

**DATE PRESENTING CLINICAL SIGNS**

2/13/23 Diagnosed with high likelihood of insulinoma, hypoglycemia paired with elevated insulin level; single seizure 2 weeks ago-ultrasound to identify and stage.

**PATIENT**

Kim McDowell  
 Current Medications: None listed.  
 Lab Results: elevated insulin  
 Date of Previous IntraPet Ultrasound: No previous.  
 Sedation: Not required to complete full diagnostic ultrasound.  
 Stat Report: Not requested.  
 Imaging Performed By: Rachel Brillhart, RDMS.

**SPECIES**

Canine

**BREED**

Mixed

**SEX**

Spayed Female

**AGE**

1/1/10

**WEIGHT**

14.3 Pounds

**INTERPRETED BY**

Kathleen Sennello DVM,  
 MS, Diplomate ACVIM  
 (Small Animal Internal  
 Medicine)

**HOSPITAL NAME**

Festival Vet Clinic

**REFERRING VET**

Dr. Beron

**INVOICE**

45115

**ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN****Urinary System**

The urinary bladder is moderately distended with anechoic urine. The Bladder wall, trigone, ureteral papillae and visible urethra (to a depth of 2cm) appear normal with no evidence of wall thickening, mucosal irregularities, masses or cystic calculi.

The left kidney has a normal shape and size (4.07 cm) with pinpoint non-obstructive nephroliths visualized. Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of focal perinephric inflammation or effusion. There is no evidence of pyelectasia, infarcts or hydroureter. Renal vasculature is normal.

The right kidney has a normal shape and size (4.46 cm) with pinpoint non-obstructive nephroliths visualized. Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of focal perinephric inflammation or effusion. There is no evidence of pyelectasia, infarcts or hydroureter. Renal vasculature is normal.

**Adrenal Glands**

The left adrenal gland is normal in size and shape but slightly irregular in appearance. It measures 0.69 cm at the cranial pole, 0.60 cm at the caudal pole, and 1.78 cm in length. It is observed in its normal position cranial to the left renal artery. It is somewhat abnormal in appearance in that there is a hyperechoic nodule in the cranial pole measuring approximately 0.66 cm x 0.58 cm, which does not significantly deform the shape of the adrenal. No evidence of vascular invasion is visualized.

The right adrenal gland is normal in size measuring 0.74 cm at the caudal pole. It is observed in its normal position between the cranial aspect of the right kidney and the caudal vena cava. It is normal in appearance (uniformly hypoechoic) and shape with no evidence of a mass effect.

**Spleen**

The spleen is subjectively normal in size, echotexture is homogenous, and the splenic capsule is smooth with no irregularities. The blood flow through the hilus and splenic parenchyma appears normal. No focal parenchymal abnormalities are visualized.

**Liver**

The liver is subjectively normal in size, and echogenicity with smooth peripheral margins. The parenchyma is homogenous echotexture. The visible portions of the vasculature and biliary tract appear normal. No focal nodules or cystic lesions are observed.

The gallbladder lumen is moderately distended. The wall of the gall bladder is not thickened and has a smooth mucosal surface. Luminal contents are mild and primarily anechoic. The cystic and common bile ducts are normal/not visible.

### ***Gastrointestinal***

The stomach contains minimal luminal contents. It measures at a normal thickness of <0.7cm with some variability due to the presence of rugal folds. The distinction of the gastric wall layers is adequate and there is no impression of reduced peristaltic activity. No masses or focal lesions were observed.

The visualized areas of duodenum, jejunum and ileum have a relatively uniform diameter with minimal fluid distension. Wall thickness is normal. Bowel loops follow a curvilinear path with distinct wall layering maintaining the typical 1:3 muscularis:mucosa layer ratio. Small intestinal wall measures 0.37 cm. Visualized peristalsis appears appropriate. There were no focal lesions consistent with obstruction or a mass effect observed.

The ileocecal junction was visualized and exhibited normal intact wall layering and is subjectively of normal thickness. Sections of colon are visualized with formed fecal material and gas shadowing distally. There is no observed focal or generalized colon wall thickening or loss of layering.

### ***Pancreas***

The left and right limbs of the pancreas are prominent and mottled compared to the surrounding isoechoic mesentery. There is a somewhat subtle, iso- to slightly hypoechoic nodule/mass effect visualized in the distal left limb of the pancreas, measuring approximately 1.65 cm x 1.06 cm. There is no evidence of regional mesenteric inflammation or fluid.

### ***Free Abdomen***

Evaluation of the peritoneal cavity did not reveal any evidence of effusion, or subjective lymphadenomegaly. The Medial iliac nodes appear normal and there was no evidence of a caudal aortic thrombus at the bifurcation. The omentum is of normal uniform echogenicity.

## **ULTRASONOGRAPHIC FINDINGS**

- Hyperechoic nodule in the cranial pole of the left adrenal gland – Adrenomegaly could be consistent with neoplasia (e.g., adenoma, carcinoma, pheochromocytoma), hyperplasia, inflammation, other.
- Subtle iso- to hypoechoic nodule in the distal left limb of the pancreas – This could be consistent with a pancreatic nodule (adenoma, carcinoma, etc.) producing insulin.

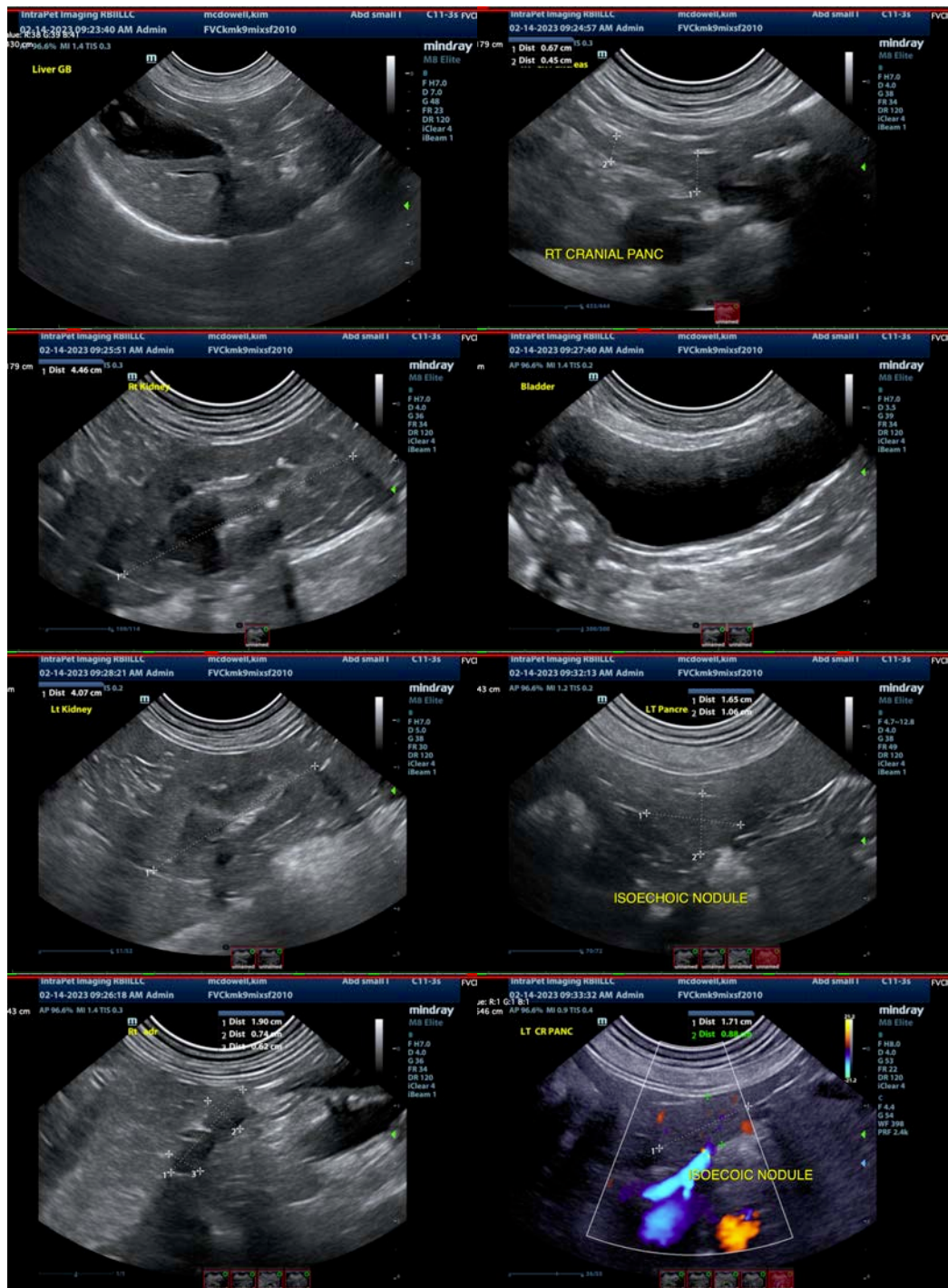
## **INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

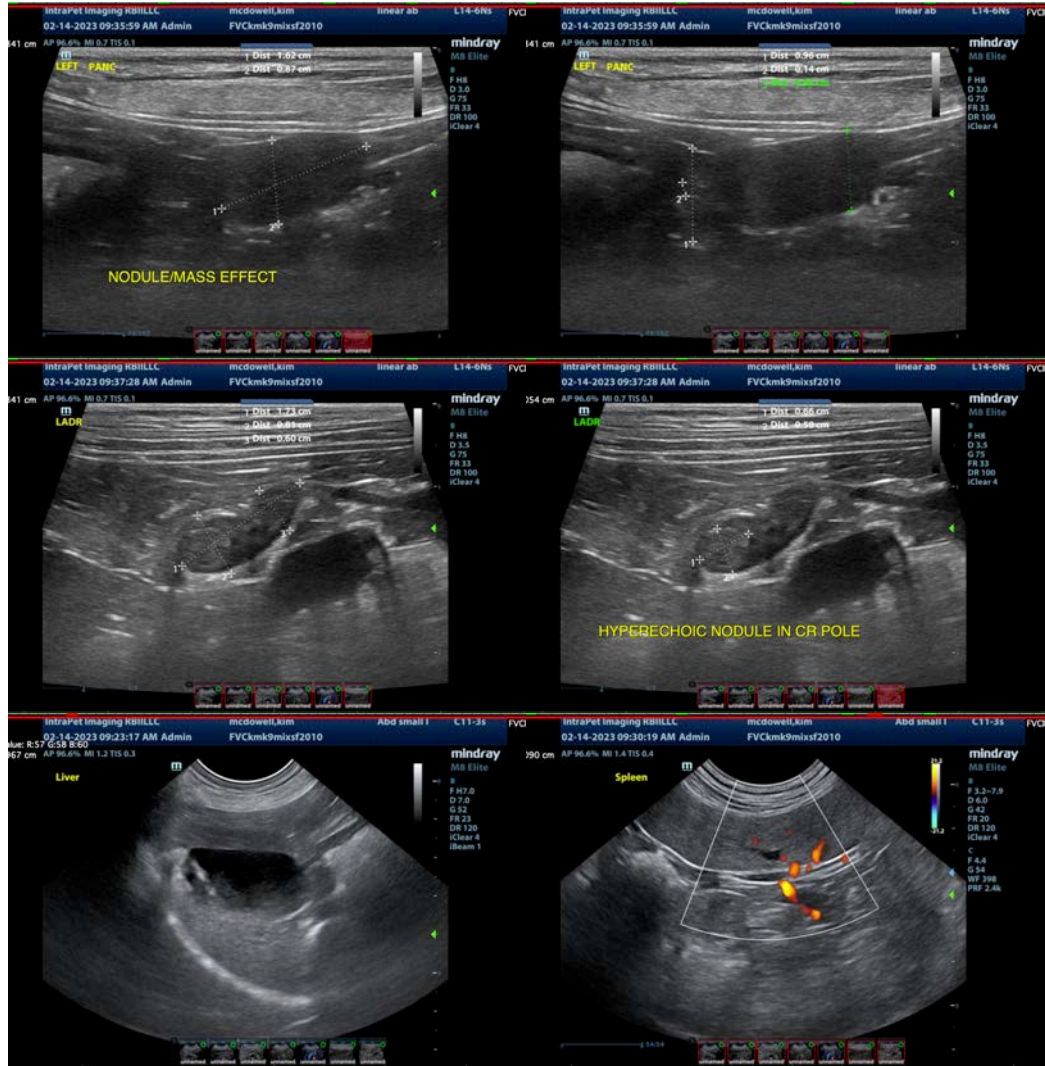
There is a subtle iso- to hypoechoic nodule visualized in the distal aspect of the left limb of the pancreas. This could be consistent with the suspected insulinoma, and could be consistent with an adenoma, carcinoma, etc. No other nodules or mass lesions are observed, although it is impossible to rule out the possibility of very small metastatic lesions. Options moving forward include a fine needle aspirate of the pancreatic nodule and referral to a veterinary surgeon for possible removal of the nodule with histopathology. preoperative CT scan, looking for the possibility of more subtle metastatic nodules can sometimes be of value.

Additionally, there is a hyperechoic nodule in the left adrenal gland. This is relatively small at this time, and does not appear to be significantly deforming the left adrenal. This could represent a benign hyperplastic lesion, adenoma, etc., or could be an early neoplastic lesion, metastatic lesion, etc. Options moving forward would include continued monitoring with ultrasound, or possibly even surgical removal at the time of surgery for the pancreatic nodule depending on the patient's clinical status and consultation with the surgeon and oncologist.

A blood pressure is recommended prior to considering surgery. If hypertension is present, recommend catecholamine levels, looking for a possible pheochromocytoma.

Recommend three view thoracic radiographs to evaluate for possible concurrent thoracic disease/involvement.





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.

Kathleen Sennello DVM,MS, Diplomate ACVIM (Small animal Internal Medicine)  
 kathleen.sennello@sonopath.com