



PATIENT

Clementine
MacArthur

PRESENTING CLINICAL SIGNS

History: Recheck echo. Asymptomatic.
-Pertinent previous echo findings (1/2022 EL): Normal LA, flat IVS, ASD, VSD, RA and RVE

SPECIES

Feline

BREED

DSH

SEX

Female Spayed

AGE

12 months

WEIGHT

9.24lbs

INTERPRETED BY

Maggie Machen Lamy,
DVM, DACVIM
(Cardiology)

IMAGING PERFORMED BY

Jessica Miller

HOSPITAL NAME

Millburn Veterinary
Hospital

REFERRING VET

Dr. Turowsky

INVOICE

24044

DATE

5/4/22

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Normal mitral valve leaflets with no mitral regurgitation. Normal left atrial dimension. Normal LV diameter with adequate myocardial function. The LV wall is normal. Septal flattening in end systole. The tricuspid valve appears mildly thickened with trace central tricuspid regurgitation present, likely secondary to annular stretch. Moderate to severe right atrial dilation. Moderate to severe right ventricular dilation with mild hypertrophy and remodeling indicative of pressure overload. A small perimembranous VSD is visualized just below the aortic valve. Color flow suggest left to right flow; however, max velocity is not assessed. The pulmonic outflow velocity is normal, although the pulmonic valve is not well visualized. No obvious pulmonic insufficiency. No obvious ASD is visualized on 2D imaging. A small color flow jet may suggest a PFO; however, this is inconclusive. No pericardial or pleural effusion noted. No tumors are seen.

CARDIAC CHART

FELINE CARDIAC PARAMETERS	BODY WEIGHT (kg)	HR (BPM)	IVSd (cm) (Moise, Pipers)	LVIDd (cm) (Moise, Pipers)	LWVd (cm) (Moise, Pipers)	FS (%)	EF (%)
NORMAL PARAMETER	-----	150-240	0.35-0.55	<2 (mean 1.5)	3.5-0.55	35-67	80-100
PATIENT	4.2	170	0.4	1.2	0.48	68	96
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	1.0	1.2	1.2		1.0	1.3	NM

**Note: All measurements based upon multi-modal images and methods. An average value is reported.
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

Unusual case. The most significant finding is severe right heart enlargement with mild hypertrophy. The MPA is not significantly dilated and there is no obvious evidence of pulmonic stenosis. What is difficult to explain is the septum is clearly flattened during systole, which suggest right ventricular pressure overload. There is obvious cause for RV pressure overload seen in this exam and other possibilities such as branch PS or PV stenosis remains a possibility. A small perimembranous VSD is identified, as was previously noted. This appears hemodynamically insignificant at this time, although shunt reversal in the future is a possibility. Finally, the previous ASD is not well visualized, aside from a small color flow abnormality. This may suggest a patent foramen ovale (PFO) is/was present. This also appears largely hemodynamically insignificant and does not explain this degree of right atrial enlargement. The left heart appears largely normal, and no obvious additional issues are identified.



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These findings are inconclusive as to a definitive diagnosis and cause of the right heart changes. A limitation of 2D ultrasound is a lack of visualization of the peripheral anatomy. **Highly recommend referral given the degree of right heart enlargement seen here, as this is clearly a hemodynamically significant problem.** Advanced imaging will likely be recommended, such as bubble study, CT/angiogram, etc. If declined, given a relatively asymptomatic status I would not necessarily utilize medications at this time other than Plavix as there is high risk for a blood clot event. This medication can be difficult to administer, and discussion with the owner is advised.

Prognosis is guarded given degree of right heart changes with risk for right-sided CHF, development of arrhythmias, and/or sudden death in the future. That being said, sub-clinical cardiomyopathy in cats is highly variable in nature.

Risk for general anesthesia is certainly elevated and should be avoided.

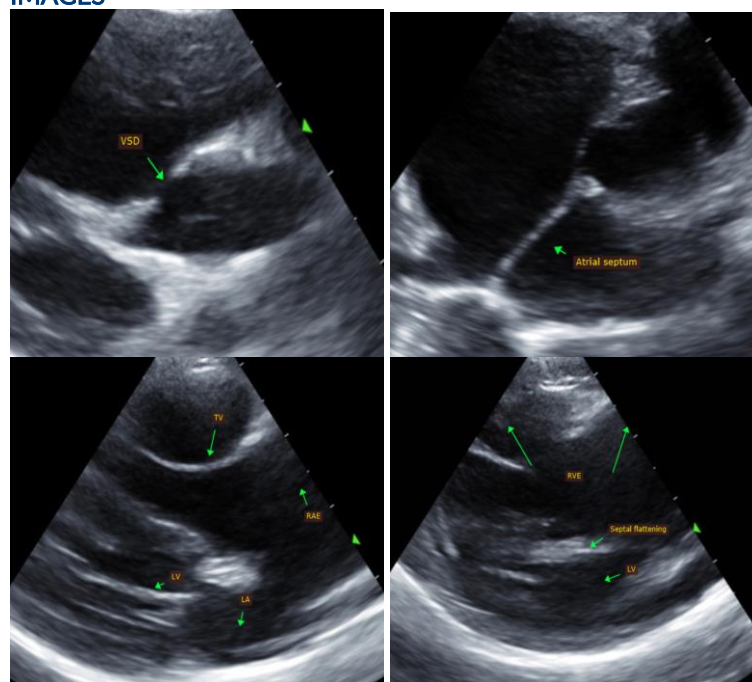
Monitor for any clinical evidence of cardiac compromise, including respiratory changes and/or signs of a blood clot event (paralysis, neurologic changes, etc.).

PLAN

Highly recommend referral for advanced imaging in search of a definitive diagnosis. Baseline BP and CXR are recommended. If able, institute blood thinner Clopidogrel (Plavix) 75mg tablets; give ¼ tab orally once daily (NOTE: this medication is very bitter on the cut edges and should be coated in entirety or administer in a gel cap).

If referral is declined, recommend recheck echocardiogram in 6 months, sooner if any clinical signs.

IMAGES





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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.

SPECIES

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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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Diplomate of the American College of Veterinary Internal Medicine (Cardiology)
info@sonopath.com

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