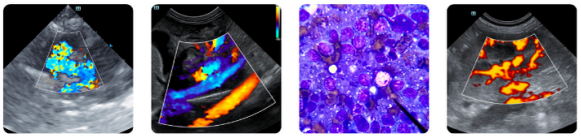




SonoPath www.SonoPath.com info@sonopath.com 800.838.4268

**PATIENT**

Basil Puzzo

**SPECIES**

Feline

**BREED**

DLH

**SEX**

MN

**AGE**

7 years 9 months

**WEIGHT**

4.3 kg

**INTERPRETED BY**

Bradley Harris, DVM, DACVECC, DACVIM (cardiology)

**IMAGING PERFORMED BY**

Kerri Becker

**HOSPITAL NAME**

Marsh AH

**REFERRING VET**

Dr. Armani

**INVOICE**

10889

**DATE**

12/8/2025

## PRESENTING CLINICAL SIGNS

HX of murmur grade 3. Previous echo elsewhere. July 2025 diagnosed w/ SAM of the mitral valve along w/ concentric hypertrophy of the ventricles. BPM-116/74 116/85 Atenolol 6.25mg sid.

## 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** | 4.3 kg | NM | 0.68 | 1.37 | 0.70 | 68% | NM |
| **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** | 1.74 | 1.72 | 1.92 | | NM | 0.7 | NM |
| Adapted from June Boon,Veterinary Echocardiography,1998<br>Sisson D et al. JVIM 1991; 5: 232, Jacobs et al. Am J Vet Res 1985; 46:1705 | | | | | | | |

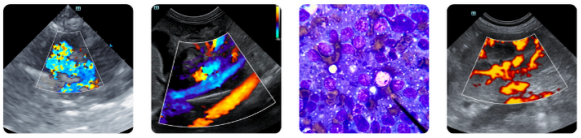
### *Cardiac Presentation*

The left atrium is mildly enlarged. There are no distinct left atrial thrombi/clots or spontaneous echo contrast appreciated. The left ventricle is normal in dimension, with mild to moderate concentric hypertrophy, and no evidence of restriction. Left ventricular systolic function is normal, based on fractional shortening and systolic left ventricular dimensions. The right atrium and ventricle are subjectively normal in dimension and systolic function. There is evidence of systolic anterior motion of the mitral valve with mild to moderate mitral regurgitation. The tricuspid valve leaflets presented normal linear structure, extension in systole, and union in diastole without regurgitation. The left ventricular outflow tract demonstrated turbulent flow and subjective structural valvular integrity. The visible aorta is unremarkable. Pulmonary outflow tract assessment revealed normal valve structure, laminar flow, and appropriate diameter and distensibility. There is no evidence of semilunar valve insufficiency or pulmonary hypertension documented. There is no visible pericardial, pleural, or free peritoneal fluid noted.

## ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

### *Urinary System*

The urinary bladder is adequately distended with anechoic urine, and a minimal amount of suspended echogenic debris. The region of the trigone, and pelvic urethra are unremarkable with normal wall thicknesses and normal tone. The ureters were not visualized, which is a normal finding. The ureteral papillae appear normal. There is no evidence of inflammatory, infiltrative, or neoplastic disease.





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The kidneys are normal in size and structure, with appropriate corticomedullary definition and cortex to medulla ratio. The cortices are uniform in texture with normal echogenic relationship to liver and spleen. The medullary structure differed distinctly from the cortex and no evidence of pyelectasis is present. The capsules are uniform without significant irregularities noted. Left kidney measures 3.85 cm, and the right kidney measures 4.21 cm.

### *Adrenal Glands*

Both adrenal glands are visualized and have normal shape, size, position and echogenicity for this breed. The phrenic vasculature, glandular echogenicity and detail were unremarkable. Capsule, cortex, and medullary definition were normal for this age patient. The left adrenal measures 0.3 cm, and the right adrenal measures 0.3 cm.

### *Spleen*

The spleen is smooth with homogeneous parenchyma and hyperechoic to liver and renal cortical parenchyma. The capsule is without noticeable irregularity or deformation. The splenic vasculature is normal without signs of congestion, spontaneous echo contrast, or thrombosis. No evidence of acute or chronic inflammatory, neoplastic, or infarct are documented. The spleen measures 0.84 cm at the hilus.

### *Liver*

The liver is subjectively normal liver size, contour, and structure. Parenchymal echogenicity is naturally coarse and hypoechoic to the spleen. Vasculature is within normal limits with no evidence of congestion. The gallbladder has thin walls which contain anechoic bile. There is no evidence of intra- or extra-hepatic biliary dilation. The cystic and common bile ducts were normal. No hepatic lymphadenopathy is documented. There is no overt structural evidence of inflammatory, infiltrative or regenerative pathology evident.

### *Gastrointestinal*

The stomach and intestines are free of stasis and peristaltic activity, with no significant dilation noted. There is normal wall thickness and acceptable curvilinear mural detail. The pyloric-duodenal junction and ileocecocolic junction are patent, and the colon contains normal shadowing feces. There is no evidence of shadowing obstructive material or overt infiltrative disease noted. No associated abnormal lymphatic activity is documented.

### *Pancreas*

The base and limbs of the pancreas are isoechoic to surrounding omental fat. The pancreatic duct and capsular contour are normal. There is no overt evidence of active inflammatory or neoplastic disease.

### *Free Abdomen*

There is no free fluid noted.

## ULTRASONOGRAPHIC FINDINGS

- These findings identify left ventricular hypertrophy in the setting of an outflow tract obstruction, consistent with hypertrophic obstructive cardiomyopathy (HOCM). As a consequence of the heart disease, the left atrium is also enlarged.

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- The urinary bladder contains echogenic, suspended debris contrasted with anechoic urine. This is often related to urinary tract infection but may represent exfoliated debris or sterile inflammation.

- The remainder of the abdomen is normal with no significant abnormalities noted.

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

There are multiple layers of uncertainty regarding this case. The presence of hypertrophy and an outflow tract obstruction make the use of a beta blocker worth considering. The challenge of treating these cats is the lack of any real data to support a meaningful benefit (most of the rationale for their use is theoretical), coupled with the potential for adverse effects (low BP, renal impairment, potential exacerbation of CHF). Continued atenolol (6.25mg q24) is recommended given the presence of significant left atrial dilation. However, beta blockers do have the potential to worsen hemodynamic function, which is more of a concern in the setting of left atrial dilation. In these cases, the concurrent use of an ACEi (enalapril/benazepril 2.5mg q24hr) is recommended as well. A recheck heart rate, BP, and chemistry would be indicated 1-2 weeks after starting ACE inhibitors. A repeat echocardiogram, thoracic radiographs, blood pressure, and chemistry panel is warranted in another 6 months. Owners should monitor resting respiratory rate at home. Values above 30 breaths/minute or an increase in respiratory rate 10% above baseline should prompt veterinary re-evaluation.

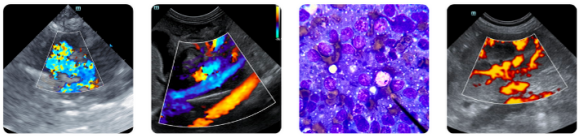
Anesthesia considerations:
While there is no CHF present, there is likely an increased anesthetic risk which must be considered prior to any anesthetic procedure. If anesthesia is necessary, then alpha-2 agonists, ketamine, high dose acepromazine, and Telazol should be avoided. If an ACE inhibitor (enalapril, benazepril) or beta-blocker (atenolol) is being given, it should not be administered on the morning of general anesthesia. Other cardiac medications should be administered per the normal dosing schedule. Fluid therapy during anesthesia should be considered at a reduced rate (e.g., 2-3 ml/kg/hour) if possible (i.e., if not hypotensive). A shorter anesthetic duration will reduce the risk of complications. Pre-oxygenation is advised. Premedication with an opioid (i.e., butorphanol, hydromorphone, oxymorphone) with or without a benzodiazepine is generally the safest protocol. An induction agent such as Propofol, alfaxalone, or diazepam/etomidate can be used to effect. Maintenance of anesthesia with isoflurane or sevoflurane is reasonable.

Diet:
No special considerations are necessary. Any high-quality food from Hills, Royal Canin, Science Diet, Eukanuba, Iams, or Purina is reasonable.

Activity:
Avoid overly strenuous activity.

A urinalysis and urine culture via cystocentesis are recommended to evaluate the urinary tract changes for potential urinary tract infection.

New Jersey Mobile
FUELED BY SONOPATH VETERINARY ULTRASOUND



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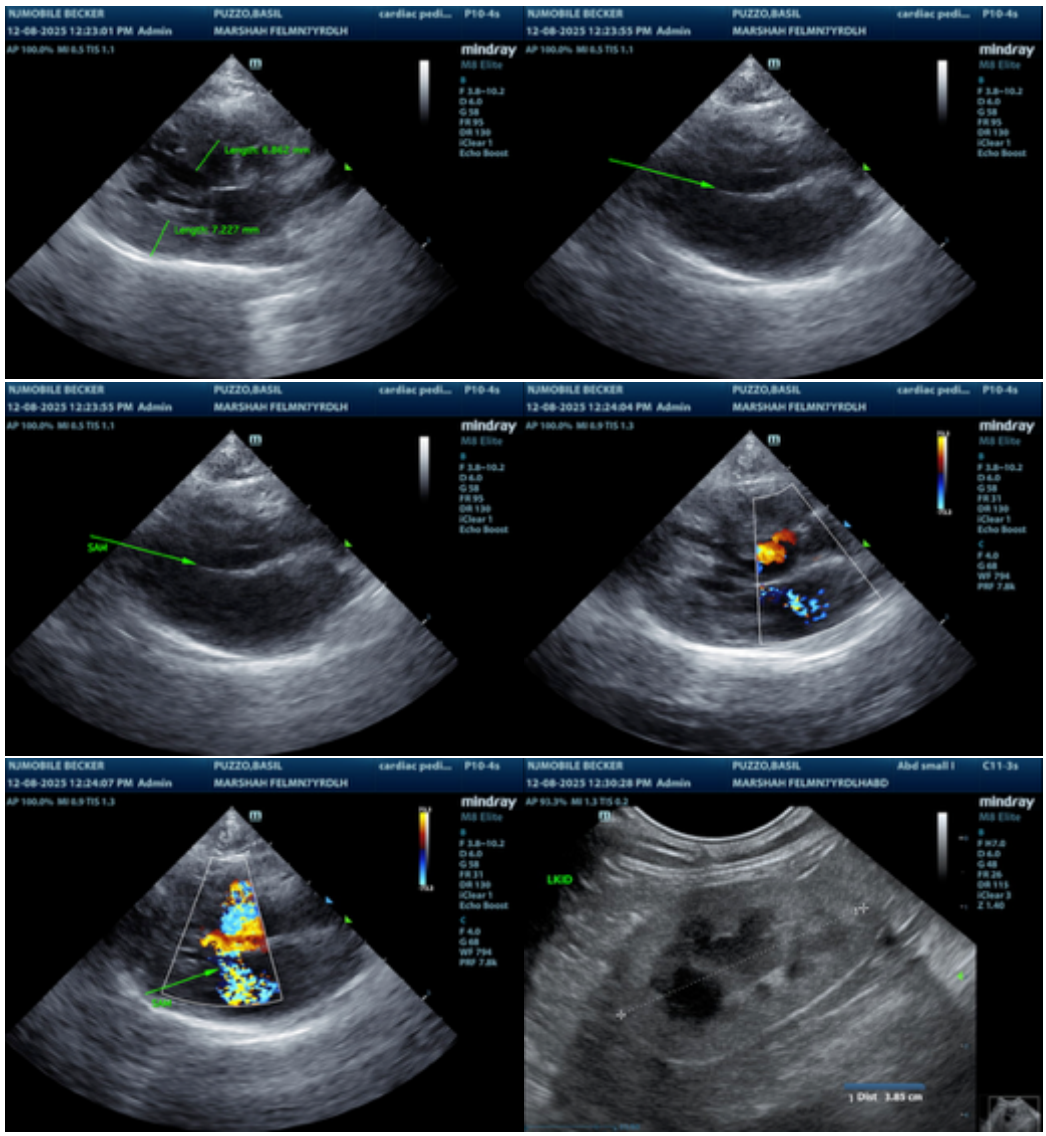

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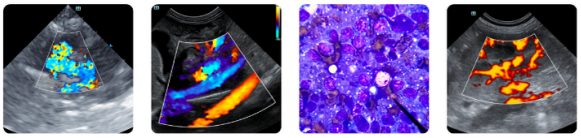

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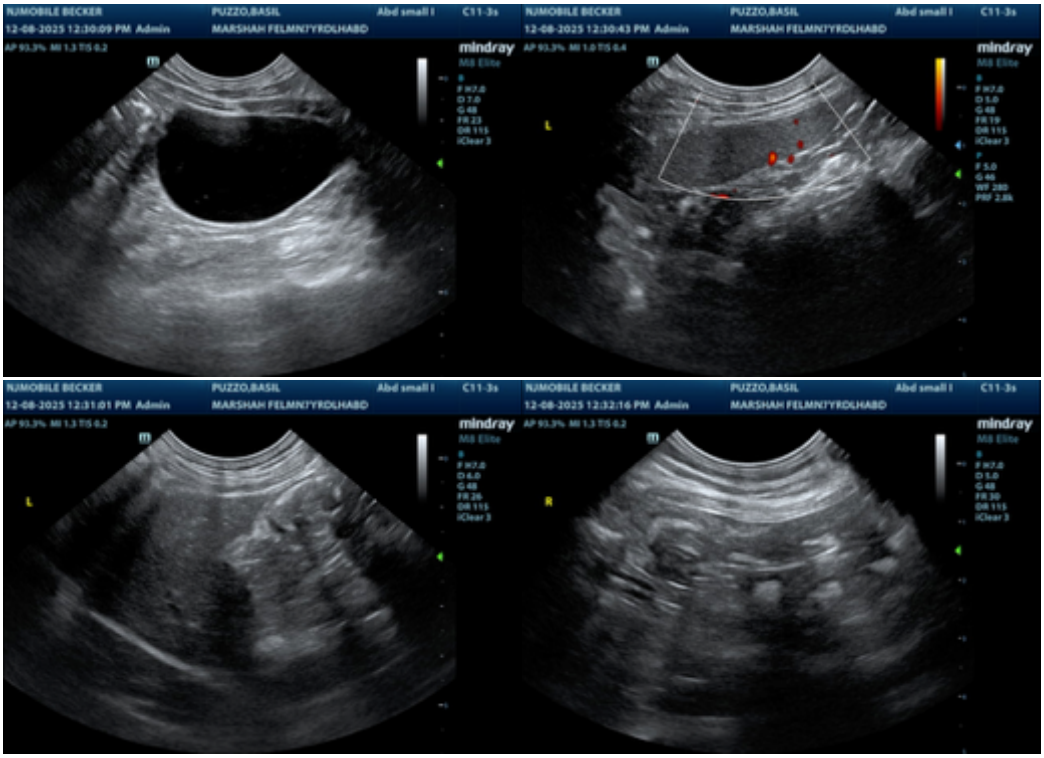


**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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.

**Bradley Harris**, DVM, DACVECC, DACVIM (cardiology)

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