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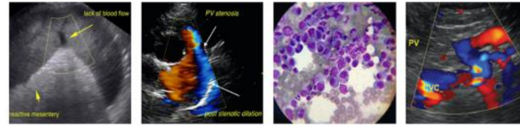


SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
1-800-838-4268 info@sonopath.com SonoPath.com

PATIENT
Friday Conway

SPECIES
Canine

BREED
Lab Mix

SEX
Female Spayed

AGE
7 years

WEIGHT
70lbs

INTERPRETED BY
Maggie Machen Lamy, DVM, DACVIM (Cardiology)

IMAGING PERFORMED BY
Rebekah Jakum, CVT ARDMS/RVT

HOSPITAL NAME
Alburtis Animal Hospital

REFERRING VET
Dr. Smith

INVOICE
27727

DATE
11/30/22

PRESENTING CLINICAL SIGNS

History: Atypical hypoadrenocorticism diagnosed 4/2021. Has been on very low dose prednisone since diagnosis. Recent suspected hypoglycemic episode likely associated with atypical Addison's. When working up suspected hypoglycemic episode, a notably increased ALT was identified. Recent urinalysis was WNL with the exception of specific gravity = 1.006. Heartworm +ve (initial diagnosis 1/2017;most recently tested in 3/2021) - was being treated with "slow kill" treatment prior to presentation at Alburtis. Medication: Prednisone 1mg BID.

ECHOCARDIOGRAM FINDINGS

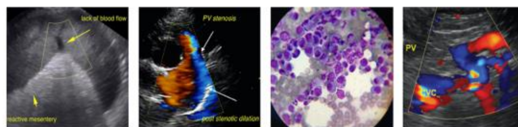
2D, m-mode, color flow and doppler imaging is available. Mild thickening of mitral valve with no prolapse into the left atrial lumen. No MR. Normal LA dimension. No LV dilation with adequate myocardial function. The MPA and branches are normal. Possible single adult worm near the bifurcation (see below). No worms seen in the RA or RV or branches. No right atrial dilation. RV appears normal with no obvious RVH. Trace tricuspid regurgitation. The pulmonic and aortic valves are normal in morphology and mobility. Normal pulmonic and aortic outflow velocities with laminar flow. No pulmonic or aortic insufficiency. No pericardial or pleural effusion.

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	NA	NM	NM	1.1	30	56	NM
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	71	1.6	0.8	31.8	2.3	4.3	3.0
*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)
**Note: All measurements based upon multi-modal images and methods. An average value is reported.*				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)
Adapted from June Boon, Veterinary Echocardiography, 1998				20	2.02 (1.9)	4.14 (2.2)	2.80 (2.0)
Rishniw M and Hollis NE, J Vet Intern Med 2000; 14:429-435				25	2.18 (2.4)	4.48 (2.9)	3.10 (2.5)
Hansson et al, Vet Rad and Ultrasound 2002				30	2.33 (3.3)	4.83 (3.9)	3.39 (3.4)
Bonagura et al. Echocardiography: principles of interpretation, Vet Clin North Am 15:1177, 1995				35	2.48 (4.3)	5.17 (5.0)	3.69 (4.5)
				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)

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Possible single adult heartworm near the bifurcation of the pulmonary artery. This is certainly not definitive in this peripheral location however, as ultrasound is largely insensitive (i.e., adult worms may be easily either missed peripheral or elsewhere). Given a lack of right heart or MPA enlargement, the infestation is considered relatively mild without evidence of significant pulmonary hypertension. No additional issues are identified.



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Heartworms can cause significant damage to the lung tissue leading to pulmonary damage, pulmonary hypertension and clinical signs such as coughing, decreased ability to exercise, or difficulty breathing. Disease severity can range from an asymptomatic dog with few worms to dogs with severe respiratory signs. In the most severe cases, caval syndrome may develop due to a very high worm burden sheering blood cells as they pass through the heart. Caval syndrome is a life-threatening emergency that requires immediate surgical removal of the worms.

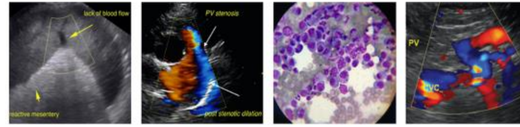
Given that this patient has no reported clinical signs and no right heart enlargement, we do have some flexibility when approaching therapy. Medical management with drugs like Sildenafil and prednisone is typically utilized if the patient is showing respiratory signs or syncope (none noted). If extraction would be a possibility from a financial standpoint, I would consider referral to a local cardiologist for advanced echocardiography and evaluation. If that is not a possibility, utilizing the standard approach to heartworm treatment as dictated by the American Heartworm Society is recommended, including 30 days of doxycycline and heartguard prior to the split immiticide protocol. Please see website and protocol for specific information. There is high risk for thromboembolism in any patient, however those with adult worms seen in the PA are no question at elevated risk. At this time, exercise restriction is paramount, including cage rest with leash walks only, as a worm embolus can be a life-threatening complication of the disease. This should be continued for an additional 6-8 weeks following therapy.

Modifications to this protocol are sometimes elected depending on individual circumstances which may involve fewer injections or a “slow kill” method. These are not; however, our standard recommendation as alternate treatment may not result in effective treatment of the infestation. Given that the patient has been on the slow kill for multiple years and there is still concern for a possible adult worm, highly recommend immiticide at this time.

Following treatment, retest for heartworm disease 6 months after completing the full course of therapy. Anesthesia is NOT advised prior to completing the protocol, as vasodilation can lead to increased risk for an embolus. Prognosis is guarded, as the right heart/MPA changes are often permanent and may cause clinical signs (exertional syncope/dyspnea, right-sided CHF) in the future.

During therapy, there is high risk for a worm embolus and breathing rate and
effort should be monitored closely. Anti-inflammatory prednisone can be used if becomes symptomatic. Patient will be at high risk for developing clinical signs due to pulmonary hypertension with age given the inherent secondary inflammation and damage to the pulmonary vasculature and lungs, and periodic rechecks may be helpful. Monitor for exertional dyspnea or fainting episodes going forward.

Ideally anesthesia would be avoided in this patient until HW negative. If needed, anesthetic risk is considered elevated, particularly should an adult worm be confirmed. The risk is for an embolus to develop, which can occur at any time yet is exacerbated by heavy sedation or gas anesthetics. Should you elect to proceed, premedicate with a vagolytic due to high vagal tone and ensure a normal response is seen. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, isoflurane gas) are recommended. Pre-oxygenate for 5-10 minutes prior to induction and recover in O2 if possible. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Mild IV fluid restriction is recommended to avoid fluid overload.



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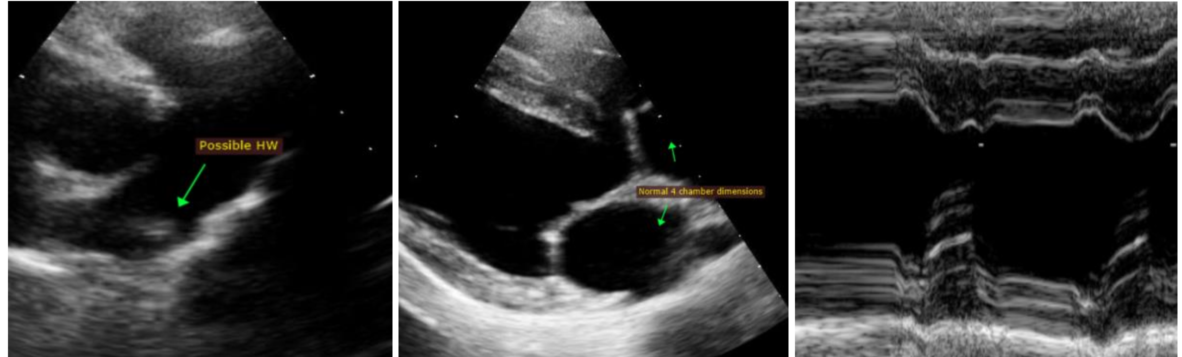
Once heartworm negative, a recheck echocardiogram and chest radiographs are recommended in 6 months to reassess right heart changes.

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)