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Clinical Sonography & Telecytology
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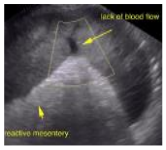
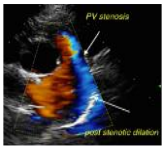
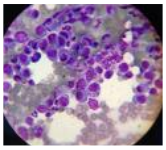
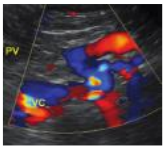

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1-800-838-4268 info@sonopath.com

PATIENT
Levi Robinson

SPECIES
Feline

BREED
DSH

SEX
Male Neutered

AGE
12 years

WEIGHT
12lbs

INTERPRETED BY
Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY
Emily Kalenius, DVM

HOSPITAL NAME
Willamette Veterinary Hospital

REFERRING VET
Dr. Kalenius

INVOICE
21146

DATE
9/21/21

PRESENTING CLINICAL SIGNS

History: Seen 01/2021 at rDVM. Elevated proBNP 482 , UPC of 0.2 noted at that time. Recheck yesterday for significant weight loss records from rdvm 9/21 rDVM labs CREA 2.7, otherwise NSF. Thoracic radiographs cardiomegaly with vascular distension and diffuse bronchointerstitial pattern and pleural fissure lines - consistent with CHF.
Abnormal PE/Chem/CBC/UA Results: Tachypneic with increased lung sounds on presentation. Responded to oxygen and lasix. Blood gas today CREA 2.2
-Current medications: Initiated pimobendan 1.25mg PO and Clopidogrel 1/4 tab PO.
-Radiographs: Cardiomegaly with vascular distension and diffuse bronchointerstitial pattern and pleural fissure lines - consistent with CHF.
-ECG: Atrial fibrillation response rate 220, single VPC.

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available; 50mm/s, 20mm/mV. The average heart rate is 220bpm (range 200-300bpm). Cannot definitively identify p waves and atrial fibrillation is suspected. Irregularly irregular rhythm. Sinus rhythm with frequent APCs cannot be definitively ruled out due to low voltage complexes. A single VPC is identified. No couplets, triplets or runs of VT are seen.
ECG diagnosis: Suspect atrial fibrillation with isolated VPC.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The left ventricular wall is remodeled with regions of asymmetry. Apical thinning. False tendon. No significant hypertrophy although the posterior wall measures borderline. The papillary muscles are remodeled. The LV systolic function is adequate. The LV and RV are both normal in dimension. The left atrium is severely dilated and bulbous in appearance. Significant spontaneous contrast. The right atrium is mild to moderately dilated. The mitral valve is thickened, trace central MR. Trace TR. Blood flow through both the LVOT and RVOT is normal in velocity. No pericardial effusion seen. No pleural effusion. No obvious cardiac tumors. Rapid heart rate throughout.

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	0.35-0.55	<2 (mean 1.5)	3.5-0.55	35-67	80-100
PATIENT	5.7	220	0.4	1.6	0.58	50	92
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	>3.0	2.5	2.2		0.9	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.

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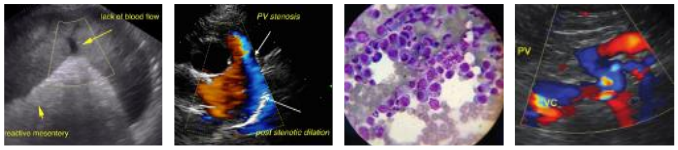

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The finding of biatrial enlargement in the face of normal LV wall thickness is most consistent with Unclassified Cardiomyopathy (UCM), however burn-out or end-stage HCM can also have this appearance. There is also significant LV remodeling and fibrosis which indicates severe diastolic dysfunction. Severe biatrial enlargement suggest the current clinical issues are certainly due to congestive heart failure. Significant smoke is visualized in the LA, indicating the patient is at high risk for a blood clot event even with anti-coagulation. This concern should be expressed to the owner. No additional issues are identified.

The ECG is most consistent with atrial fibrillation (AF) which is concerning for more malignant arrhythmias and sudden death in the future. Due to low voltage complexes in cats, a sinus rhythm with frequent APCs cannot be ruled out; however, this is less likely. An isolated VPC is also seen which is not uncommon with structural disease in a state of crisis. Most cats are asymptomatic with AF and do not require medications. The overall heart rate is reasonable for a stressed cat in this case (avg 220bpm); however, I would reassess this in 1-2 weeks once the patient's clinical decompensation is stabilized. Institution of Diltiazem may certainly be indicated at that time pending HR evaluation.

Regardless of categorical classification, this degree of atrial dilation and arrhythmic disease confers the patient is certainly in spontaneous congestive heart failure and continued lifelong medications are warranted as below. The long-term prognosis is guarded to poor, however most cats are able to maintain a good quality of life for some time on medications if tolerated.

Going forward there will always remain risk for episodes of CHF and development of blood clots and/or sudden death in the future. Monitoring of sleeping breathing rates at home is recommended as the best way to screen for progression to CHF at home. Tolerance of medications in geriatric cats is always of concern, and blood values must be watched carefully. Elective anesthesia should be avoided.

PLAN

Continued hospitalization for oxygen support and Lasix therapy until stable. Screening BP recommended. Discharge on the following: Institute Lasix 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.

Recheck renal values, ECG/heart rate and blood pressure in 1-2 weeks then every 3-4 months lifelong. If BP is >130mmHg at that time, institute ACE-I 0.5mg/kg PO q12h. If heart rate is persistently >200-220bpm despite overall clinical stability, institute low dose Diltiazem 30mg tablets, give ¼ tab by mouth q12h. Recheck heart rate/ECG 5-7 days later with a target of <160-180bpm in hospital.

A recheck echocardiogram is recommended in 6 months to assess progression.

IMAGES

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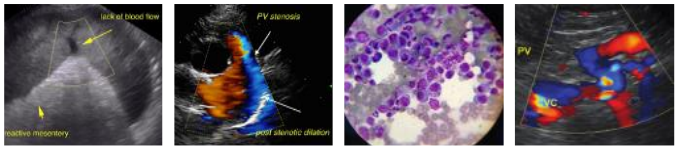

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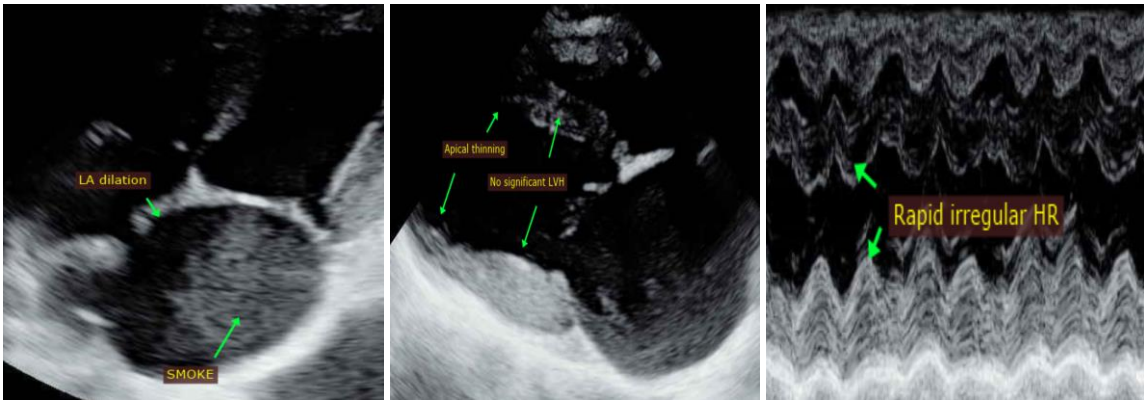

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. 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.

Maggie Machen Lamy, DVM
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)
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