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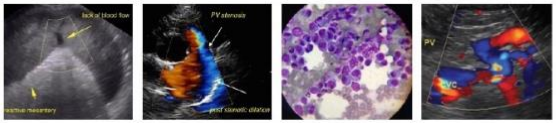


THE FOCAL ZONE
IMAGING PERFORMED BY
289-808-2608 info@thefocalzone.com

PATIENT

Prince Eyassu

SPECIES

Canine

BREED

Cockapoo

SEX

Neutered Male

AGE

10 Years

WEIGHT

45 Pounds

INTERPRETED BY

Lisa Carioto, DVM, DVSc, Diplomate

IMAGING PERFORMED BY

Kelly Reschny

HOSPITAL NAME

Fisher Mills AH

REFERRING VET

Dr. Gupta

INVOICE

15751

DATE

5/24/22

PRESENTING CLINICAL SIGNS

History: abdominal fluid, concern for right sided HF vs possible heart mass

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	<1.3	28-40	40-100	<0.6
PATIENT	3.30	3.40	2.21	--	41	74	--
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	186	1.52	3.11	N/A	2.24	2.62	1.54

Echocardiographic Findings

Mitral valve: mild to moderate myxomatous degeneration of both leaflets. The septal leaflet is more severely affected compared to the posterior leaflet.

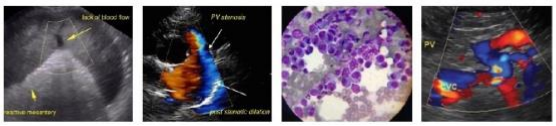
- mild prolapse of both leaflets.
- Moderate mitral regurgitation.
- Left auricle: N/E
- Paradoxical flattening of a portion of the interventricular septum due to severe right ventricular enlargement
- Pseudohypertrophy of the left ventricle due to hypovolemia
- Severe increase of LA: Ao ratio

Aortic valve: no abnormalities

- Turbulent blood flow in the LVOT with aliasing

Tricuspid valve: mild myxomatous degeneration of the tricuspid valve

- Mild prolapse of posterior leaflet.
- Tricuspid regurgitation: very severe, with marked turbulence
- Pulmonary hypertension
- Severe right ventricular; RVIDd = 3.2 cm, with flattening of the interventricular septum
- Severe right atrial and auricular enlargement.



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Pulmonic valve: no abnormalities

- A heart-based mass is evident "wrapping around" the pulmonary artery and aorta. It is impinging on and invading the pulmonary artery. It measures 4.67 cm in length (along the pulmonary artery) x 2.54 cm in diameter. The mass is heterogeneous with hyper and hypoechoic areas and invades the MPA and the right branch.
- Pulmonary insufficiency: absent
- No signs of pericardial or pleural effusion
- No evidence of pulmonary edema.

Urinary System

The urinary bladder is well distended with anechoic contents. The wall is smooth and regular. No abnormalities are noted with the trigone or proximal urethra, and there is no evidence of sediment, cystoliths, polyps or a mass.

Prostate

Not visualized.

Kidneys

The **left** kidney measures 5.37 cm. The capsule is smooth. A very mild loss of the normal definition of the cortico-medullary junction is present. A small amount of anechoic fluid is observed surrounding the kidney.

The **right** kidney measures 5.87 cm. The capsule is smooth. Its overall architecture, including the definition of the cortico-medullary junction, is preserved. A marked amount of ascites surrounds the kidney.

Aortic bifurcation/trifurcation

No abnormalities observed.

Adrenal Glands

The **left** adrenal gland measures 0.61 cm at the cranial pole, 0.49 cm at the caudal pole and 2.26 cm in length. No abnormalities are noted with the gland's overall architecture, echogenicity or echotexture. The phrenico-abdominal vein and surrounding vasculature and mesentery are unremarkable.

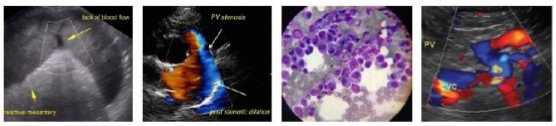
The **right** adrenal gland is not visualized.

Spleen

The spleen is decreased in size, which is suggestive of hypovolemia. The capsule is smooth. The vasculature is not evaluated due to panting artifact.

Liver

The liver's borders are smooth, but mildly rounded. A diffuse, mildly coarse or granular echotexture is observed, in addition to a mildly heterogeneous echotexture, with occasional hypoechoic nodules and a hyperechoic "capsule", i.e. target lesions are suspected. The largest nodule of mixed echogenicity (not a typical target lesion) measures 1.7 cm in diameter x 1.8 cm in length. Occasional pinpoint hyperechoic foci are observed, which are suggestive of mineralization and/or fibrosis. Hypoechoic nodules of variable size are also noted. The latter are more consistent with nodular hyperplasia. The liver lobes are separated by ascites. No obvious abnormalities are noted with the hepatic vessels.



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The gallbladder wall is within normal limits in thickness and echogenicity. There is no evidence of echogenic material within the GB. The cystic and common bile ducts are not visualized.

Gastrointestinal

No obvious abnormalities observed with the small intestines (the loops of bowel visualized). An in-depth evaluation of the entire GI tract is not possible due to the large amount of ascites.

Pancreas

Not well visualized due to the ascites.

Other

Lymph nodes

A plump, mildly enlarged, slightly hypoechoic lymph node is observed in the caudal abdomen, dorsal to the urinary bladder.

Abdominal effusion

A marked amount of ascites is visualized. Echogenic material is noted floating throughout the effusion, i.e., suggestive of cellular or proteinaceous material. Free floating fibrin is also present.

Mesentery

Small, well circumscribed, hypoechoic nodules are observed throughout the mesentery, which is highly suggestive of carcinomatosis.

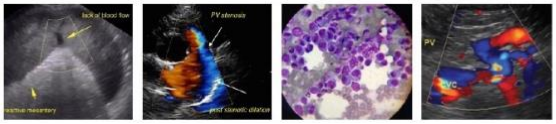
ULTRASONOGRAPHIC FINDINGS FOR THE HEART

- Heart-based mass with invasion of the main pulmonary artery and right pulmonary artery. Compression of the aorta is also present. Severe right heart enlargement secondary right sided congestive heart failure (ascites). Differential diagnoses include a chemodectoma (neuroendocrine tumour), carcinoma, including a thyroid carcinoma. Lymphoma is also possible but is less common as heart-based tumours.
- Incidental finding of myxomatous degeneration of the mitral (moderate) and tricuspid (mild) valves with left atrial enlargement and an increase in the LA: Ao ratio. Pseudohypertrophy of the left ventricle is present due to hypovolemia.

ULTRASONOGRAPHIC FINDINGS FOR THE ABDOMEN

- Marked ascites with high index of suspicion of carcinomatosis along the mesentery. The ascites is attributed to right heart failure; however, a component may be due to carcinomatosis.
- Hepatic changes are suggestive of a reactive hepatopathy and mineralization, as well as nodular hyperplasia. However, a few nodules also suggest possible "target lesions", which tend to be compatible with neoplasia, most often, carcinoma.
- Mild lymphadenomegaly of a lymph node in the caudal abdomen
- Age-related renal degeneration is observed.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS



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Unfortunately, surgical resection of the mass is not possible.

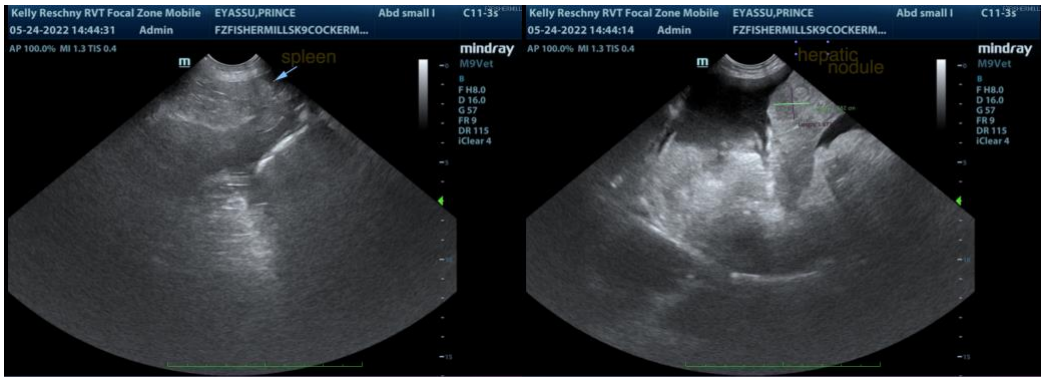
- Abdominocentesis may be considered to improve Prince's comfort.
- Palliative care with the administration of Palladia may be considered, assuming the mass is a carcinoma.
- Antithrombotic medications, such as clopidogrel, is suggested.
- Referral to an oncologist may also be considered.
- Sildenafil may help decrease pulmonary hypertension, however, the dose should be slowly up-titrated every few days to avoid systemic hypotension. A baseline arterial blood pressure would be required.
- Monitoring of the resting (sleeping) respiratory rate (RRR) is highly recommended once a day. The RRR should NOT EXCEED 30 breaths per minute (bpm). If the respiratory rate is greater than 30 bpm, *or* if there is a gradual increase (over a day or two) toward 30 bpm, the patient should be evaluated immediately for congestive heart failure and the appropriate treatment initiated.

The abdominal circumference may be measured once a day to monitor re-accumulation of the ascites.

Abdominocentesis may be performed. The fluid may be centrifuged and the sediment cytologically evaluated in an attempt to obtain a diagnosis.

Please refer to the echocardiogram for further recommendations.

I am sorry I could not be the bearer of better news for Prince.



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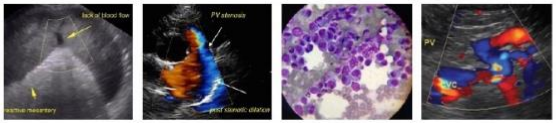

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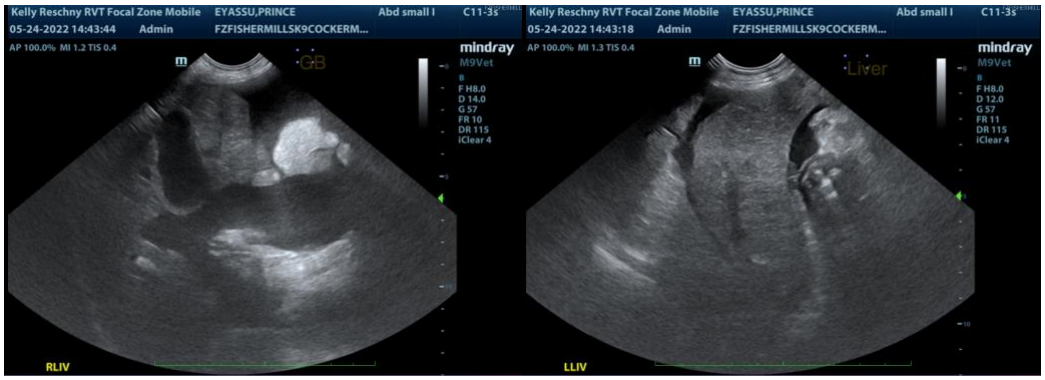

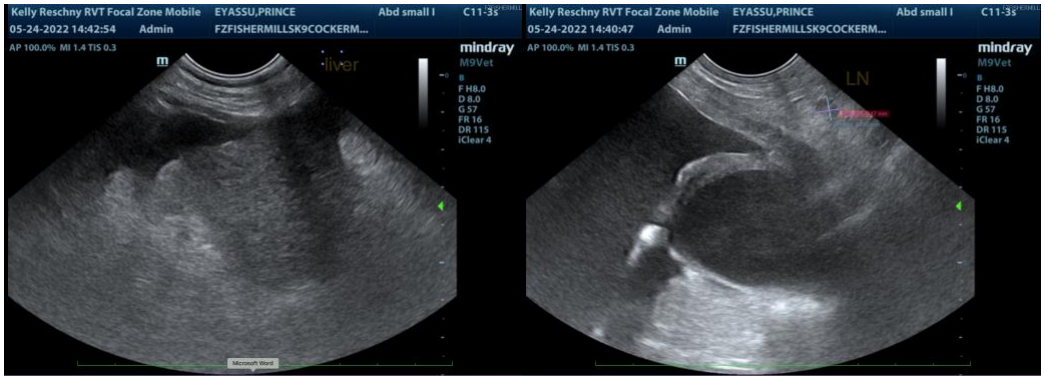

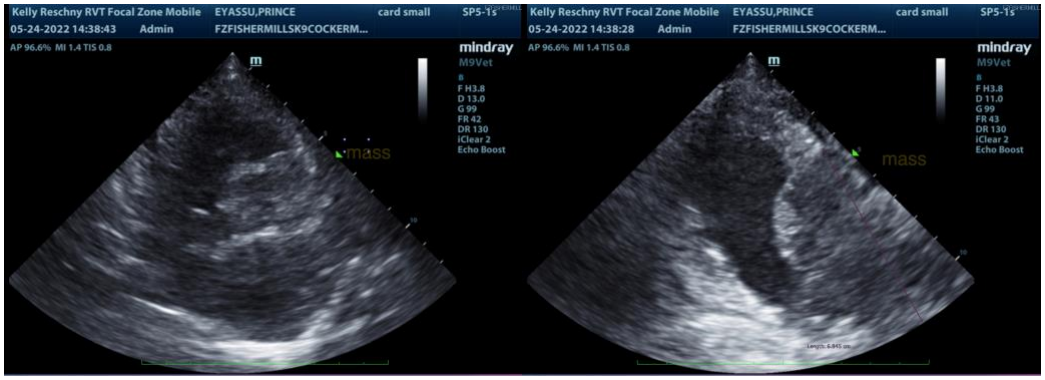

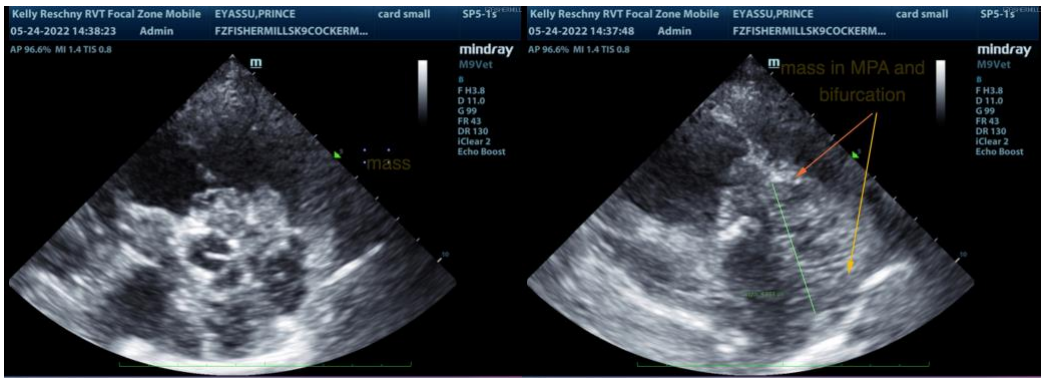

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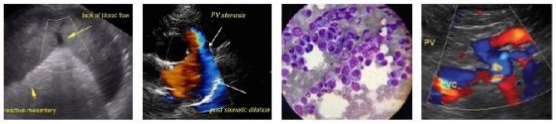

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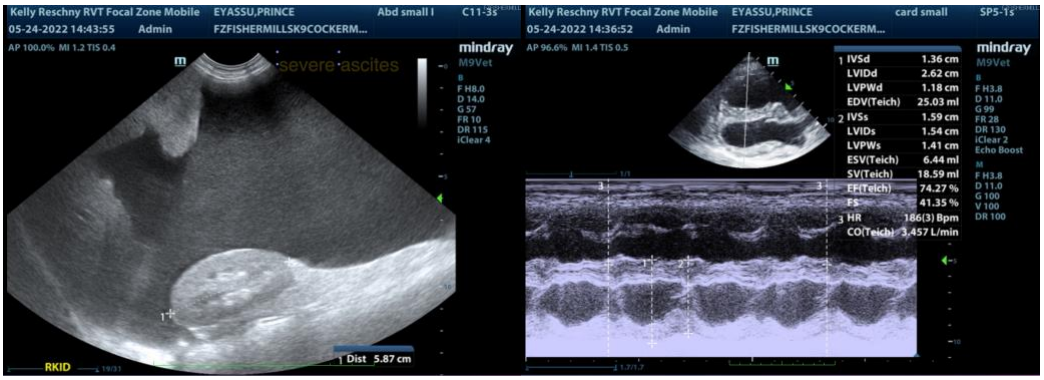
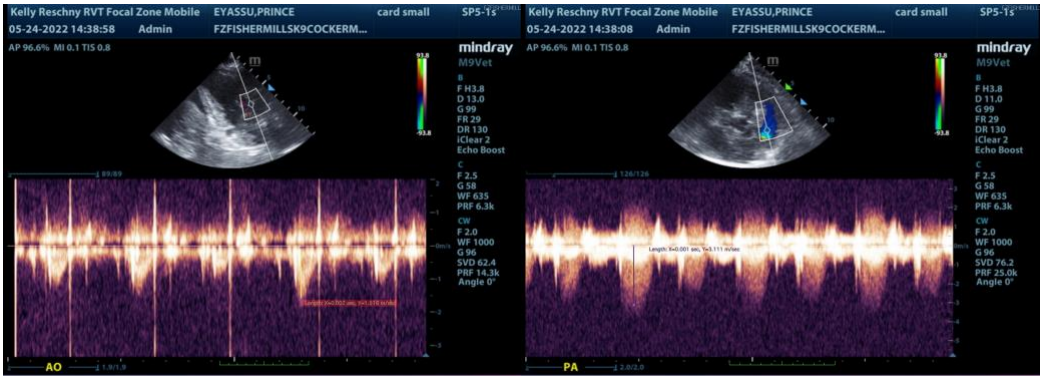
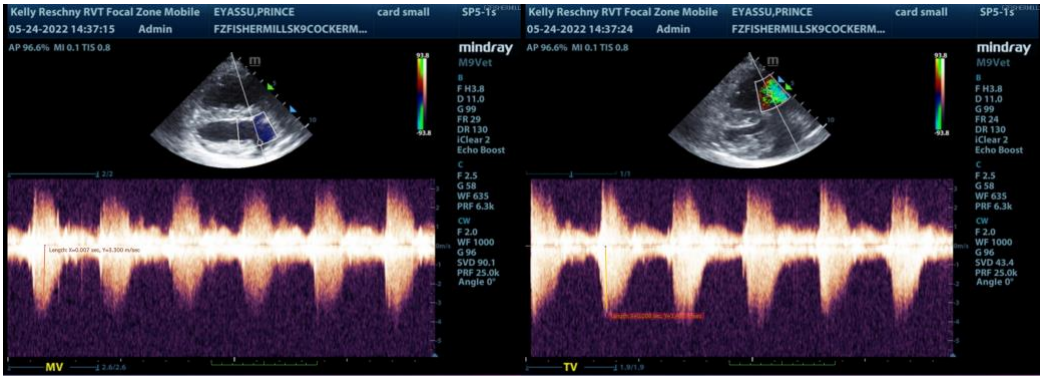
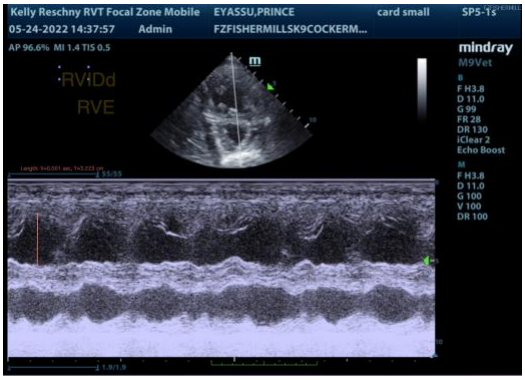
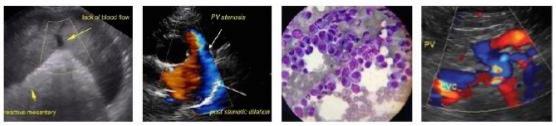








The information and recommendations provided are based on the images presented by the



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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.

Lisa Carioto, DVM, DVSc, Diplomate ACVIM

Lisa.Carioto@sonopath.com