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Clinical Sonography & Telecytology
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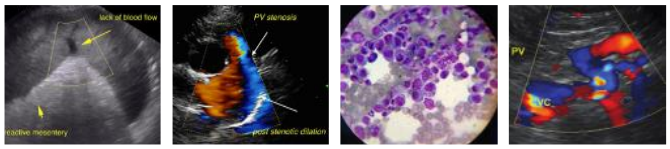


SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT

Patch Kaska

SPECIES

Canine

BREED

Pomeranian

SEX

Neutered Male

AGE

17.5

WEIGHT

8.75

INTERPRETED BY

Eric Lindquist, DMV DABVP, Cert. IVUSS

IMAGING PERFORMED BY

Christensen

HOSPITAL NAME

Tranquility VC

REFERRING VET

Christensen

INVOICE

23491

DATE

7/19/23

PRESENTING CLINICAL SIGNS

Recheck abdominal ultrasound from last July. Nodular liver and renal cyst at that time. Recent increase in liver enzymes. Previous G.B removal at Crown. Recheck cardiac ultrasound. Originally done at Crown. On Pimobendan now but owner unsure how long he has been on it and unable to obtain original scan.

Abnormal PE/Chem/CBC/UA Results: ALT= 209. Alk-phos= 373. BUN= 44

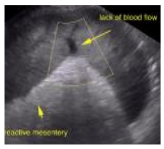
ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

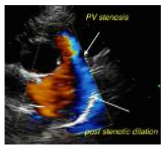
CANINE CARDIAC PARAMETERS	**MR VMAX** (m/s)	**TR VMAX** (m/s)	**LA/AO** (Boon method)	**LA/AO** (Heart Base; Swe)	**FS** (%)	**EF** (%)	**EPSS** (cm)
NORMAL PARAMETER	4.5-5.5	<2.7	1.3	<1.6	28-40	40-100	<0.6
PATIENT	--	--	1.5	1.9	54	86	0.1
CANINE CARDIAC PARAMETERS	**HR** (BPM)	**AV VMAX** (m/s)	**PV 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				
PATIENT	--	--	.60	--	3.0	2.7	--

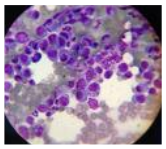
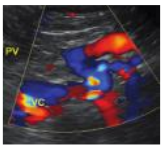
Cardiac Presentation

The echocardiogram for this patient presented mildly excessive **left atrial size** expressed both in the LA/AO and LA max measurements. Chamber volumes and echogenicity were normal. Prolapse of the anterior mitral valve leaflet was noted. Doppler indicated measurable mitral 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. The **right atrium** and auricle revealed normal size, structure and content. No evidence of masses was noted or chamber overload. **Tricuspid** valvular assessment demonstrated adequate linear morphology. The **right ventricle** was of normal size (1/3 diameter of LV), chordae structure, myocardial echogenicity and thickness. **Pulmonic** 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. No echographically detectable evidence of infiltrative disease was visible. The cranial **mediastinum and pericardial regions** were free of masses in the visible window.

Urinary System





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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 **right kidney** revealed a 2.2 cm anechoic cyst deriving from the caudal pole. Moderate degenerative renal changes were noted with interstitial nephrosis pattern. The right kidney measured 4.3 cm in length. Pyelectasia was noted in the right kidney.

The **left kidney** measured 3.49 cm. Moderate degenerative renal changes were noted with interstitial nephrosis pattern.

Other microcystic changes were noted throughout the renal cortices.

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 0.96 cm x 0.61 cm at the cranial pole and 0.46 cm at the caudal pole. The right adrenal gland measured 1.51 cm x 0.7 cm.

Spleen

The **spleen** was uniform. Caudal folding of the spleen was noted.

Liver

The **liver** revealed mixed echogenic nodular masses with expansive irregular contour, deriving primarily from the caudate process. Diffuse nodular changes were noted elsewhere throughout the liver. A macronodular 3.0 cm change was noted in the left cranial liver. The gallbladder was not visible. Deviation of the diaphragm is also noted.

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 in the abdomen, may be deriving from a ruptured cyst.

ULTRASONOGRAPHIC FINDINGS

- Mitral insufficiency
- Mild left atrial enlargement

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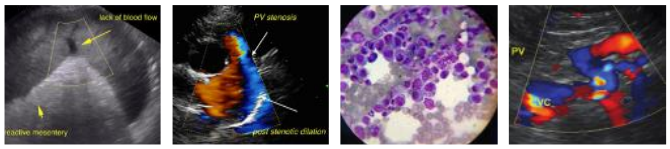

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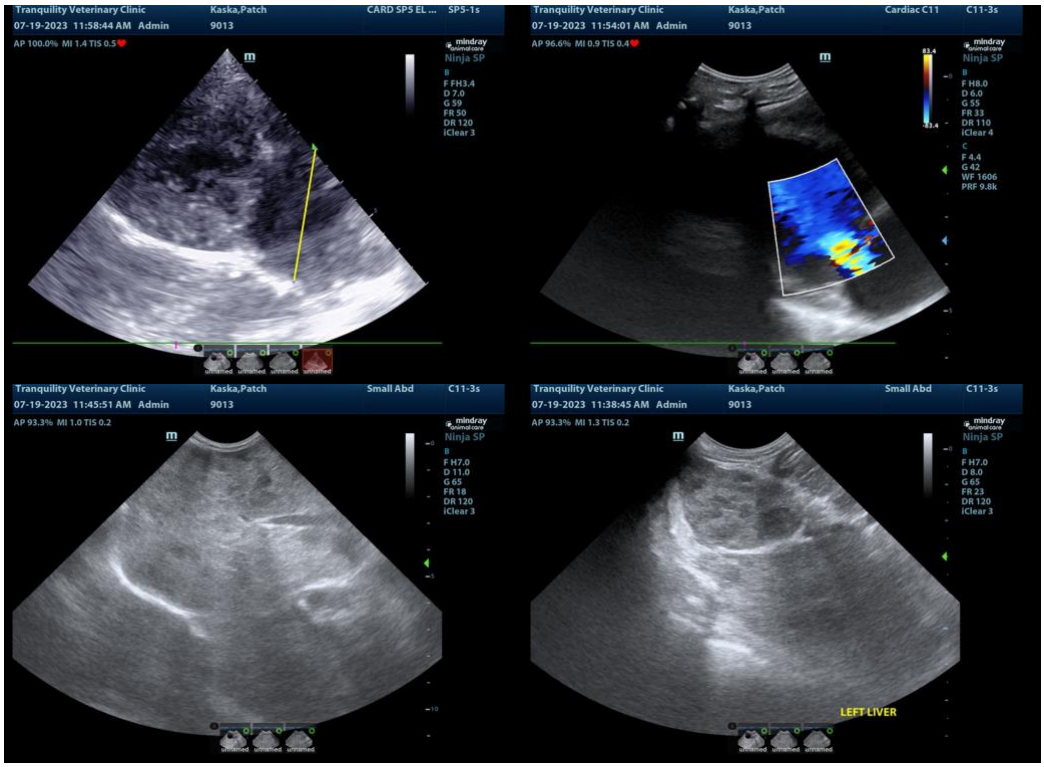
- Moderate degenerative renal changes with cortical cysts and right kidney pyelectasia
- Free fluid
- Coalescing nodular changes were creating mass effects. Pronounced nodular hyperplasia is still possible, however, biliary or hepatocellular carcinoma is a strong potential.
- Splenic fold

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

I recommend continuation of the Pimobendan. No specific change in protocol is warranted. I'm most concerned about the hepatic changes, as neoplastic criteria is met. Pronounced severe nodular hyperplasia or potential emerging hepatocutaneous syndrome is technically possible. Sampling and bile acid profile is indicated. The kidneys appear near end stage. Urine culture and blood pressures are indicated. Medical management for emerging renal failure and potential hepatic neoplasia are indicated. Prognosis is extremely guarded to poor long term.

Bile acid profile and FNA of the liver nodules is warranted. If attainable, ultrasound guided abdominocentesis of the localized free fluid is indicated as well.



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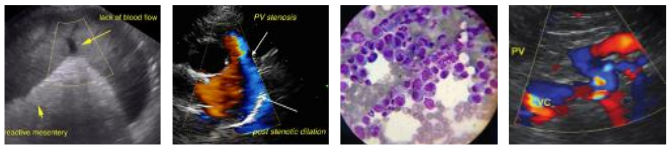

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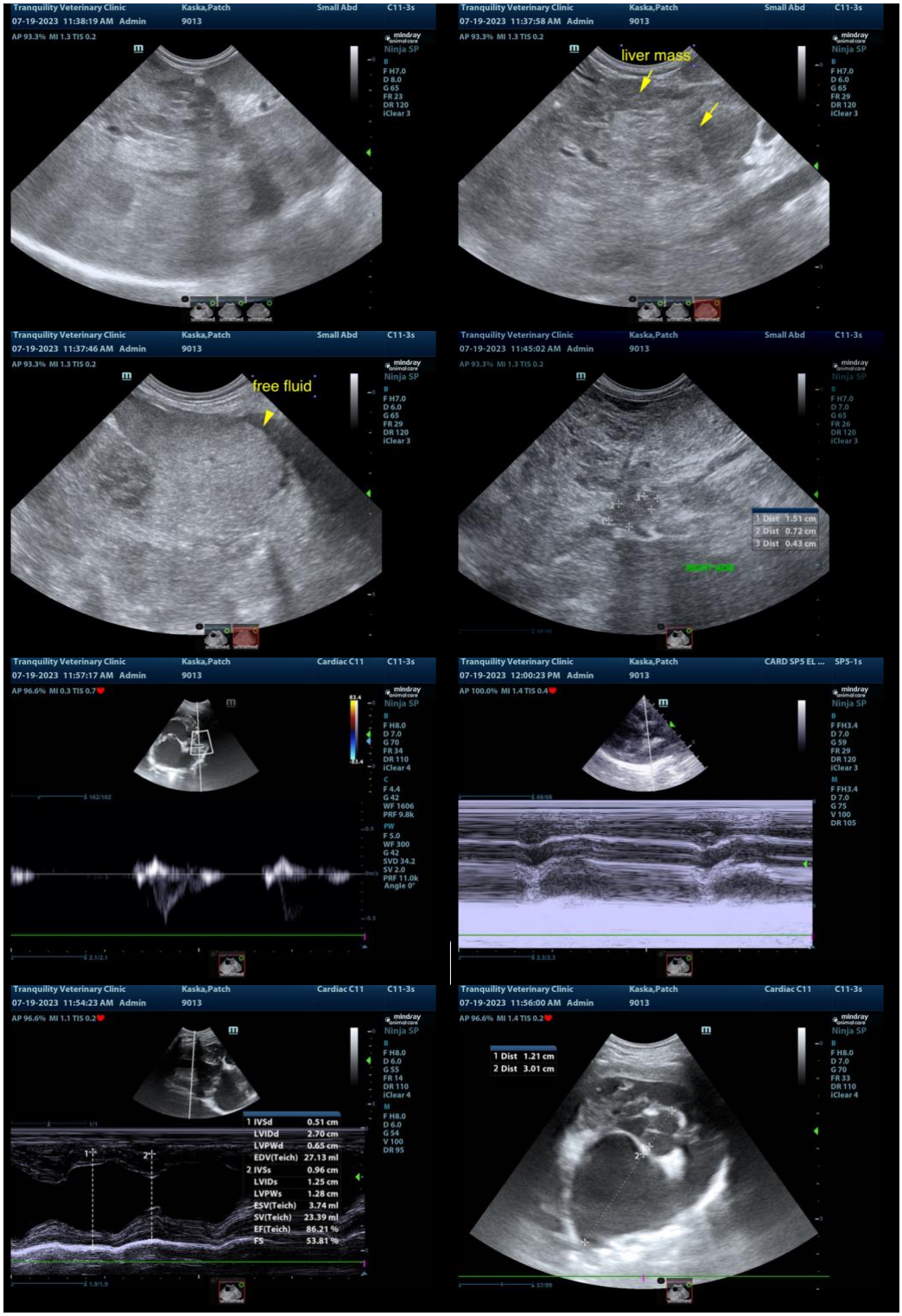

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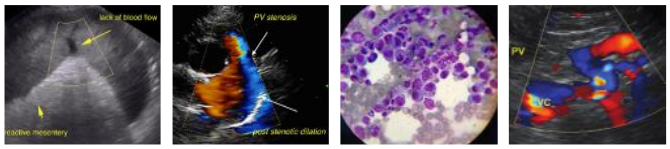

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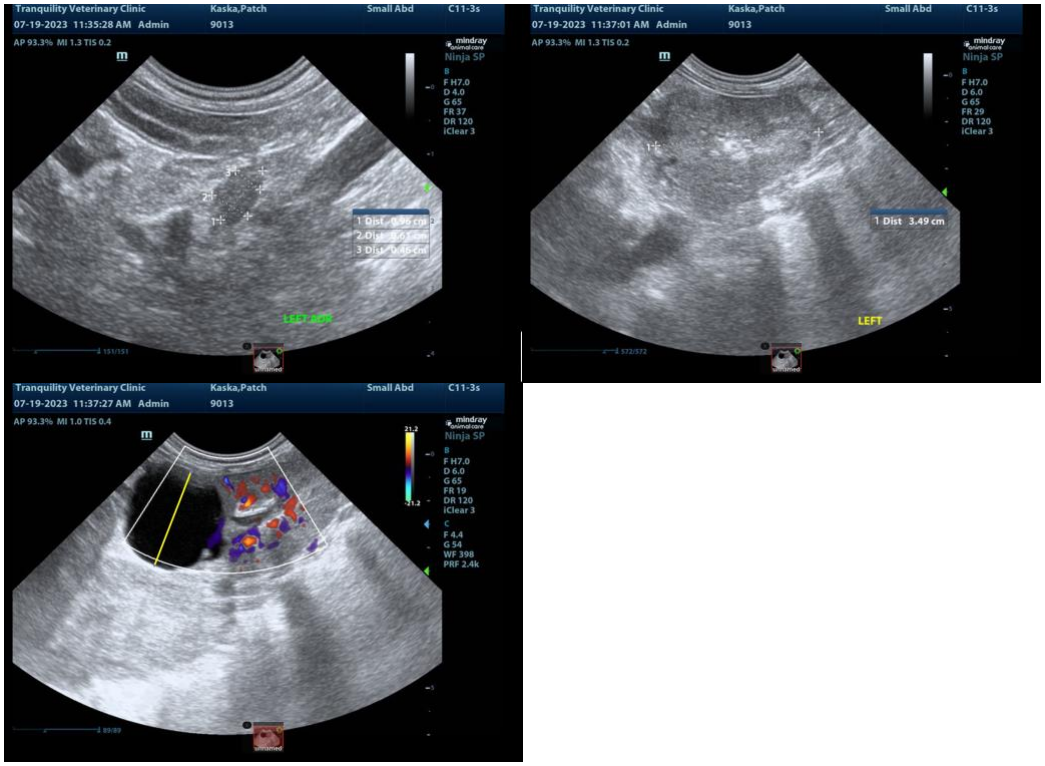

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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