


PATIENT

Connan Tirado

SPECIES

Canine

BREED

Staffordshire Bull Terrier

SEX

Male Neutered

AGE

9 years

WEIGHT

70lbs

INTERPRETED BY

 Maggie Machen Lamy,
 DVM, DACVIM
 (Cardiology)

IMAGING PERFORMED BY

 Gabriel Ferrer,
 DVM

HOSPITAL NAME

Pulse Pet Ultrasound Services

REFERRING VET

Dr. Quinones

INVOICE

21214

DATE

9/25/21

PRESENTING CLINICAL SIGNS

History: Connan was referred to ACH for heartworm treatment on May 2021 after starting protocol (Doxycycline cycle) he was already on Vetmedin 5mg BID. He was hospitalized on June 2021 after cardiopulmonary complications. After this event he was started on Benazepril 15mg BID, Pred 10mg BID (tapering every week), Furosemide 80mg BID and Vetmedin was increased to 7.5mg BID. He recovered well and gained some energy. On July 2021 he was given 1 dose of Diroban following HW protocol, CBC and Biochem were WNL. One month after he was diagnosed with ascites and abdominocentesis extracted 350ml of straw-colored fluid. He was started on Spironolactone 18.75mg BID. A week later, ~600ml of fluid were extracted from abdominal tap and his Furosemide was increased to 120mg TID. A week later, 1400 ml were tapped. At this point, Sildenafil was started at 50mg BID. Biochem and electrolytes were repeated a couple of days later and they were WNL. Owner reported that he seemed better after the addition of Sildenafil to his tx regimen. A couple of days later an abdominal tap of 460ml was completed, his Sildenafil was increased to 50mg TID. At this exam, owner made an observation that at the other clinic there was a test that the HW diagnosis could be incorrect. A HW test (in house) was repeated, and it was negative. We do not know if he was negative due to low worm burden and response to only one shot, if he was a false positive or if he was never positive. Two weeks later (yesterday, Sept 23rd) he was seen, and another tap was done, about 420ml of fluid extracted. Connan will get winded, and his gums will turn purple when he gets too excited but otherwise, he acts normal.

-Current medications: Furosemide 120mg TID (12mg/kg/day), Vetmedin 7.5mg BID, Sildenafil 50mg TID, Benazepril 15mg BID.

-Blood pressure: 157/102 (120)mmHg.

RADIOGRAPHIC FINDINGS *NOTE: Images submitted for supplemental cardiac information only. Significant generalized cardiomegaly. Heavy bronchointerstitial pattern.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. Diffuse thickening of mitral valve leaflets with no prolapse into the left atrial lumen. Moderate to severe eccentric mitral regurgitation with severe left atrial dilation. Normal MR velocity. LV dilation with adequate myocardial function. The tricuspid valve appears mildly thickened with moderate to severe tricuspid regurgitation. Mildly elevated velocity. Moderate right atrial and ventricular dilation. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities with laminar flow. No aortic or pulmonic insufficiency; normal velocities. No obvious MPA dilation. A hyperechoic heart-based tumor is identified associated with the aortic root. The mass appears small and non-impinging, although difficult to view. No pericardial or pleural effusion noted. Small volume ascites noted on subcoastal views.

CARDIAC CHART

CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (Boon method)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	5.0	3.3	NM	2.5	41	71	0.36



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CANINE CARDIAC PARAMETERS	HR (BPM)	AV VMAX (m/s)	PV MAX (m/s)	BODY WEIGHT (kg)	LA 2D short axis Base view (cm)	LVIDd Avg; 2D and m-mode short axis (cm)	LVIDs Avg; 2D and m-mode short axis (cm)
NORMAL PARAMETER	50-100	0.7-1.7	0.7-1.6	BELOW	BELOW	BELOW	BELOW
PATIENT	150	1.2	0.8	31.8	4.4	5.7	3.3
*Normal chamber parameters expressed as a mean value (SD)				3	1.27 (5.3)	2.46 (2.46)	1.36 (5.5)
BODY WEIGHT DEPENDENT PARAMETERS				5	1.40 (4.5)	2.74 (5.2)	1.60 (4.7)
<i>*Note: All measurements based upon multi-modal images and methods. An average value is reported.</i>				10	1.50 (3.8)	3.27 (3.5)	2.06 (3.1)
				15	1.83 (2.0)	3.71 (2.4)	2.43 (2.1)
				20	2.02 (1.9)	4.14 (2.2)	2.80 (2.0)
Adapted from June Boon, Veterinary Echocardiography, 1998				25	2.18 (2.4)	4.48 (2.9)	3.10 (2.5)
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435				30	2.33 (3.3)	4.83 (3.9)	3.39 (3.4)
Hansson et al, Vet Rad and Ultrasound 2002				35	2.48 (4.3)	5.17 (5.0)	3.69 (4.5)
Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995				40	2.62 (5.2)	5.48 (6.1)	3.96 (5.4)
				50	2.88 (7.1)	6.07 (8.3)	4.46 (7.4)

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Findings are most consistent with chronic degenerative valve disease causing severe mitral and tricuspid regurgitation. Significant four chamber dilation indicates the risk for spontaneous congestive heart failure is high and the ascites is most likely cardiogenic in origin (biventricular failure). Cardiac supportive medications are noted as below. **The dose of Lasix is in the toxic range and further increases are quite dangerous.** Consider change to an alternative diuretic, such as Torsemide given the high dose and lack of response to Lasix therapy. With only mild PAH sildenafil is likely unnecessary; however, if a clinical improvement was noted on the medication this can be continued going forward. Therapeutic centesis should be continued; however, **only recommend fluid removal if the patient is uncomfortable or inappentent** (ie a small volume is benign). A screening six-lead ECG is highly recommended as this patient is at high risk for rapid arrhythmias and an **intermittent irregular rhythm is noted** throughout the study. Finally, a heart-based tumor is identified which is likely an incidental finding given the breed. That being said, peripheral congestion by the tumor can also lead to right-sided congestive signs and **advanced imaging such as a thoracic CT scan can be considered.**

The history of conflicting heartworm test results is difficult to interpret. Although no obvious adult worms are seen in this study, this does not rule out a true infestation. Consider ancillary testing such as a full heartworm panel, Knotts test, etc. to understand if further treatment is advised. If the patient is consistently testing negative, then obviously no further heartworm therapy is indicated.

Close monitoring for improvement in clinical signs is recommended. Unfortunately, with this degree of heart disease and congestion, the prognosis is guarded to poor with an average survival time of 6mo at this point. Most dogs are able to maintain a good quality of life for some time however with medications. Going forward, patient will remain at high risk for recurrent CHF (left or right sided), LA tear, collapse episodes and/or development of malignant arrhythmias in the future. Periodic centesis is recommended if the patient experiences discomfort, drop in appetite or labored breathing.

Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit once stabilized. Monitor for development of a cough, labored breathing, exercise



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intolerance or collapse episodes. Monitoring of sleeping breathing rates is recommended as the best way to screen for improvement/recurrent CHF at home.

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Elective anesthesia, fluid or steroid therapy are not advised in this patient.

BREED

Staffordshire Bull Terrier

PLAN

Continue therapeutic centesis as needed to maintain appetite and comfort level. Small volumes do not need to be retrieved. Screening ECG is strongly recommended. Full repeat of heartworm testing as discussed (see American Heartworm Society website for further information). Consider advanced imaging of heart-based tumor as discussed.

SEX

Male Neutered

Oral medications include the following: Continue Lasix as prescribed. Dose increase: administer Pimobendan 10mg PO q12h. Continue Benazepril as prescribed. Institute spironolactone 1-2mg/kg PO q 12h. If clinical improvement was seen on Sildenafil, reasonable to continue as prescribed.

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Monitor kidney panel, BP and fluid status in 10-14 days, then every 3-4 months lifelong. If ascites continues to recur and requires removal with increased frequency, consider change to Torsemide 5mg PO q12h and discontinue Lasix (can go up to 10mg BID based upon clinical and renal value response). If this change is made, renal values should be closely monitored in 3-5 days, sooner if any drop in appetite is identified.

WEIGHT

70lbs

A recheck echocardiogram is recommended in 6 months to screen for progression, sooner if clinical signs arise.

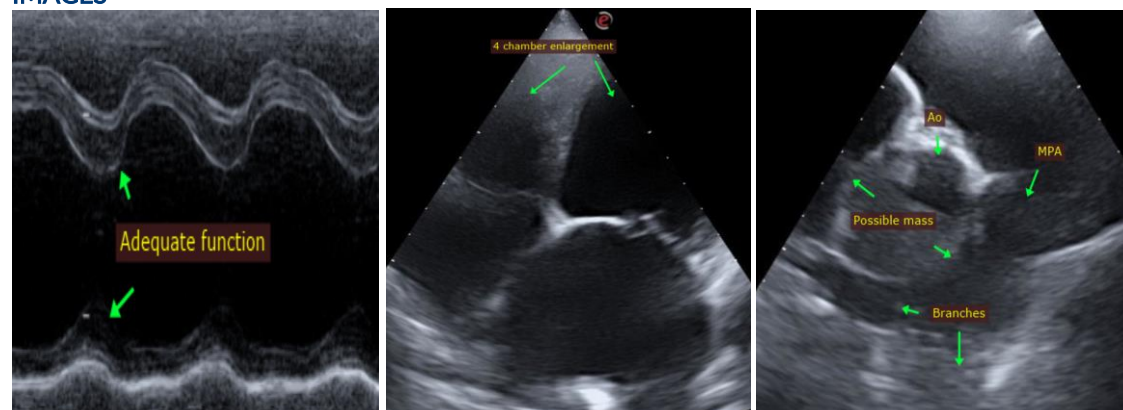
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IMAGES

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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.

REFERRING VET

Dr. Quinones

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.

INVOICE

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