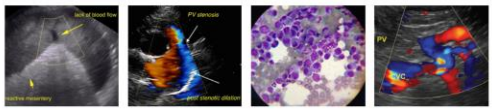
PAUS
Pet Animal Ultrasound Service
4paus.com 781-635-5677



SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
1-800-838-4268 info@sonopath.com SonoPath.com

PATIENT
Juanito Castaneda

SPECIES
Canine

BREED
Shih Tzu

SEX
Male Intact

AGE
12 years

WEIGHT
11.1lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Pamela Harrigan, RDCS

HOSPITAL NAME
East Boston Veterinary Hospital

REFERRING VET
Dr. Chopra

INVOICE
21218

DATE
9/26/21

PRESENTING CLINICAL SIGNS
History: New patient. Presents with labored breathing. No murmur noted. Started Pimobendan 5mg, 1/4 t q12h

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; 25mm/s, 20mm/mV. The average heart rate is 100bpm (range 75-125bpm). The rhythm is sinus in origin, with a p for every QRS complex and vice versa. P and QRS morphologies are positive. Isolated APCs throughout with a single couplet. No ventricular premature beats, pauses or other dysrhythmias observed.
ECG diagnosis: Normal sinus rhythm with respiratory variation. APCs; singles and a couplet.

ECHOCARDIOGRAM FINDINGS
2D, m-mode, color flow and Doppler imaging is available.
Left ventricle: The LV diameter is normal with adequate myocardial function. LV wall thicknesses are normal.
Left atrium: The left atrium normal.
Mitral valve: The mitral valve is normal with no prolapse into the left atrial lumen. No mitral regurgitation.
Aortic valve/Aorta: The aortic valve is normal in morphology and mobility. Normal aortic outflow velocity; laminar flow. Trace aortic insufficiency.
Right ventricle: The RV is moderately enlarged with prominence in the short axis view.
Right atrium: RA is mildly dilated.
Tricuspid valve: The tricuspid valve appears normal with mild to moderate tricuspid regurgitation. Velocity consistent with moderate pulmonary hypertension.
Pulmonic valve/Pulmonary artery: The body of the MPA appears normal. There is a large, encapsulated mass associated with the heart base (3.9 x 2.8cm). Compression is suspected of the diastole right branch.
Pericardium/other: No pericardial effusion. Small pockets of pleural effusion noted.

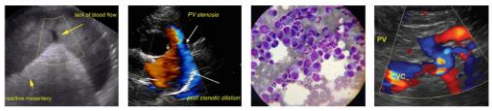
2-Dimensional Measurements

Ao diam (cm)	1.3
LA diam (cm)	1.3
LA:Ao (Swe)	1.3
IVS thickness (cm)	0.48
LVID diastole (cm)	2.1
PW thickness (cm)	0.50
LVID systole (cm)	1.1
FS (%)	48

Doppler Measurements

PV Vmax (m/s)	0.8
AoV Vmax (m/s)	1.2
MR Vmax (m/s)	NA
TR Vmax (m/s)	3.8
TR PG (mmHg)	58

INTERPRETATION OF THE FINDINGS
A large soft tissue lesion is identified with the heart base. The mass appears extracardiac and intrapericardial with compression of the peripheral MPA visualized. This is leading to pressure overload of the right heart, with fluid accumulating in the pleural space. There is also mild to moderate tricuspid regurgitation, which is clinically insignificant at this time. That being said, the velocity is suggestive of moderate pulmonary, likely due to mass



PATIENT
Juanito Castaneda

SPECIES
Canine

BREED
Shih Tzu

SEX
Male Intact

AGE
12 years

WEIGHT
11.1lbs

INTERPRETED BY
Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY
Pamela Harrigan, RDCS

HOSPITAL NAME
East Boston Veterinary Hospital

REFERRING VET
Dr. Chopra

INVOICE
21218

DATE
9/26/21

compression. Other possible issues including occlusion of pulmonary venous return etc. are also possible. No additional issues are identified.

The mass is suspected to be heart based in origin; however, an exact root cannot be seen. The most common heart base tumor is a chemodectoma, however other possibilities including ectopic parathyroid tumor cannot be ruled out. Further diagnostic imaging may be useful understand the definitive origin and thoracic involvement of the mass (CXR, CT, FNA, etc.).

Going forward, regardless of tumor type the clinical issues are due to a mechanical obstruction of flow through the right heart, which confers a poor to grave prognosis. The mass will likely continue to increase in size, further worsening the obstruction and ultimately leading to decompensation. The best we can do is remove effusions through tapping when needed and use medications for congestive heart failure to help slow fluid accumulation. I am cautiously optimistic that we can decrease fluid volume by some degree for the short term, however the size of the mass and compressive nature should be considered when electing to treat or euthanize. Diuretics are a band aid over a much bigger issue and may or may not be effective. Please note medications below.

There are some options for palliating this type of cancer, including radiation and chemotherapy. Full systemic screening to assess for metastasis may be useful (AUS, labs, etc.) when deciding what is appropriate. Consultation with an Internist or Oncologist is recommended in light of echo results.

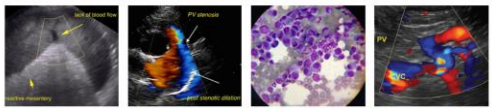
As a further complicating factor, APCs are noted on the ECG. While single APCs are largely benign, a couplet is identified, and the patient is certainly at risk for atrial fibrillation and/or sustained SVT. Given a patient without syncopal episodes, I would not necessarily treat this at this time; however, certainly monitoring for clinical signs such as syncope is suggested going forward.

High risk will always remain for recurrent effusions (pericardial, pleural or abdominal) and development of arrhythmias/sudden death at home. Monitor at home for progressive abdominal distention, labored breathing and/or lethargy and collapse.

RECOMMENDATIONS

- Consider attempted medical palliation of symptoms as discussed.
    - Palliation includes cough suppression with hydrocodone, furosemide (1-2mg/kg PO q12h), Spironolactone (1-2mg/kg PO q12h), Pimobendan (0.3mg/kg PO q12h, Sildenafil 1-2mg/kg PO q12h).
- Consider consultation with an Oncologist or Internist for chemotherapeutic options, etc.
- Full systemic evaluation to screen for metastatic lesions is recommended (CXR, AUS, etc)
- Omega fatty acid supplementation and mild salt restriction may be of some long-term benefit.
- Monitor for development of a cough, labored breathing, exercise intolerance or collapse episodes.

PAUS
Pet Animal Ultrasound Service
4paus.com 781-635-5677



SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
1-800-838-4268 info@sonopath.com SonoPath.com

PATIENT

Juanito Castaneda

SPECIES

Canine

BREED

Shih Tzu

SEX

Male Intact

AGE

12 years

WEIGHT

11.1lbs

INTERPRETED BY

Maggie Machen Lamy, DVM DACVIM (Cardiology)

IMAGING PERFORMED BY

Pamela Harrigan, RDCS

HOSPITAL NAME

East Boston Veterinary Hospital

REFERRING VET

Dr. Chopra

INVOICE

21218

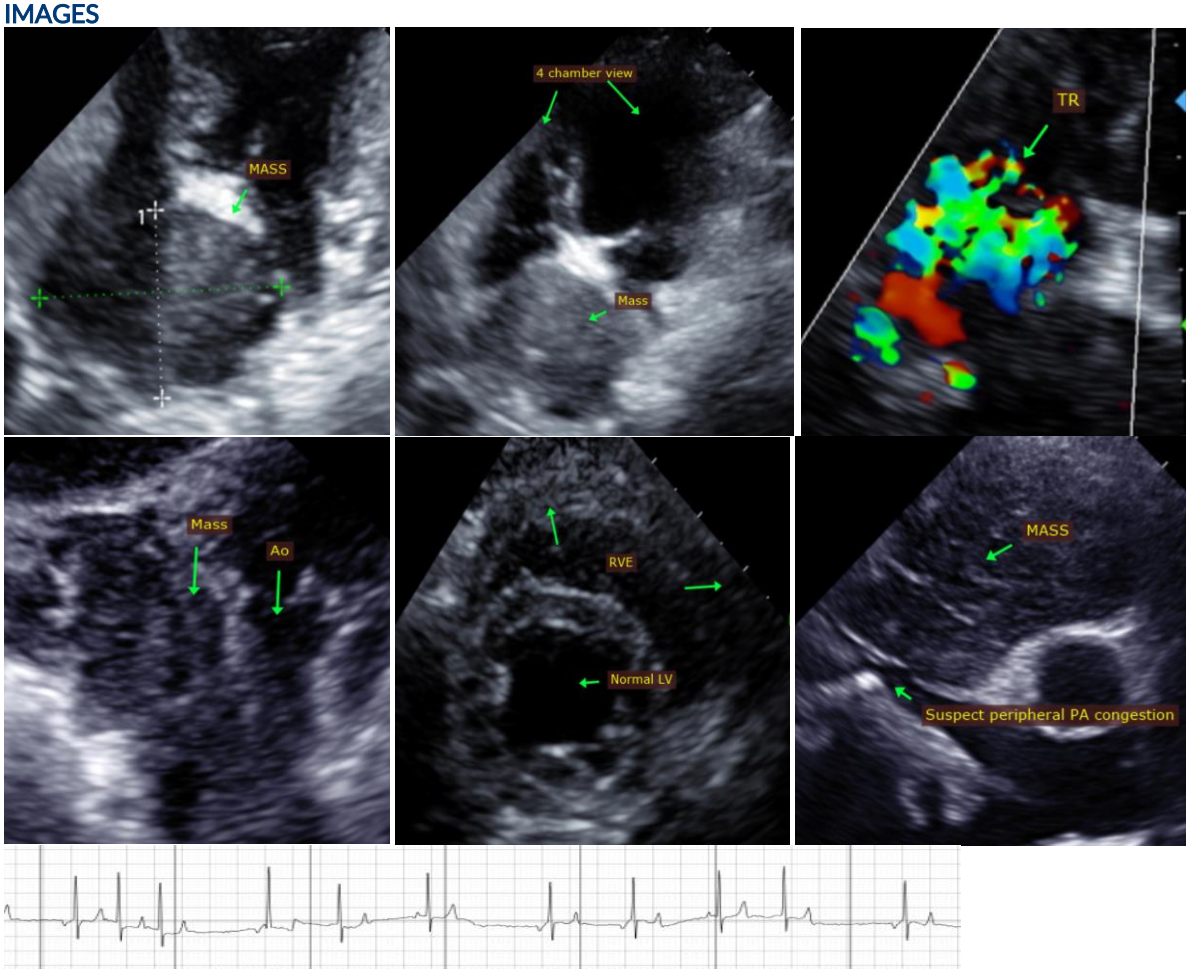
DATE

9/26/21

PLAN

- Monitor renal panel/BP and amount of effusion in 1-2 weeks then every 3-4 months lifelong, sooner if any clinical decline.
- If symptoms recur and quality of life suffers, **euthanasia should be considered.**
- Recheck echocardiogram in 3-4 months pending clinical improvement.

IMAGES



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.

Thank you for this referral. This report was generated using transcription software, and minor dictation errors may be present. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance, please contact me.

Maggie Machen Lamy, DVM
Diplomate of the American College of Veterinary Internal Medicine (Cardiology)
info@sonopath.com