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Clinical Sonography & Telecytology
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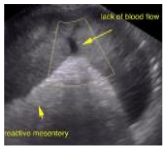
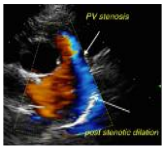
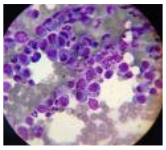
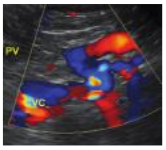

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1-800-838-4268 info@sonopath.com

PATIENT
Shadow Braham

SPECIES
Canine

BREED
Schnauzer

SEX
Female Spayed

AGE
9.8 years

WEIGHT
18.1lbs

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

IMAGING PERFORMED BY
B. Barnes, DVM

HOSPITAL NAME
Westview Veterinary Hospital

REFERRING VET
Dr. Barnes

INVOICE
31893

DATE
7/17/23

PRESENTING CLINICAL SIGNS

History: Problem List: 1) Increased BA Panel (Post 41.1 (N 0-15) (July 2014) 2) Suspect MVD (PV Hypoplasia) on AUS, treated with Urso, Denamarin, Hepatosupport Vitamins and improved) 3) Worsening BA Panel (Post 85.5 (N 0-15) (July 2016) 4) Increased Cardiopet BNP 1109 (N 0-900)(July 2016) 5) Repeat AUS no shunts seen, MVD suspected would need BX to confirm (Aug 2016) 6) Echo Mild MV Dysplasia (Aug 2016) 7) A/G Removal (May 2017) 8) Cystic Bladder Calculi and Urethral Calculi, Cystotomy and urethral flush of small calculi (April 2018) 9) Stone Analysis Mixed, Struvite 90% Ca phos Carbonate 10% 10) Cardiopet BNP 1456 (N 0-900) Hx of Mild MV dysplasia (Sept 2020) 11) UTI occult (Oct 2020) 12) Small eyelid mass upper right mid to lateral location (suspect Meibomian Gland tumor) 13) Small Dermal mass 2-3mm cranial to right hip 14) Dental disease. Bladder stones seen on x-rays. Dog is going for lithotripsy treatment of the bladder stones , will need G/A

ECHOCARDIOGRAM FINDINGS

2D, m-mode, color flow and doppler imaging is available. The mitral valve is diffusely thickened with mild prolapse into the left atrial lumen. There is severe eccentric mitral regurgitation present. The MR velocity is normal. There is moderate to severe left atrial enlargement. E wave velocity suggest elevated filling pressures (1.6m/s). There is mild left ventricular dilation. Left ventricular systolic function is mildly depressed. Mild right atrial and ventricular dilation (subjective). Mild thickening of the tricuspid valve with mild TR. Velocity consistent with early pulmonary hypertension. There is normal systolic flow velocity across the aortic valve. The aortic valve appears trileaflet with normal mobility. The main pulmonary artery is normal in diameter. The pulmonic valve is normal in appearance. Trivial PI. No pericardial/pleural effusion or cardiac masses are seen.

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	5.9	3.0	1.8	1.95	33	62	0.25
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	NM	1.3	1.0	8.2	3.0	3.8	1.62
*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)
				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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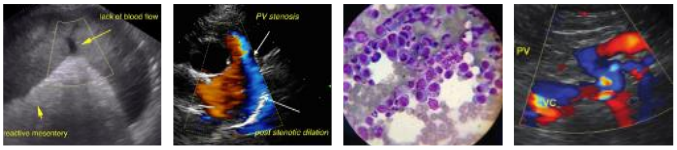

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Chronic degenerative valve disease causing severe mitral and mild tricuspid regurgitation. The LA is significantly dilated indicating a high risk for clinical signs going forward. Mild pulmonary hypertension is noted, which of unknown significance without reported symptoms. No additional issues are identified.

With this degree of left heart changes, the risk for spontaneous congestive heart failure is elevated and cardiac supportive medications are indicated as below. A weak diuretic (spironolactone) is included given high risk for decompensation in the future even with no reported symptoms. **The LA filling pressures appear significantly increased, and screening CXR are recommended to assess for early congestion.** Assessment of progression in the future will help predict long term outcome, however prognosis is guarded at this stage (late B2/C). Unfortunately, the patient will always be at risk for recurrent CHF, development of arrhythmias/LA tear, syncope and/or sudden death in the future.

Close monitoring for development of associated clinical signs (development of a cough, labored breathing, exercise intolerance or worsening collapse episodes) is recommended. Monitoring of sleeping breathing rates is recommended as the best way to screen for CHF at home.

Elective anesthesia is not advised, as there is high risk for complication. If necessary, consider referral to an Anesthesiologist. Cardiac protective drug choices (opioid/benzodiazepine premedication, propofol or alfaxalone induction, iso or sevoflurane gas) are recommended. Baseline CXR are strongly recommended prior to proceeding. Pre-oxygenate for 5-10 minutes prior to induction and recover in O2 cage. Monitor for arrhythmias, hypotension, and hypoxia both intra and post-operatively and intervene as necessary. Moderate IV fluid restriction is recommended to avoid fluid overload. Avoid heart rate stimulating drugs such as atropine unless clinically indicated.

Omega fatty acid supplementation and mild salt restriction may also be of some long-term benefit.

PLAN

A screening BP and CXR are recommended. Institute Pimobendan 0.3mg/kg PO q12h. Institute ACE-I (benazepril or enalapril) 0.5mg/kg PO q12h. Institute spironolactone 1-2mg/kg PO q12h.

Monitor renal values in 1-2 weeks, then every 3-4 months lifelong to ensure tolerance of medications.

A recheck echocardiogram is recommended in 4-6 months to screen for progression, sooner if clinical signs arise.

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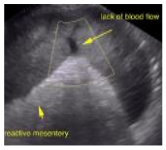
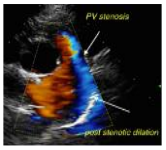
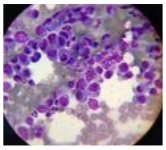
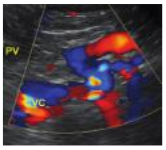

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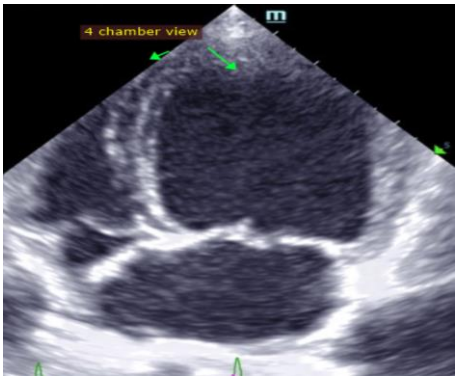
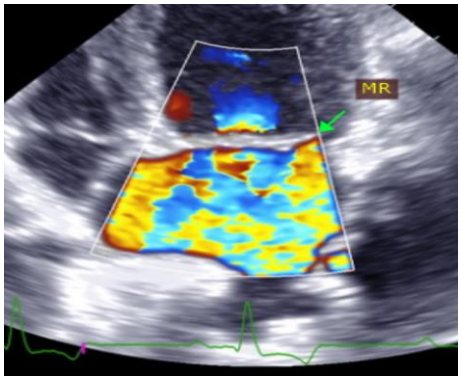
IMAGES





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)
info@sonopath.com