


**PATIENT PRESENTING CLINICAL SIGNS**

Bella Montag

**SPECIES ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN**

Canine

BREED

Pug

SEX

Spayed Female

AGE

13 Years

WEIGHT

12.6 Pounds

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	5.78		1.1	1.3	48	81	NM
CANINE CARDIAC PARAMETERS	HR (BPM)	AV VMAX (m/s)	PV MAX (m/s)	RA	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	157	1.22	0.53	2.95	2.6	2.49	

**Cardiac Presentation**

The echocardiogram in this patient demonstrated normal **left atrial** size based on 3 different LA measurement methods. Chamber volumes and echogenicity were normal. The cranial and caudal **mitral** valve leaflets presented vegetative thickening consistent with endocardiosis. Doppler indicated measurable insufficiency. 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. Tricuspid insufficiency velocity of 5.14, consistent with severe pulmonary hypertension. Pulmonic velocity was mildly subnormal. No visible **pericardial** or free pleura fluid was noted. No echographically detectable evidence of infiltrative disease was visible. Hepatic veins were dilated in this patient.

**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 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. The right kidney measured 4.31 cm with pyelectasia noted. The left kidney measured 4.31 cm.

**INTERPRETED BY**

Eric Lindquist, DMV

DABVP, Cert. IVUSS

**IMAGING PERFORMED BY**

Eric Lindquist, DMV

DABVP, Cert. IVUSS

**HOSPITAL NAME**

Rockaway AH

**REFERRING VET**

Dr. Maniar

**INVOICE**

39750

**DATE**

7/22/22



**PATIENT**

Bella Montag

**SPECIES**

Canine

**BREED**

Pug

**SEX**

Spayed Female

**AGE**

13 Years

**WEIGHT**

12.6 Pounds

**INTERPRETED BY**

Eric Lindquist, DMV

DABVP, Cert. IVUSS

**IMAGING PERFORMED BY**

Eric Lindquist, DMV

DABVP, Cert. IVUSS

**HOSPITAL NAME**

Rockaway AH

**REFERRING VET**

Dr. Maniar

**INVOICE**

39750

**DATE**

7/22/22

**Adrenal Glands**

Both **adrenal glands** were visualized and recognized as having largely normal shape, size, position and acceptable echogenicity for this age group and breed. Some heterogeneity was noted within the adrenal parenchyma without concerning capsular distortion. These changes are likely age related but should be monitored by sonogram should the patient be suspected of having adrenal disease. The left adrenal gland measured 1.84 cm x 0.67 cm at the cranial pole and 0.60 cm at the caudal pole. The right adrenal gland measured 1.56 cm x 0.89 cm at the cranial pole and 0.58 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. Hepatic veins were dilated, as was the vena cava, up to 1.2 cm at the level of the diaphragm. 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.

**Free Abdomen**

Trace ascites noted.

**ULTRASONOGRAPHIC FINDINGS**

- Emerging right-sided heart failure
- Severe pulmonary hypertension
- Concurrent mitral insufficiency
- Hepatic vein dilation
- Trace ascites
- Minor renal pyelectasia
- Minor heterogeneous adrenal glands



**PATIENT**

Bella Montag

**SPECIES**

Canine

**BREED**

Pug

**SEX**

Spayed Female

**AGE**

13 Years

**WEIGHT**

12.6 Pounds

**INTERPRETED BY**

Eric Lindquist, DMV

DABVP, Cert. IVUSS

**IMAGING PERFORMED BY**

Eric Lindquist, DMV

DABVP, Cert. IVUSS

**HOSPITAL NAME**

Rockaway AH

**REFERRING VET**

Dr. Maniar

**INVOICE**

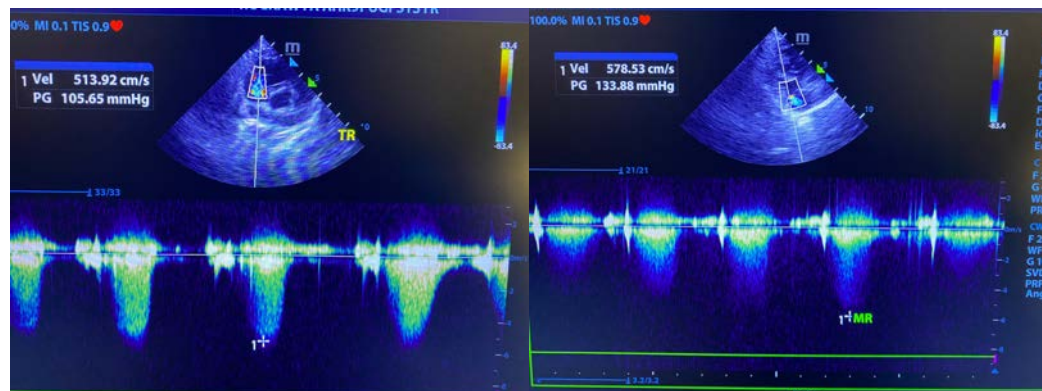
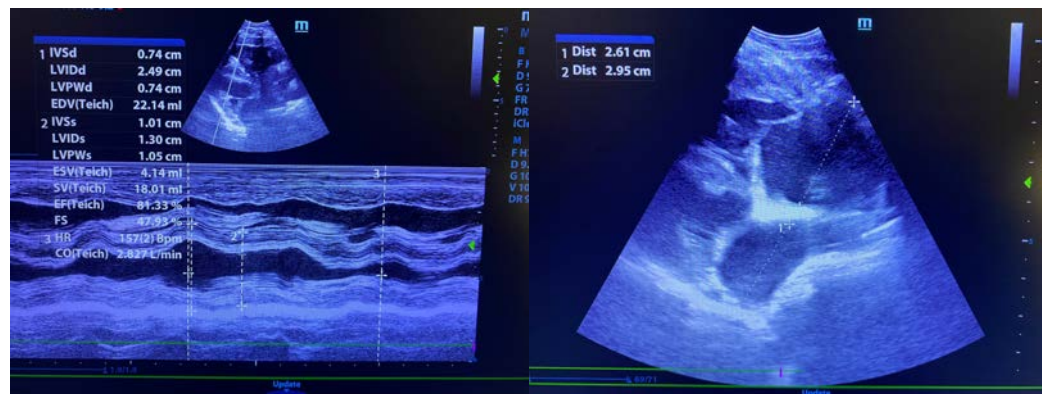
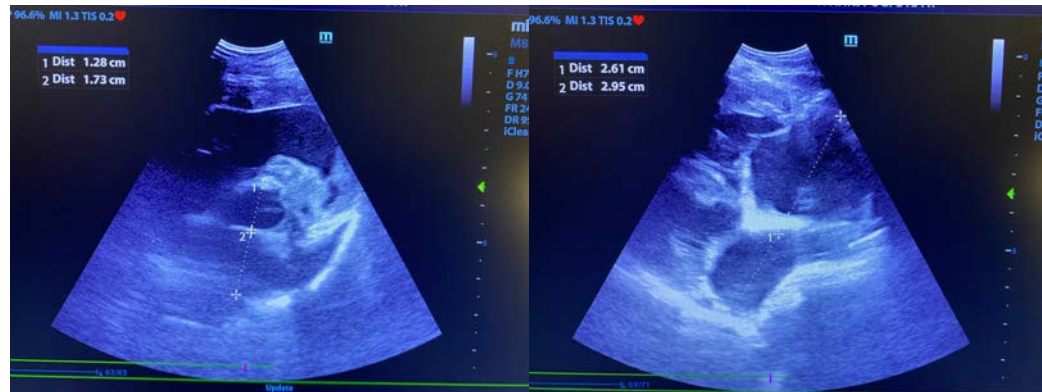
39750

**DATE**

7/22/22

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

Workup for UTI warranted. Recommend initiating ACE inhibitor 0.5 mg/kg SID progressing to BID, Spironolactone at 1-2 mg/kg BID, and Sildenafil at 1.0 mg/kg BID, increasing to 1.5 mg/kg BID after two weeks and recheck echo in one month. Assessment for exercise intolerance warranted.





**PATIENT**

Bella Montag

**SPECIES**

Canine

**BREED**

Pug

**SEX**

Spayed Female

**AGE**

13 Years

**WEIGHT**

12.6 Pounds

**INTERPRETED BY**

Eric Lindquist, DMV  
DABVP, Cert. IVUSS

**IMAGING PERFORMED BY**

Eric Lindquist, DMV  
DABVP, Cert. IVUSS

**HOSPITAL NAME**

Rockaway AH

**REFERRING VET**

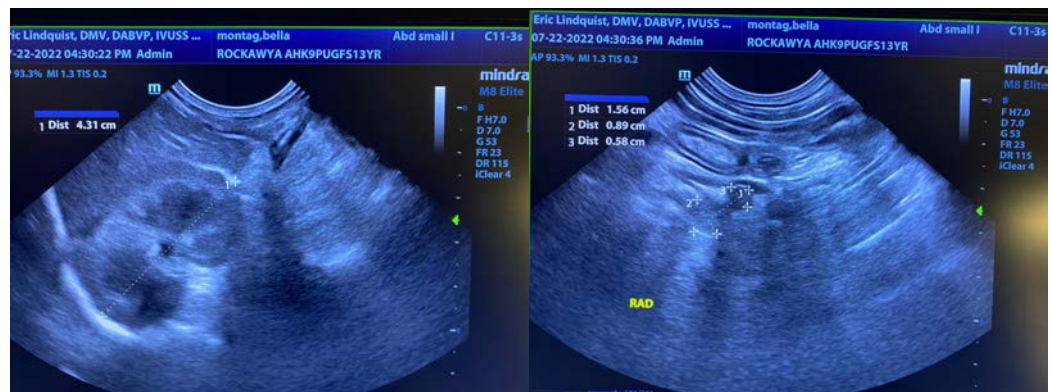
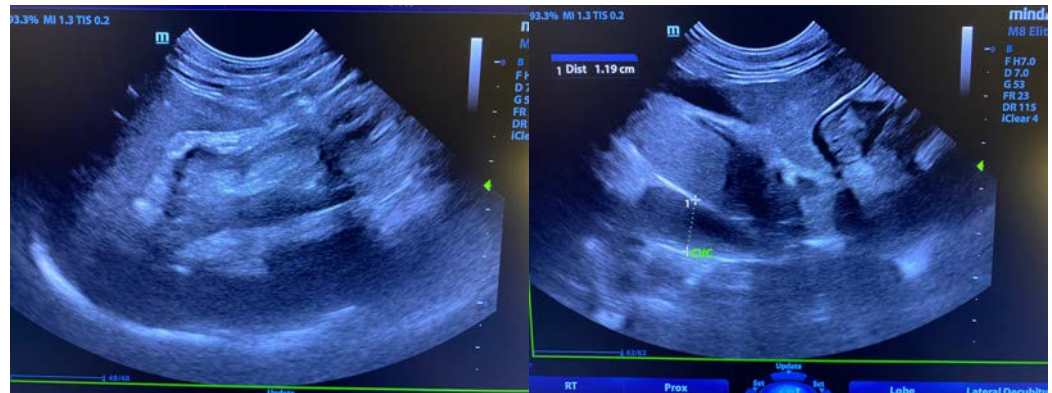
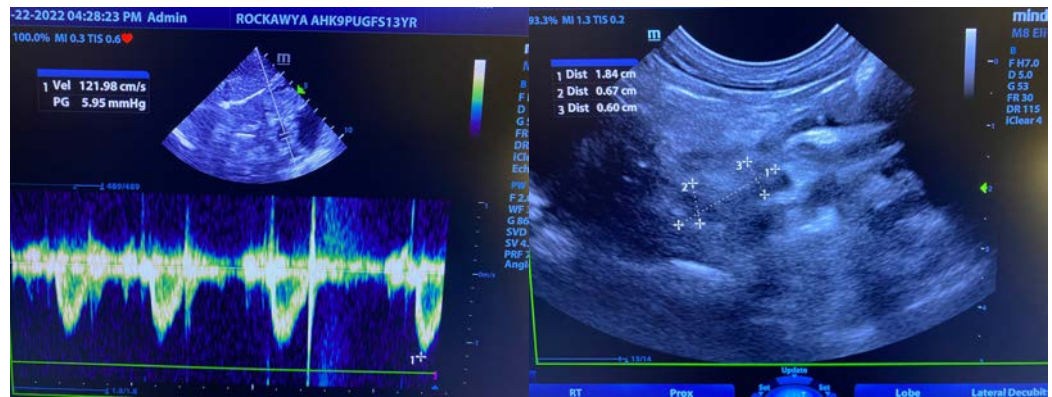
Dr. Maniar

**INVOICE**

39750

**DATE**

7/22/22



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](mailto:info@SonoPath.com)