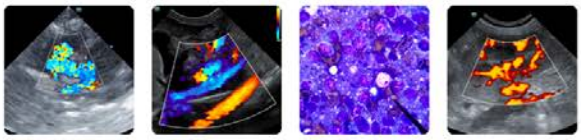


DATE

2/3/26

PATIENT

Alabama Butters Johnson

SPECIES

Canine

BREED

Pekingese x

SEX

Neutered Male

AGE

8/10/13

WEIGHT

19.4 lbs

INTERPRETED BY

Eric Lindquist, DMV, DABVP, Cert. IVUSS

HOSPITAL NAME

Chadwell Animal Hospital

REFERRING VET

Dr. Mengers

INVOICE

72683

PRESENTING CLINICAL SIGNS

Patient History: Presented 1/21/26 for chronic cough w/ several months duration. On PE, grade II HM, mild aural debris AD, mild cough elicited on tracheal palpation, L MPL, over conditioned, OS bupthalmic w/ cataract and uveal cyst, OD microphthalmia and non-visual, mod dental calc. Hx of idiopathic epilepsy and hypothyroidism. Elevated ALT, ALP, and cholesterol (prev elevated while on phenobarb, went down following cessation of phenobarb and switch to zonisamide, now increasing again). LDDST not supportive of Cushing's dz, T4 WNL.

Current Medications: Doxycycline 100mg - 1 tab po sid x 30 days (started 10/30/25 at origination of cough) keppra 250mg - 1.5 tab po tid, gabapentin 100mg - 1 tab po tid, thryo-tabs 0.2 mg- 1/2 tab po bid, zonisamide 50mg - 1 tab po bid (started 4/10/25), milk thistle 250mg - 1 tab PO sid (restarted 3 wks ago), phenobarb stopped 11/3/22
Labwork Results: labwork attached, reported as: 1/31/25 - CBC/CHEM/T4: ALT 252 (prev 770), ALP 329 (prev 605), chol 456, T4 3.2, fT4 2.1. 10/31/25 - LDDST: resting cortisol 1.7, 4 hrs post 0.7, 8 hrs post 0.5. 11/4/25
- CBC/CHEM/T4: creat 1.2, BUN 47, ALT 547 (prev 252), ALP 341 (prev 329), T4 2.8. - 2V CXR: bronchoalveolar lung patterning, mild intrathoracic narrowing of trachea, mod reverse D-shaped cardiomegaly, ingesta throughout GIT, gas aborad small intestines, rounded tip of liver w/ mild hepatomegaly, normal appearance of kidneys, no skeletal abnormalities
Date of Previous IntraPet Ultrasound: 4/15/22. See attached.
Sedation: Not required to complete full diagnostic ultrasound.
Stat Report: Not requested.
Imaging Performed by: Stephanie Warga RDCS, RVT.

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 residual prostate was uniform.

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 and no evidence of pelvic dilation was present. Slight mineralizations noted in both kidneys. The right kidney measured 5.0 cm. The left kidney measured 4.41 cm.

Adrenal Glands

The **right adrenal gland** presented slight swollen contour yet measurably normal at 2.2 cm x 0.71 cm at the cranial pole and 0.55 cm at the caudal pole. Slight hyperechoic nodule noted at the cranial pole.

The **left adrenal gland** was slightly heterogeneous and mildly swollen, measuring at the upper limits of normal at 2.5 cm x 0.88 cm at the caudal pole and 0.63 cm at the cranial 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 were noted.

Liver
The **liver** presented mild coarse architecture and uniform swelling. Slight increased portal markings noted. Some nodular changes were noted in the liver, non-disruptive. The gallbladder presented minor excessive debris and coalesced and suspended bile noted with some minor striations.

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 base and limbs of the **pancreas** were observed to be largely isoechoic to surrounding omental fat. Some parenchymal remodeling, however, with mild deviation from curvilinear normalcy was observed. Pancreatic duct and capsular irregularities were present consistent with age related changes. If pain upon imaging (+ Murphy sign) was present or if the patient is focally painful in subxyphoid palpation then low-grade smoldering chronic pancreatitis should be suspected.

ULTRASONOGRAPHIC FINDINGS

- Benign hepatopathy with minor remodeling and minor excessive gallbladder overdistention.
- Slightly swollen adrenal glands – Potential emerging PDH.
- Age related renal changes with slight mineralization.
- Age related pancreatic remodeling.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

The gallbladder presentation is not consistent with mucocele at this time. However, Ursodiol therapy could be justified as a proactive measure. Given that cushingoid parameters are not completely present, recheck for Cushing's recommended in 2-3 months depending upon progression of the presentation. Screening FNA of the liver, particularly the right liver, recommended for further definition, yet these changes would be consistent with Phenobarbital induced hepatopathy. Recommend periodic screening of USG to ensure that it is persistently <1.020, followed by urine cortisol to creatinine ratio. If elevated, then repeat LDDST would be indicated in the future. However, the screening tests of USG and UCCR may be utilized periodically.

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.

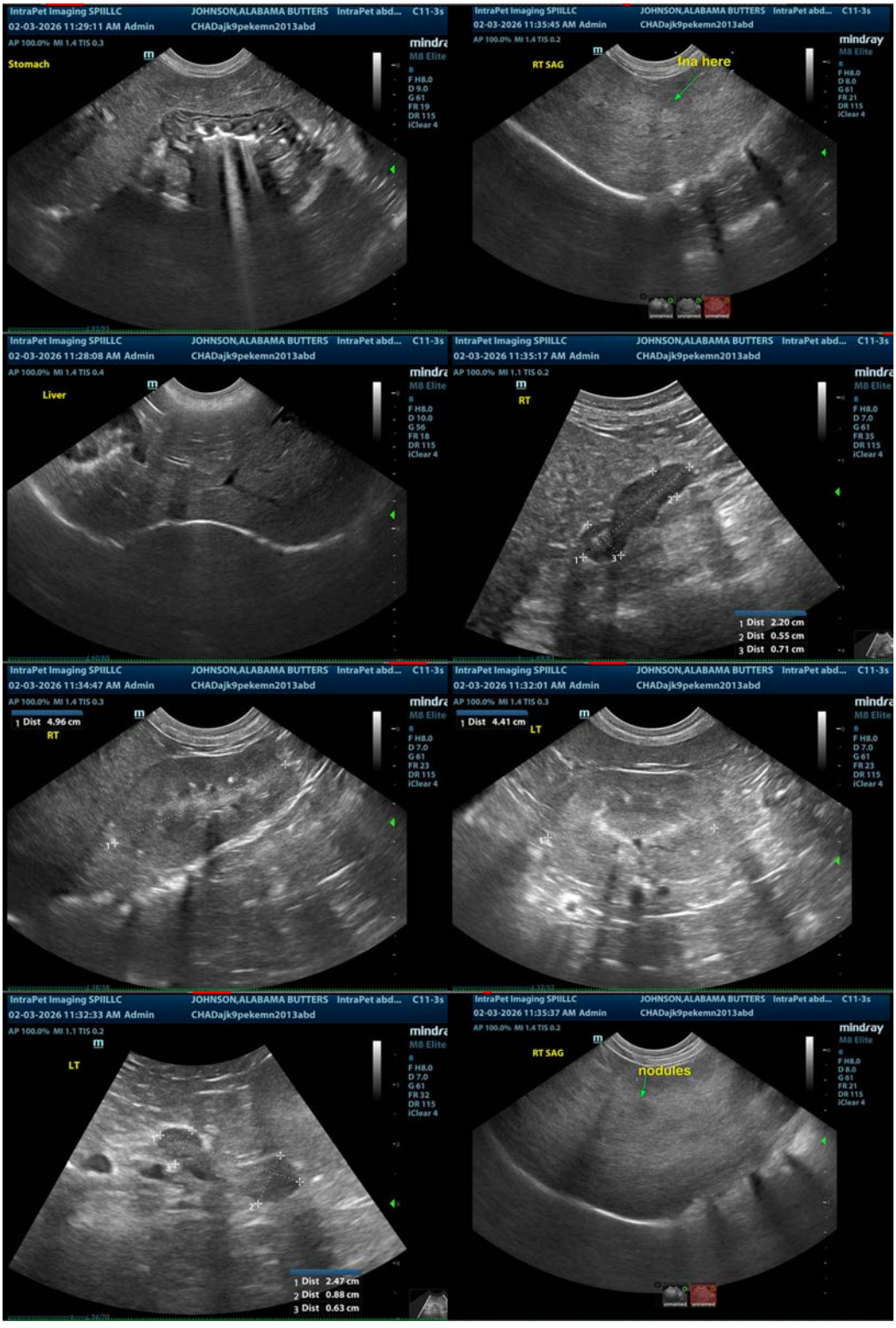
Its important to remember that Cushing's dogs usually look and play the part and other diseases cause false + stress related cortisol spikes. On rare occasion a Cushing's dog will not follow the rules but this is truly an exception.

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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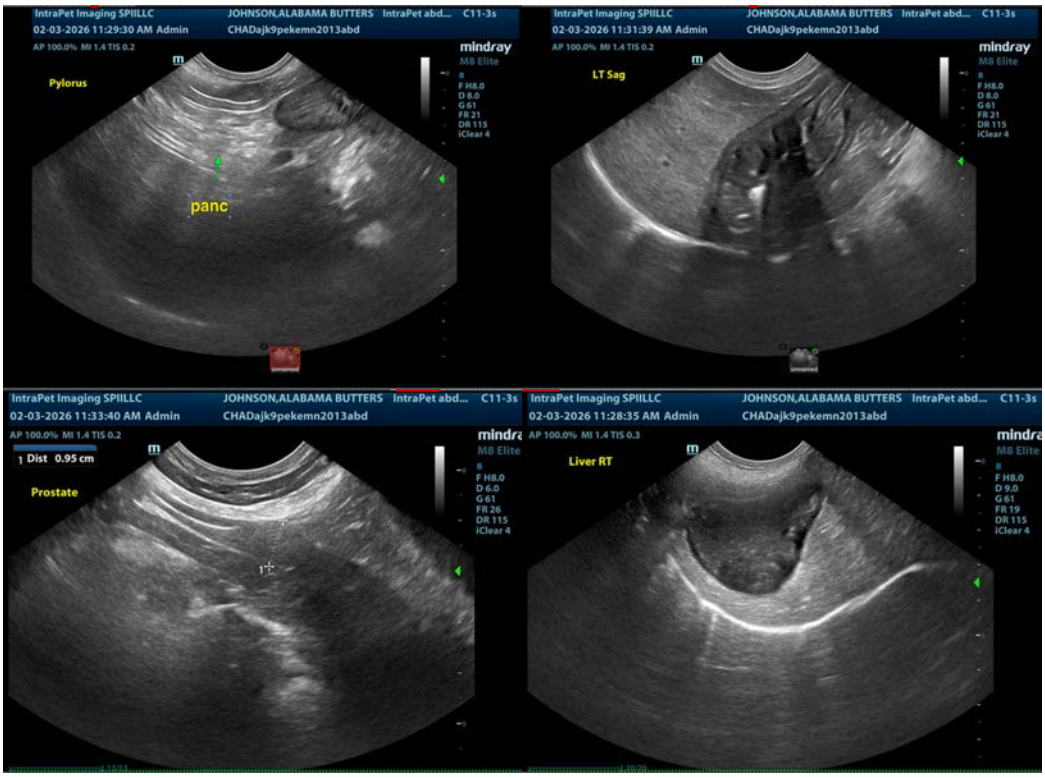
nodules



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(CFM), Cert. IVUSS,
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info@SonoPath.com