



PATIENT

Benjamin Button
Hansen

SPECIES

Feline

BREED

Sphynx

SEX

Neutered Male

AGE

6 Years 8 Months

WEIGHT

4.48 kg

INTERPRETED BY

James Wood, DVM,
DACVIM (Cardiology)

IMAGING PERFORMED BY

Dr. Greg Kuhlman

HOSPITAL NAME

Red River AEH & RC

REFERRING VET

Dr. Greg Kuhlman

INVOICE

37292

DATE

6/2/26

PRESENTING CLINICAL SIGNS

History: Benjamin is a 6-year, 8-month-old neutered male Sphynx cat presenting for an echocardiogram due to elevated NT-proBNP results found on pre-anesthetic bloodwork before a dental procedure. NT-proBNP was elevated on two occasions (436.3 pmol/L and 476.6 pmol/L) on 05/06/2026, and the dental procedure was postponed pending cardiac evaluation. The owner has no current concerns. Appetite, water intake, urination, defecation, and activity level are normal. No coughing, sneezing, or travel history reported.

Abnormal PE/Chem/CBC/UA Results: Blood pressure before butorphanol and echo: 136 mmHg NT-proBNP (05/06/2026): 476.6 pmol/L NT-proBNP rerun (05/06/2026): 436.3 pmol/L CBC and Chemistry on 5/6/26: WNL No heart murmur noted on today's physical exam.

ULTRASONOGRAPHIC EXAMINATION OF THE HEART

FELINE CARDIAC PARAMETERS	BODY WEIGHT (kg)	HR (BPM)	IVSd (cm)	LVIDd (cm)	LVWd (cm)	FS (%)	EF (%)
NORMAL PARAMETER	-----	150-240	0.3-0.6	1.0-2.1	0.25-0.6	35-67	80-100
PATIENT	4.48	220	0.59	1.47	0.72	48.9	--
FELINE CARDIAC PARAMETERS	LA/AO (M-mode)	LA/AO HEART BASE (Sisson)	LAD LA MAX 4 Chamber		LVOT VEL. (m/s)	RVOT VEL. (m/s)	IVRT (m/)
NORMAL PARAMETER	<1.5	1.6	0.7-1.7		<1.6	<1.3	40-60
PATIENT	--	1.67	1.6		0.68	0.78	NM

Adapted from June Boon, Veterinary Echocardiography, 1998
Sisson D et al. JVIM 1991; 5: 232, Jacobs et al. Am J Vet Res 1985; 46:1705

Cardiac Presentation

The left atrium is mildly to moderately enlarged. The mitral valve leaflets are normal and there is no mitral regurgitation. There is no evidence of systolic anterior motion of the mitral valve and no evidence of a left ventricular outflow tract obstruction. There is moderate to severe left ventricular free wall thickening with mild thickening of the interventricular septum. The apical left ventricular myocardium is thinned. Segments of the myocardium are also hyperechoic. The right atrium is normal. The tricuspid valve is normal without evidence of tricuspid regurgitation. Subjectively normal RV systolic function. The aortic and pulmonary valves are normal without evidence of insufficiency. Aortic and pulmonary outflow velocities are within normal limits. The aorta and PA are normal along with the associated PA branches. There is no evidence of pleural effusion, pericardial effusion, or intracardiac masses.



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ULTRASONOGRAPHIC FINDINGS

- Hypertrophic cardiomyopathy phenotype- ACVIM stage B2

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The echocardiogram revealed thickening of the left ventricular walls. This is consistent with a hypertrophic cardiomyopathy phenotype, or HCM. In HCM, there is hypertrophy (thickening) of the muscle fibers that make up the walls of the heart. Many cases are a primary heart muscle disease (genetic in origin), however in some cases this can be a secondary process that may improve with treatment of the underlying condition (i.e. high blood pressure or hyperthyroidism among others). A blood pressure and total T4 are recommended in cats >6yr to rule these out as underlying causes (if not already performed). Regardless of the cause, the thickening causes diastolic dysfunction, and progressive left atrial enlargement. Eventually, cats with left atrial enlargement are at risk of developing congestive heart failure (pulmonary edema, pleural effusion, or both), blood clot formation and arrhythmias/sudden death. Some cats with mild HCM may live a normal lifespan with no further progression of disease. However, it is also possible that his HCM will progress over time, and further therapy may be required for congestive heart failure, blood clots, or arrhythmias.

The echocardiogram showed HCM with left atrial enlargement. While there is no evidence of CHF, baseline thoracic radiographs within the last 1-2 years are ideal to serve as a baseline. Clopidogrel is recommended (18.75 mg PO once daily) to reduce the risk of clot formation. A recheck echocardiogram +/- thoracic radiographs are recommended in 6 months to determine if there is any progression.

Monitoring

It is very important to catch any clinical signs concerning for emerging CHF as early as possible. The client should be closely monitoring and ideally tracking the sleeping respiratory rate. The sleeping RR should be between 10-30 breaths per minute or less (ideally in the teens or low 20s). **If the resting RR is trending upward**, consistently >35/min while resting/sleeping, the patient should be seen urgent for evaluation to determine if CHF is developing. If your pet is ever unable to use one or more of their limbs, seek emergency veterinary attention. *RECHECK ASAP for thoracic radiographs if there is increase in RR to detect early CHF and avoid ER presentation**

Anesthesia

There is a moderately to severely increased risk to anesthesia given the underlying cardiac disease. Anesthesia should only be pursued for medically necessary procedures with client understanding of the risks.

On top of the increased intraoperative risks (hypotension, hypoventilation, hypothermia) with cardiac disease, there is an increased risk of precipitating CHF. With this understanding, anesthesia can be pursued pending normal labwork, with appropriate precautions for strictly necessary procedures.



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Baseline thoracic radiographs are recommended within 1-2 months of anesthesia, not only to rule out CHF, but to serve as a baseline for comparison if a new cough or other respiratory signs develop after anesthesia.

Recommendations for pre-operative sedation include an opiate (such as butorphanol) combined with a benzodiazepine (such as midazolam or diazepam). It is recommended to avoid alpha 2 agonists, as these agents can cause vasoconstriction and worsen MR, exacerbating left atrial hypertension. These effects persist for hours even after reversal. Etomidate or alfaxalone are preferred induction agents. Propofol can be considered for induction; however, is less preferred to alfaxalone or etomidate. Ketamine should ideally be avoided. Atropine should be used as needed for blood pressure support when bradycardia is present during periods of hypotension.

Full cardiac precautions should be taken with regards to monitoring (ideally CO₂, SpO₂, ECG, and BP monitoring) and judicious IV fluid administration (avoid volume overload or underload/hypotension – 1-2 mL/kg/hr surgical fluid rate is recommended). All other methods of blood pressure support should be utilized **instead of fluid boluses** (i.e. reduce inhalant/use MAC reducing agents, consider anticholinergics if bradycardia + hypotension), and the use of parenteral inotropes should be considered (i.e. dobutamine or dopamine).



The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. 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.

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