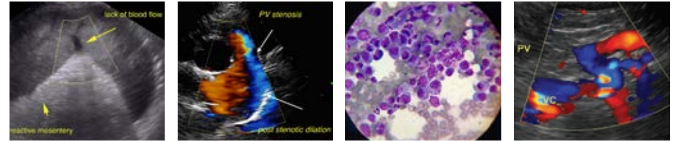

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1-800-838-4268 info@sonopath.com

PATIENT
Henry Wentz

SPECIES
Canine

BREED
Terrier X

SEX
Neutered Male

AGE
17 Years

WEIGHT
13.2

INTERPRETED BY
Eric Lindquist, DMV
DABVP, Cert. IVUSS

IMAGING PERFORMED BY
Dr. Brittany Gardener

HOSPITAL NAME
Wilvet Salem

REFERRING VET
Dr. Brittany Gardener

INVOICE
46073

DATE
3/22/23

PRESENTING CLINICAL SIGNS

Patient stopped eating on Sunday night and became very lethargic Monday morning. He has a HX of chewing up paper towels and napkins.

Abnormal PE/Chem/CBC/UA Results: CBC: RBC 5.27 HCT 33.5 HBG 12.9 WBC 11.31 NEut 9.52 Plts 180 PCV/TS: 33/8.8 Anemia r/o hemorrhage/GI loss vs destruction/autoimmune/infectious vs bone marrow disease/chronic disease vs neoplasia Chem 17: gluc 145 Creat 1.6 BUN 52 Glob 4.9 ALP 1406 Lipase 4334 elevated BUN r/o prerenal (dehydration, GI bleeding, high protein diet), renal, post renal elevated ALP r/o Cushings disease, biliary tract abnormalities (cholestasis, bile duct neoplasia, cholelithiasis, pancreatitis), hepatic parenchymal disease vs other EPOC: HCT 35 Gluc 137 Creat 1.29 BUN 50 K 5.2 pH 7.472 Hyperkalemia r/o renal (ARF), postrenal obstruction, Addisons, DKA, dehydration, uroabdomen, muscle necrosis, tumor lysis syndrome, whipworms (large bowel diarrhea), chronic effusion Cpli: 981.5 - consistent with pancreatitis

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 were 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 his age patient. Medullary structure differed distinctly from that of the cortex. Pyelectasia noted in the left kidney. Occasional anechoic cortical cysts noted in both kidneys. The left kidney measured 5.0 cm. The right kidney measured 5.2 cm.

Adrenal Glands

The **left adrenal gland** was slightly swollen, measuring 0.83 cm, uniform.

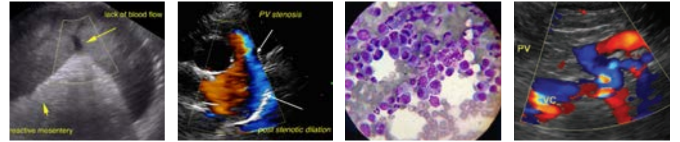
The **right adrenal gland** was heterogeneous and irregular with generalized enlargement, measuring 1.3 cm at the cranial pole and 0.70 cm at the caudal pole.

Spleen

The **spleen** presented an expansive parenchymal mass measuring 6.0 cm. No evidence of cavitation or rupture. The splenic mass derived from the mid caudal body of the spleen. This may be independent from the clinical signs in this patient.

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. Non-obstructive calculi also noted in the gallbladder, the largest of which measured 8.0 mm. 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 metastasis from the splenic pathology, yet micrometastasis cannot be completely ruled out.



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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 hypoechoic and irregular enhanced surrounding mesentery, suggestive for low-grade inflammation. Pathology localized primarily to the right limb.

ULTRASONOGRAPHIC FINDINGS

- Moderate chronic degenerative renal changes with cortical cysts
- Prominent, irregular pancreas – suspect chronic active inflammation +/- hyperplasia.
- Splenic parenchyma mass – may be histopathologically benign. Hemangiosarcoma, round cell neoplasia, stromal tumor all possible.
- Subjectively benign hepatopathy with possible of micrometastasis from the splenic pathology, with gallbladder calculus and debris present.
- Bilateral adrenal enlargement – suggestive for PDH if all clinical signs of Cushing's are present.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Supportive care warranted. The splenic mass may be completely incidental. However, stabilization of the patient followed by splenectomy, inspection of the pancreas, particularly the right pancreatic limb, and liver biopsy indicated. Screening FNA of the splenic mass and liver could also be considered. Chest radiographs warranted to assess for metastatic disease. Round cell neoplasia, hemangiosarcoma, fibrosarcoma, benign splenic mass with benign hepatopathy all possible.

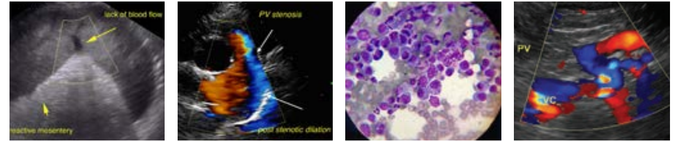
Efficient & Accurate Cushing's Work up-Lindquist

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.



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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).

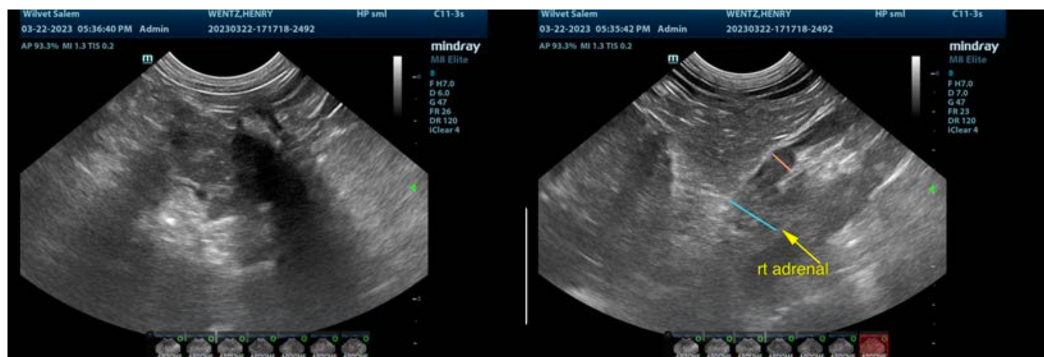
5) If **diabetic** then run both LDDST & ACTH stim.

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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Clinical Sonography & Telecytology

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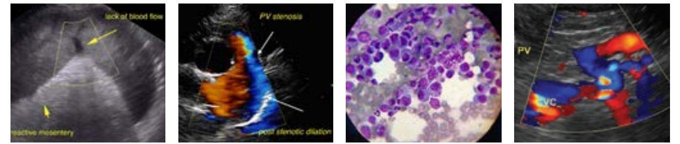

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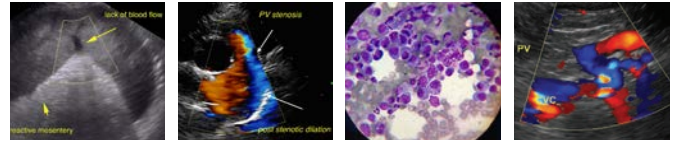

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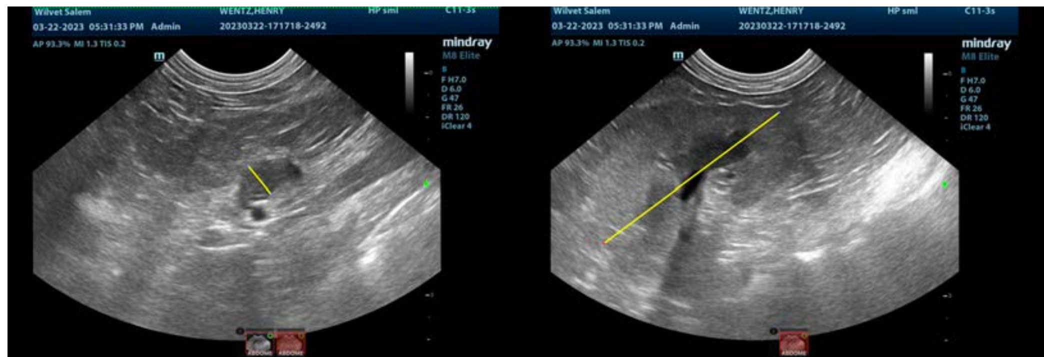

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.

Eric Lindquist, DMV, DABVP, Cert. IVUSS, CEO of SonoPath.com

info@SonoPath.com