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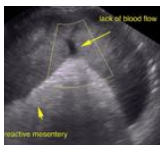

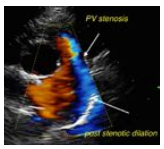

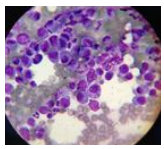
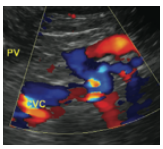


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1-800-838-4268 info@sonopath.com

**PATIENT**
Sarah Kaska

**SPECIES**
Canine

**BREED**
Pomeranian

**SEX**
Spayed female

**AGE**
10 years

**WEIGHT**
12 lbs

**INTERPRETED BY**
Eric Lindquist, DMV DABVP, Cert. IVUSS

**IMAGING PERFORMED BY**
Dr. Christensen

**HOSPITAL NAME**
Tranquility VC

**REFERRING VET**
Dr. Christensen

**INVOICE**
43764

**DATE**
4/10/23

## PRESENTING CLINICAL SIGNS

History: Bladder and kidney mineralization seen on x-ray. Recheck cardiac ultrasound attempted.
Abnormal PE/Chem/CBC/UA Results: Elevated reticulocytes.

## ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

### *Urinary System*

The **urinary bladder**, trigone, and pelvic urethra presented normal thicknesses and normal tone. The ureters were not visible which is normal. Sand accumulation or calculus was noted in the bladder and measured 0.3 cm and was non-obstructive at the time of the sonogram. No evidence of inflammatory or neoplastic changes was 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 and no evidence of pelvic dilation was present. Moderate, non-obstructive mineralization was noted and measured up to 0.5 cm. The largest calculus in the left kidney measured 1.0 cm. The right kidney measured 4.53 cm. The left kidney measured 3.59 cm.

### *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 left adrenal gland measured 0.54 cm at the caudal pole and 0.49 cm at the cranial pole. The right adrenal gland measured 1.0 x 0.37 cm at the cranial pole and 0.37 cm at the caudal pole.

### *Spleen*

The **spleen** in this patient was mildly enlarged with uniform parenchyma and was folded upon itself cranially. This is a positional variant and is not pathological. There was no evidence of significant disease.

### *Liver*

The **liver** images from right and left intercostal as well as subcostal views revealed subjectively normal liver size, contour, and structure. Some age-related parenchymal remodeling was noted but likely not clinically significant at this time. Vascular and biliary tracts were of normal volume and no evidence of congestion was noted. The gallbladder was mildly over distended with suspended and dependent debris, yet not to the level of emerging mucocele, yet sludge appears to be mildly excessive. Gallbladder polyps were noted as well. No adjunctive inflammation was noted.

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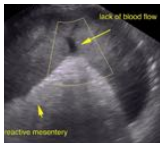

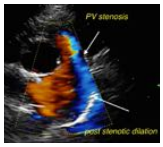

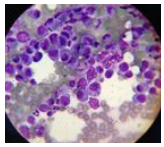
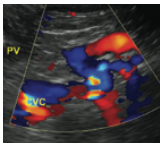


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### *Gastrointestinal*

There was some residual chyme and gas was noted in the **stomach**, yet not pathological. This is consistent with end post prandial presentation. Transit of chyme into the small intestine was normal. Curvilinear patterns were maintained throughout the GI tract. No evidence of pathology. 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.

## ULTRASONOGRAPHIC EXAMINATION OF THE HEART

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. 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.

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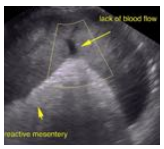

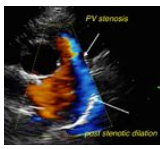

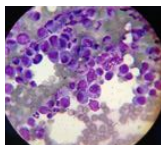
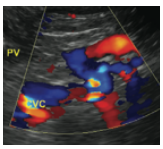


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| CANINE CARDIAC PARAMETERS | MR VMAX (m/s) | TR VMAX (m/s) | LA/AO (Boon method) | LA/AO (Heart Base;) | FS (%) | EF (%) | EPSS (cm) |
|---|---|---|---|---|---|---|---|
| NORMAL PARAMETER | 4.5-5.5 | <2.7 | 1.3 | <1.6 | 28-40 | 40-100 | <0.6 |
| PATIENT | >5.0 | 2.0 | 1.0 | 1.5 | 50 | 90 | 0.1 |
| **CANINE CARDIAC PARAMETERS** | **HR** (BPM) | **AV VMAX** (m/s) | **PV MAX** (m/s) | **BODY WEIGHT** | **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 | 90 | 1.3 | 0.7 | 12 lbs | 2.5 | 2.1 | |

## ULTRASONOGRAPHIC FINDINGS

Moderate nephrolithiasis with moderate degenerative renal changes, non-obstructive at the time of the sonogram.

Emerging gallbladder mucocele and gallbladder polyps.

Occasional, hypoechoic nodular change noted in the liver, yet not overtly pathological.

Bladder sand/calculi.

Compensated mitral insufficiency, no significant volume overload.

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Ursodiol therapy is recommended over the next 6-8 weeks with a recheck of the liver sonographically. Bile acid profile is warranted given the level of degenerative changes in the liver and nodular changes. There is a minimal potential for neoplasia, yet this is likely nodular hyperplasia.

No adjustment in cardiac protocol is warranted.

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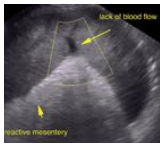

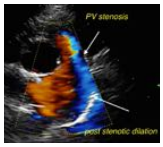

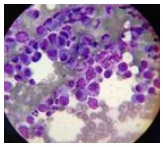
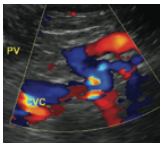


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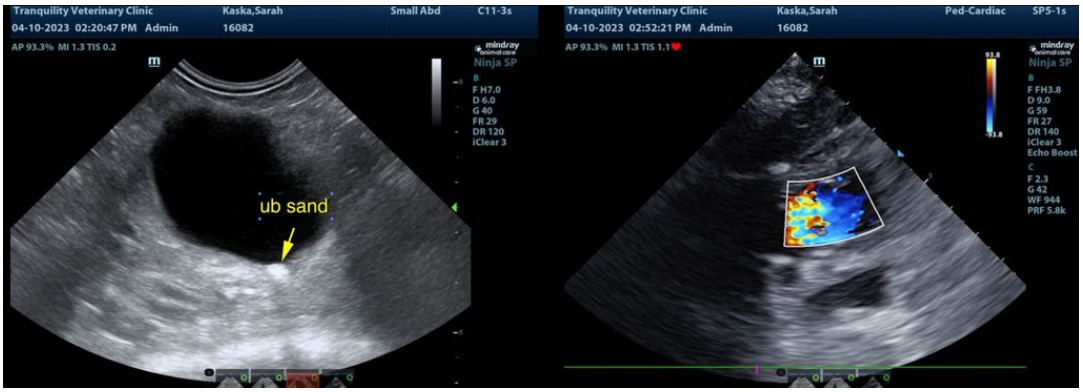


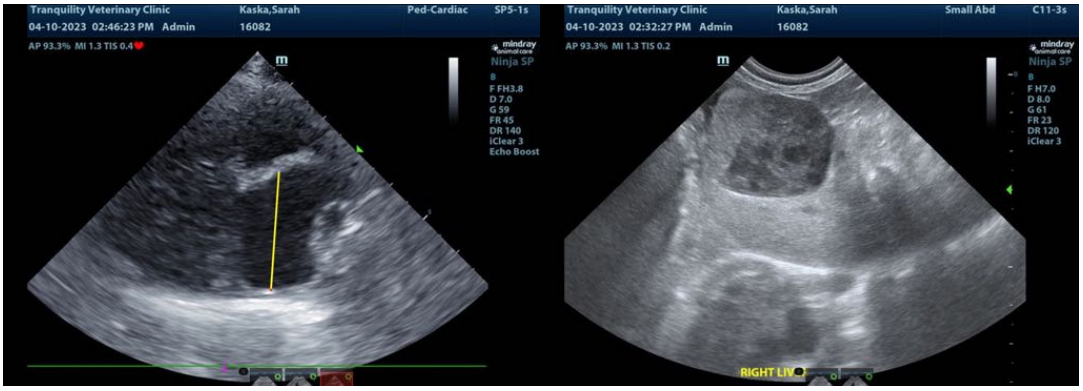


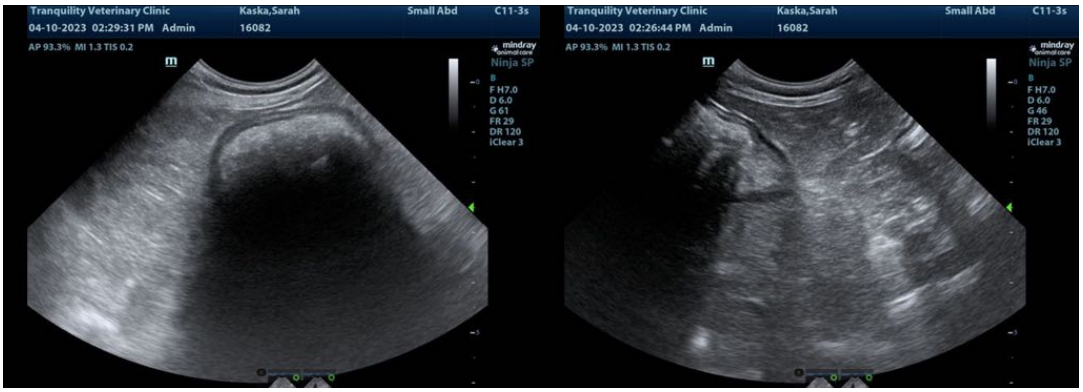


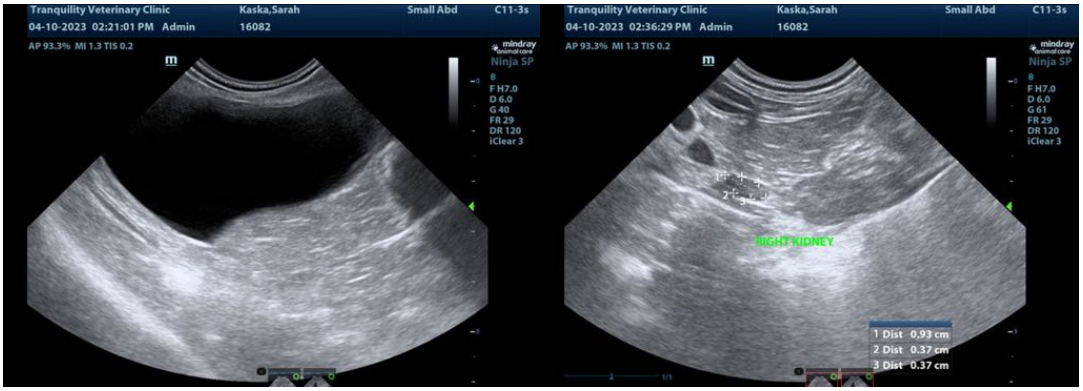

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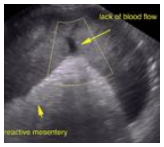

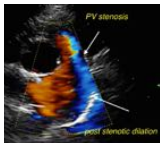

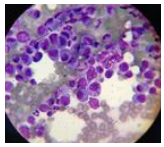
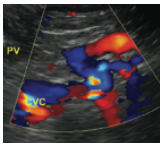


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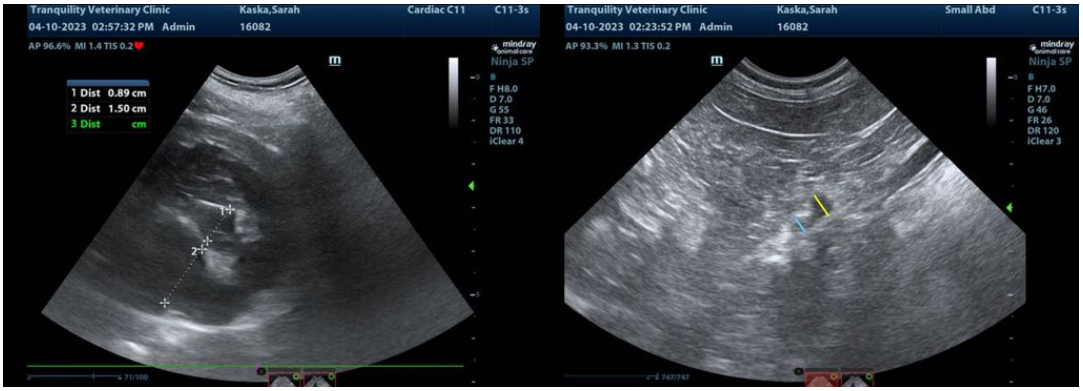


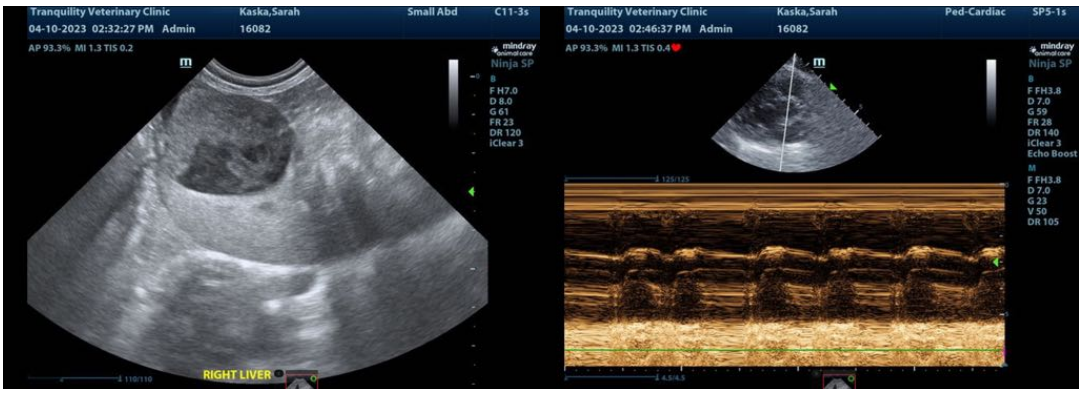


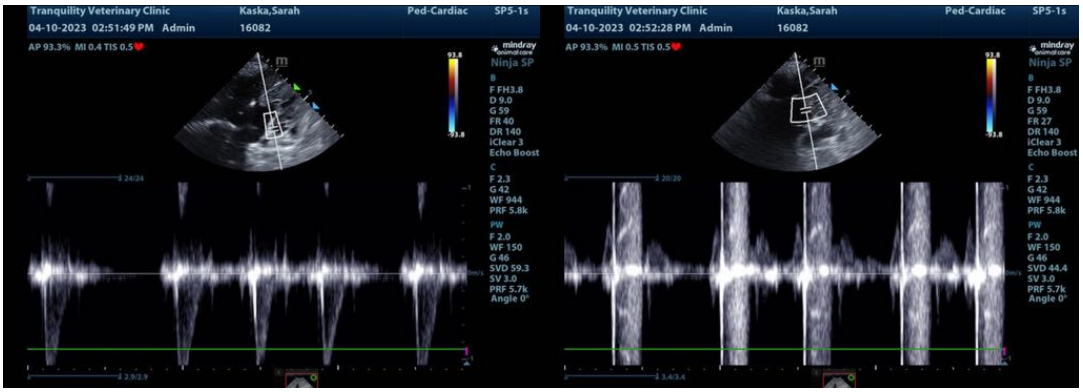


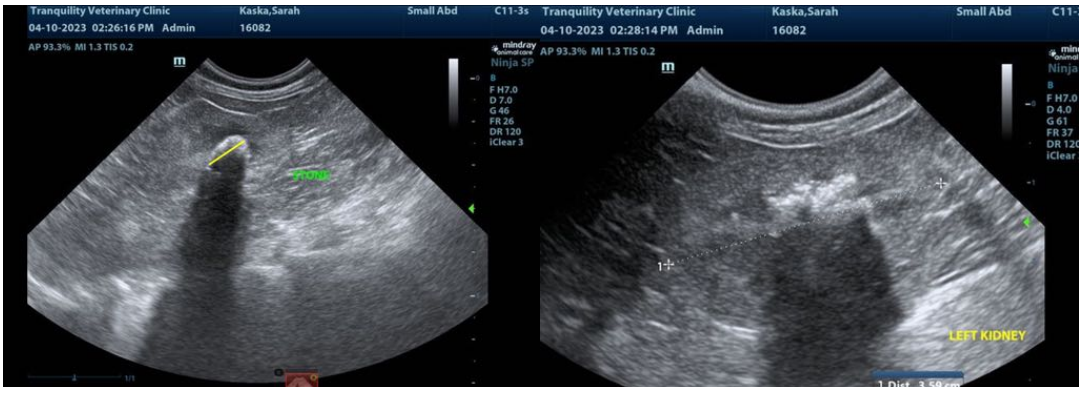

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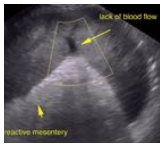
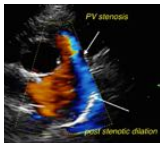
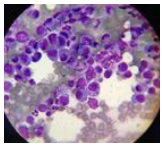
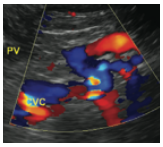

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**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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