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Clinical Sonography & Telecytology
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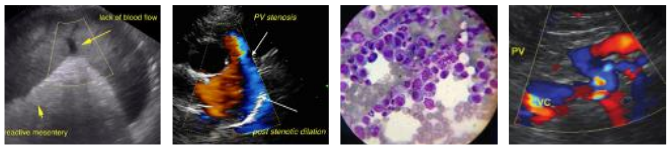


SonoPath.com
1-800-838-4268 info@sonopath.com

PATIENT

Charlie Beal

SPECIES

Feline

BREED

DMH

SEX

Neutered Male

AGE

8 Years

WEIGHT

4.33 lbs

INTERPRETED BY

Eric Lindquist, DMV DABVP, Cert. IVUSS

IMAGING PERFORMED BY

Dr. Alastair Westcott

HOSPITAL NAME

Dr. Alastair Westcott, DVM

REFERRING VET

Dr. Alastair Westcott

INVOICE

12499

DATE

11/12/21

PRESENTING CLINICAL SIGNS

History: Weight loss over several months. Palpable abdominal mass. It is known from a previous ultrasound that the mass/s arise from the kidneys and FNA cytology was unrewarding. A comprehensive, double cavity ultrasound is requested.

Abnormal PE/Chem/CBC/UA Results: Thin, grade IV/VI systolic murmur, stress lymphopenia and a moderate renal azotemia. TT4 is pending

ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

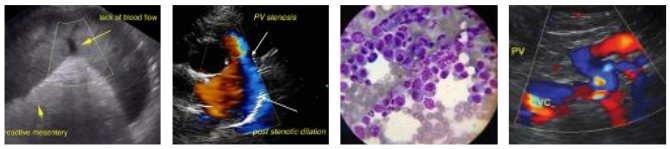
FELINE CARDIAC PARAMETERS	**BODY WEIGHT** (kg)	**HR** (BPM)	**IVSd** (cm)	**LVIDd** (cm)	**LVWd** (cm)	**FS** (%)	**EF** (%)
NORMAL PARAMETER	------	150-240	0.3-0.6	1.0-2.1	0.25-0.6	35-67	80-100
PATIENT	--	NM	0.7	1.0	0.7	45	--
FELINE CARDIAC PARAMETERS	**LA/AO** (Boon)	**LA/AO HEART BASE** (Sisson)	**LA** 2D 4-chamber long axis AS to FW (Sisson) (cm)		**LVOT VEL.** (m/s)	**RVOT VEL.** (m/s)	**IVRT** (m/)
NORMAL PARAMETER	<1.5	0.88-1.79	0.7-1.7		<1.6	<1.3	40-60
PATIENT	1.15	1.5	1.2		1.37	1.03	NM

Adapted from June Boon,Veterinary Echocardiography,1998
Sisson D et al. JVIM 1991; 5: 232, Jacobs et al. Am J Vet Res 1985; 46:1705

Cardiac Presentation

The echocardiogram in this patient demonstrated normal **left atrial** size and structure with no evidence of "smoke" or thrombi. The cranial and caudal **mitral** valve leaflets appeared mildly thickened with insufficiency noted on Doppler. The **left ventricle** presented excessive free wall and septal thicknesses with hypertrophic thicknesses compared to normal for this species. The **myocardium** presented essentially normal echogenicity without immediate signs of fibrotic or ischemic disease. **Contractility** of the ventricular walls was considered excessive for this patient evidenced by the elevated fractional shortening measurement. The **left ventricular outflow** tract demonstrated turbulent laminar flow. Subjective assessment of the **right atrium** and auricle revealed normal size, structure and content. No evidence of masses was noted. **Tricuspid** valvular assessment demonstrated linear morphology. The **right ventricle** was of normal size with normal chordae structure, myocardial echogenicity and thickness. Slight **pulmonic** insufficiency noted. Trace pericardial effusion was noted, likely owing to systemic disease/paraneoplastic effusion given the abdominal presentation. No echographically detectable evidence of infiltrative disease was visible. The **mediastinum** was free of masses in the visible window. Exaggerated papillary noted in the left ventricle.

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 pelvic urethra was imaged 2.0 cm beyond the cystourethral junction.

The **kidneys** presented multifocal expansive parenchymal masses with hyperechoic surrounding fat. The right kidney was enlarged, measuring 5.18 cm in width. The left kidney measured 5.18 cm. Multifocal calculi noted in both kidneys as well.

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 0.35 cm. The left adrenal gland measured 0.29 cm.

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. The spleen measured 0.67 cm.

Liver

The **liver** revealed multifocal hypoechoic mildly disruptive nodules (up to 1.27 cm). The gallbladder and common bile duct were unremarkable. A comet tail lung pattern was noted.

Gastrointestinal

The **gastrointestinal** presentation revealed mild uniform prominence of the gastric mucosa as well as areas of "ropey" small intestinal wall with slight disruption of the normal 1:3 muscularis/mucosal ratio. The intestinal submucosa was slightly irregular, thickened and hyperechoic suggestive of low grade, chronic disease. No concerning lymphadenopathy was visible. No evidence of obstruction was present. Chronic inflammatory bowel disease is likely with a low possibility of an early neoplastic event such as lymphoma. Full thickness tissue biopsies via open laparotomy, ideally guided by intraoperative ultrasound in order to obtain the most representative mural sample, would be necessary to rule out this possibility. This is a minor change.

Pancreas

The base and limbs of the **pancreas** were observed to be largely isoechoic to surrounding omental fat. Some parenchymal remodeling, however, with mild deviation from curvilinear normalcy was observed. Pancreatic duct and capsular irregularities were present consistent with age related changes. If pain upon imaging (+ Murphy sign) was present or if the patient is focally painful in subxyphoid palpation then low-grade smoldering chronic pancreatitis should be suspected. The pancreatic lymph nodes (0.47 cm) were slightly enlarged and rounded.

ULTRASONOGRAPHIC FINDINGS

- Left ventricular hypertrophy most consistent with hypertrophic cardiomyopathy. However, myocardial lymphoma cannot be completely ruled out especially given the renal presentation.

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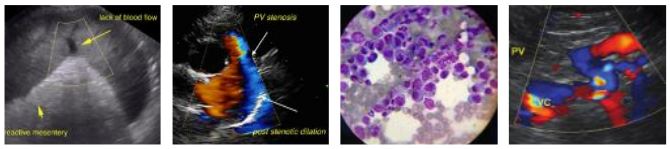

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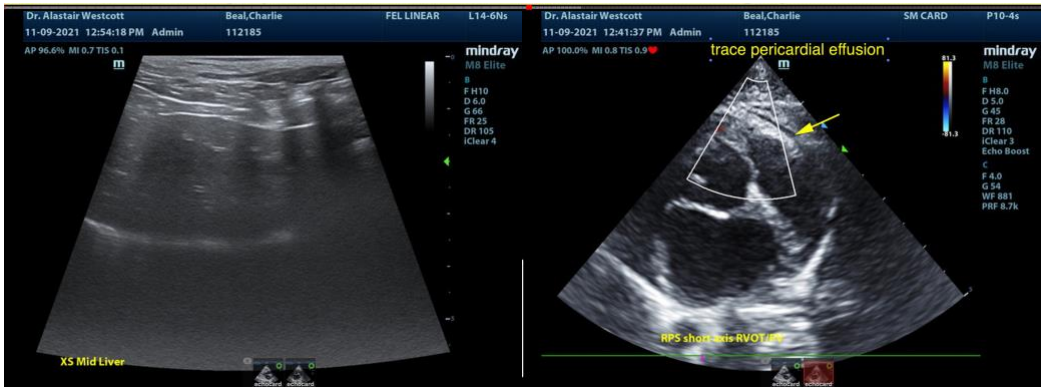
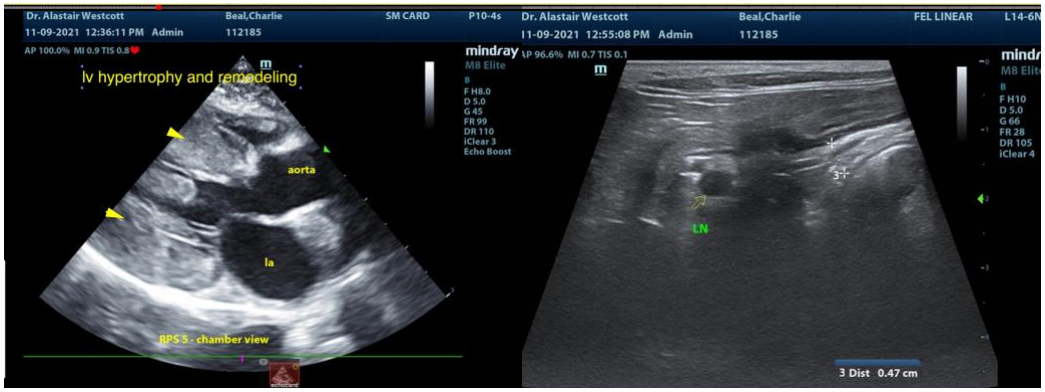
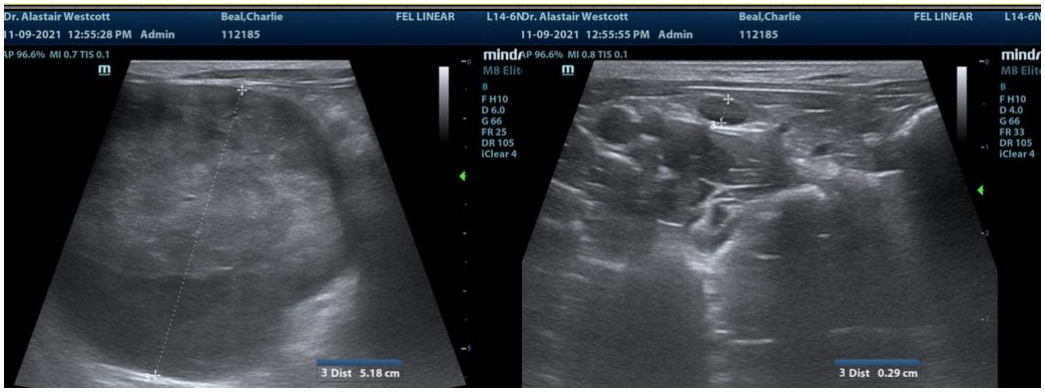
- Slight pericardial effusion, non-cardiogenic
- Liver nodules, concern for metastatic disease
- Chronic inflammatory bowel disease
- Age-related pancreatic changes with slightly enlarged pancreatic lymph nodes
- Enlarged right kidney with kidney masses, hyperechoic surrounding fat and calculi

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

FNA of either kidney and liver nodules warranted with a chemotherapeutic intervention. No cardiac medications recommended at this time. Primary focus on the abdominal pathology and chemoreduction recommended. The slight pericardial effusion is non-cardiogenic. Even though significant left ventricular hypertrophy is present, the left atrial size is contained. Blood pressure measurements warranted.







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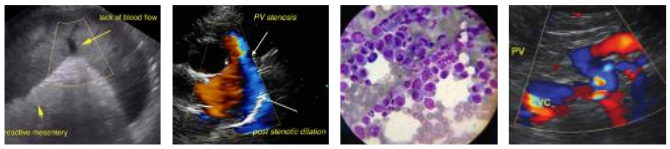

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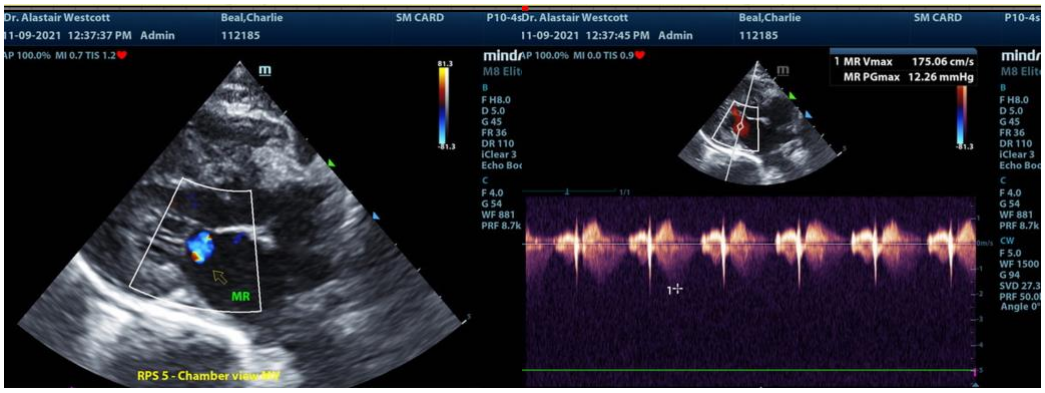

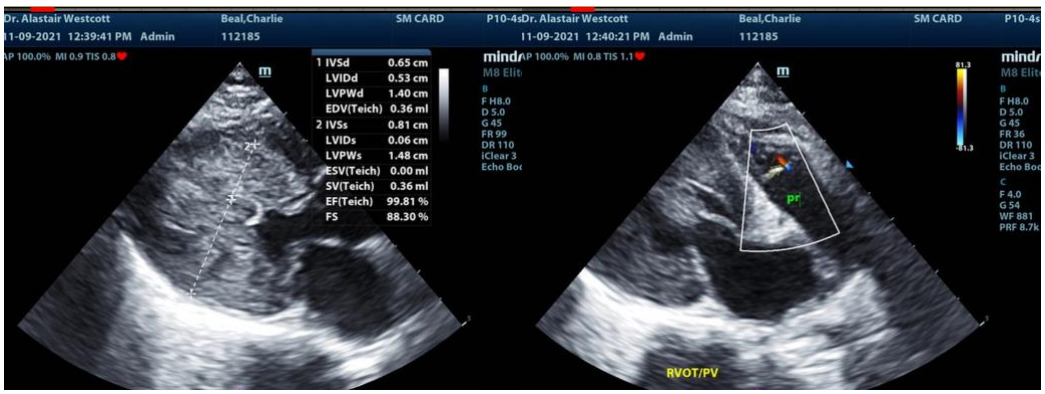

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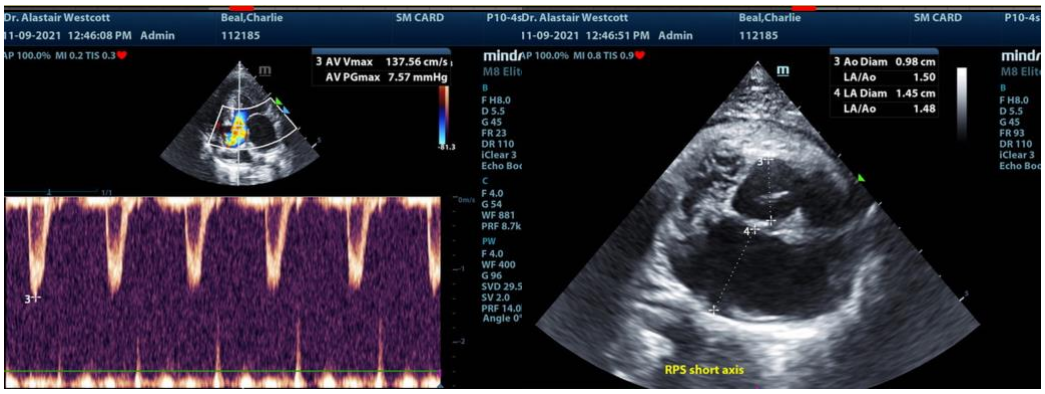

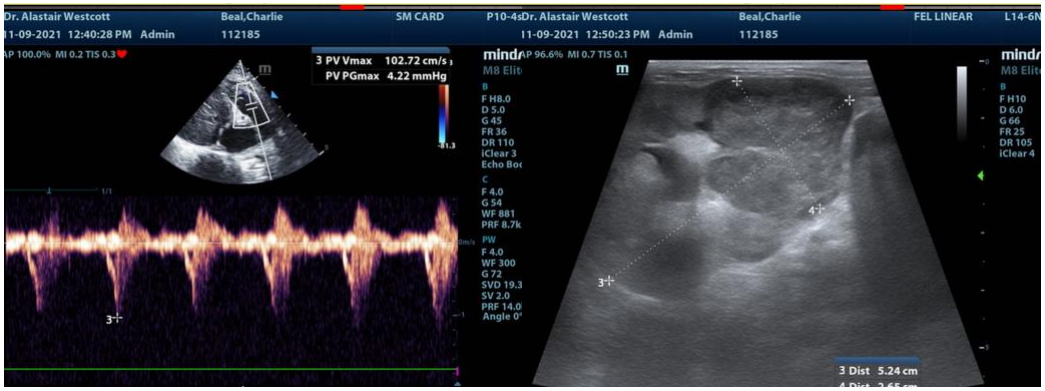

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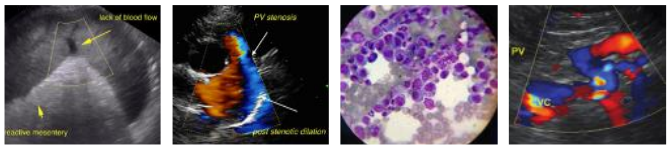

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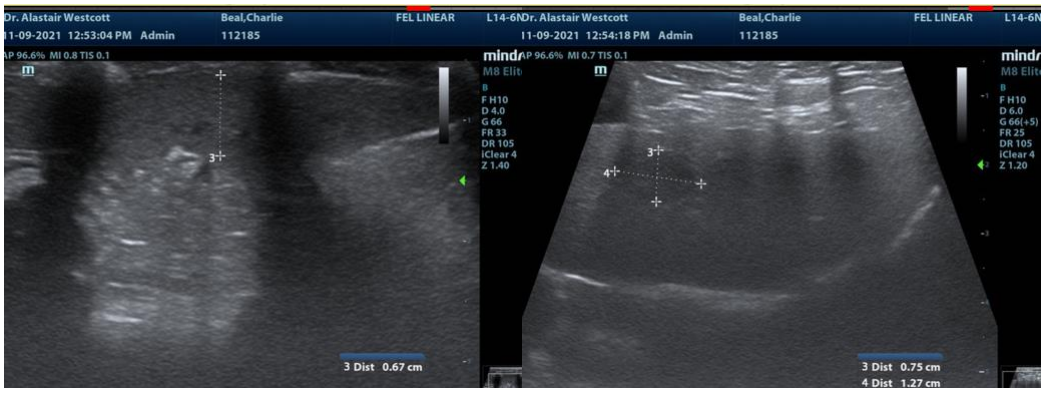

The information and recommendations provided are based on the images presented by the referring veterinarian. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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