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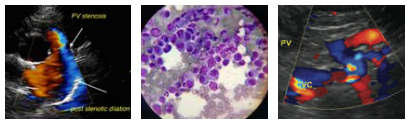

SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
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DATE

9/9/21

PATIENT

Sadie Hartzell

SPECIES

Canine

BREED

Labrador

SEX

Spayed Female

AGE

2007

INTERPRETED BY

Eric Lindquist, DMV
DABVP, Cert. IVUSS

HOSPITAL NAME

Everhart VH

REFERRING VET

Dr. Hayes

INVOICE

91750

PRESENTING CLINICAL SIGNS

Patient presents for multiple mass removals, recent labs show ALP increase from previous- 937 in July from 356 in Sept 2020. USG = 1.008. 3lb wt loss since July. Brief abd us shows concern for hepatic mass.
ALKP 937, ALT 143
Current Medications: none
Date of Previous IntraPet Ultrasound: no previous
Sedation: not needed
Stat Report: not requested

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. The left kidney measured 7.45 cm. An anechoic cyst was noted in the cranial pole of the right kidney measured 5.7 cm. The right kidney measured 6.73 cm.

Adrenal Glands

The left **adrenal gland** was uniformly enlarged and mildly heterogenous with pericapsular inflammatory pattern noted. The left adrenal gland measured 3.57 x 0.94 cm and 1.26 cm at the cranial pole. The right adrenal gland was also enlarged and measured 2.74 x 1.54 cm at the cranial pole and 1.21 cm at the caudal pole.

Spleen

The **spleen** was enlarged and folded upon itself with micronodular changes and swollen contour.

Liver

The **liver** presented multiple, moderately undifferentiated, expansive masses. A 2.44 cm mildly hypoechoic nodule was noted in the right liver. Other heterogenous, nodular changes were noted. A separate left liver mass measured 6.0 x 3.75 cm. The gallbladder presented acceptably thin walls with primarily anechoic content. The cystic and common bile ducts were normal. No pathological hepatic lymphadenopathy was evident. No overt structural evidence of inflammatory, infiltrative or regenerative pathology was evident.

Gastrointestinal

Examination of the **gastrointestinal tract** revealed a mildly thickened gastric wall, yet there was no loss of detail. The intestines were 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. The mesenteric lymph nodes were reactive and measured 1.76 x 0.64 cm.

Pancreas

The **pancreas** was heterogenous, hypoechoic with irregular parenchyma and enlargement of the right limb measuring 2.33 cm.

ULTRASONOGRAPHIC FINDINGS

Bilateral adrenal hypertrophy, suspect PDH/Cushing's.
Multiple hepatic masses. Pronounced hyperplasia is possible. Carcinoma or metastatic disease is suspected.
Mild splenic enlargement.
Pancreatitis and gastritis may also be present in this patient given the sonographic presetnation.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

FNA of the right and left sided liver lesions are recommended. Depending upon cytology results of the liver, work-up for Cushing's would be appropriate. The hepatic pathology even though fairly undifferentiated may be slow growing. FNA of the spleen is warranted to assess for reactive spleen versus emerging round cell neoplasia. The prognosis is guarded depending upon cytology results. I recommend cytology first of the liver and spleen, if benign or low-grade then work-up for adrenal Cushing's/PDH is recommended. Urinalysis is warranted to assess for isosthenuria.

Efficient & Accurate Cushing's Work up-Lindquist

Notes regarding Cushing's Clinical Presentations:

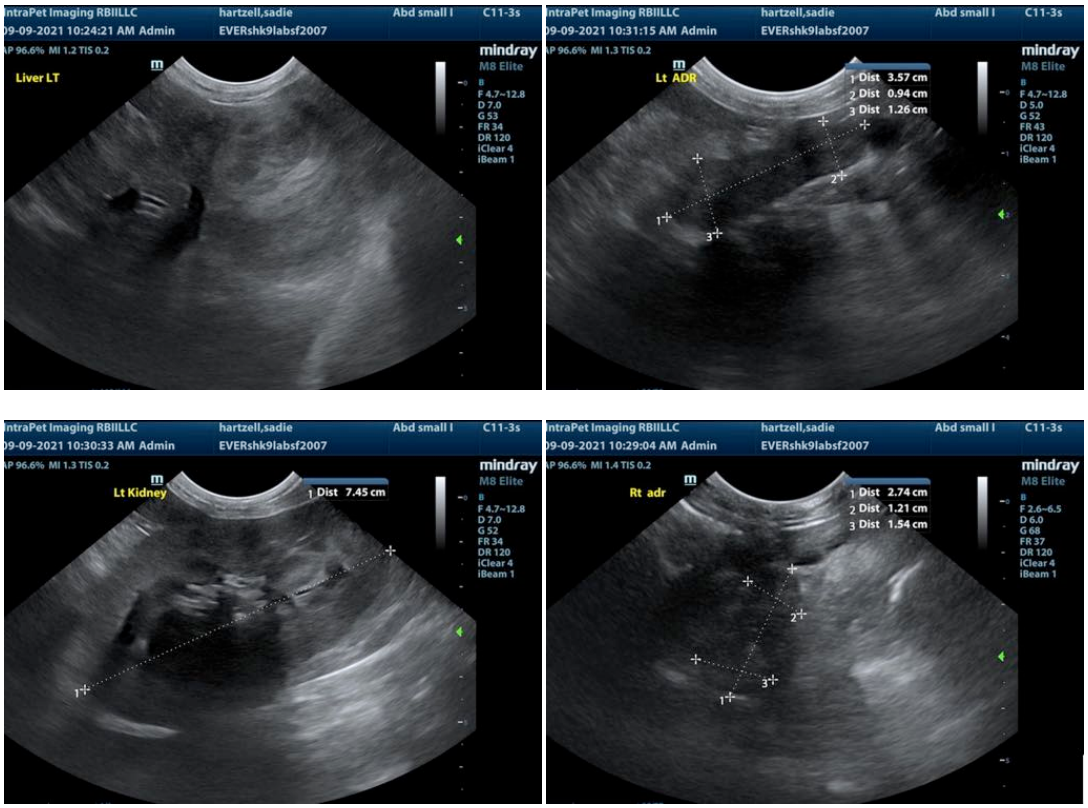
Nearly all Cushing's dogs have SAP elevations and true PU/PD (USG < 1.025) and most are polyphagic.
Cushing's dogs are > 6 years and usually > 9 years old, usually have poor skin coats, body scores > 3/5, and are usually sedentary animals.
Its important to remember that Cushing's dogs usually look and 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.

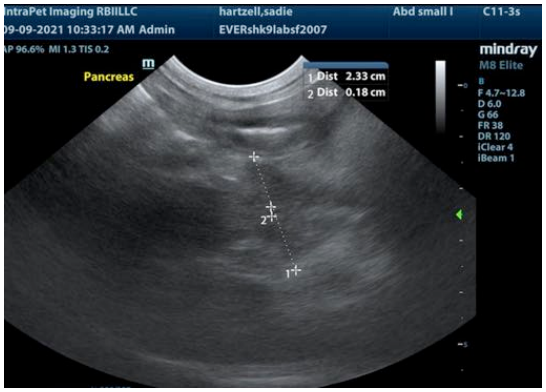
Screen first, workup second

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 .

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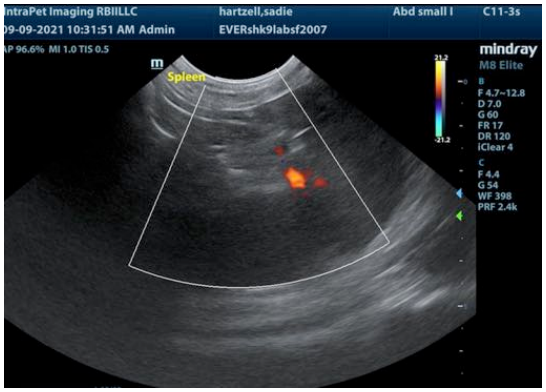
hartzell,sadie
EVERshk9labsf2007
Abd small I
C11-3s
mindray
M8 Elite
Pancreas
1 Dist 2.33 cm
2 Dist 0.18 cm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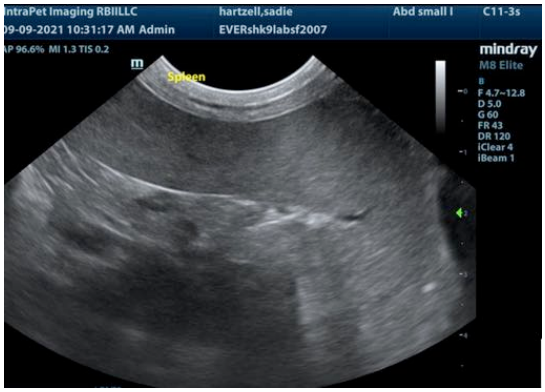
Spleen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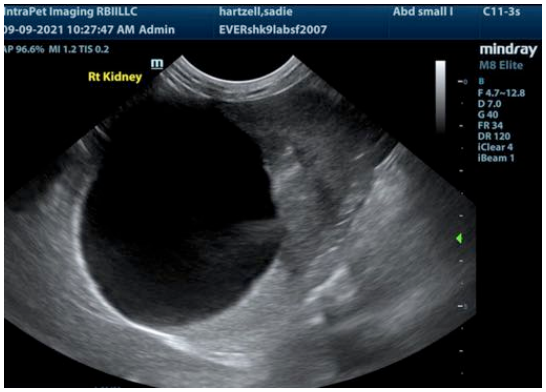
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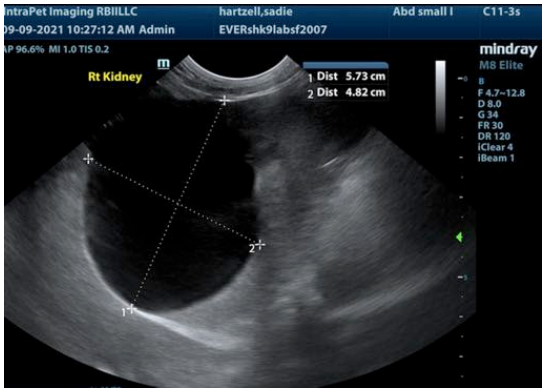
C11-3s
mindray
M8 Elite
Rt Kidney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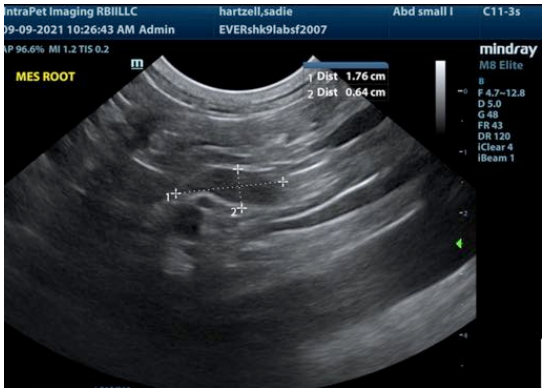
EVERshk9labsf2007
Abd small I
C11-3s
mindray
M8 Elite
Rt Kidney
1 Dist 5.73 cm
2 Dist 4.82 cm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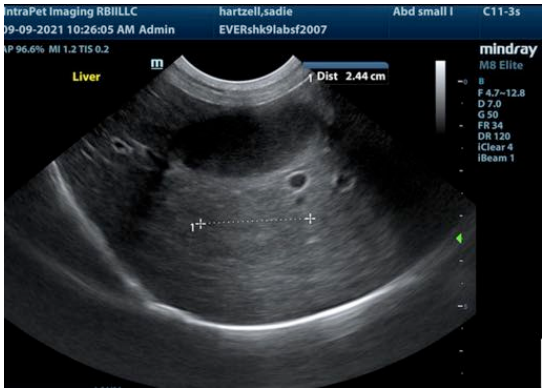
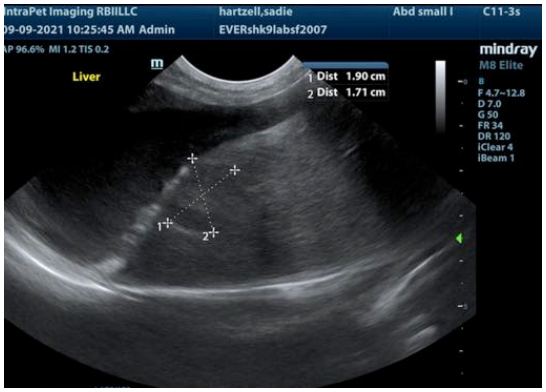
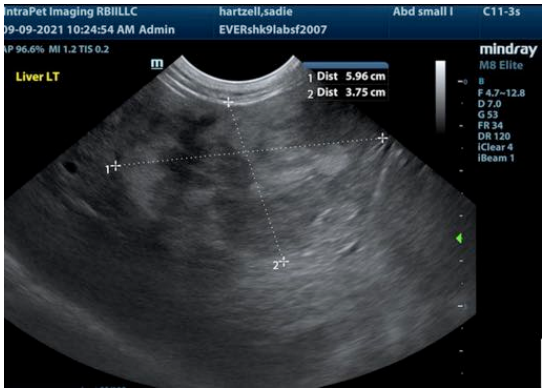
EVERshk9labsf2007
Abd small I
C11-3s
mindray
M8 Elite
MES ROOT
1 Dist 1.76 cm
2 Dist 0.64 cm







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
Eric.Lindquist@SonoPath.com