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Clinical Sonography & Telecytology
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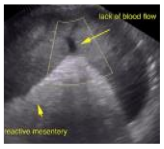
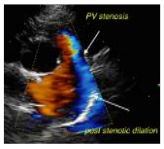
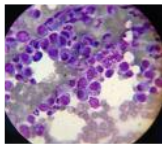
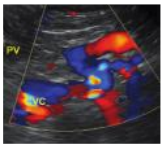




SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT

Toby O' Malley

SPECIES

Feline

BREED

DSH

SEX

MN

AGE

12 years

WEIGHT

-

INTERPRETED BY

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

IMAGING PERFORMED BY

Kelly Vazquez

HOSPITAL NAME

Livingston AH

REFERRING VET

Dr. Messina

INVOICE

17159

DATE

6/27/23

PRESENTING CLINICAL SIGNS

Patient with history of prior echo 10/14/22 (normal echo), presents for grade 2-3/6 heart murmur, PMI, left side. The patient has nasal discharge, coughing, early signs of kidney changes.

Current meds: Homeo pet nose drops - 3 drops SID in food.

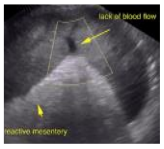
Abnormal PE/Chem/CBC/UA Results: 12/15/22: BUN 41, creatinine 2.1, SDMA 14. 6/18/23: SDMA 12, BUN 36, creatinine 1.8. U/A: 2+ protein, pH 7.0, USG 1.028. Recheck urine and UPC pending.

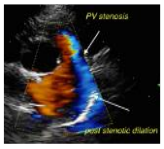
ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

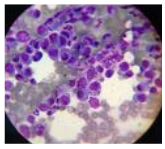
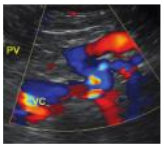
FELINE CARDIAC PARAMETERS	**BODY WEIGHT** (kg)	**HR** (BPM)	**IVSd** (cm)	**LVIDd** (cm)	**LVWd** (cm)	**FS** (%)	**EF** (%)
NORMAL PARAMETER	------	150-240	0.3-0.6	1.0-2.1	0.25-0.6	35-67	80-100
PATIENT		142	0.58	1.7	0.48	52	86
FELINE CARDIAC PARAMETERS	**LA/AO** (Boon)	**LA/AO HEART BASE** (Sisson)	**LA** 2D 4-chamber long axis AS to FW (Sisson) (cm)		**LVOT VEL.** (m/s)	**RVOT VEL.** (m/s)	**IVRT** (m/)
NORMAL PARAMETER	<1.5	0.88-1.79	0.7-1.7		<1.6	<1.3	40-60
PATIENT		1.5	1.3		1.1	1.0	NM
Adapted from June Boon,Veterinary Echocardiography,1998 Sisson D et al. JVIM 1991; 5: 232, Jacobs et al. Am J Vet Res 1985; 46:1705							

Cardiac Presentation

The echocardiogram in this patient demonstrated normal **left atrial** size based on 2 separate LA measurements. The cranial and caudal **mitral** valve leaflets presented normal linear structure and kinetics. No overt MR was noted on Doppler. The **left ventricle** presented normal thicknesses with subtle alinear contour and was not dilated nor restricted. The **myocardium** presented normal echogenicity with mild age-related myocardial remodeling yet without 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 and angles of the myocardium. The **left ventricular outflow** tract demonstrated normal laminar flow and subjective structural integrity. Normal measured LVOT velocity was noted. 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 and kinetics. 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). Normal measured RVOT velocity was noted. No visible **pericardial** or free pleura fluid was noted or extra cardiac pathology in the visible planes. The cranial **mediastinum and pericardial regions** were free of masses in the visible window.





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Urinary System

The urinary bladder, trigone, cystourethral junction, and visible pelvic urethra to a depth of 2.0 cm exhibited normal thickness and tone. Primarily anechoic urine was present with mild dependent hyperechoic lumen sand and non-dependent particulate sediment. The ureteral papillae were normal. The ureters were not visible which is normal. No evidence of inflammatory or neoplastic changes was noted.

No evidence of pathology in the area of the aortic trifurcation.

The bilateral kidneys exhibited asymmetrical contour with cortical microinfarction. The renal cortex presented uniformly increased in echogenicity with uniform echotexture. The renal cortex appeared to be hypertrophied resulting in an altered cortex: medulla ratio. Mild loss of corticomedullary distinction was also present. The renal medullary volume was subjectively reduced. Pinpoint areas of dystrophic medullary mineral were present. The left kidney was normal in size measuring 3.6 cm in length. The right kidney exhibited borderline subnormal size measuring 3.1 cm in length.

Adrenal Glands

No overt pathology was noted in the area of the left or right adrenal glands.

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/ 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 thin walls and primarily anechoic luminal content. The cystic and common bile ducts were normal.

Gastrointestinal

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 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 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.

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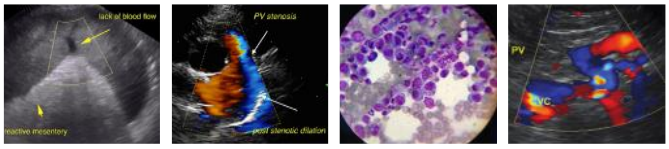

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Free Abdomen

No overt lymphadenopathy or peritoneal effusion was present.

ULTRASONOGRAPHIC FINDINGS

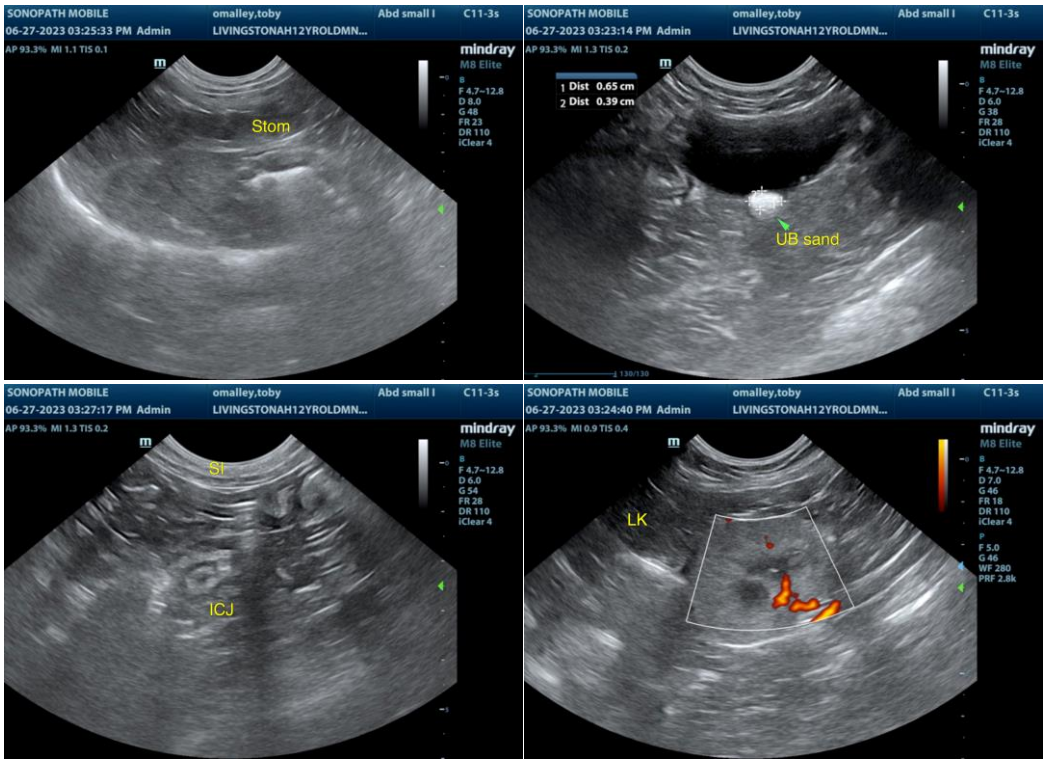
- Normal echocardiogram with mild LV myocardial remodeling
- Bilateral chronic degenerative renal changes exhibiting pinpoint dystrophic medullary mineral
- Mild dependent urinary bladder sand and non-dependent particulate sediment

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

No evidence of structural or functional cardiomyopathy was visualized. A definitive cause of the murmur was not obvious yet likely consistent with benign physiologic/ flow murmur assuming no evidence of anemia or dehydration. Regardless, the hemodynamic effects of the murmur appear to be minimal given the lack of left or right heart chamber enlargement.

No indication for cardiac medications. Continued conservative monitoring of the murmur is suggested. Recheck echocardiogram is suggested in 6-8 months, sooner if clinical signs consistent with heart disease arise or if murmur intensity increases.

Correlation with recheck UA and UPC is suggested. Screening C/S for additional renal staging may be considered if clinically indicated. Pending additional urinary workup, CKD therapy with monitoring of systemic BP and renal parameters going forward is recommended.



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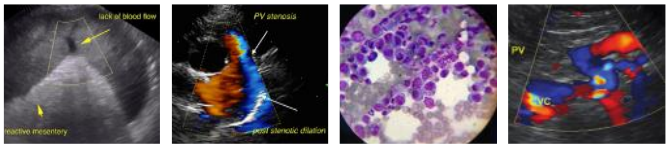

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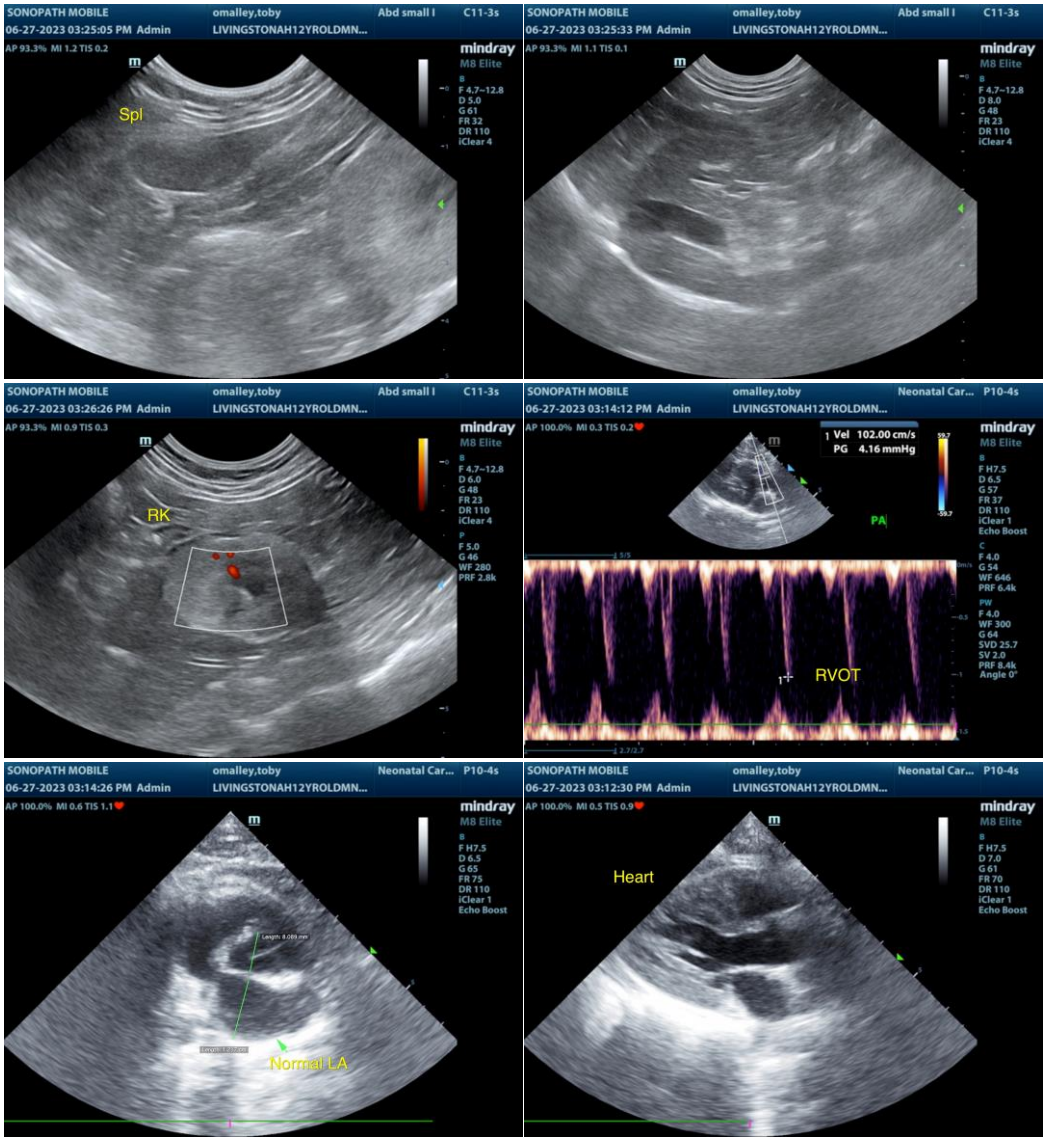

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

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