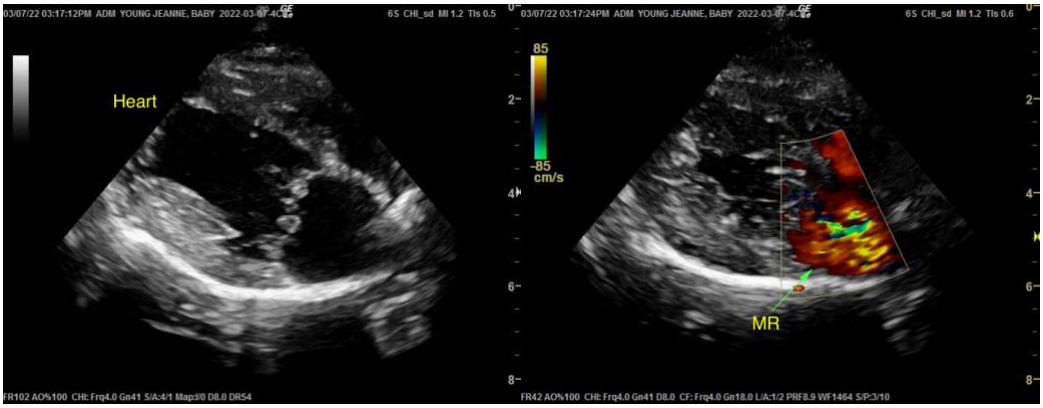

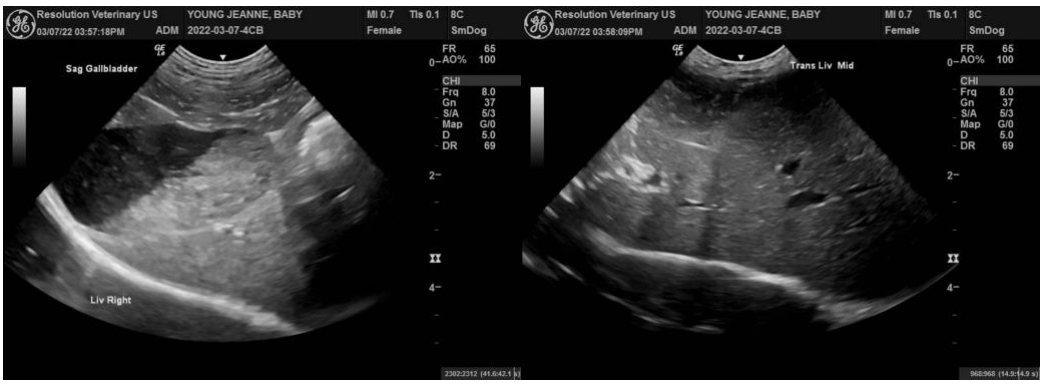

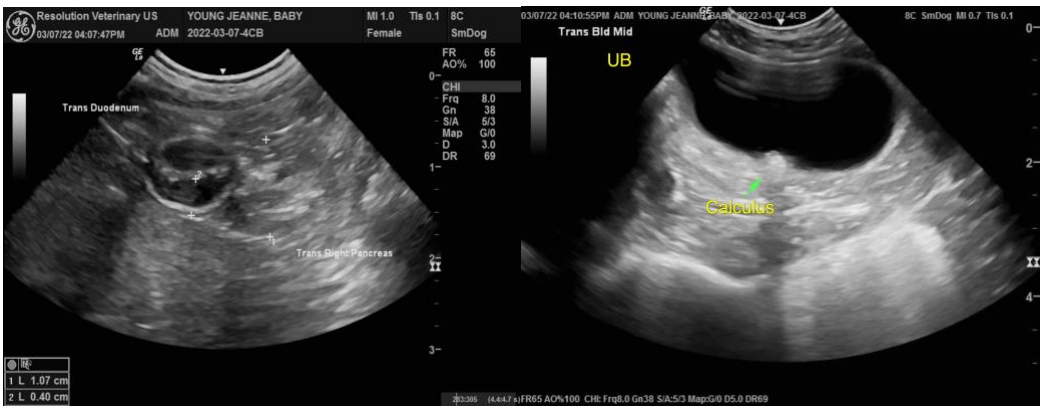

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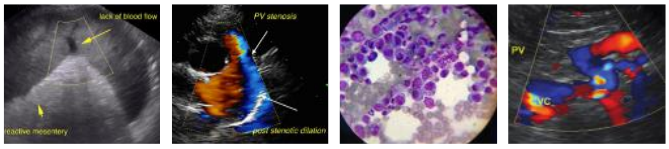

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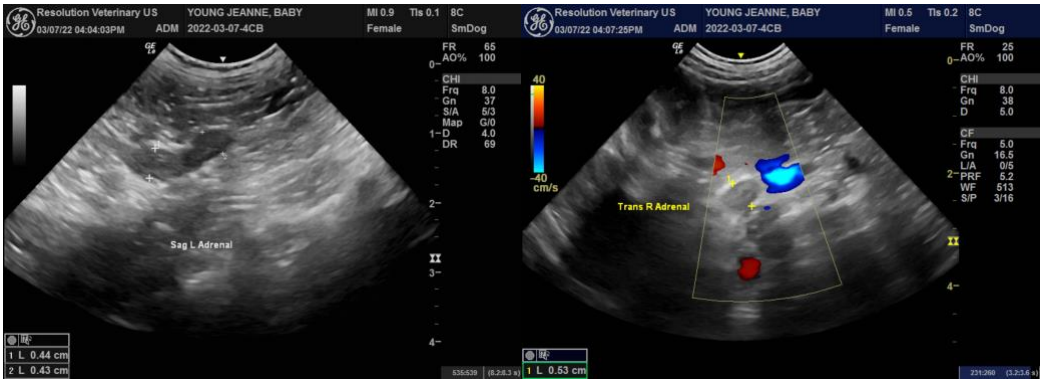

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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)
info@SonoPath.com