

PATIENT

Toby Kazienko

SPECIES

Canine

BREED

Westie x Poo

SEX

Spayed Female

AGE

15 Years

WEIGHT

17 Pounds

INTERPRETED BY

James Wood, DVM,
 DACVIM (Cardiology)

IMAGING PERFORMED BY

Crystal Hill

HOSPITAL NAME

The Maples AH

REFERRING VET

Dr. Kazienko

INVOICE

36170

DATE

37170

PRESENTING CLINICAL SIGNS

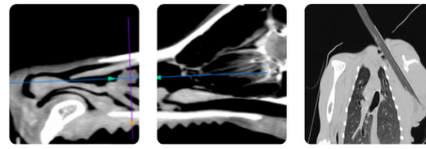
History: Grade 5-6/6 bilateral heart murmur. Started coughing this past weekend. Tired, sleeping more. Started Furosemide 10mg SID past five days, Tramadol BID.

ULTRASONOGRAPHIC EXAMINATION OF THE HEART

CANINE CARDIAC PARAMETERS	LA long axis	LAmxN	Ao long axis	LA/AO (Heart Base; Swe, short axis)	LA/AO long axis	LVIDd	LVIDdN
NORMAL PARAMETER		<1.57		<1.6	<2.5		<1.7
PATIENT	4.07	2.17	1.08	2.21	3.77	3.64	1.91
CARDIAC PARAMETERS	Body Weight (kg)	AV VMAX (m/s)	PV MAX (m/s)	MR VMAX (m/s)	TR VMAX (m/s)	FS (%)	LVIDsN
NORMAL PARAMETER		0.7-1.7	0.7-1.6			22 - 49%	<0.9
PATIENT	7.72	1.43	1.2	5.3	1.35	49.7	0.82
CARDIAC PARAMETERS	HR (bpm)	MV E (m/s)	MV A (m/s)	MV E/A (m/s)	EF (%)	IVSdN	LVFWdN
NORMAL PARAMETER						<0.6	<0.6
PATIENT	134	1.2	1.04	1.15	81.8	0.44	0.42

Cardiac Presentation

The mitral valve leaflets are mildly thickened with severe central mitral valve insufficiency. There is mild bileaflet prolapse. The left atrium is severely dilated. The left ventricle is severely dilated. Normal global left ventricular systolic function. There is normal right atrial size with mild tricuspid regurgitation. There is no prolapse of the tricuspid valve leaflets and no evidence of pulmonary hypertension based upon tricuspid regurgitant velocities. The right ventricle subjectively appears normal in structure and function. The aortic and pulmonary valves have normal appearance and motion, and the corresponding outflow velocities are within normal limits. There is mild aortic valve insufficiency based on color doppler. There is no evidence of pulmonary valve insufficiency. The aorta appears normal. The pulmonary artery and associated branches appear normal. There is no evidence of pleural effusion, pericardial effusion, or intracardiac masses.



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ULTRASONOGRAPHIC FINDINGS

- Myxomatous mitral valve disease, ACVIM stage B2/C
- Suspected left sided congestive heart failure
- Mild aortic valve insufficiency
- Mild tricuspid valve regurgitation

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

There is severe myxomatous mitral valve disease with severe left-sided chamber enlargement. Given the history, decompensated congestive heart failure is possible as a cause of the coughing. If there was clinical improvement on the furosemide, this can be continued unchanged if the clinical signs are well controlled. However, thoracic radiographs are recommended to evaluate for the presence of persistent pulmonary edema. If the clinical signs persist, furosemide at 2.0 mg/kg PO Q12 is recommended. Pimobendan is also recommended at 0.3 mg/kg PO Q12. These will likely be lifelong therapies. Recheck chest radiographs are recommended in 10-14 days along with blood work and a blood pressure. If the patient is doing well and the kidney values are within normal limits, recommend starting an ACE inhibitor (enalapril or benazepril 0.3-0.5mg/kg POq12) and spironolactone (1-3 mg/kg PO q24). 2-3 weeks after starting ACE inhibition, repeat kidney values are recommended. If the patient is doing well, recheck thoracic radiographs and renal function every 3-4 months, and a recheck echocardiogram is recommended every 6 months.

Monitoring

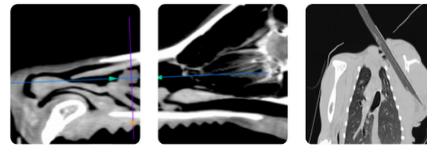
It is very important to catch any clinical signs concerning for emerging CHF as early as possible. The client should be closely monitoring and ideally tracking the sleeping respiratory rate. The sleeping RR should be between 10-30 breaths per minute or less (ideally in the teens or low 20s). **If the resting RR is trending upward**, consistently >35/min while resting/sleeping AND/OR there is a new or progressive cough, the patient should be seen urgent for evaluation to determine if CHF is developing. *RECHECK ASAP for thoracic radiographs if there is a new cough or increase in RR to detect early CHF and avoid ER presentation**

Salt Restriction

Moderate sodium restriction may be beneficial in managing this stage of cardiac disease. High-salt treats or diets should be avoided. If interested, further information on moderate sodium restricted diets for dogs with advanced cardiac disease can be found at: <https://heartsmart.vet.tufts.edu/nutrition/>.

Anesthesia

There is a 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.



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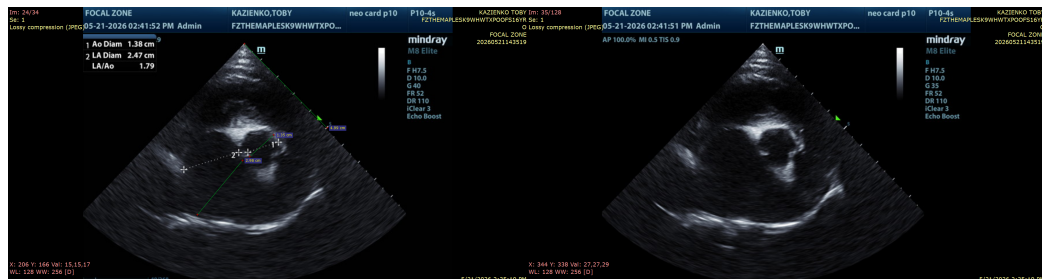
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On top of the increased intraoperative risks (hypotension, hypoventilation, hypothermia) with cardiac disease, there is an increased risk of precipitating CHF. With this understanding, anesthesia can be pursued pending normal labwork, with appropriate precautions for strictly necessary procedures. 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. Pimobendan can be given three times daily for 2-3 days prior to and following anesthesia to support cardiac function. The morning dose of any ACEi should be skipped the day of 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.

James Wood, DVM, DACVIM (Cardiology)

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