SonoPath
Clinical Sonography & Telecytology
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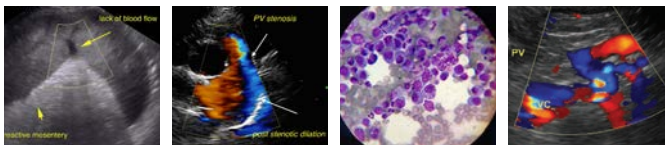

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1-800-838-4268 info@sonopath.com

PATIENT
Rocky Goed

SPECIES
Canine

BREED
Chihuahua

SEX
Neutered Male

AGE
15 Years

WEIGHT
11.3 Pounds

INTERPRETED BY
Eric Lindquist, DMV
DABVP, Cert. IVUSS

IMAGING PERFORMED BY
Shari Reffi, CVT

HOSPITAL NAME
Newton Vet Hospital

REFERRING VET
Dr. Chun

INVOICE
40277

DATE
8/10/22

PRESENTING CLINICAL SIGNS

Respiratory distress, hypoxic Sp02 84%, heart murmur, pulmonary edema. Current meds: Furosemide 2mg/kg IV,

ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

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			NM	1.35	39	73	0.2

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	133	1.1	0.88			1.78	

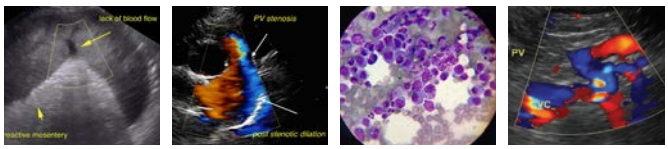
Cardiac Presentation

The **echocardiogram** presented a prominent **right heart** with mild **right ventricular** hypertrophy and normal **right atrial** size. Significant tricuspid insufficiency noted at 4.0 m/sec, consistent with moderate to severe pulmonary hypertension. No evidence of neoplasia was noted in the right auricle, or elsewhere in the heart. The **pulmonary artery** was uniformly prominent with mildly depressed pulmonic velocity measured on PW Doppler. No overt heartworms were noted in the main or visible deep pulmonary arteries. Yet, theoretically heartworms could be present in the deep pulmonary vasculature out of visible sonographic range. More likely, however, this prominent right heart is due to excessive intra-thoracic pressures caused by chronic respiratory disease or potentially excessive intra-thoracic fat (Pickiwickian syndrome). The **left heart** demonstrated a linear **ventricular septum**. Contractility was functionally adequate demonstrated by the FS% measurement. Mitral insufficiency noted, not clinically significant. No significant **left atrial** dilation was noted. The **left ventricular outflow** demonstrated normal flow patterns and velocities through the aortic valve. No evidence of tumor, pericardial or pleural effusion was noted. The visible **extra-cardiac** tissues were uniformly linear without evidence of masses, infiltrative or inflammatory mediastinal tissue. No evident arrhythmic activity was noted during the exam.

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 largely normal size and structure, corticomedullary definition and ratio (cortex 1/3 of medulla) were essentially maintained with some age-related loss of curvilinear patterns regarding



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the capsule and C/M junction. The cortices presented largely uniform texture with some increased echogenicity expected for his age patient. Medullary structure differed distinctly from that of the cortex and no evidence of pelvic dilation was present. The left kidney measured 3.31 cm. The right kidney measured 3.64 cm.

Adrenal Glands

A **right adrenal** mass was noted measuring 3.0 cm x 1.2 cm at the cranial pole and 1.52 cm at the caudal pole.

The **left adrenal gland** was enlarged and irregular, measuring 2.13 cm x 1.18 cm at the caudal pole.

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

The **liver** images submitted revealed subjectively normal liver size, contour, and structure. Parenchymal echogenicity was naturally coarse and hypoechoic to the spleen. Vascular and biliary tracts were of normal volume with no evidence of congestion. The gallbladder presented acceptably thin walls with primarily anechoic content. The cystic and common bile ducts were normal. No pathological hepatic lymphadenopathy was evident. No overt structural evidence of inflammatory, infiltrative or regenerative pathology was evident.

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.

Other

Comet tail lung pattern noted in the lung fields.

ULTRASONOGRAPHIC FINDINGS

- Cor pulmonale with pulmonary hypertension
- Multifocal comet tail lung pattern
- Right adrenal mass, enlarged irregular left adrenal gland
- Age related renal changes

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Hepatic veins were not dilated, and therefore no right-sided heart failure present. Primary respiratory disease should be the focus in this patient. SARS, pneumonitis, or thromboembolic disease all possible.

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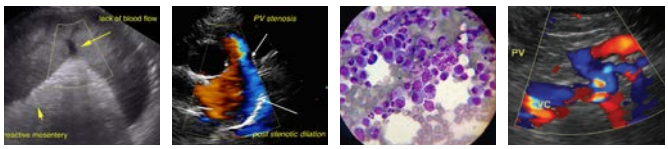

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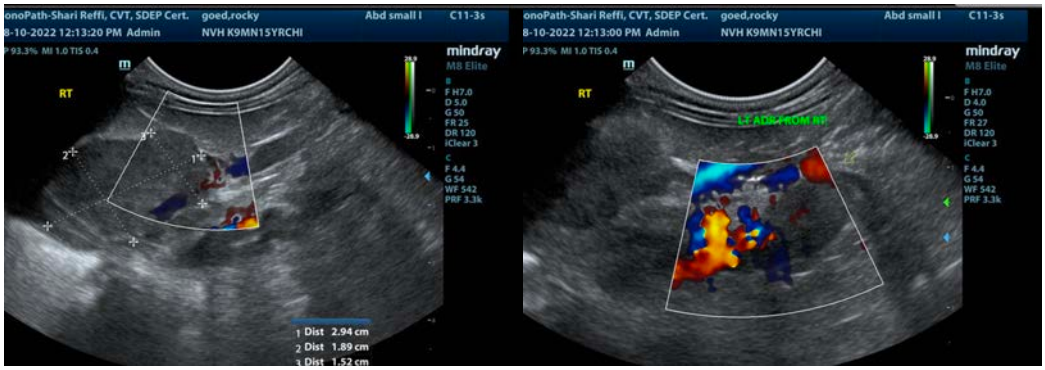
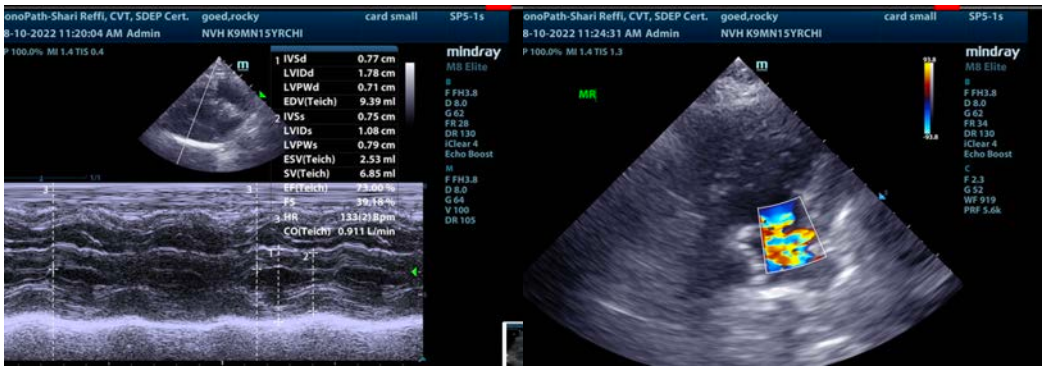
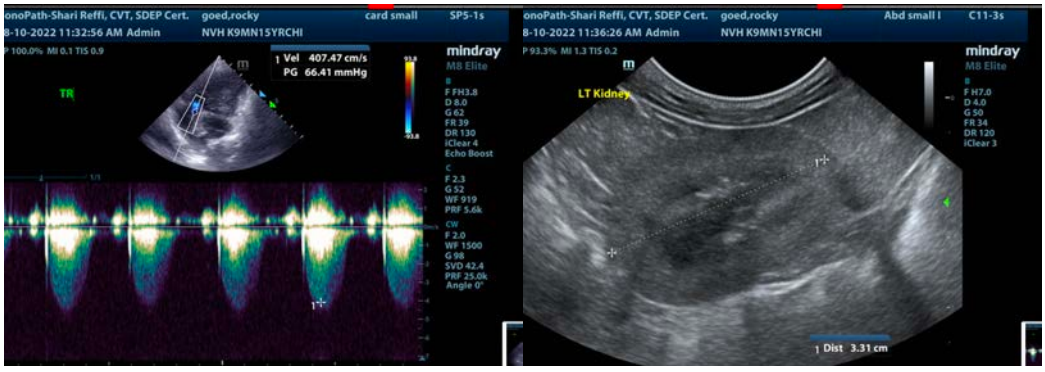
Sildenafil could be considered at 1mg/kg BID.
Blood pressure measurements recommended. PDH versus right adrenal neoplasia possible. Urine catecholamine warranted if hypertension is an issue. Prognosis is guarded. Primary respiratory protocol with oxygen therapy, broad-spectrum antibiotics, bronchodilators warranted. Further definition of the right adrenal pathology warranted. The right adrenal does appear resectable. If the patient appears cushingoid, eventual workup for adrenal dependent Cushing's or PDH could be considered. No evidence of invasion in the vena cava.







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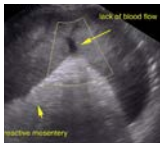
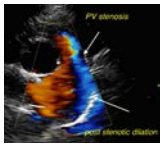
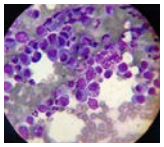
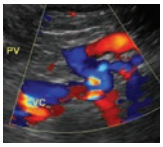

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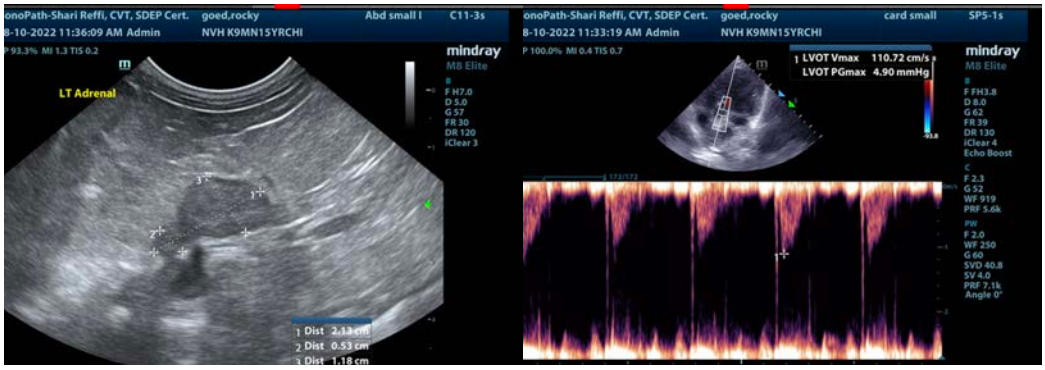

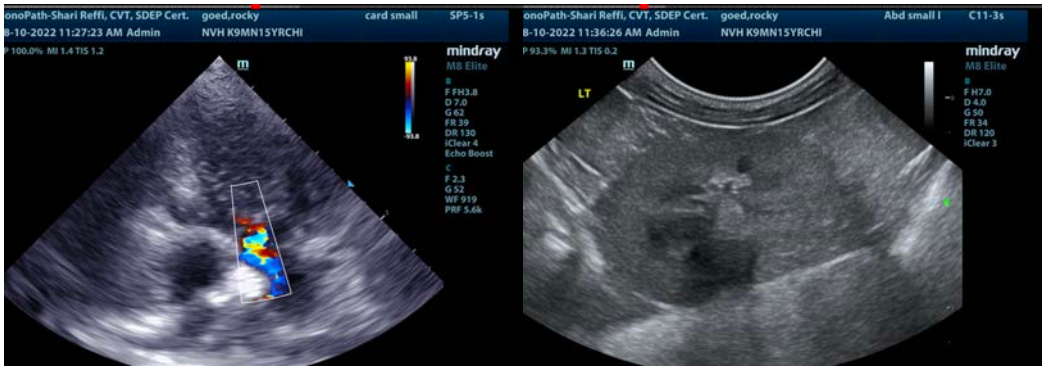

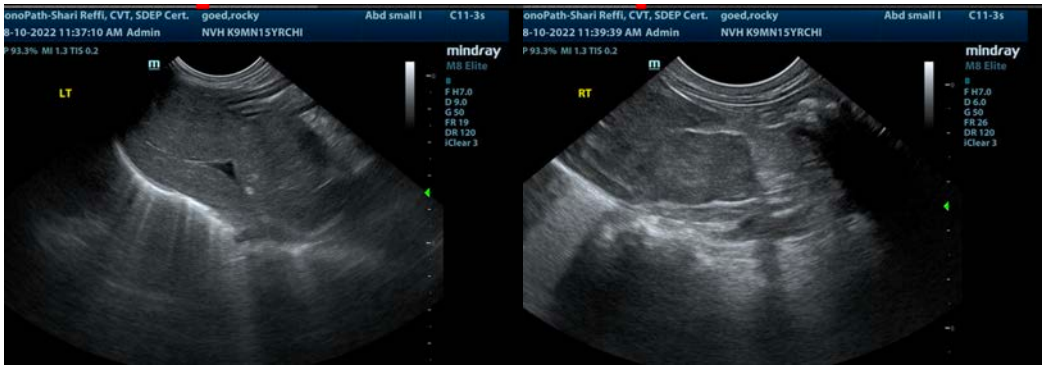

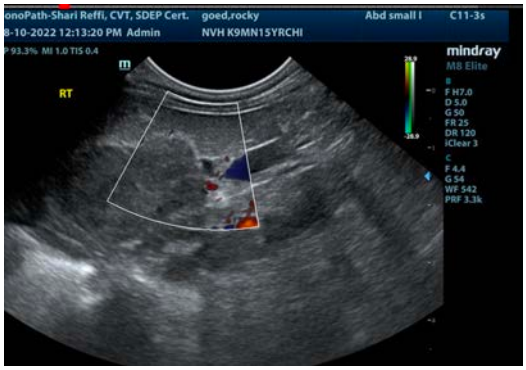

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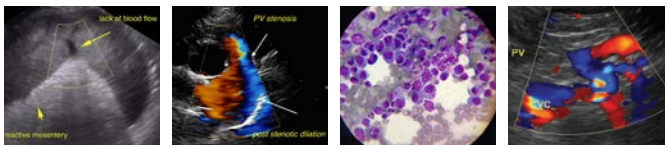

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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