

PATIENT

Scoobert Hernandez

SPECIES

Canine

BREED

Great Dane Mix

SEX

FS

AGE

11 years

WEIGHT

71.2lbs

INTERPRETED BY

Maggie Machen
Lamy, DVM
DACVIM (Cardiology)

IMAGING PERFORMED BY

Pamela Harrigan,
RDCS

HOSPITAL NAME

Mass Veterinary
Services

REFERRING VET

Dr. Masloski

PRESENTING CLINICAL SIGNS

History: Recheck echo. History chronic valvular disease - Stage B2; history VPCs. On Pimobendan 10 mg q12h and Sotalol 40 mg q12h . On 1/12/23, Scoobert presented to the ER with increased respiratory effort and coughing x 3 weeks and more recently lethargic and hyporexic. On PE: abdominal distension with fluid wave, erratic HR with poor pulses. aFAST showed moderate volume free fluid in abdomen. Perihilar edema on chest radiographs. Instituted Furosemide 50 mg x 1.5 PO q8h for 7 d, then q12h. She was seen again yesterday on an emergent basis. She was noted to have ventricular tachycardia and was given a bolus of lidocaine at 2mg/kg - needed two doses to convert. Later in the day, she went back into V tach and needed 3 boluses of lidocaine to convert her (no ECG available). Her sotalol was increased to TID at that time due to her arrhythmia. In conversation with the family, we added mexilitine last night to help with the arrhythmia. She has been isolating herself and wanting to be outside. On exam: grade III/VI systolic murmur; irregular rhythm. Unable to obtain blood pressure. Current medications: 1) Pimobenan/vetmedin 10mg 1 tab twice a day 2) Sotalol 80mg 1/2 tab three times a day 3) Snip tips 4) Lasix/fursomide 50mg 1 tab three times a day 5) Mexilitine 200mg 1 capsule three times a day -Pertinent previous echo findings (4/12/22 MML): LA 4.3 cm; LA:Ao 1.7; LV 5.2 cm; moderate LAE; moderate MR; mild TR (2.6 m/s; 27 mmHg). ECG: NSR with isolated VPCs; periods of ventricular bigeminy

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; 50mm/s, 20mm/mV. The average heart rate is 180bpm (range 150-214bpm). No identifiable P waves with an irregularly irregular rhythm consistent with atrial fibrillation. No obvious ventricular arrhythmias. ECG diagnosis: Atrial fibrillation.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and Doppler imaging is available.

Left ventricle: The LV diameter is significantly increased with adequate function. LV wall thicknesses are normal.

Left atrium: The left atrium is severely dilated.

Mitral valve: The mitral valve is mildly thickened with no prolapse into the left atrial lumen. Severe eccentric mitral regurgitation with a mildly decreased velocity.

Aortic valve/Aorta: The aortic valve is normal in morphology and mobility. Normal aortic outflow velocity; laminar flow. Mild aortic insufficiency.

Right ventricle: Mild RV enlargement.

Right atrium: Mild RA enlargement.

Tricuspid valve: The tricuspid valve appears mildly thickened with mild tricuspid regurgitation. Normal velocity.

Pulmonic valve/Pulmonary artery: The pulmonic valve is normal in morphology and mobility. No pulmonic insufficiency. Normal RVOT velocity; laminar flow.

Pericardium/other: No pericardial or pleural effusion noted. No obvious cardiac masses.

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2-Dimensional Measurements

Ao diam (cm)	2.2
LA diam (cm)	6.0
LA:Ao (Swe)	2.7
IVS thickness (cm)	0.9
LVID diastole (cm)	5.8
PW thickness (cm)	0.9
LVID systole (cm)	3.6
FS (%)	38

Doppler Measurements

PV Vmax (m/s)	1.0
AoV Vmax (m/s)	0.96
MR Vmax (m/s)	4.3
TR Vmax (m/s)	2.6
TR PG (mmHg)	27

INTERPRETATION OF THE FINDINGS

Chronic degenerative valve disease persists with significant progression. Moderate disease has become severe, with progressive LA and LV dilation. The right heart is mildly enlarged as well, likely secondary to development of an arrhythmia. No concurrent issues are identified, and the systolic function remains intact.

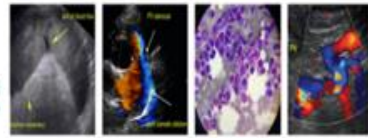
These findings would support the recent diagnosis of congestive heart failure and continued medications are warranted lifelong as below. This includes addition of Spironolactone and an ACEI for long-term benefit. Hydrocodone can be utilized if needed for quality of life.

As a complicating factor, the patient has also developed a significant arrhythmia with both atrial fibrillation (AF) and a history of VPCs/VT. What is unclear is if VT was an accurate diagnosis, as no VPCs are seen on exam today and AF was not noted in the ER history. My suspicion is that AF with aberrancy (ie some degree of QRS widening) may have been misinterpreted as VT. That being said, this differentiation is quite important as if VT was truly present this may warrant multi-modal anti-arrhythmic therapy. If possible to rule out recent VT (through obtaining the ECG tracing), Mexilitene should be discontinued and Sotalol returned to BID dosing. Regardless, Diltiazem is necessary to slow the ventricular rate and maximize cardiac output.

Development of multiform arrhythmias puts the patient at high risk for acute decompensation going forward. Tachycardia of any origin (when sustained) leads to right sided congestion (tachycardia-induced cardiomyopathy) as was seen in this case with ascites. AF is characterized by disorganized contractions of the atria leading to an irregular heart rhythm.

Monitoring of sleeping respiratory rates will be paramount to screen for recurrent congestive heart failure at home in the future. Cough suppression to improve QOL can also be considered once diuretics are on board for any residual mechanical cough in the face of normal sleeping respiratory rates.

Prognosis is poor at this stage, with risk for recurrent congestive heart failure, malignant arrhythmias (AF, VT), collapse and/or sudden death in the future.



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RECOMMENDATIONS

- Continue Lasix and Pimobendan as prescribed.
- Institute Spironolactone 1-2mg/kg PO q12h.
- Pending BP >130mmHg, institute ACEI 0.5mg/kg PO q12h.
- If VT is ruled out, discontinue Mexilitene and return sotalol to 40mg BID dosing.
- If VT is confirmed, discontinue Mexilitene and increase sotalol to 80mg am, 40mg pm.
- Institute diltiazem 1mg/kg PO q12h.
- 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.
- Monitoring of sleeping respiratory rates will be paramount to screen for congestive heart failure at home.
- Elective anesthesia is not advised as there is exceedingly high risk for complication.
- Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.

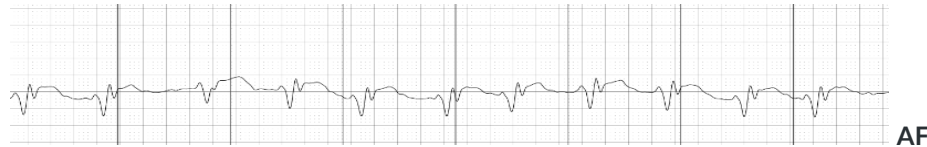
PLAN

- Monitor renal values, BP and ECG in 1-2 weeks, then every 3-4 months lifelong. Target AF heart rate is 140-160bpm stressed. Up-titrate Diltiazem to TID if needed.
- Recommend conservative monitoring with a recheck echocardiogram in 6 months, sooner if any development of clinical signs.

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IMAGES



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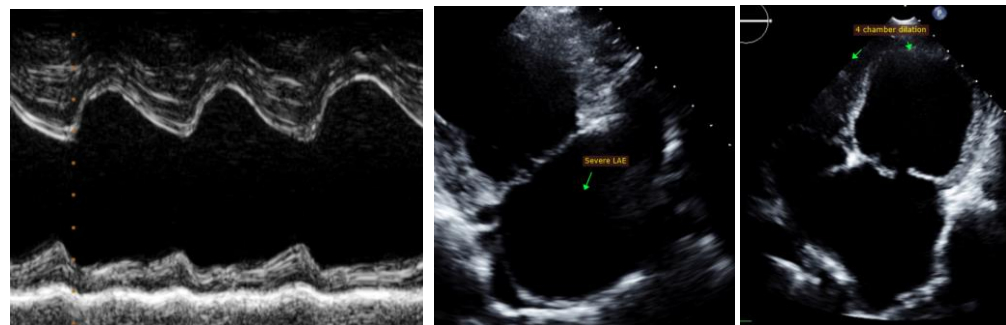
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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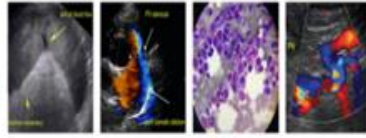
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Maggie Machen Lamy, DVM

Diplomate of the American College of Veterinary Internal Medicine (Cardiology)

info@sonopath.com

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Echocardiogram performed by:

Pamela Harrigan, RDCS

Pet Animal Ultrasound Service (4paus.com)

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