

IMAGING PERFORMED BY

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Clinical Sonography & Telectology

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PATIENT

Pumpkin Ruhl

SPECIES

Feline

BREED

DSH

SEX

Male Neutered

AGE

12.19.2004

WEIGHT

8.10lbs

INTERPRETED BY

Maggie Machen Lamy,
DVM, DACVIM
(Cardiology)

IMAGING PERFORMED BY

Stephanie Pearce,
RDCS, RVT

HOSPITAL NAME

Hickory Veterinary
Hospital

REFERRING VET

Dr. McNesby

INVOICE

22371

DATE

2.4.22

PRESENTING CLINICAL SIGNS

History: Murmur 1y duration; increasing in intensity. Detached retinas Dec. 2021. Concurrent renal insufficiency.

-Pertinent abnormal PE/Chem/CBC/UA Results: BNP: 247, BUN: 64, Creat: 2.4, K: 3.3, TS: 9.5, USG: 1.012, 1+ proteinuria.

-Current medications: Amlodipine 0.312mg Q24h, Renal K+ supplement.

-Blood pressure: 220mmHg.

-Sedation used: Not required to complete full diagnostic ultrasound.

-STAT: Not requested.

- ECG report: Heart rate: 150bpm-NSF.

-CXR report: Cardiomegaly. No CHF.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The left ventricular wall is largely normal in dimension with regions of irregularity. There is a diffusely hyperechoic endocardium consistent with fibrosis. The endocardium also appears mildly remodeled. The papillary muscles appear mildly remodeled. The left atrium is normal in size. Blood flow through the LVOT appears normal with no evidence of obstruction. The right atrium is normal in size. The right ventricle appears normal. The tricuspid valve appears normal in structure and mobility. Trace tricuspid regurgitation. The mitral valve is normal in structure and mobility. No mitral regurgitation. Blood flow through the RVOT is mildly elevated in velocity based upon Doppler and color flow, likely secondary to tachycardia creating a benign outflow tract obstruction. No evidence of cardiac tumors or metastatic lesions on this scan.

CARDIAC CHART

FELINE CARDIAC PARAMETERS	BODY WEIGHT (kg)	HR (BPM)	IVSd (cm) (Moise, Pipers)	LVIDd (cm) (Moise, Pipers)	LVWd (cm) (Moise, Pipers)	FS (%)	EF (%)
NORMAL PARAMETER	-----	150-240	3.5-0.55	<2 (mean 1.5)	3.5-0.55	35-67	80-100
PATIENT	3.7	195	0.43	1.37	0.46	65	94
FELINE CARDIAC PARAMETERS	LA/AO (Boon)	LA/AO HEART BASE (Swe) (Abbott)	LA 2D short axis Base view (cm) (Abbott)		LVOT VEL (m/s)	RVOT VEL (m/s)	E max (m/s)
NORMAL	<1.5	<1.3	<1.2		<1.6	<1.3	<0.9
PATIENT	NM	1.0	1.0		1.2	1.8	NM

Adapted from June Boon, Veterinary Echocardiography, 1998
Abbott J & MacLean H JVIM 2006;20: 111-119, Moise et al. Am J Vet Res 47:1476, 1986. Pipers et al. Am J Vet Res 40:882, 1979.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The only cause of a murmur identified is a heart rate dependent flow obstruction through the right ventricle (DRVOTO), which is a physiologic finding (i.e., benign and of little clinical significance). This type of flow murmur will wax and wane secondary to tachycardia and volume changes (likely due to renal disease in this patient). There is also LV remodeling and fibrosis, which is likely a normal variant. The left atrial dimension is normal, and there is minimal risk for complication at this time. Serial echocardiography will be necessary to determine progression and clinical relevance of the findings in the future.

These findings do not explain an elevated BNP; however, renal insufficiency can also lead to its elevation and is suspected here. Additionally, systemic hypertension is present despite Amlodipine therapy and a dose increase +/- addition of an ancillary vasodilator may be beneficial. Consultation with an IM consultant is strongly recommended in this case, particularly should the BP be difficult to control. There are no cardiac changes secondary to chronic SHT identified here.

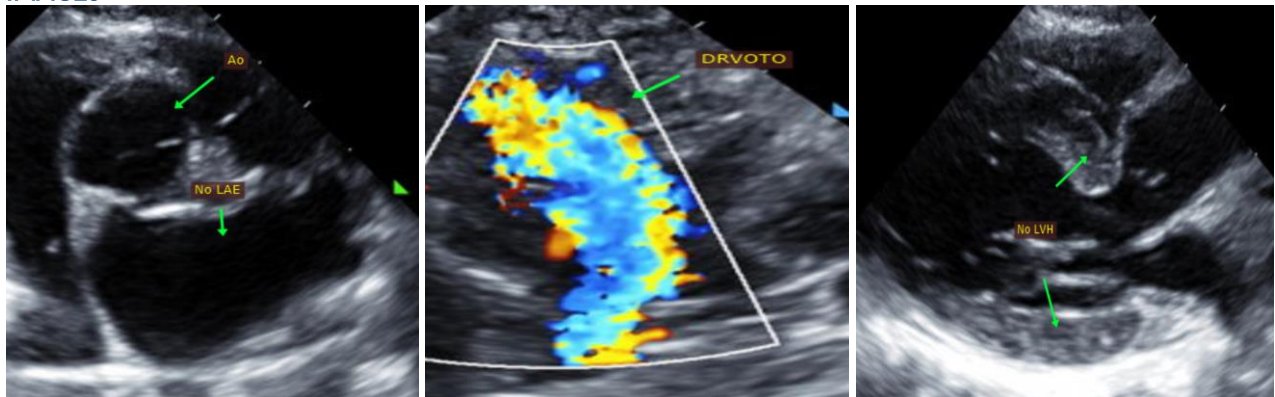
These findings would suggest the radiographic abnormalities are likely a normal variant as no cardiomegaly is appreciated here.

Given these findings, no cardiac specific medications are indicated at this time.

If needed, the risk for general anesthesia is low, however heart rate stimulating drugs such as atropine, glycopyrrolate or ketamine should be avoided unless medically necessary. Even without significant pathology, with this degree of remodeling and diastolic stiffening there is a mildly elevated risk for fluid overload in this patient. Judicious IV fluid use is recommended. Risk for complication with steroid use typically follows LA dilation, which in this case is low. That being said, any cat can experience unexpected signs of intolerance and monitoring of RR/RE is advised particularly in the initiation phase.

Recommend recheck echocardiogram in 1 year to assess for progression or development of disease the pre-existing murmur may mask.

IMAGES



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. This report was generated using transcription software, and minor dictation errors may be present. 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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