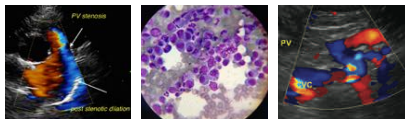
IMAGING PERFORMED BY

IntraPet.com



SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
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DATE
2/21/22

PATIENT
Abby Sutton

SPECIES
Canine

BREED
Fox Terrier

SEX
Spayed Female

AGE
2012

WEIGHT
20 lbs

INTERPRETED BY
Eric Lindquist, DMV
DABVP, Cert. IVUSS

HOSPITAL NAME
Bay Country VH

REFERRING VET
Dr. McLean

INVOICE
96193

PRESENTING CLINICAL SIGNS

Seen at another hospital August 2021 - labwork showed markedly elevated Cholesterol and Triglycerides. Mild ALP increase, 3+ protein in urine.
Seen 2/17/22 for decreased appetite, abdominal pain. On PE, noted mildly distended abdomen, painful on palpation.
Labwork 2/17/21: Increased ALP, Cholesterol, Triglycerides, Spec cPL.
Current Medications: 2/17 - started Cerenia 24mg SID, Mometamax in both ears.
Lab Results: Attached. ALP = 449 (5-160)
Cholesterol = 779 (131-345)
Trigyceride = 279 (20-150)
Spec cPL = 288 (0-200)
Urine: 4+ proteinuria. USG = 1.028. Rare cocci, no increase in WBC.
Date of Previous IntraPet Ultrasound: No previous.
Sedation: Not required to complete full diagnostic ultrasound.
Stat Report: Not requested.
Imaging Performed By: Rachel Brilhart, RDMS.

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. No uroliths or sediment were visualized and anechoic urine was present. 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 this age patient. Medullary structure differed distinctly from that of the cortex and no evidence of pelvic dilation was present. Mineralization was noted. The left kidney measured 4.7 cm.

Adrenal Glands

The left **adrenal gland** was uniform and measured 1.41 x 0.39 cm at the caudal pole and 0.35 cm at the cranial pole. The right adrenal gland was uniformly enlarged and measured 1.66 x 1.02 cm at the cranial pole and 0.95 cm at the caudal pole.

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 was noted.

Liver

The **liver** was uniformly swollen with minor, excessive gallbladder debris and over distension with dependent and suspended bile without evidence of overt mucocele formation. However, excessive sludge was present. Slight polypoid changes and echogenic gallbladder wall was noted. The liver presented coarse architecture with mildly increased portal markings and subtle, mixed echogenic changes. This is consistent with vacuolar hepatopathy and some level of remodeling and history of inflammatory component. There was no overt suspicion of neoplasia.

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 **pancreas** was heterogenous and irregular with undulating contour. The pancreas was mildly enlarged and measured up to 1.38 cm.

ULTRASONOGRAPHIC FINDINGS

Benign hepatopathy with gallbladder sand.
Chronic pancreatic changes.
Prominent right adrenal gland.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

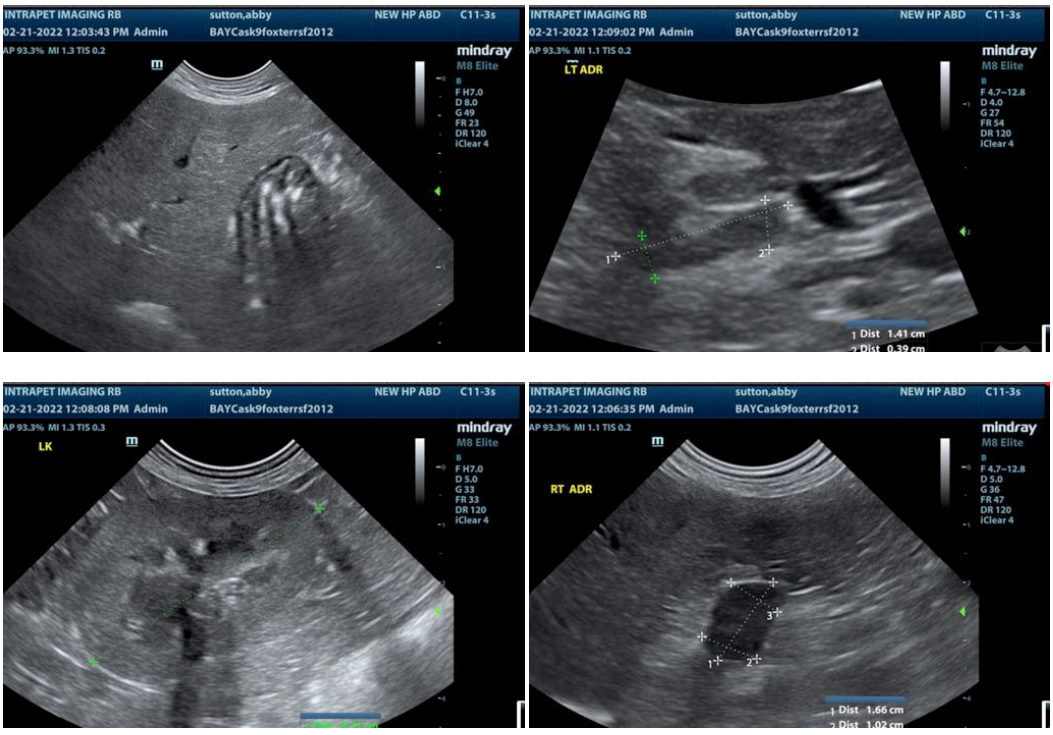
FNA of the liver and pancreas is ideal to assess any inflammatory cell type. Ursodiol therapy is warranted over the next 6-8 weeks with a recheck of the biliary sand. There was no evidence of obstructive disease. Ursodiol therapy is warranted over the next 6-8 weeks with a recheck of the biliary sand. There was no evidence of obstructive disease. If Cushingoid parameters are present then work-up for adrenal dependent Cushing's is indicated. However, an argument could be made for both adrenal dependent and pituitary dependent Cushing's even though the left adrenal appears normal. If Cushing's is present the proteinuria may be secondary to Cushing's disease or possibly low-grade UTI.

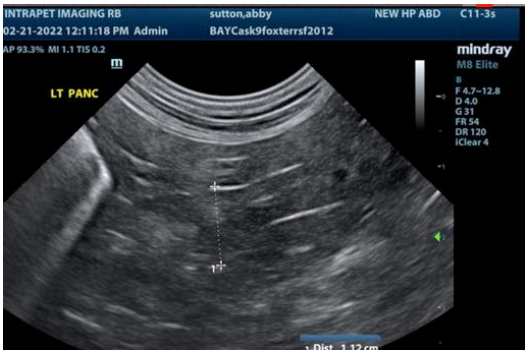
Efficient & Accurate Cushing's Work up-Lindquist
Notes regarding Cushing's Clinical Presentations:
Nearly all Cushing's dogs have SAP elevations and true PU/PD (USG < 1.025) and most are polyphagic.
Cushing's dogs are > 6 years and usually > 9 years old, usually have poor skin coats, body scores > 3/5, and are usually sedentary animals.
Its important to remember that Cushing's dogs usually look and play the part and other diseases cause false + stress related cortisol spikes. On rare occasion a Cushing's dog will not follow the rules but this is truly an exception.
Potential Cushing's patient workups can be costly and frustrating if not definitive and, in my experience, the non-definitive patient usually has something else going on that may be contributing to some of the clinical signs a Cushing's dog will have, especially SAP elevations or PU/PD. Based on this prelude of information I came up with the following algorithm in the spirit of diagnostic efficiency.
The following suggested protocol is based on current available literature on Cushing's disease and extensive clinical-sonographic experience evaluation + Cushing's and False + LDDST & ACTH stim. cases in order to maximize the efficiency of a Cushing's workup in practice.

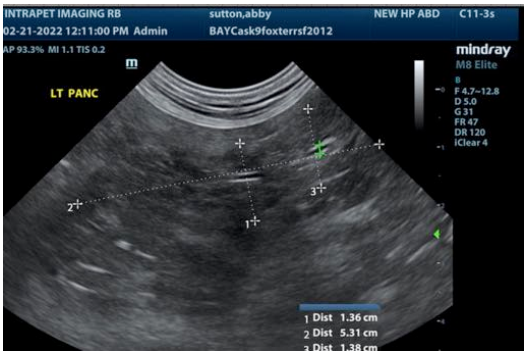
Screen first, workup second
1) **UA:** Repeatable (2-3 urine samples) Urine specific gravity & urine cortisol/creatinine ratio (UCCR): If ***repeatable USG< 10.20 and + UCCR*** move to next step 2.
Note: UA is inexpensive and easy to obtain and if UA criteria is not met for Cushing's then resources can be spent into other more pertinent diagnostics or left on hold until the UA criteria is met in emerging Cushing's cases.
2) **Sonogram:** Does the patient **have concurrent disease** clinically or sonographically as non-Cushing's illness will influence the potential false + LDDST or even ACTH stim. The sonogram gives a global perspective of the internal health of the patient to be considered in the Cushing's workup as an assessment of concurrent disease. Is there a concurrent neoplastic process, UTI pancreatitis, mucocele….? Are the adrenals enlarged (Cushing's-PDH, stress, age related or breed variant), or atrophied (Iatrogenic Cushing's or adrenal burnout),

have asymmetric enlargement (Adrenal tumor, hyperplasia, adenoma, age related variant), or is there vascular invasion (Invasive pheo with false + UA criteria or adenocarcinoma or phrenic thrombosis)? The sonogram answers these questions proactively.
3) **LDDST** (0.01 D-Sodium phosphate mg/kg IV) (Better screening test but plagued with false +) Use if there is potential early Cushing's or if adrenal asymmetry present on sonogram suspecting tumor. Use LDDST in cats at a higher dose (0.1 mg/kg IV).
OR
4) **ACTH stim**. (Better confirming test but can have false +) Use if the patient "looks" Cushingoid or if bilateral adrenal enlargement is present, or high normal width on sonogram, or if iatrogenic Cushing's suspected (Cortisone Tx in past).
5) If **diabetic** then run both LDDST & ACTH stim.
5) Run a **serial blood pressure** in a BP friendly non "white coat effect" atmosphere. Run at least 3 at different times over a few hours or when eating as the patient tends to be calm when eating or give Torbutrol when entering the facility.
6) **Perform CT** of the pituitary to identify macro adenoma expansion if any lethargy or dullness or other central clinical CNS signs are minimally present.
Suggested reading:

Behrend EN, Kooistra HS, Nelson R, et al. Diagnosis of Spontaneous Canine Hyperadrenocorticism: 2012 ACVIM Consensus Statement (Small Animal). J Vet Intern Med 2013;27:1292–1304 .







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.

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