



PATIENT

10683 2nd Chance
Rescue

SPECIES

Feline

BREED

DSH

SEX

Female Spayed

AGE

10 weeks

WEIGHT

3lbs

INTERPRETED BY

Maggie Machen
Lamy, DVM, DACVIM
(Cardiology)

IMAGING PERFORMED BY

Melissa Weisman,
DVM

HOSPITAL NAME

Minnesota Veterinary
Ultrasound

REFERRING VET

Dr. Weisman

INVOICE

26398

DATE

9/15/22

PRESENTING CLINICAL SIGNS

History: Heart murmur. Sedated with Butorphanol 0.1mg/lb IV followed by diazepam at 0.03mg/kg IV.

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The left ventricular wall is normal in dimension. The LV chamber is mildly increased in diastole. A moderate diameter perimembranous VSD is seen just below the aortic valve (diam 0.3cm). The shunt is left to right; max velocity recorded is 4.6m/s. No right to left flow identified. The left atrium is mildly increased in size for this body size. The right atrium is normal in size. The right ventricle appears normal. The MPA is significantly dilated. The mitral valve is normal in structure and mobility. No obvious MR or TR. Blood flow through the LVOT is normal in velocity. Blood flow through the PV is normal in velocity. The PV appears largely normal. Trace PI. There is no pleural or pericardial effusion seen.

CARDIAC CHART

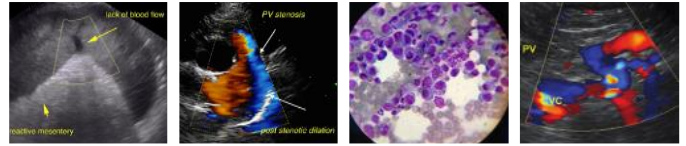
FELINE CARDIAC PARAMETERS	BODY WEIGHT (kg)	HR (BPM)	IVSd (cm) (Moise, Pipers)	LVIDd (cm) (Moise, Pipers)	LVWd (cm) (Moise, Pipers)	FS (%)	EF (%)
NORMAL PARAMETER	-----	150-240	0.35-0.55	<2 (mean 1.5)	3.5-0.55	35-67	80-100
PATIENT	1.4	236	0.40	1.57	0.41	63	93
FELINE CARDIAC PARAMETERS	LA/AO (Boon)	LA/AO 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	1.5	1.3		1.0	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

The cause of the murmur is a perimembranous ventricular septal defect (VSD). The defect is moderate in dimension, with left to right flow. There is evidence of mild left heart volume overload, which while mild is concerning in this very young kitten. Additionally the MPA is significantly dilated which is of unknown origin. While mild MPA enlargement can be seen with increased flow through the vessel (ie relative pulmonic stenosis), this is considered a mismatch for this size shunt. Other possibilities include primary pulmonary hypertension, pulmonic stenosis not appreciated here, etc. Given this mismatch referral to a local Cardiologist for advanced imaging is recommended in this case, to ensure no ancillary issues are present and follow up is advised. No additional congenital defects are visualized.

VSDs in cats have variable outcomes, and lifelong monitoring is advised. The defect in this case appears hemodynamically significant, leading to increased concern for volume overload over time and potentially progression to clinical signs and development of CHF earlier in life. The prognosis is guarded however, as the rate of progression with subclinical cardiomyopathy is highly variable. Patient will always remain at risk for development of congestive signs, arrhythmias and/or sudden death in the future.



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With only mild heart enlargement in a 10 week old kitten, no medications are indicated at this time. Reassessment at 6 months of age is recommended to monitor rate of progression in left heart volume overload as this recommendation will likely change.

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Monitor at home for any associated clinical signs, including respiratory changes or signs of a thrombus.

BREED

DSH

Anesthetic risk is considered mild, however judicious IV fluid rates are advised to avoid fluid overload. Additionally, drugs that stimulate heart rate should be avoided unless clinically necessary (glycopyrrolate, atropine). Avoid vasodilators as this may worsen the obstruction. A reasonable protocol includes opioid/benzodiazepine premedication, propofol induction, isoflurane maintenance. Additionally, steroids should be used with caution lifelong, as with LA dilation there is risk for acute intolerance and fluid retention.

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Plan: Consider referral as discussed. If declined, reassessment at 6 months of age is recommended.

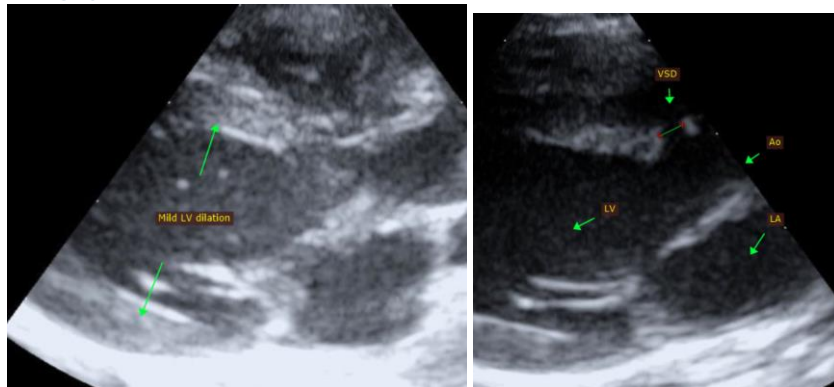
WEIGHT

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IMAGES

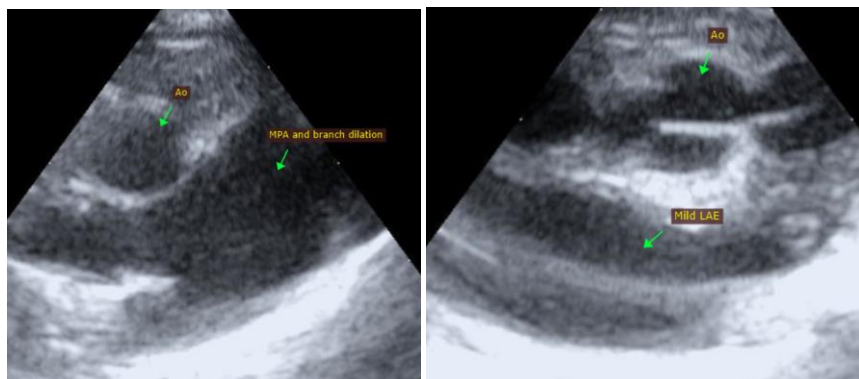
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The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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Thank you for this referral. This report was generated using transcription software, and minor



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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
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