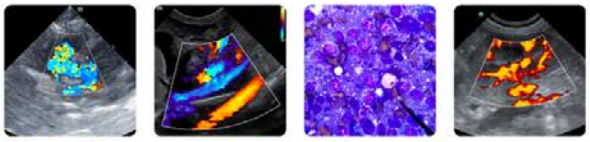


PATIENT

Toby Kulig

SPECIES

Feline

BREED

DSH

SEX

Neutered Male

AGE

17 Years

WEIGHT

4 kg

INTERPRETED BY

Brad Harris, DVM, DACVECC, DACVIM (cardiology)

IMAGING PERFORMED BY

Catherine Alexander, LVT

HOSPITAL NAME

NorthStar Veterinary Sonography

REFERRING VET

Dr. Hodge

INVOICE

72467

DATE

1/25/26

PRESENTING CLINICAL SIGNS

Toby presented 1/24 PM for Not acting like himself, lethargic, not wanting to eat. Has been pretty bad for a couple days, and starting to worsen a few days before that.

Abnormal PE/Chem/CBC/UA Results: Cardiovascular: Grade III-IV/VI systolic left sided murmur, regular rate/rhythm. Musculoskeletal: Ambulatory x4; diffuse loss of musculature Bionote fPL: 24.7 High

ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

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	4.0	NM	0.7	1.07	0.6	49	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	NM	1.03	1.48		NM	1.4	NM

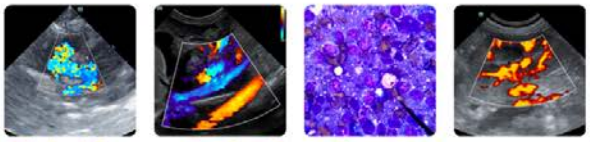
Adapted from June Boon,Veterinary Echocardiography,1998
Sisson D et al. JVIM 1991; 5: 232, Jacobs et al. Am J Vet Res 1985; 46:1705

Cardiac Presentation

The left atrium is normal in dimension. 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, with adequate contractility 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 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.

Urinary System

The urinary bladder, trigone, and pelvic urethra are unremarkable with normal wall thicknesses and normal tone. The ureters were not visualized, which is a normal finding. There are no uroliths or sediment noted, and anechoic urine is present. The ureteral papillae appear normal. There is no evidence of inflammatory, infiltrative, or neoplastic disease.



PATIENT

Toby Kulig

SPECIES

Feline

BREED

DSH

SEX

Neutered Male

AGE

17 Years

WEIGHT

4 kg

INTERPRETED BY

Brad Harris, DVM, DACVECC, DACVIM (cardiology)

IMAGING PERFORMED BY

Catherine Alexander, LVT

HOSPITAL NAME

NorthStar Veterinary Sonography

REFERRING VET

Dr. Hodge

INVOICE

72467

DATE

1/25/26

The kidneys are normal in size. There is decreased corticomedullary definition, with occasional cortical cystic changes. The capsules are mildly irregular bilaterally. There is no significant pyelectasia or pelvic dilation. Left kidney measures 3.35 cm. Right kidney measures 3.25 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. Left adrenal gland measures 0.40 cm. Right adrenal gland measures 0.44 cm.

Spleen

The spleen measures 0.69 cm at the hilus. It 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.

Liver

The liver is subjectively normal in size with a diffusely heterogeneous parenchyma. The left limb has a circumscribed hypoechoic mass effect that does not distort the smooth hepatic capsule. The vasculature is normal with no evidence of congestion. The gallbladder is mildly distended with a mild amount of suspended echogenic debris and dependent sediment. The cystic duct is mildly dilated and tortuous with no evidence of extrahepatic biliary dilation or obstruction. The common bile duct is normal.

Gastrointestinal

The gastrointestinal tract is non-distended with no significant dilation, and adequate peristaltic activity. There is no shadowing foreign material or evidence of obstructive disease. The small intestinal wall measures within normal limits for thickness but has a prominent muscularis layer that distorts the normal 1:3 muscularis to mucosal ratio. The colon contains normal shadowing feces. The pylorus and Ileocecocolic junction appear patent.

Pancreas

The pancreas is prominent and hypoechoic with irregular margins. There is a mild degree of hyperechoic regional mesentery and omental fat.

Free Abdomen

No free peritoneal effusion noted. There are several prominent mesenteric and colic lymph nodes with normal length to width ratio and isoechoic parenchyma.

ULTRASONOGRAPHIC FINDINGS

- The cardiac findings identify left ventricular hypertrophy in the setting of an outflow tract obstruction and absence of any chamber dilation, consistent with occult hypertrophic obstructive cardiomyopathy (HOCM).
- There is increased renal cortical echogenicity and thickening with a mildly irregular capsular contour. Multifocal cystic cortical changes are noted. This is secondary cystic formation

PATIENT

Toby Kulig

SPECIES

Feline

BREED

DSH

SEX

Neutered Male

AGE

17 Years

WEIGHT

4 kg

INTERPRETED BY

Brad Harris, DVM, DACVECC, DACVIM (cardiology)

IMAGING PERFORMED BY

Catherine Alexander, LVT

HOSPITAL NAME

NorthStar Veterinary Sonography

REFERRING VET

Dr. Hodge

INVOICE

72467

DATE

1/25/26

consistent with chronic age related degeneration and remodeling. There is no evidence of abscessation or suspicion of neoplasia.

- The hepatic parenchyma is coarse with some mixed echogenicity. The gallbladder was slightly dilated with a dilated gallbladder neck and tortuous cystic duct. This could be an age-related change or related to underlying cholecystitis/cholangiohepatitis, especially if elevated liver enzymes are present currently or in the recent past.

- The hypoechoic circumscribed mass effect within the liver may represent benign changes. However, infiltrative neoplastic disease cannot be definitively excluded.

- The intestinal submucosa is slightly irregular, thickened and hyperechoic suggestive of low grade, chronic disease. There is mild uniform prominence of the gastric mucosa as well as areas of "ropey" small intestinal wall with slight disruption of the normal 1:3 muscularis/mucosal ratio. This is most consistent with chronic enteropathy. No concerning lymphadenopathy or evidence of mechanical obstruction is present. Chronic inflammatory bowel disease is likely with a low possibility of an early neoplastic event such as lymphoma.

- The prominent, hypoechoic pancreas with an irregular contour and mixed ill-defined hyper and hypoechoic changes is most consistent with pancreatic remodeling and nodular hyperplasia. This may be secondary to active or acute-on chronic inflammatory disease or pancreatitis.

- The slightly prominent mesenteric and colic lymph nodes display no loss of parenchymal detail or change in echogenicity. This is most consistent with reactive lymphadenitis or lymphatic hyperplasia.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

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

Fine needle aspirates of the liver with cytology are recommended. A coagulation profile and platelet estimate prior to sampling are indicated to ensure the absence of coagulopathy. Occasionally some tissues are poorly exfoliative, or cytology is non-specific, in which case biopsy with histopathology may be required for a definitive diagnosis.

A gastrointestinal panel (TLI, PLI, B12, folate) via Texas A&M gastrointestinal laboratory is indicated to further evaluate for potential chronic enteropathy. Ultimately, gastrointestinal biopsies may be required for a definitive diagnosis.

Continued supportive care for suspected pancreatitis with a nasogastric tube placement and enteral feedings is recommended, and additional symptomatic therapy as clinically indicated.

Cardiac Recommendations/Treatment:

The presence of hypertrophy and an outflow tract obstruction make the use of a beta blocker worth considering. However, 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). If atenolol is used, the atenolol dose would be 1-2mg/kg once daily (with the potential of increasing to BID if well tolerated after the first week). A recheck heart rate, BP, and chemistry would be indicated 1-2 weeks after

PATIENT

Toby Kulig

SPECIES

Feline

BREED

DSH

SEX

Neutered Male

AGE

17 Years

WEIGHT

4 kg

INTERPRETED BY

Brad Harris, DVM, DACVECC, DACVIM (cardiology)

IMAGING PERFORMED BY

Catherine Alexander, LVT

HOSPITAL NAME

NorthStar Veterinary Sonography

REFERRING VET

Dr. Hodge

INVOICE

72467

DATE

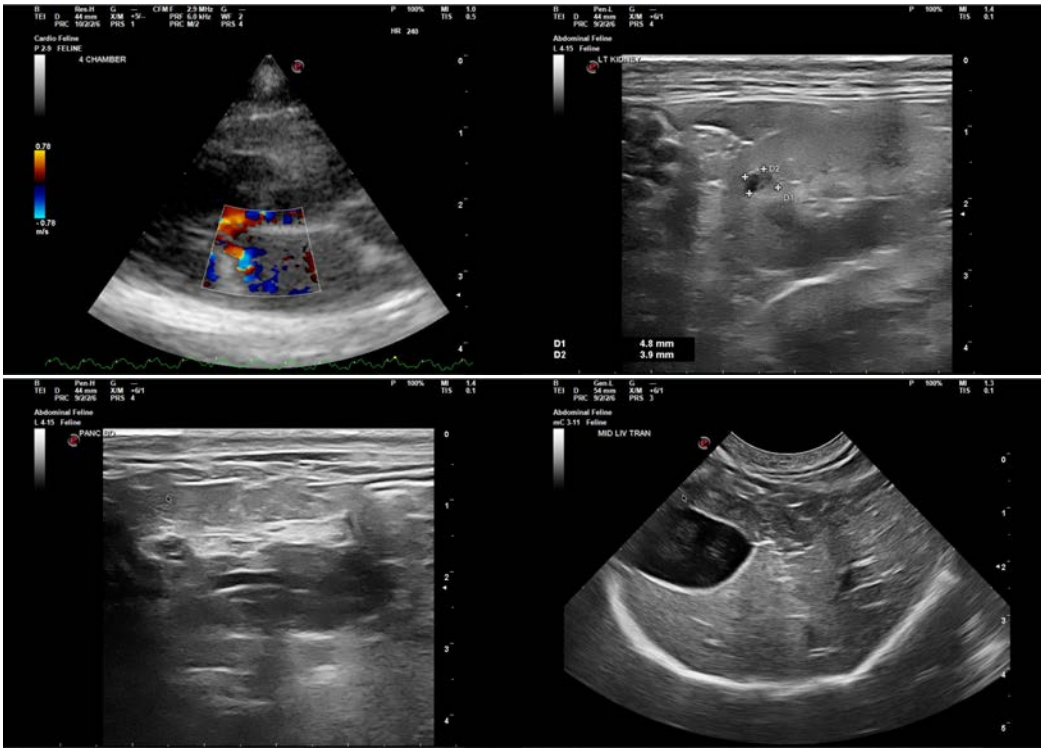
1/25/26

starting therapy; at that time the need for higher doses of atenolol can be assessed. A repeat echo is warranted in another 6 months, regardless of whether or not therapy is started. Ultimately, a conversation with the owner is necessary to determine what course of therapy is most suitable for them. Regardless, 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:
If anesthesia is necessary, then alpha-2 agonists, ketamine, high dose acepromazine, and Telazol should be avoided. If a 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 conservative rate (e.g., 5 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 or alfaxalone 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.



PATIENT

Toby Kulig

SPECIES

Feline

BREED

DSH

SEX

Neutered Male

AGE

17 Years

WEIGHT

4 kg

INTERPRETED BY

Brad Harris, DVM, DACVECC, DACVIM (cardiology)

IMAGING PERFORMED BY

Catherine Alexander, LVT

HOSPITAL NAME

NorthStar Veterinary Sonography

REFERRING VET

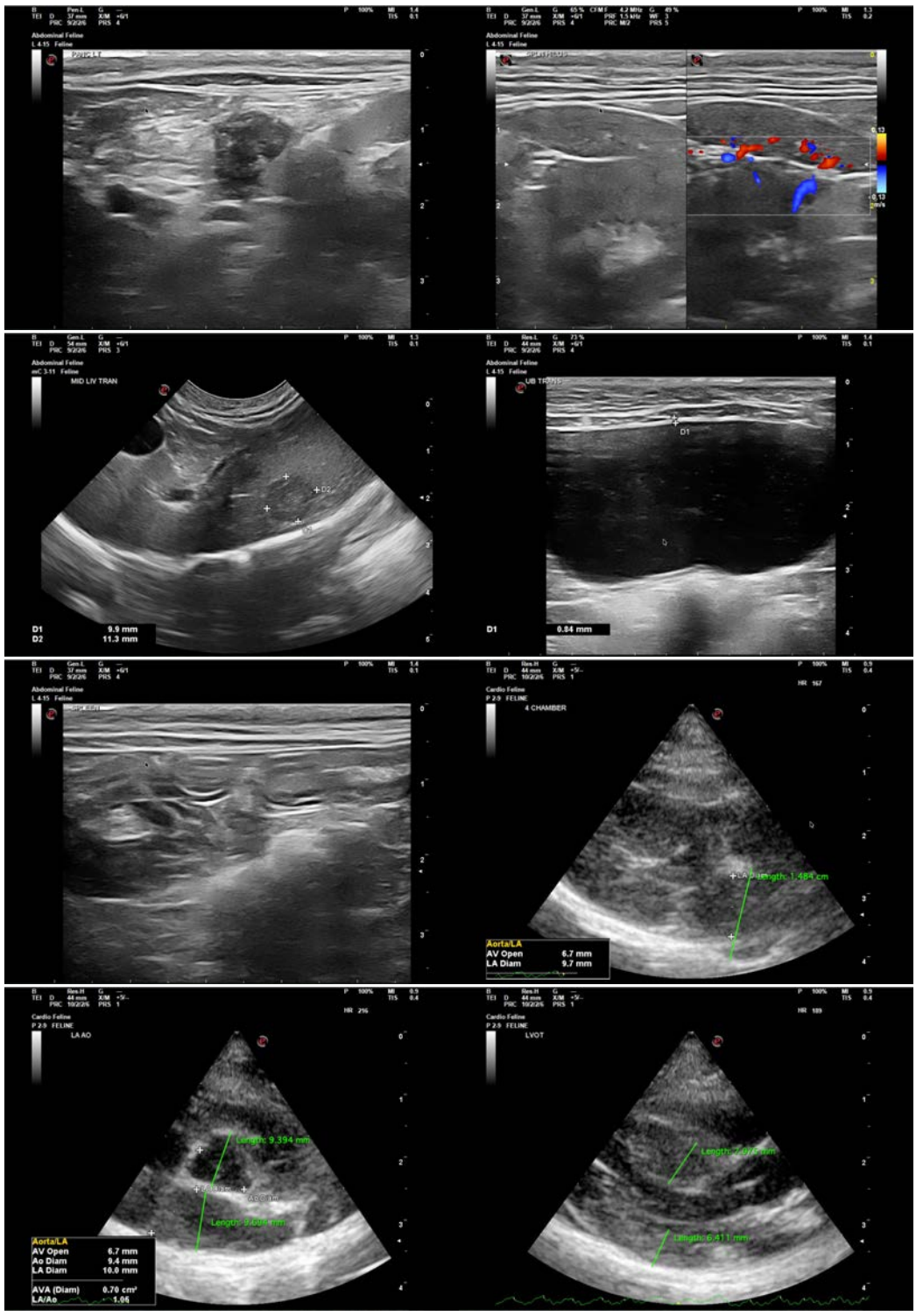
Dr. Hodge

INVOICE

72467

DATE

1/25/26



PATIENT

Toby Kulig

SPECIES

Feline

BREED

DSH

SEX

Neutered Male

AGE

17 Years

WEIGHT

4 kg

INTERPRETED BY

Brad Harris, DVM, DACVECC, DACVIM (cardiology)

IMAGING PERFORMED BY

Catherine Alexander, LVT

HOSPITAL NAME

NorthStar Veterinary Sonography

REFERRING VET

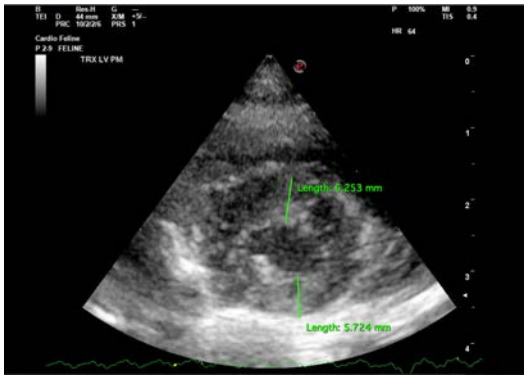
Dr. Hodge

INVOICE

72467

DATE

1/25/26



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.

Brad Harris, DVM, DACVECC, DACVIM (cardiology)

info@SonoPath.com