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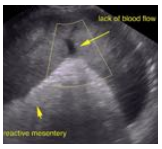

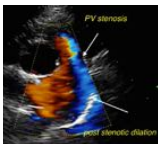

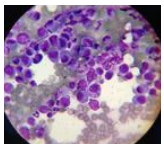
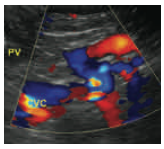

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1-800-838-4268 info@sonopath.com

PATIENT

Luca Mayoral

SPECIES

Canine

BREED

Boxer

SEX

Neutered male

AGE

11 years

WEIGHT

78 lbs

INTERPRETED BY

Eric Lindquist, DMV DABVP, Cert. IVUSS

IMAGING PERFORMED BY

Dr. Ferrer

HOSPITAL NAME

Paseos VC

REFERRING VET

Dr. Ortiz

INVOICE

95448

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1/20/22

PRESENTING CLINICAL SIGNS

Presented for an elective mass removal and when the PE was done, an arrhythmia was noticed. The surgery was postponed to perform more diagnostics. EKG was done and sent for interpretation and this echo was done to further evaluate. EKG - revealed arrhythmia sent to cardiologist LUCA MAYORAL 22985 Canine | Boxer | Not Specified | 10Yr 5Mo | 82Lb PATIENT HISTORY Presenting Complaint:Cardiology Consult History:External studies to compare? (No), Clinical signs (arrhythmia or ECG abnormality), Sedation (no), Additional history (patient came in for elective lumpectomy, and the arrhythmia was noticed, otherwise ok at home), Patient appetite (stable) Physical Exam:T (101.8F/38.8C), HR (162), R (panting), MM (pink), Pulse quality (105), Murmur (no), Cardiac rhythm (irregular), IRREGULAR rhythm (sinus arrythmia), Patient attitude/demeanor (anxious), BCS (5), BCS changes (stable) Diagnostics:BP (162), Creatinine (1.3), HWT (negative), Completed diagnostics (none) Treatment:Current cardiac medications (HEARTGARD IMMUNITY), Other current medications (none) Other:Needs anesthesia recommendations (Yes), Planned procedure (mass removal), Additional information (no) SPECIALIST REPORT HEART RATE AND RHYTHM: Heart Rate: 165 ECG submitted 19 Jan 2022: A 6 lead ECG is submitted for review Heart rate: 165 beats per minute. Heart rhythm: Frequent presence of ventricular premature complexes. FINDINGS: The VPCs are of left bundle branch block morphology, which is consistent with a right ventricular origin. In this breed, this is strongly suggestive of the presence of Arrhythmogenic Right Ventricular cardiomyopathy (ARVC). The arrhythmia in this tracing appears to be low grade and therefore unlikely to cause any hemodynamic effect during the ECG, however, it is not fully representative of the severity of the arrhythmia at different moments of the day or during certain activities. ASSESSMENT: ARVC can present either as an arrhythmia alone, associated with dilated cardiomyopathy, and in a high proportion of cases with sudden death. Staging of the severity of the disease is recommended to decide the best treatment options for the patient. RECOMMENDATIONS: Radiographs of the thorax are recommended to rule out the presence of congestive heart failure. An echocardiogram, if possible, is recommended to assess the systolic function of either ventricle and more accurately measure the size of the different cardiac chambers. A baseline set of laboratory studies (CBC/Chem/UA) are advised if not already performed. Measuring the blood pressure is indicated. As stated above, isolated VPCs are rarely hemodynamically significant, so based on this ECG trace alone, no treatment would be recommended for this patient at this stage. However, further assessment is recommended with a 24 hours ambulatory Holter monitor. Holters can be organized through your local cardiologist or through our technical assistance service for USA patients only. No treatment is recommended, but depending on the results of the tests suggested above a more accurate treatment plan will be designed for this patient. There is a moderate increase risk of anesthesia given the cardiac disease present. Anesthetic recommendations for this patient would include the avoidance of ketamine, telazol, dexdomitor (or other alpha-2 agonists), and acepromazine. The use of atropine and glycopyrrolate are typically reserved for use if hemodynamically significant bradycardia develops during anesthesia. Consider premedication with an opioid/benzodiazepine and induction with Propofol, Etomidate or Alfaxan. If IV fluids are used then recommend reducing to ¼ surgical rates. If possible, heart rate, rhythm, pulse oximetry and blood pressure should be monitored during the procedure. Instructing the owners to monitor and record the resting/sleeping respiratory rate at least once weekly will help anticipating congestive heart failure. This should normally be between 10 and 30 rpm and should prompt repeating/obtaining thoracic radiographs if these are consistently above 40-45 rpm.
Abnormal PE/Chem/CBC/UA Results: Examination inspection, palpation and auscultation. Examination included: the head, eyes, ears, nose, and oral cavity; lymph nodes; the thorax; the abdomen; and the integumentary, reproductive, and musculoskeletal systems. The following abnormalities were observed: patient came in for elective mass removal An arrhythmia was auscultated.

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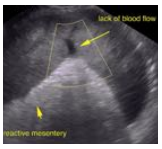
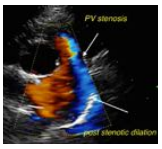
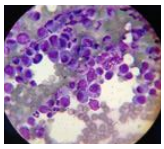
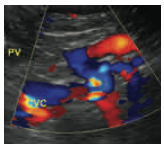

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ULTRASONOGRAPHIC EXAMINATION OF THE HEART

The echocardiogram in this patient demonstrated normal **left atrial** size based on 3 separate methods of LA evaluation. The cranial and caudal **mitral** valve leaflets presented normal linear structure, extension in systole, and union in diastole with normal kinesis. The **left ventricle** presented thicknesses with linear contour and was not dilated nor restricted. The **myocardium** presented normal echogenicity without subjective evidence of significant fibrotic or ischemic disease. **Contractility** of the ventricular walls was adequate and in normal range for this patient evidenced by the fractional shortening measurement and subjective evaluation of the different regions of the myocardium. The **left ventricular outflow** tract demonstrated normal laminar flow and subjective structural integrity. The **right atrium** and auricle revealed normal size, structure and content. No evidence of masses was noted. **Tricuspid** valvular assessment demonstrated adequate linear morphology and kinesis. The **right ventricle** was of normal size (1/3 diameter of LV), chordae structure, myocardial echogenicity and thickness. **Pulmonary outflow** tract assessment revealed normal valve structure, laminar flow, and diameter (approx.1:1 pa/ao ratio). No visible **pericardial** or free pleura fluid was noted. The cranial **mediastinum and pericardial and extra-cardiac regions** were free of masses in the visible window.

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			1.2	1.5	38	68	0.5
CANINE CARDIAC PARAMETERS	**HR** (BPM)	**AV VMAX** (m/s)	**PV MAX** (m/s)	**BODY WEIGHT**	**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				
PATIENT		1.25	0.95	78 lbs	4.5	4.32	

ULTRASONOGRAPHIC FINDINGS

Normal echocardiogram.

Normal volume and function.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

There was no evidence of structural of functional disease. I recommend 24 hour Holter monitor in this patient to assess the characteristics of the arrhythmogenic activity over a 24 hour period to assess if therapy is recommended.

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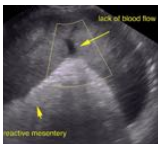

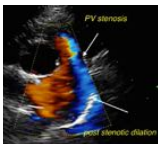

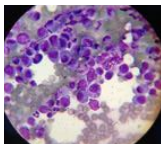
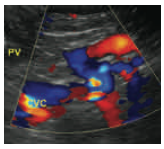

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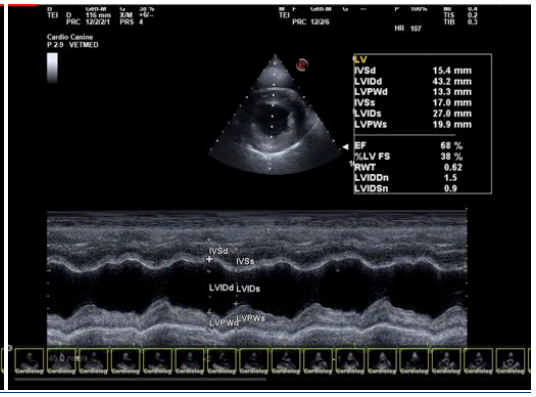

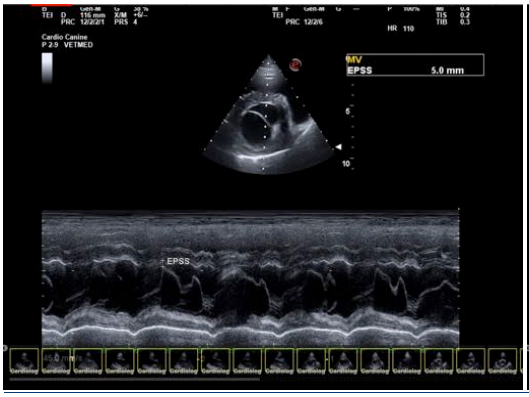

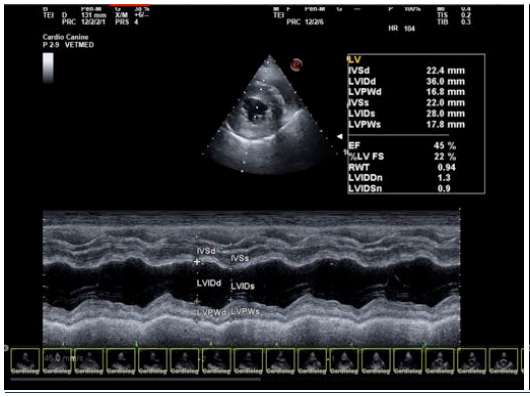

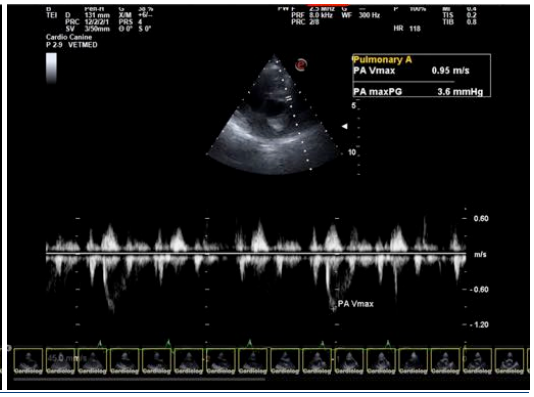

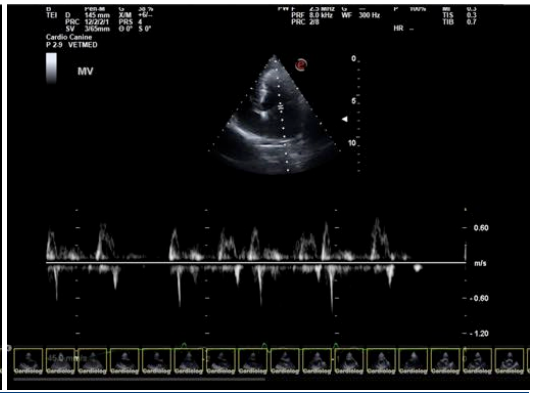

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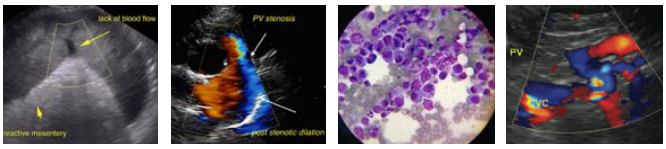

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

Eric Lindquist, DMV, DABVP, Cert. IVUSS, CEO of SonoPath.com
info@SonoPath.com