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Clinical Sonography & Telecytology
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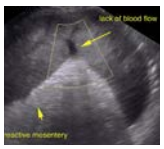
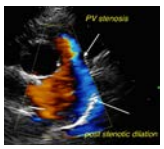
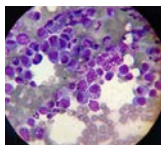
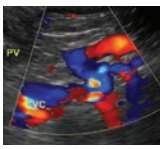

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1-800-838-4268 info@sonopath.com

PATIENT
Oliver Jouravleva

SPECIES
Canine

BREED
Puggle

SEX
Neutered Male

AGE
10 Years

WEIGHT
43 Pounds

INTERPRETED BY
Eric Lindquist, DMV
DABVP, Cert. IVUSS

IMAGING PERFORMED BY
Shari Reffi, CVT

HOSPITAL NAME
Animal General

REFERRING VET
Dr. Castimore

INVOICE
38589

DATE
6/10/22

PRESENTING CLINICAL SIGNS

Respiratory distress, coughing, tires easily, less active. Rads: Cranial R chest opacities. Current meds: Temaril P PRN, Convenia

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			1.15	1.46	38	69	NM

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	127	2.06	1.6		2.4	3.32	

Cardiac Presentation

The echocardiogram in this patient demonstrated normal **left atrial** size based on 3 separate methods of LA evaluation. Mitral insufficiency noted, compensated. No volume overload. 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. Moderate **tricuspid** insufficiency noted up to 3.0 m/sec. 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).

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 residual prostate was uniform at 0.8 cm.

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 6.18 cm. The left kidney measured 5.03 cm.

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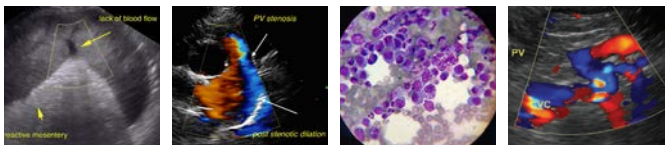

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Adrenal Glands

Both **adrenal glands** were visualized and recognized as having normal shape, size, position and echogenicity for this breed. The phrenic vasculature, glandular echogenicity and detail were unremarkable. Capsule, cortex, and medullary definition were normal for this age patient. The right adrenal gland measured 1.91 cm x 0.59 cm at the cranial pole and 0.47 cm at the caudal pole.

The **left adrenal gland** revealed a nodular cranial pole at 1.28 cm at the cranial pole, 0.44 cm at the caudal pole, and 1.85 cm in length.

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** presented a uniform vacuolar hepatopathy pattern. However, the liver extended cranially through the diaphragm along with falciform fat, and continued with the pericardium, consistent with diaphragmatic hernia. This is likely a congenital issue. However, it may be sliding and causing clinical signs. Minor hepatic vein congestion noted. The gallbladder was not visualized, likely residing in the thorax.

Comet tail lung pattern noted through the diaphragm, indicative of alveolar disease.

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.

PRIMARY FINDINGS

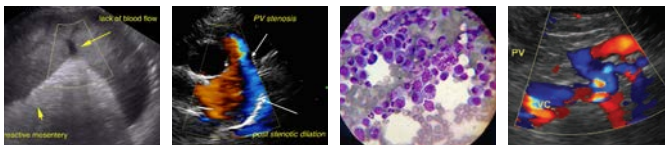
- Stage B1 valvular disease
- Tricuspid insufficiency/pulmonary hypertension
- Pericardial diaphragmatic hernia of liver and falciform fat, likely congenital origin, concurrent respiratory disease likely
- Mild passive congestion liver pattern

SECONDARY FINDINGS

- Left adrenal nodule – likely adenoma, minor potential for carcinoma or pheochromocytoma.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Pericardial involvement of the diaphragmatic hernia likely, as the heart was tilted, and isoechoic fat was noted in the pericardium. Primary respiratory protocol warranted. The diaphragmatic hernia is likely



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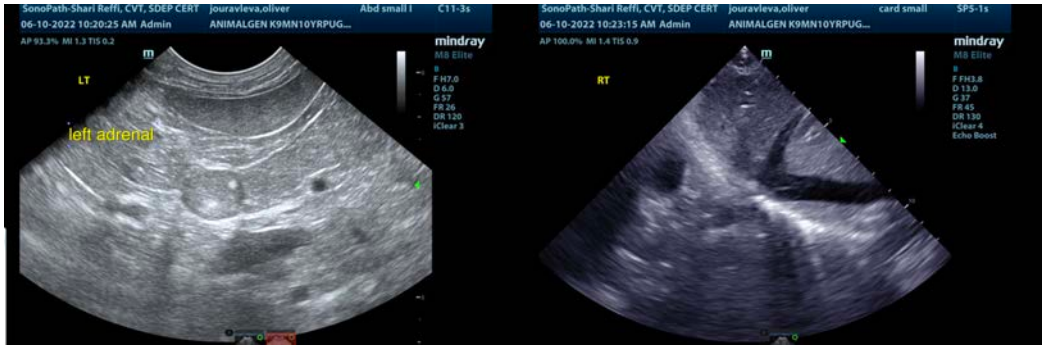
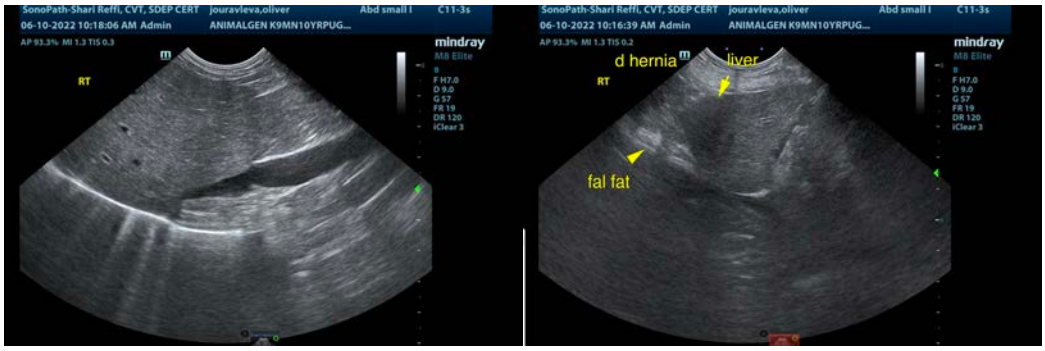
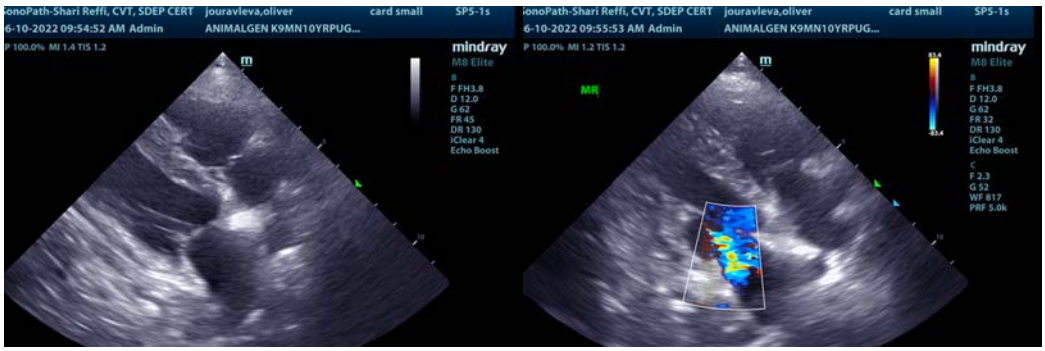
not a new issue. However, given the patient history, primary respiratory disease complicated by the diaphragmatic hernia is likely. Concurrent hypertension may be causing exercise intolerance. Recommend primary respiratory protocol with bronchodilators, broad-spectrum antibiotics. Sildenafil trial could be considered at 1mg/kg BID x2 weeks and recheck echocardiogram at that time. Serial blood pressures warranted. If hypertension is present, urine catecholamine would be indicated. Chest/abdominal CT would be ideal for potential surgical planning or further evaluation. If necessary, the left adrenal is resectable.

SonoPath CT Services are offered at the Blairstown Animal Hospital. Blairstown animal hospital is just a 30-minute drive west on route 80 from the route 80/287 interchange/Parsippany, New Jersey. More information can be found at:

https://sonopath.com/resources/sonopaths-teleconsultation-services-and-sdep-certification/sonopath-ct-services







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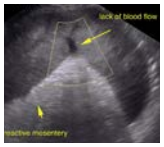
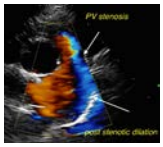
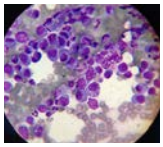
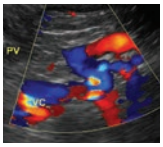

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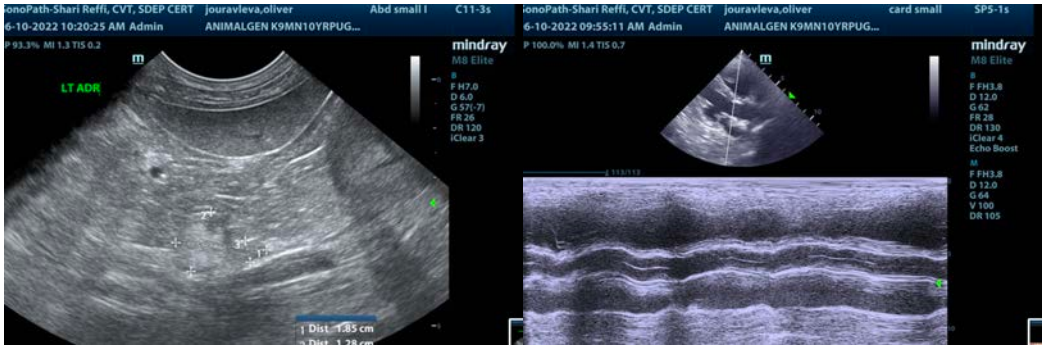

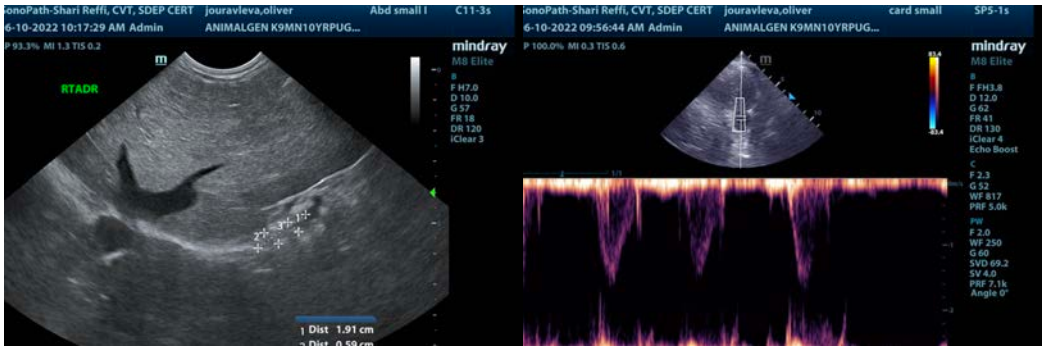

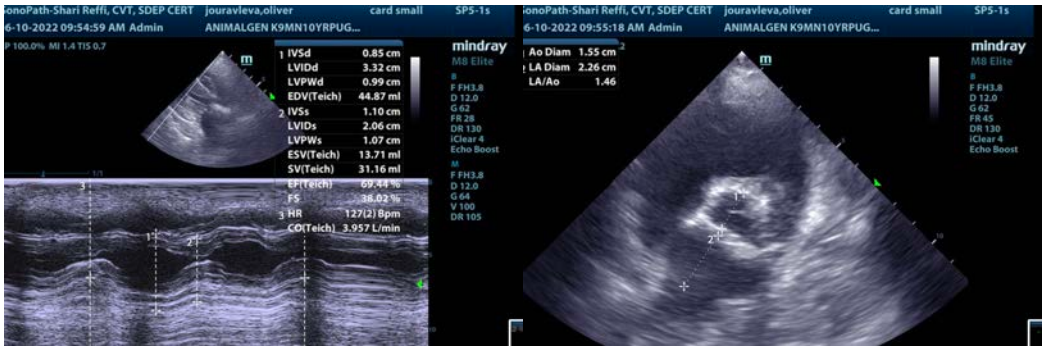

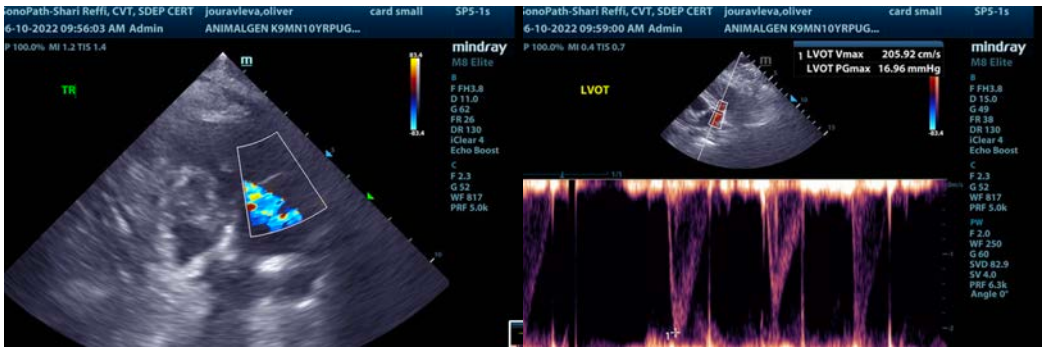

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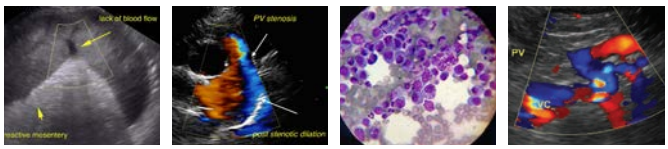

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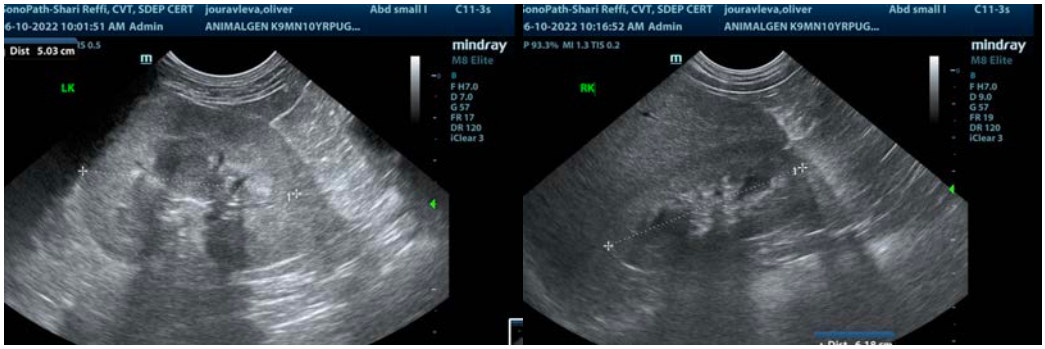

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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