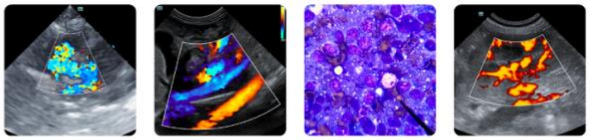

PATIENT

Charlie Caban

SPECIES

Canine

BREED

Beagle

SEX

Neutered Male

AGE

8

WEIGHT

54

INTERPRETED BY

Eric Lindquist, DMV, DABVP (Canine & Feline), Cert. IVUSS

IMAGING PERFORMED BY

Jenn

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DATE

3/3/26

PRESENTING CLINICAL SIGNS

History: Came in for respiratory distress Hx of heart dz fluid in lungs Current meds Spirolactone 25mg 1 am 1/2 pm Vetmedin 5mg 1 1/2 BID Sildenafil 100mg 1 am 1/2 pm

ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

CANINE CARDIAC PARAMETERS	MR VMAX (m/s)	TR VMAX (m/s)	LA/AO (M-Mode)	LA/AO (Heart Base; Swe)	FS (%)	EF (%)	EPSS (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	Up to 1.6	28-40	40-100	<0.6
PATIENT		5.0	1.2		30		0.1
CANINE CARDIAC PARAMETERS	**HR** (BPM)	**AV VMAX** (m/s)	**PV MAX** (m/s)	**BODY WEIGHT**	**LAD** LA MAX 4 Chamber	**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			.90	54	3.0	2.4	--

Cardiac Presentation

The cardiac presentation in this patient presented severe right atrial and right ventricular dilation with over-circulation of the right heart. Severe tricuspid insufficiency was noted. Left atrium and left ventricle were subnormal in volume. Flattening of the left ventricular septum was noted. No pericardial or pleural effusion was noted. Pulmonary artery was dilated with pulmonic insufficiency. Hepatic vein dilation was also noted.

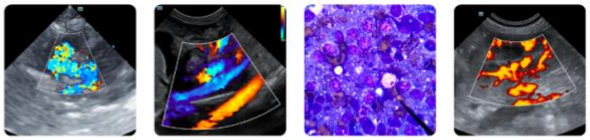
Urinary System

The **urinary bladder**, trigone, and pelvic urethra presented normal thicknesses and normal tone. The ureters were not visible which is normal. No uroliths or sediment were visualized and anechoic urine was present. No evidence of inflammatory or neoplastic changes were noted. Ureteral papillae were normal.

The **kidneys** revealed normal size and structure, corticomedullary definition and ratio for this age. The cortices presented largely uniform texture with normal echogenic relationship to liver and spleen. Medullary structure differed distinctly from the cortex and no evidence of pelvic dilation was present. The capsules were acceptably uniform without significant irregularities. The right kidney measured 5.52 cm. The left kidney measured 6.55 cm.

Adrenal Glands

The regions of the **adrenal glands** were not visualized.



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Spleen

The **spleen** presented a smooth homogeneous parenchyma hyperechoic to liver and renal cortical parenchyma. The capsule was smooth without noticeable expansion or deviation from within the spleen or adjacent pathology. The splenic vasculature demonstrated normal volume without signs of congestion or thrombosis. No sonographic evidence of acute or chronic inflammatory, neoplastic, or infarctual changes were noted.

Liver

Hepatic vein dilation was noted with uniform vacuolar hepatopathy pattern. Minor hepatic remodeling was noted. The gallbladder and common bile duct were unremarkable.

Gastrointestinal

Examination of the **gastrointestinal tract** revealed a stomach and intestine free of stasis, of normal wall thickness, acceptable curvilinear mural detail, and peristaltic activity. Small and large intestine demonstrated normal luminal chyme and stool consistency respectively. No obstructive or overt infiltrative disease was noted. No associated abnormal lymphatic activity was noted.

Pancreas

The base and limbs of the **pancreas** were observed to be largely isoechoic to surrounding omental fat. Pancreatic duct and capsular contour were acceptably normal and parenchyma respected normal curvilinear patterns. No overt evidence of active inflammatory or neoplastic disease was noted.

Free Abdomen

Slight **free fluid** was noted.

ULTRASONOGRAPHIC FINDINGS

- Severe pulmonary hypertension
- Right sided volume overload
- Vacuolar hepatopathy pattern, hepatic vein dilation
- Slight free fluid

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Recommend managing for right sided heart failure and likely primary respiratory disease. Continuation of the Vetmedin, spironolactone and sildenafil is indicated, yet increasing sildenafil by 0.5 mg/kg BID, and adding an ACE inhibitor 0.5 mg/kg SID. Prognosis is guarded to poor.

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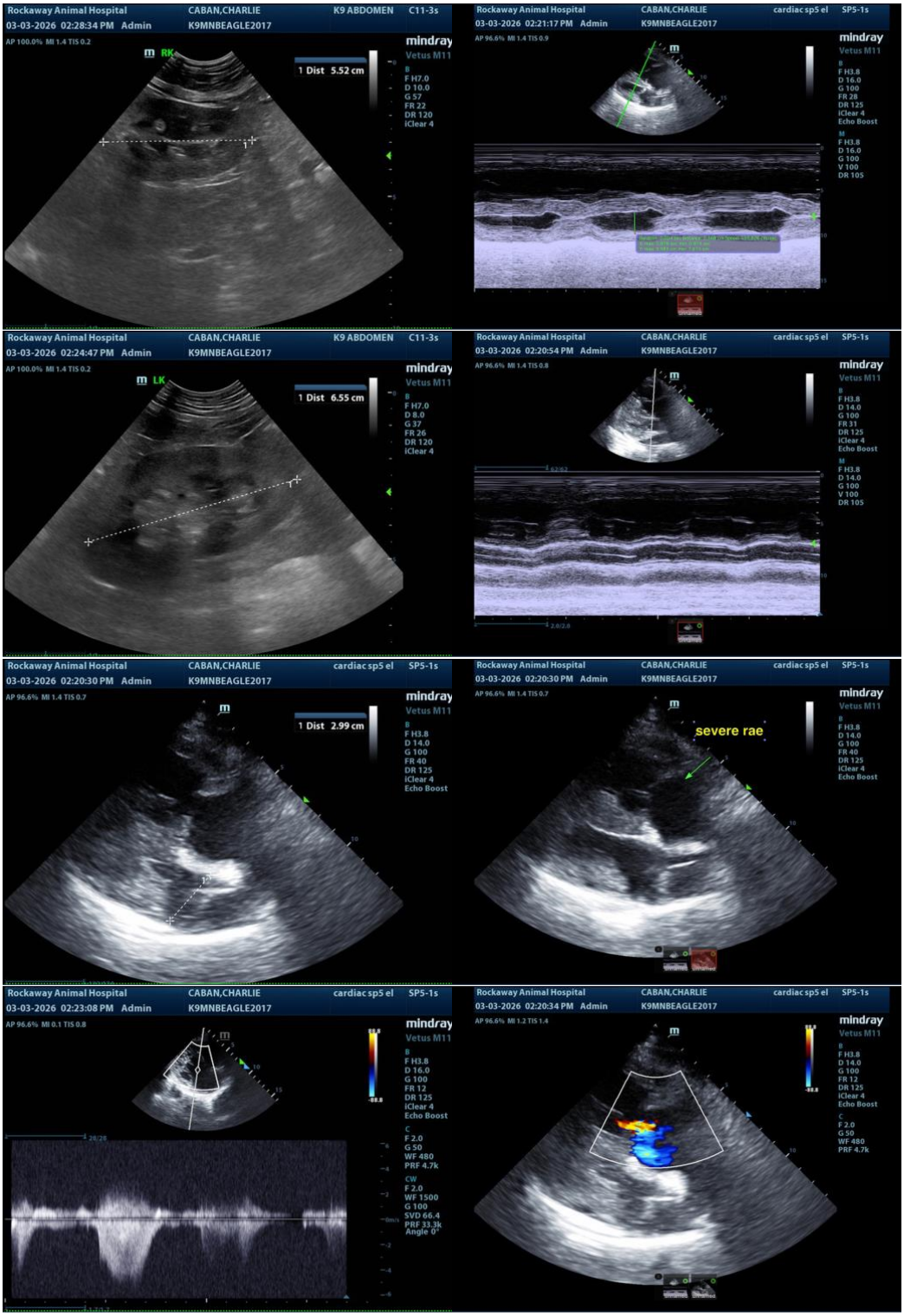

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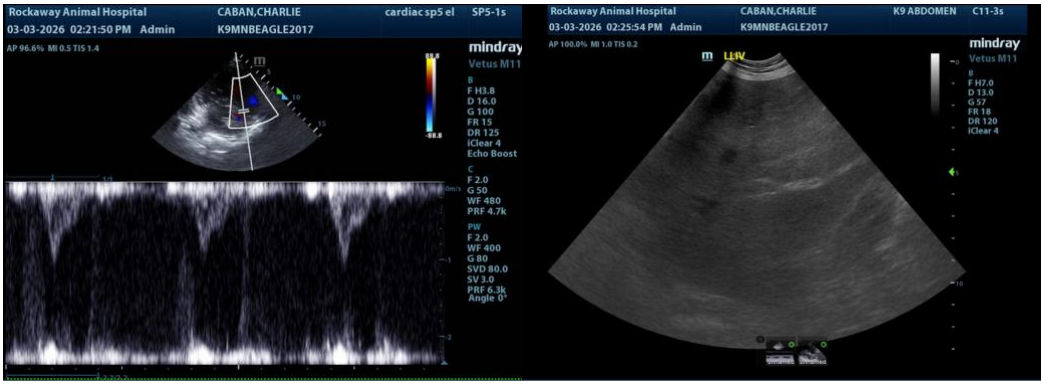


The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

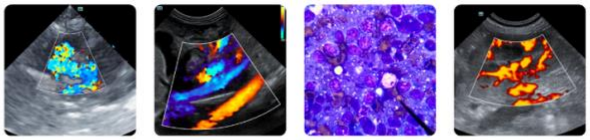
Eric Lindquist, DMV, DABVP(CFM), Cert. IVUSS,
CEO, Owner, Founder -- SonoPath.com
info@SonoPath.com

Right Heart Disease-General Considerations

http://www.sonopath.com/RightHeartDisease

Description: Right heart disease is often an incidental finding, which can be either cardiogenic or secondary to respiratory or systemic disease. The coughing patient with right heart disease may present with primary respiratory disease (i.e., bronchial collapse, collapsing trachea, pneumonitis) and suffer from secondary pulmonary hypertension (PHT). Concurrent mitral valve disease and chronic left-sided congestive heart failure (CHF) might also lead to PHT. The dyspeic patient with right heart enlargement might have pulmonary hypertension due to airway disease, chronic CHF, parenchymal lung disease (e.g. pulmonic fibrosis), or a cardiac shunt with secondary PHT and shunt reversal.

Primary cardiac causes of right heart enlargement include: tricuspid dysplasia/degeneration; pulmonic stenosis; pulmonic insufficiency; atrial or septal defects; patent ductus arteriosus; right auricular masses; and pericardial peritoneal diaphragmatic hernias. The second most common cause of right-sided enlargement is secondary PHT, which results in high-velocity tricuspid insufficiency (TR vel.>2.8 m/sec) and pulmonic insufficiency due to diseases that cause increased pulmonary vascular resistance or increased pulmonary wedge pressures. The most common cause of secondary PHT is left-sided heart failure (LHF), which presents radiographically as a more globoid-shaped heart with marked left atrial and ventricular enlargement. There are also signs of left-sided CHF as opposed to a simple prominent cranial waist or reverse D radiographic presentation.



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Secondary, non-cardiac causes of PHT include: acute or chronic respiratory disease; pulmonary thromboembolic disease; thoracic neoplasia; excessive thoracic fat deposition (e.g. Pickwickian syndrome, which leads to chronic hypoxia); brachycephalic syndrome; high altitude disease; heartworm disease; and primary vascular disease.

Clinical Signs: The most common presenting symptoms of right heart disease are collapse, syncope, intermittent or constant acute respiratory distress (e.g. thromboembolic disease), and exercise intolerance.

Diagnostics: Physical examination may reveal a right-sided apical heart murmur and/or a cranial left heart murmur, a split S2, jugular distension, ascites, and signs consistent with respiratory disease (i.e., cough, wheeze, tracheal collapse, tachypnea). Radiographic findings may reveal an enlarged right atrium, right ventricle, and/or primary/secondary branches of the pulmonary artery. In cases of PHT, an enlarged or engorged pulmonary artery is often present. Tortuous arteries or those that suddenly terminate can indicate the presence of thromboembolic disease or heartworms. An interstitial pattern might indicate the presence of pulmonary parasitism or primary interstitial lung disease. Pulmonic stenosis is suspected if the pulmonic segment is enlarged. ECG findings include tall P and S waves with a right axis shift.

Treatment: Please refer to the chapter “Pulmonary Hypertension” for therapeutic recommendations.

References:

Oyama MA, Rush JE, Rozanski EA, et al. Assessment of serum N-terminal pro-B-type natriuretic peptide concentration for differentiation of congestive heart failure from primary respiratory tract disease as the cause of respiratory signs in dogs. *J Am Vet Med Assoc* 2009;235:1319-25.

Rozanski E. Interstitial lung disease in small animals. Proceedings from American College of Veterinary Internal Medicine Forum, Denver, CO, June 15-18, 2011.

Zoia A, Augusto M, Drigo M, Caldin M. Evaluation of hemostatic and fibrinolytic markers in dogs with ascites attributable to right-sided congestive heart failure. *J Am Vet Med Assoc* 2012;241:1336-43.