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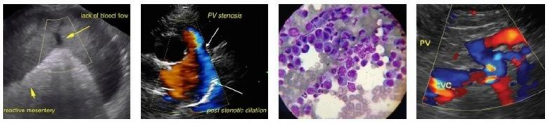

IMAGING PERFORMED BY
pawsonography@gmail.com 530-786-8340

PATIENT
Shadow Jones

SPECIES
Feline

BREED
DSH

SEX
Male Neutered

AGE
16 years

WEIGHT
8.5lbs; 3.9kgs

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

IMAGING PERFORMED BY
Loetitia St-Jacques, LVT/RVT

HOSPITAL NAME
VCA Feline Animal Hospital

REFERRING VET
Dr. Fleming

INVOICE
29164

DATE
2/21/23

PRESENTING CLINICAL SIGNS

History: Weight loss. CKD IRIS stage 3. Hyperthyroidism. Arrhythmia on exam. Assess prior to fluid therapy. Sedated with Torb/midazolam/alfaxalone.
-Abnormal PE/Chem/CBC/UA Results: Urinalysis - USG 1.015 protein 2+ occult blood 2+ RBC 11-20 else unremarkable Urine culture - No growth- Chemistry profile - BUN 77 Creat 4.3 Phos 8.4 else unremarkable; Thyroid hormones - T4 2.8; CBC - Eosino 1344 else unremarkable.

ELECTROCARDIOGRAPHIC FINDINGS

A six lead ECG is available at 25mm/s; 20mm/mV. Complete (3rd degree) AV block is present with P waves seen independent of QRS contraction. The sinus/P wave rate is 200bpm. A ventricular escape rhythm is firing with a heart rate of 68bpm. A 2nd QRS morphology is present, always following the escape beat with an instantaneous heart rate of 200bpm. These are suspected to be VPCs.
ECG diagnosis: Complete AV block with a slow ventricular escape rhythm and VPCs.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The left ventricular walls are irregular with mild hypertrophy. There is a diffusely hyperechoic endocardium consistent with fibrosis. The papillary muscles are mildly remodeled and hyperechoic. The endocardium also appears remodeled. The left atrium is mildly enlarged. The right atrium is normal in size. The right ventricle appears normal. The mitral valve is normal in structure and mobility. Trace diastolic MR. Mild TR. Normal velocity. Blood flow through both the LVOT and RVOT is normal in velocity. No pericardial effusion seen. Small to moderate pleural effusion. No obvious cardiac tumors.

CARDIAC CHART

FELINE CARDIAC PARAMETERS	BODY WEIGHT (kg)	HR (BPM)	IVSd (cm) (Moise, Pipers)	LVIDd (cm) (Moise, Pipers)	LVWd (cm) (Moise, Pipers)	FS (%)	EF (%)
NORMAL PARAMETER	------	150-240	0.35-0.55	<2 (mean 1.5)	3.5-0.55	35-67	80-100
PATIENT	3.9	Var	0.58	1.2	0.65	56	90
FELINE CARDIAC PARAMETERS	**LA/AO** (Boon)	**LA/AO HEART BASE (Swe)** (Abbott)	**LA** 2D short axis Base view (cm) (Abbott)		**LVOT VEL** (m/s)	**RVOT VEL** (m/s)	**E max** (m/s)
NORMAL	<1.5	<1.3	<1.2		<1.6	<1.3	<0.9
PATIENT	NM	1.6	1.6		1.6	1.2	NM

**Note: All measurements based upon multi-modal images and methods. An average value is reported.*
Adapted from June Boon, Veterinary Echocardiography,1998
Abbott J & MacLean H JVIM 2006;20: 111-119, Moise et al. Am J Vet Res 47:1476, 1986. Pipers et al. Am J Vet Res 40:882, 1979.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

HCM is a rule out diagnosis once hyperthyroidism and hypertension have been ruled out. A baseline BP is certainly recommended in this azotemic cat. Regardless, what is seen here is relatively mild from a structural standpoint with mild LA dilation. Serial echocardiography will be necessary to determine progression.

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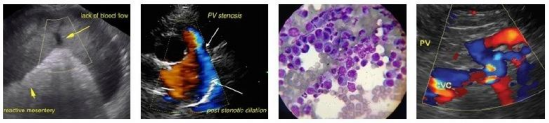

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The ECG is consistent with third degree (or complete) AV block with frequent VPCs. An escape rhythm is present, with a HR of 70bpm. While AV block is considered a progressive arrhythmic disease, many cats will remain asymptomatic for potentially months to years given adequate cardiac output with this heart rate. Should the escape rhythm deteriorate however, progressive bradycardia will be noted with concurrent issues such as collapse or lethargy. An epicardial pacemaker becomes necessary in this scenario, in order to maintain QOL going forward with euthanasia as an alternative option. Sudden death is a clear possibility with arrhythmic cats, and this should be expressed to the owner.

Pleural effusion may certainly be secondary to profound bradycardia; however, the finding of only mild left atrial dilation is somewhat confounding. **Highly recommend sampling of the effusion, to determine possible causes**. If a transudate is identified, this may suggest congestive failure and Lasix would ideally be indicated. This patient is severely azotemic however, and this may be an end-point. Regardless of cause, pleural effusion suggests an unstable patient and referral to a Multi-Specialty Center should be considered given the complicated nature of the case.

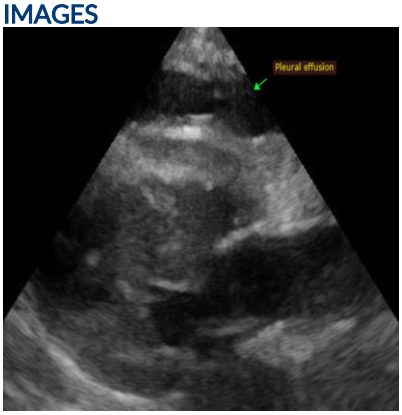
Given the totality of the findings**, this is considered a grave prognosis**, with the complexity of issues. Patient is at high risk for sudden death, acute fluid or Lasix intolerance and/or blood clot events going forward.

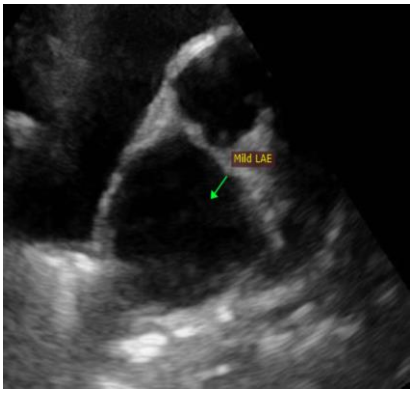
Monitor at home for any respiratory issues or signs of blood clot events (neurologic change, paralysis, etc.). Anesthetic risk is considered high and is not advised. If needed, extreme caution must be used for any IV fluid or steroid therapy. Prognosis is guarded to poor long term, however prior to clinical signs many cats can remain stable for some time.

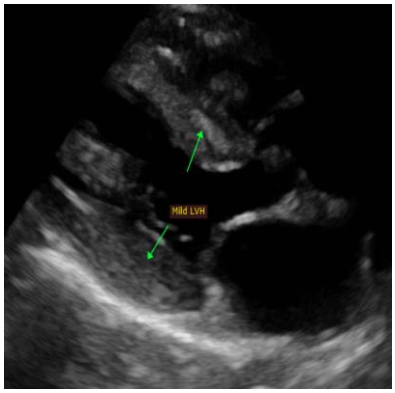
PLAN

Consider euthanasia given the complexity of issues. If the client elects to go forward, a thoracocentesis is recommended for diagnostic purposes. Consider advanced imaging/evaluation, a baseline BP, etc. Consultation with a Cardiologist regarding the arrythmia/pacemaker implementation may be warranted.

IMAGES







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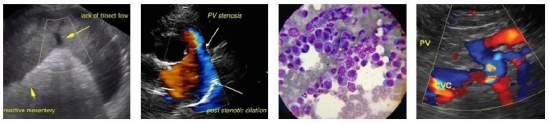

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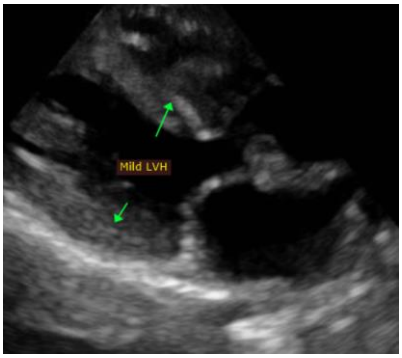

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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