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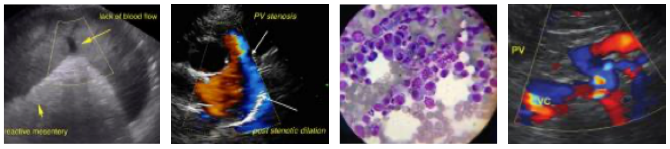


**PATIENT**

Annie Incandela

**SPECIES**

Canine

**BREED**

Yorkshire Terrier

**SEX**

Spayed Female

**AGE**

11 years

**WEIGHT**

3.58 kg

**INTERPRETED BY**

Andrea Nicastro, DVM, Diplomate ACVIM (*Small Animal Internal Medicine*)

**IMAGING PERFORMED BY**

Dr. Van Nieuwal

**HOSPITAL NAME**

Animal EH Volusia

**REFERRING VET**

Dr. Van Nieuwal

**INVOICE**

11977

**DATE**

11.7.22

## PRESENTING CLINICAL SIGNS

History: Annie is an 11yo FS Yorkie that presented for evaluation of acute ataxia, crossing hind legs when walking, and walking on hocks. Suspect hyperosmolar hyperglycemic syndrome.
Abnormal PE/Chem/CBC/UA Results: Blood: Osmolality 399.6, Crea 3.1, ALP 283, Bicarb 13.2, BE-14.1, Sodium 114, potassium 5.3, ionized calcium 1.03, BUN diluted 1x10 165.4, Glucose diluted 1x10 1319, phosphorus diluted 1x10 15.7, CPL abnormal UA: Glu ++500, blood +++250, SG 1.018

## ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

### *Urinary System*

The **urinary bladder**, trigone, and pelvic urethra are normal in thickness and the mucosal surface is smooth. The bladder is moderately distended. A scant amount of echogenic debris is observed within the lumen. No masses, inflammatory changes or calculi are observed. The region of the trigone is normal.

The **left kidney** is normal size (3.61 cm in length) with a normal shape and smooth peripheral contours. The cortex is variably thickened with mild loss of corticomedullary distinction. Hyperechoic shadowing diverticular foci are visualized. Moderate pyelectasia is present (0.35 cm in the transverse plane). Small, nonobstructive nephroliths are seen. There is no evidence of or hydroureter.

The **right kidney** is normal size (3.65 cm in length); with a normal shape, smooth peripheral margins, and normal internal architecture. There is mild loss of corticomedullary distinction. Several hyperechoic shadowing diverticular foci are observed. Trace pyelectasia is present. Several, small, nonobstructive nephroliths are visualized. There is no evidence of infarcts or hydronephrosis.

### *Adrenal Glands*

The **left adrenal gland** is mildly enlarged (0.58 cm length; 0.62 cm width) with a normal shape and smooth peripheral contours. A 0.83 x 0.43 cm hyperechoic nodule/area is observed at the cranial pole. Glandular echogenicity and detail at the caudal pole are normal. Surrounding vasculature appears normal.

The region of the **right adrenal gland** is evaluated. The gland itself is not definitively visualized. There is no obvious pathology in this region.

### *Spleen*

The **spleen** is normal in size (0.94 cm in width at the level of the hilus) with a normal capsular contour. There is appropriate echogenicity and echotexture. No focal lesions are observed. Splenic vasculature is normal.

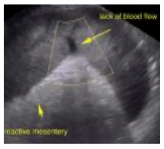
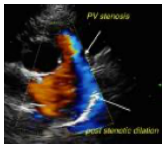
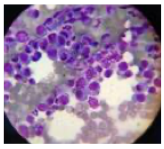
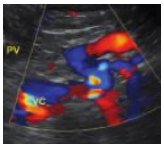
### *Liver*

The **liver** is subjectively prominent in size with slightly swollen peripheral contours. The parenchyma is hyperechoic relative to the spleen and diffusely mottled, with a few, ill-defined hypoechoic nodules/areas on the right side. Hepatic vasculature and intrahepatic biliary tracts are of normal volume with no evidence of congestion.

The **gall bladder** is distended. The wall is normal in thickness. A moderate amount of suspended, echogenic debris, in a partially stellate pattern is observed within the lumen. The cystic and common bile ducts are normal/not seen.

### *Gastrointestinal*

The **stomach and intestine** are free of stasis and exhibit normal peristaltic activity. The gastric lumen is not distended. The gastric wall and pylorus are normal in thickness with a normal layering pattern. The pyloric outflow tract is patent. The small intestinal lumen is not dilated. The small intestinal wall thickness is normal with a normal layering pattern and appropriate mural

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detail. Discreet masses are not identified. The colonic wall is normal. There is no evidence of an obstructive pattern.

***Pancreas***
The region of the pancreas is isoechoic relative to surrounding omental fat. No obvious parenchymal abnormalities are observed. There is no evidence of regional inflammation or effusion.

***Free Abdomen***
The **peritoneal cavity** is normal. There is no evidence of inflammation or effusion. The abdominal **lymph nodes** are normal/not visible.

***Other***
A brief visualization of the heart reveals no obvious evidence of pericardial effusion.

## ULTRASONOGRAPHIC FINDINGS

### Primary Findings

- The hepatic parenchymal changes are nonspecific and may be secondary to vacuolar hepatopathy (i.e., due to diabetes mellites), regenerative nodular hyperplasia, or infiltrative neoplasia (less likely), or other hepatopathy. Inflammatory disease is possible but considered less likely given the normal ALT.
- The gall bladder changes are concerning for a developing mucocele.
- Bilateral degenerative renal changes with nonobstructive nephrolithiasis and pyelectasia, more pronounced in the left kidney.

### Secondary Findings

- Mild left adrenomegaly. The nodule at the cranial pole trends toward the benign (i.e., benign nodular hyperplasia) with a lower possibility of an emerging tumor. (The right adrenal gland is not visualized).

## INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Regarding the Hyperglycemic Hyperosmolar Syndrome, judicious IV fluid diuresis is recommended along with regular insulin therapy, either given as a constant rate infusion or intramuscularly. Care should be taken to reduce the patient's serum glucose level slowly (no faster than 50-75 mg/dl/hour) to avoid rapid fluid shifts in the brain and subsequent cerebral edema.

Given the azotemia and the bilateral renal changes, consider the following:

1. Urine culture and sensitivity
2. UPC (if proteinuria is present in the absence of infection)
3. Baseline blood pressure measurement

Regarding the gall bladder changes, consider initiation of Ursodiol therapy (when the patient is stable) with serial sonographic monitoring (i.e., every 4 weeks) to assess for progression to a fully formed mucocele.

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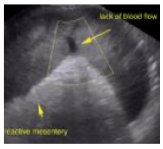
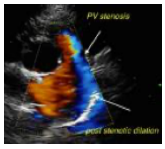
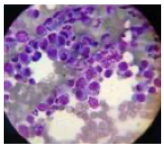
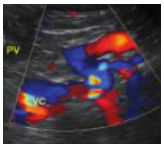

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**The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.**

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.

**Andrea Nicastro**, DVM, Diplomate DACVIM (Small Animal Internal Medicine)
info@SonoPath.com