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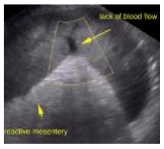
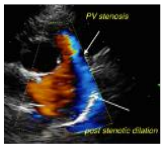
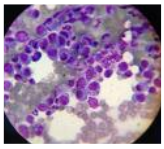
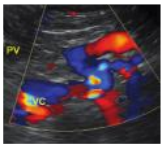





SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT

Toby Okyle

SPECIES

Canine

BREED

Shih Tzu

SEX

Spayed Female

AGE

16.5 Years

WEIGHT

15 Lbs.

INTERPRETED BY

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

IMAGING PERFORMED BY

Jessica Miller

HOSPITAL NAME

Marsh AH

REFERRING VET

Dr. Milwicki

INVOICE

13135

DATE

12/21/21

PRESENTING CLINICAL SIGNS

History: Cardiac murmur, AV Block on ECG. Left Adrenal Enlargement, Hx of elevated liver enzymes. Current meds: Thyrosyn, Ursodiol, Potassium Citrate, Tylan, Gabapentin

Abnormal PE/Chem/CBC/UA Results: SDMA 18.3, ALT 149, Alk Phos 1177, Urea Nitrogen 32, Gluc 35, Calcium 11.8, Potassium 6.4, Na/K Ratio 23, Chol 340, Triglyc 388, Prec PSL 145, Platelet 563

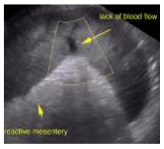
ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

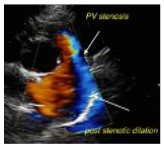
CANINE CARDIAC PARAMETERS	**MR VMAX** (m/s)	**TR VMAX** (m/s)	**LA/AO** (Boon method)	**LA/AO** (Heart Base; Swe)	**FS** (%)	**EF** (%)	**EPSS** (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	5.2	2.9	1.1	1.1	49.6	83.5	0.15
CANINE CARDIAC PARAMETERS	**HR** (BPM)	**AV VMAX** (m/s)	**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	117	1.1	0.8	--	2.3	2.1	--

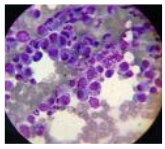
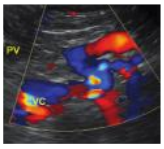
Cardiac Presentation

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 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. Trace aortic valve insufficiency noted on color doppler assessment. The **right atrium** and auricle revealed normal size, structure and content. No evidence of masses was noted or chamber overload. Mild **tricuspid** valve insufficiency noted on color doppler assessment. 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. No overt evidence if significant arrhythmogenic disease.

Urinary System





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The urinary bladder, trigone, cystourethral junction, and visible pelvic urethra to a depth of 2.0 cm exhibited normal thickness and tone. Anechoic urine was present in the lumen with no uroliths or sediment. The ureteral papillae were normal. The ureters were not visible which is normal. No evidence of inflammatory or neoplastic changes were noted. Aortic trifurcation was normal.

Normal size and margination was 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 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. Moderately sized, thinly walled, right kidney cyst (3.0 cm in diameter), containing anechoic fluid was present primarily in the cranial right kidney. The left kidney measured 4.6 cm in length. The right kidney measured 5.2 cm in length.

Adrenal Glands

The bilateral adrenal glands were normal in size. Mild parenchyma heterogeneity and mild capsule asymmetry was present without suspicion for overt neoplasia. The left adrenal gland measured 2.5 cm in length x 0.49 cm width in the caudal pole. The right adrenal gland measured 1.7 cm in length x 0.45 cm width in the caudal 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

The liver was subjectively normal in size, structure, and contour. The liver parenchyma was mildly nonuniform and hypoechoic to the spleen with a moderate coarse echotexture and subjective mild to benign parenchymal remodeling. The hepatic and portal vasculature were normal in appearance without signs of congestion.

Moderate inspissated yet nonorganized luminal debris was present in the gallbladder. No evidence of gallbladder inflammatory criteria as well as no evidence of peripheral gallbladder inflammation.

Gastrointestinal

The stomach presented intact wall layering with a normal wall layer ratio. Minor retained non-shadowing ingesta/chyme was present in the stomach. The gastric body wall measured 0.34 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 jejunum wall measured 0.38 cm.

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.

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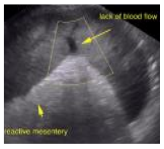
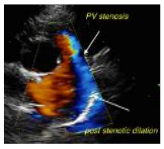
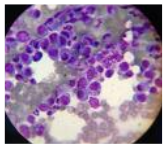
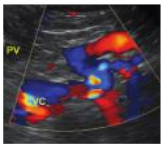

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Free Abdomen

No omental masses, lymphadenopathy or peritoneal effusion were present.

ULTRASONOGRAPHIC FINDINGS

- Chronic mitral valve disease (ACVIM B-1)
- Mild TR- estimated pulmonary pressure gradient not consistent with clinical pulmonary hypertension
- Trace AV insufficiency
- Chronic hepatopathy- subjectively benign
- Moderate inspissated gallbladder debris (non-mucocele)
- Chronic renal changes with pinpoint medullary mineral and right kidney cyst
- Heterogeneous pancreas- age-related pancreatic changes and parenchymal remodeling owing to previous inflammation or low grade to chronic pancreatitis possible

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. No other clinical issues such as systolic dysfunction or clinical pulmonary hypertension were noted. No anesthetic contraindications if anesthesia is required. Conservative monitoring is recommended with a recheck echocardiogram in 6-12 months, sooner if clinical signs suggestive of heart disease develop. Suggested anesthetic protocol may include opioid or Benzodiazepine pre-med, induction with Propofol or Alfaxalone, and appropriate gas anesthesia with avoidance of alpha 2 agonists.

https://www.antechdiagnostics.com/cadet-braf

Further renal staging to include urine C/S and protein: creatinine ratio on sterile urine sample may be considered.

Assuming normal clotting status, FNA of the liver could be considered for screening cytology, primarily to assess for evidence of inflammatory cells. No overt evidence of neoplastic hepatic criteria. Continued hepatosupportive medications and ursodiol recommended.

Subjectively, the appearance of the bilateral adrenal glands was not overtly consistent with underlying endocrinopathy or adrenal disease. Screening blood pressure and further adrenal work up may be considered if clinical signs suggestive of underlying endocrinopathy are present.

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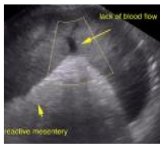
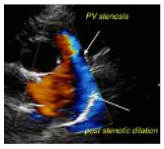
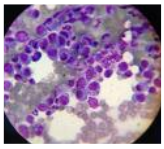
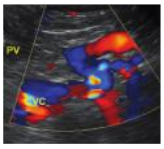

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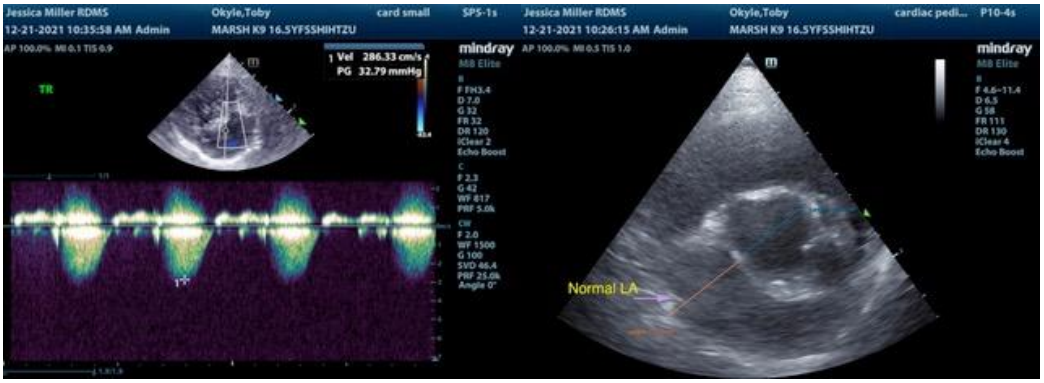

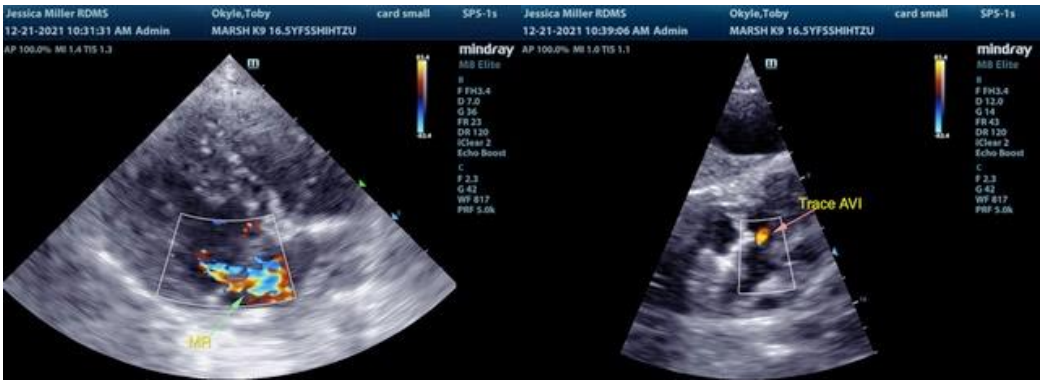

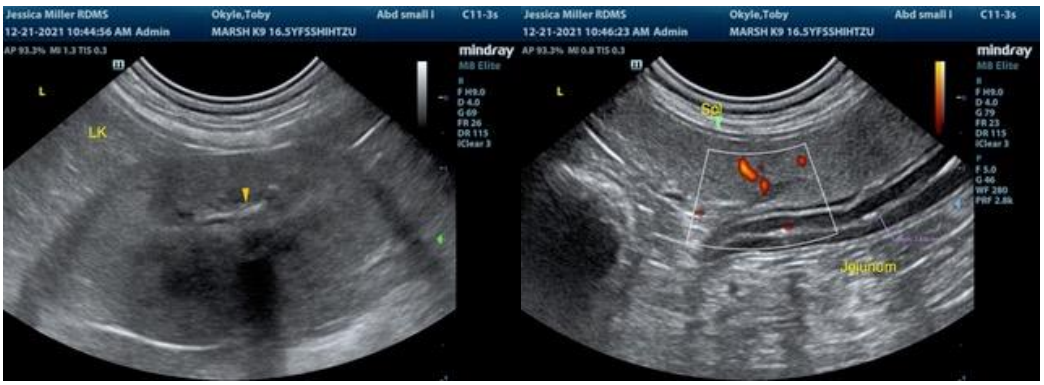

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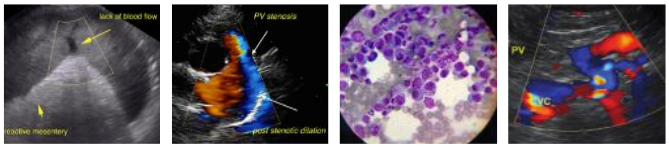

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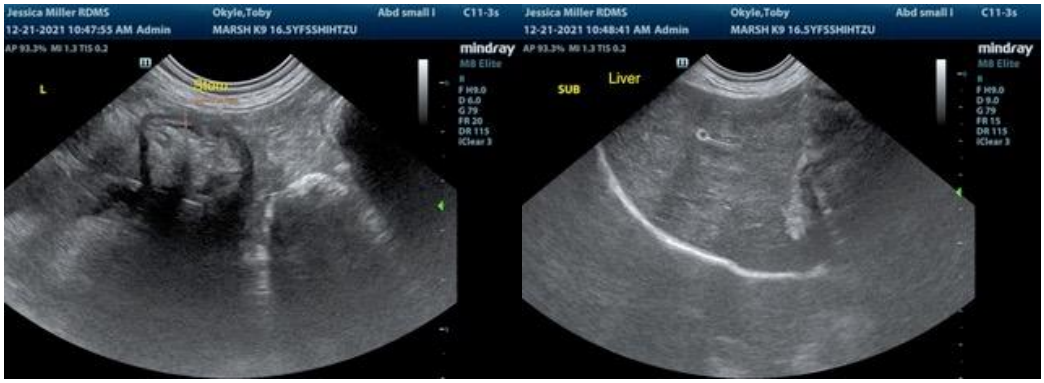

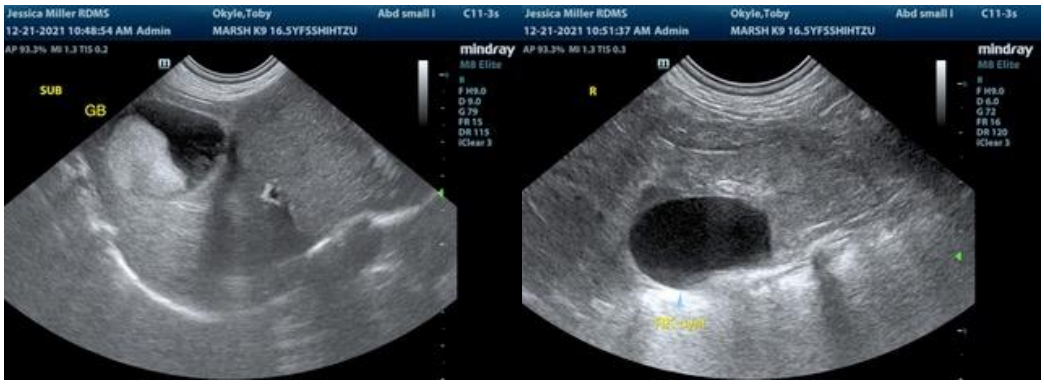

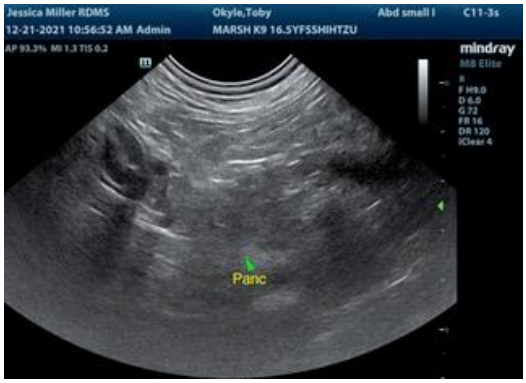

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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