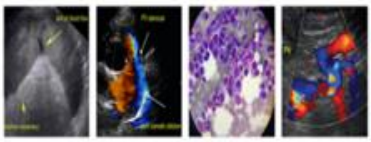
Mass Veterinary Services



SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
1-800-838-4268 info@sonopath.com SonoPath.com

PATIENT
Chance Armstrong

SPECIES
Canine

BREED
Mix

SEX
Male Neutered

AGE
14 years

WEIGHT
60lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Pamela Harrigan, RDCS

HOSPITAL NAME
Mass Veterinary Services

REFERRING VET
Dr. Masloski

INVOICE
28660

DATE
1/31/23

PRESENTING CLINICAL SIGNS

History: Chance was referred in August for a heart murmur and bradycardia. At that time, he was coughing some and panted frequently. His activity level was good except with heat/humidity. Radiographs showed marked cardiomegaly; LAE; compression of main stem bronchus; broncho to alveolar pattern in perihilar area; dorsal deviation of trachea; diffuse interstitial pattern consistent with age throughout lung fields. Dispensed pending echocardiogram: 1) pimobendan 7.5mg 1 tab twice a day 2) Lasix 20mg 3/4 tab twice a day 3) diphenoxylate with atropine 2.5mg 1.5-2 tabs twice a day. Presents today for echocardiogram. He is coughing less and doing well with a good appetite and activity level. He did have one collapse episode over the summer, but none since. On exam: NSR , grade IV/VI murmur with PMI left apical area radiating to right, PSS, lung fields clear, mm pink, moist, CRT<2. BP: 180mmHg x 3, 200mmHg x 2. *No sedation for study.

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. The average heart rate is 110bpm (range 10125bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. P and QRS morphologies are positive. Frequent isolated VPCs throughout; singles only with periods of bigeminy. The VPCs appear monomorphic. No supraventricular premature beats, pauses or other dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with frequent isolated VPCs and periods of ventricular bigeminy.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and Doppler imaging is available.
Left ventricle: Moderate LV dilation with hyperdynamic myocardial function.
Left atrium: The left atrium is severely dilated with a horizontal component.
Mitral valve: Diffuse thickening of mitral valve leaflets with prolapse into the left atrial lumen. Evidence of a primary ruptured chordae tendineae and flail anterior leaflet (see below). Severe eccentric mitral regurgitation with an elevated velocity.
Aortic valve/Aorta: The aortic valve is normal in morphology and mobility. Normal aortic outflow velocity; laminar flow. No aortic insufficiency.
Right ventricle: No RV dilation.
Right atrium: No right atrial dilation.
Tricuspid valve: The tricuspid valve appears mildly thickened, with trivial tricuspid regurgitation.
Pulmonic valve/Pulmonary artery: The pulmonic valve is normal in morphology and mobility. The MPA is normal. Normal pulmonic outflow velocities with laminar flow. No PI.
Pericardium/other: No pericardial or pleural effusion noted. No obvious cardiac masses.

2-Dimensional Measurements

Ao diam (cm)	2.9
LA diam (cm)	5.3
LA:Ao (Swe)	1.8
IVS thickness (cm)	1.0
LVID diastole (cm)	5.3
PW thickness (cm)	1.0
LVID systole (cm)	2.5
FS (%)	53

Doppler Measurements

PV Vmax (m/s)	1.4
AoV Vmax (m/s)	1.5
MR Vmax (m/s)	7.1
TR Vmax (m/s)	NM
TR PG (mmHg)	NA

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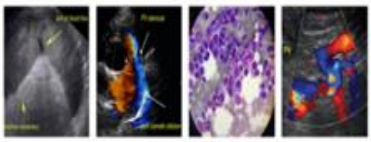

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INTERPRETATION OF THE FINDINGS

Chronic degenerative valve disease causing severe mitral and trivial tricuspid regurgitation is identified. Severe left atrial enlargement suggests the risk for complication is elevated. The finding of a primary ruptured chordae tendineae and flail leaflet is likely a chronic issue potentially correlating with the prior syncopal episode, although this is purely speculative. No additional issues are identified.

In light of the history, finding of a ruptured chord, and severity of disease seen here the diagnosis of congestive heart failure is supported and continued lifelong cardiac medications are recommended as below. This includes an increase in Lasix dosing as well as use of an ACEI for vasodilation.

The average survival time of canine patients with active pulmonary edema is 8-9 months on medications; however, they generally are able to maintain a good quality of life for that period. If able to be stabilized, a ruptured chord does not necessarily limit this prognosis which appears to be the case here. Patient will always be at risk for recurrent CHF, development of arrhythmias/LA tear, syncope and/or sudden death in the future.

The ECG shows frequent isolated VPCs, with periods of bigeminy. There is also a low resting heart rate, which is somewhat unusual in a patient with severe valve disease. The frequency of VPCs does warrant anti-arrhythmic therapy and Mexiletine is suggested as this will have less impact on resting heart rate. See recommendations below. This patient certainly has risk for acute decompensation, collapse and/or sudden death in the future.

The reported blood pressure is elevated, and should be reassessed for accuracy particularly given no reported clinical signs of severe hypertension (retinal changes, etc.) or evidence of LVH on echo. Ideally obtain serial measurements in a controlled, low stress environment and continue until 3 consecutive readings plateau within 5mmHg of variability. If persistently >180mmHg despite a relatively calm demeanor, recommend institution of amlodipine to effect. Additionally if deemed accurate, screening for predisposing underlying causes of SHT is recommended (Cushing's, PLN, adrenal tumor, etc.), as primary disease is relatively uncommon and a rule out diagnosis.

RECOMMENDATIONS

- Continue Lasix at an increased dose: administer 20mg PO q12h.
- Institute Spironolactone 1-2 mg/kg PO q 12h.
- Continue Pimobendan as prescribed.
- Institute ACE-I 0.5mg/kg PO q12h.
- Institute Mexiletine 5-7mg/kg PO q8h (available in 150and 250mg capsules).
- Once the medications have been altered, reassess BP to determine if further vasodilation is warranted.
- A recheck ECG or ideally a holter should be considered in 1-2 weeks to assess response.
- Cough suppression to improve QOL can also be considered (hydrocodone, 0.2-0.4mg/kg up to q4-6h PRN) for any residual mechanical cough in the face of normal sleeping respiratory rates.
- Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

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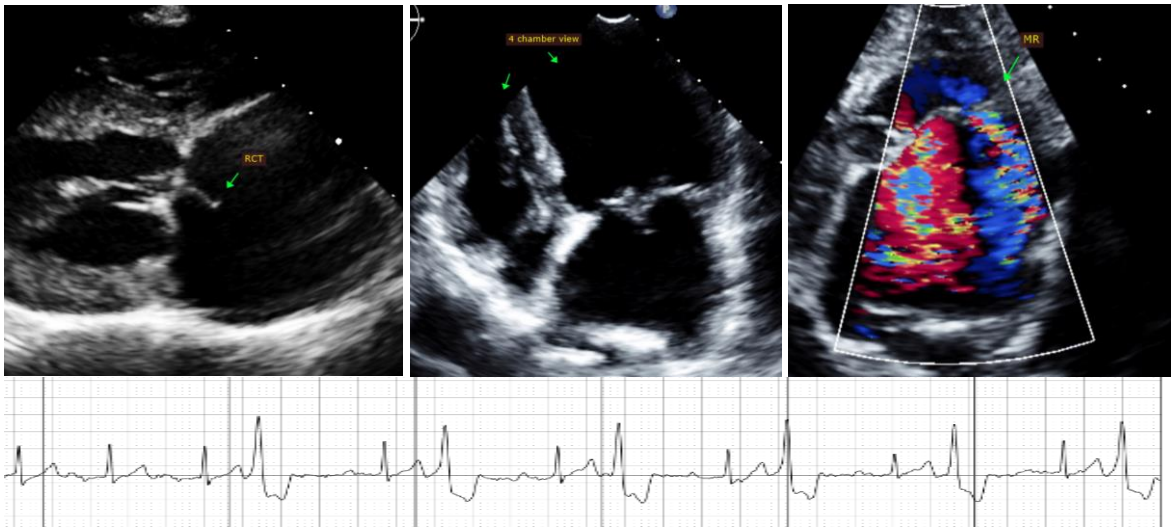
- Monitoring of sleeping respiratory rates will be paramount to screen for congestive heart failure at home.
- Elective anesthesia is not advised.
- Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.

PLAN

- Monitor renal values, ECG or holter and BP in 1-2 weeks then every 3-4 months lifelong.
- Recommend conservative monitoring with a recheck echocardiogram in 6 months, sooner if any development of clinical signs.

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.

Maggie Machen Lamy, DVM
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)
info@sonopath.com

Echocardiogram performed by: Pamela Harrigan, RDCS
Pet Animal Ultrasound Service (4paus.com)