



PATIENT

Lilly Bell Hillebrand

SPECIES

Feline

BREED

DSH

SEX

FS

AGE

13 years

WEIGHT

13lbs

INTERPRETED BY

Maggie Machen
Lamy, DVM, DACVIM
(Cardiology)

IMAGING PERFORMED BY

Rachel Runnells, RVT

PRESENTING CLINICAL SIGNS

History: Presented as transfer from ER. Was seen at another local clinic earlier in the week for not eating well for a few days and increased RR and effort. BW - mild increase in SDMA and UTI. Tx with AB. Not improving. Rechecked there yesterday. Rads revealed pleural effusion and pulmonary edema and large cardiac silhouette. Cat was in respiratory distress. Spent 3 hours in O2 and was given Lasix x 2, Depo, and cefazolin. Transferred to current clinic and in oxygen cage. Suspected CHF, decompensation secondary to steroids.

Abnormal PE/Chem/CBC/UA Results: Lethargic with mild increased inspiratory effort. HR 300 bpm, no obvious murmur. RR - 70, harsh tracheal rattle with some referred sounds over lungs, moderately increased BV sounds on L side, no obvious crackles or wheezes. Rapid sinus HR. MM - pale pink, CRT - 2, mild tacky MM. No obvious abdominal abnormalities on palpation.

RADIOGRAPHIC FINDINGS *NOTE: Images submitted for supplemental cardiac information only. Severe cardiomegaly with evidence of CHF.

ELECTROCARDIOGRAPHIC FINDINGS *Note: Single lead ECGs are evaluated as a rhythm strip. Morphology/MEA cannot be definitively commented on.

A single lead ECG is available; 25mm/s, 10mm/mV. Motion artifact throughout. The average heart rate is 188bpm with a largely regular rhythm. The rhythm is sinus in origin, with a p for every QRS complex and vice versa. The P and QRS morphologies are positive. No ectopic beats, pauses or other dysrhythmias observed.

ECG diagnosis: Normal sinus tachycardia.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The left ventricular wall is decreased with regions of remodeling and irregularity. There is a diffusely hyperechoic endocardium consistent with fibrosis. The systolic function is decreased with evidence of diastolic dysfunction as well. The papillary muscles are mildly remodeled and asymmetric. The left atrium is severely dilated. Significant spontaneous contrast located within the LA body and auricle with concern for a disorganized clot. No obvious thrombus. Mild central MR due to annular stretch. The right ventricle is also affected, with diffuse fibrosis and remodeling. Moderate RA dilation. Trivial TR. Blood flow through the RVOT and LVOT is low normal velocity. No pericardial effusion. No pleural effusion. No obvious cardiac tumors.

CARDIAC CHART

HOSPITAL NAME

SVS Imaging KC

REFERRING VET

Dr. Mervin

INVOICE

28766

DATE

2/3/23

FELINE CARDIAC PARAMETERS	BODY WEIGHT (kg)	HR (BPM)	IVSd (cm) (Moise, Pipers)	LVIDd (cm) (Moise, Pipers)	LWWd (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	5.9	NM	0.41	1.93	0.43	17	22
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	2.3	2.2	2.0		0.7	0.7	NM

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



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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.

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The finding of severe biatrial enlargement in the face of normal/decreased LV wall thickness and systolic dysfunction is most consistent with Restrictive Cardiomyopathy (RCM), however some prior historical infectious or inflammatory insult to the myocardium cannot be definitively ruled out. The biatrial dilation is causing insufficiency of both AV valves, and systolic dysfunction has developed.

A heart rate of 300 bpm is noted on exam however the included ECG shows a normal sinus rhythm with a heart rate of 188 bpm. If this does not match what was heard on exam and tachycardias noted persistently going forward reassessment is strongly recommended.

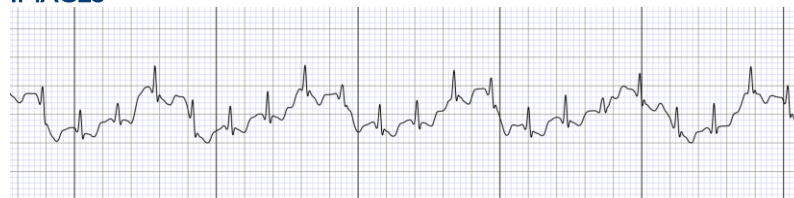
The finding of this degree of biatrial dilation confirms the origin of the tachypnea and effusion is spontaneous congestive heart failure, and lifelong medications are warranted as below. Whether this patient was in CHF initially or if this was a case of subclinical yet severe cardiomyopathy that was easily pushed into a fluid overloaded state is unclear. Regardless, what is seen here is considered end-stage with potentially early clot formation. This patient is at high risk for thromboembolic events regardless of medications and this should be expressed to the owner (monitor for neurologic change, acute paralysis/lameness, etc). **Consider hospitalization for continued stabilization, oxygen and Lasix therapy.** A thoracocentesis should also be considered due to effusion and instability. The prognosis is **poor to grave**, with a mean survival time for cats with CHF <8-12 months, however most are able to maintain a good quality of life on medications if able to be stabilized. There will always remain risk for recurrent episodes of CHF, development of blood clots, arrhythmias, and/or sudden death in the future. Monitoring of sleeping breathing rates at home is recommended as the best way to screen for recurrent CHF at home.

Plan: Consider hospitalization, oxygen, IV diuretic in hospital until stabilized due to effusion. Oral medications: furosemide 1-2mg/kg PO q12h. Institute blood thinner Clopidogrel (Plavix) 75mg tablets; give ¼ tab orally once daily (NOTE: this medication is very bitter on the cut edges). Institute Pimobendan (off label use) 1.25mg PO q12h.

If signs of a thromboembolic event arise such as paresis or neurologic changes, euthanasia strongly recommended. If tachycardia persists, reassess ECG as discussed. Once stabilized, eating well at home and BP >130mmHg, consider addition of vasodilator ACE-I (benazepril or enalapril) 0.5mg/kg PO q12h. If hypotensive, do not use.

Recheck renal values in 10-14 days to ensure tolerance of medications, then every 3-4 months lifelong. A recheck echocardiogram is recommended in 4-6 months to assess for progression.

IMAGES





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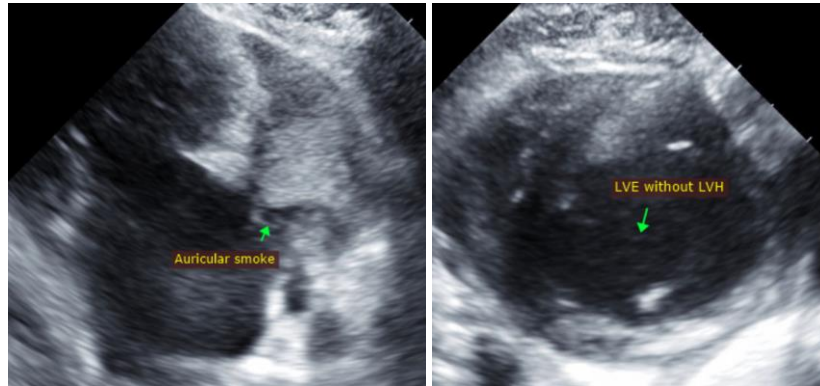
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Maggie Machen Lamy, DVM
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