



## PATIENT

Koa Morande

## SPECIES

Canine

## BREED

Boxer

## SEX

Male Neutered

## AGE

4 years

## WEIGHT

96 lbs

## INTERPRETED BY

Maggie Machen Lamy,  
DVM, DACVIM  
(Cardiology)

## IMAGING PERFORMED BY

## HOSPITAL NAME

Mass Veterinary  
Specialty Services

## REFERRING VET

Dr. Masloski

## INVOICE

21203

## DATE

9/24/21

## PRESENTING CLINICAL SIGNS

History: Koa has a history of waxing/waning gastroenteritis as well as collapse episodes. He also has a history of probable atopy and has received cytopoint injections. Koa also has a history of separation anxiety. Koa has had 4 collapse episodes since he was adopted. His most recent collapse was this past summer when he was playing with the other dog. The episodes seem to be associated with exercise. Koa does not have any coughing nor labored breathing. He does not have a good appetite tho is typically finicky.

Abnormal PE/Chem/CBC/UA Results: \* 27th July 2021: CBC, chem,u/a--->SDMA 15; ALP 265; cholesterol 367; amylase 2656; lipase 1644; USG > 1.050; pH 6.5; 1+ proteinuria \* 27th July 2021: proBNP--> 1159 \* 18th August 2021: bile acids---> pre 1.4; post 1.2 \* 18th August 2021: CXR---> cardiomegaly; VHS 12; mild dorsal deviation trachea; spondylosis \* 18th August 2021: AXR--> small liver with rounded borders; thickened intestinal walls \* 7th September 2021: echocardiogram/AUS---> trace MR; ventricular arrhythmia; mildly enlarged submandibular LN. started mexilitine normal ranges: ALP 5-160; amylase 337-1468; cholesterol 131-345; lipase 0-250; proBNP 0-900; SDMA 0-14 Pertinent echo findings (9/7/21 UltravetMobile): Normal structure/function with trivial MR. Holter recommended to confirm the arrhythmia prior to instituting medications.

## HOLTER MONITOR FINDINGS AND RHYTHM ASSESSMENT

Time analyzed	23:53h
Mean heart rate	87bpm
Maximum heart rate	284bpm
Minimum heart rate	37bpm
VPCs	78; 3 pairs, 1 run (3 beats)
APCs	0

Interpretation: Underlying normal sinus rhythm with appropriate rate variation. Max HR appears sinus in origin, during play. While VPC count is reasonable (<100 in 24h), the finding of an unstable triplet (technically brief VT) and tightly paired couplets is highly concerning.

Rhythm diagnosis: Sinus rhythm with malignant ventricular arrhythmias.

## RECOMMENDATIONS

Sinus rhythm with malignant ventricular arrhythmias. While the frequency is low, the tightly paired couplets and unstable triplet are highly concerning. This is considered an unstable rhythm, and initiation of anti-arrhythmic therapy is advised.

VPCs are a very non-specific finding. They can be primary in origin (such as ARVC), be secondary to significant cardiac disease (reportedly normal) or be extra-cardiac in origin; ie due to pain, stress, inflammation, cancer, GI disease, DIC/sepsis, etc. In an 4yo Boxer, there is high suspicion for ARVC (despite the most common age of onset 6-8yo, often asymptomatic). ARVC can occur with or without systolic dysfunction and structural issues, however this should be monitored going forward for any progressive change. It is always reasonable to rule out other differentials for VPCs/VT (AUS, tick titers, troponin, etc) however suspicion is low given the signalment of the patient. Unfortunately there is always an elevated risk for collapse and sudden death in any arrhythmic patient, and even on medications this risk unfortunately still persists. ARVC carries a HIGHLY variable prognosis, with some dogs able to remain asymptomatic for extended periods of time, and others developing exercise intolerance, syncopal episode, and refractory arrhythmias/sudden death imminently.





**PATIENT**

Koa Morande

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**

Canine

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.

**BREED**

Boxer

Maggie Machen Lamy, DVM

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

info@sonopath.com

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