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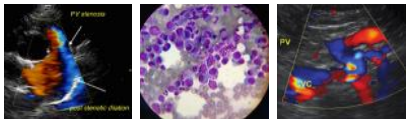

SonoPath
Clinical Sonography & Telecytology
EDUCATIONAL TELECONSULTATION SERVICES™
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DATE
1/28/22

PATIENT
Hershie Soto

SPECIES
Canine

BREED
Dachshund

SEX
Neutered Male

AGE
3/24/11

WEIGHT
12.9 Lbs.

INTERPRETED BY
Eric Lindquist, DMV
DABVP, Cert. IVUSS

HOSPITAL NAME
Bel Air VH

REFERRING VET
Dr. Young

INVOICE
13683

PRESENTING CLINICAL SIGNS

History: Persisting growth hematuria despite cystotomy. Hershie initially presented in Sept.2021 for stranguria and pollakiuria. He has a historic 3/6 systolic heart murmur. At that time urinalysis reveled hematuria, pyuria, and 4-10 transitional epithelial cell/HPF. Radiographs revealed mineral opacity in the region of the bladder and focal bladder ultrasound revealed a thickened bladder wall with hyperechoic lucenies with acoustic shadowing as well as mobile/dependently falling hyperechoic lucencies. Just caudal to/adjacent to the bladder was a mixed echotexture area with hyperechoic lucencies. BRAF testing was recommended but declined. Hershie was started on RC SO diet and rechecked in 2 weeks. Upon recheck UA there were a few CaOx Dihydrate crystals seen, continued hematuria and pyuria, and no transitional epithelial cells. Recheck UA revealed no change in the radiographic appearance. A cystotomy was then recommended once the superficial pyoderma of the ventral abdomen was healed. Hershie then presented to the ER for coughing on 12/18/21; 7 days of Clavamox and terbutiline were dispensed. Cystotomy was performed on 1/4/22 and
a Convenia injection was given. UMN Urolith Center found the stone to be calcium phosphate carbonate, he was changed to Hill's c/d diet. Urine culture was negative. Hershie has continue to have very bloody urine. so it was check via a catheterized sample. pyuria, hematuria 1-5 struvite crystal/HPF and >10 non-squamous epithelia cells were seen. Last night Hershie started coughing - multiple dry hacking coughing fits. On exam today, there were no crackles or wheeze heard.

Current Medications: Current: Zeniquin 25mg 1 po SID for 10 days (started 1/21/22). Hydrocodone 5mg/ Homatropine 1.5mg 1/2 pill po TID for cough. Past: Carprofen 25mg 1/2 tab BID for 3-5 days (rx on 1/13/22).
Lab Results: Attached separately.
Radiographs: Rad review attached separately.
Date of Previous IntraPet Ultrasound: No previous IntraPet scans.
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** 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. Ureteral papillae were normal.

The **prostate** in this patient revealed a mixed hypoechoic mineralizing mass, peripherally inflamed, measuring 3.17 cm. The prostatic mass invaded into the pre-prostatic urethra and trigone to an extent of 2.3 cm x 1.15 cm. The post-prostatic urethra was also invaded distally.

The **kidneys** revealed largely normal size and structure, corticomedullary definition and ratio (cortex 1/3 of medulla) were essentially maintained with some minor 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. The left kidney measured 4.6 cm. The right kidney measured 4.82 cm.

Adrenal Glands

The **left adrenal gland** was slightly swollen, measuring 0.71 cm at the cranial pole and 0.65 cm at the caudal pole x 1.95 cm in length.

The **right adrenal gland** was visualized and recognized as having normal shape, size, position and echogenicity for this breed. The phrenic vasculature, glandular echogenicity and detail were unremarkable. Capsule, cortex, and medullary definition were normal for this age patient. The right adrenal gland measured 1.9 cm x 0.78 cm at the cranial pole and 0.64 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 were noted.

Liver

The **liver** images submitted revealed subjectively normal liver size, contour, and structure. Parenchymal echogenicity was naturally coarse and hypoechoic to the spleen. Vascular and biliary tracts were of normal volume with no evidence of congestion. 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 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 moderate 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.

Free Abdomen

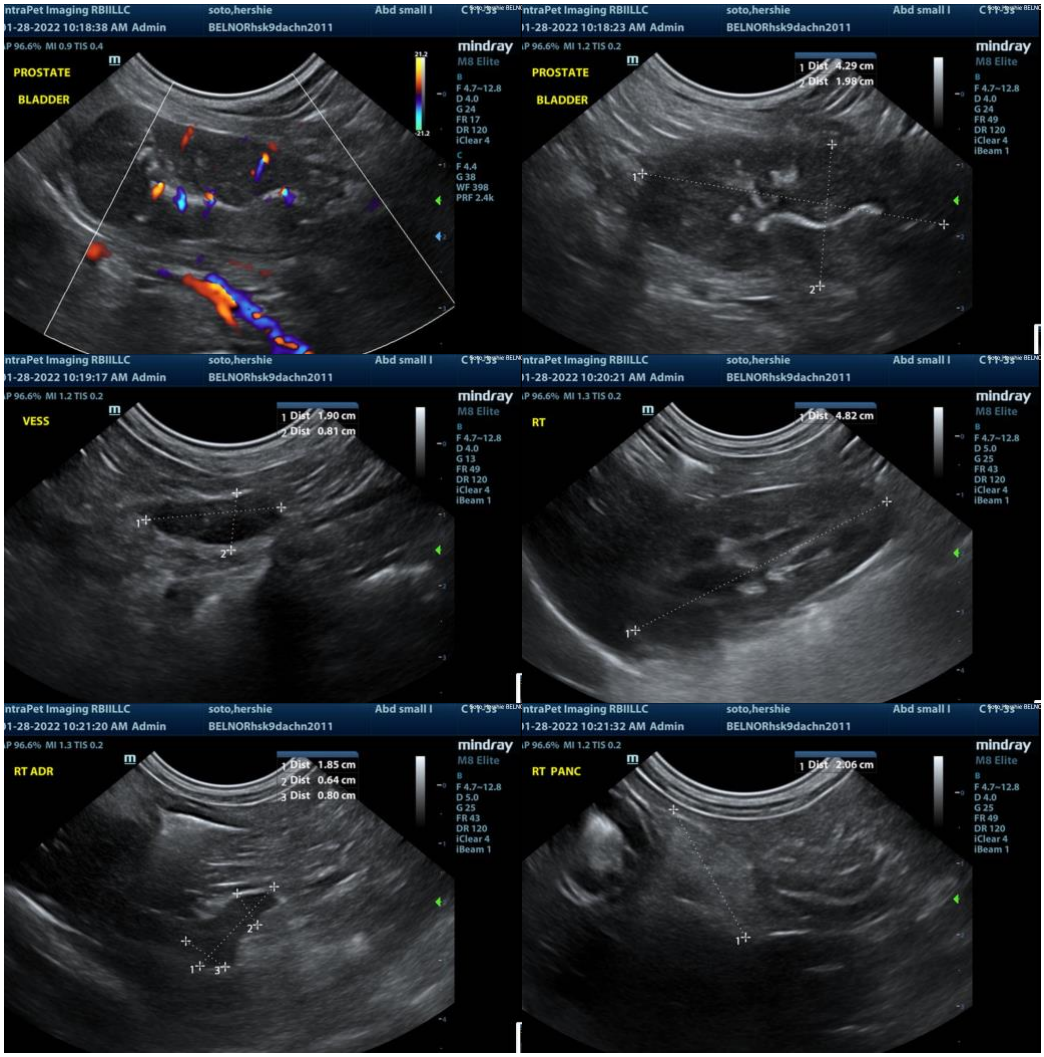
Iliac **lymph nodes** were enlarged, measuring up to 1.92 cm x 0.92 cm.

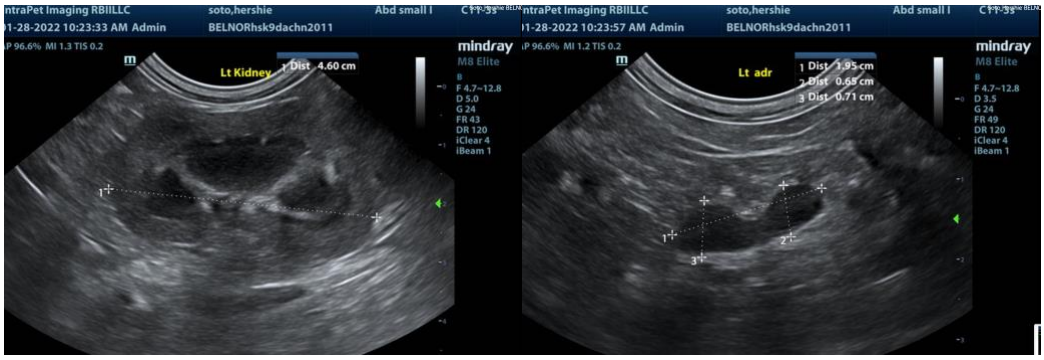
ULTRASONOGRAPHIC FINDINGS

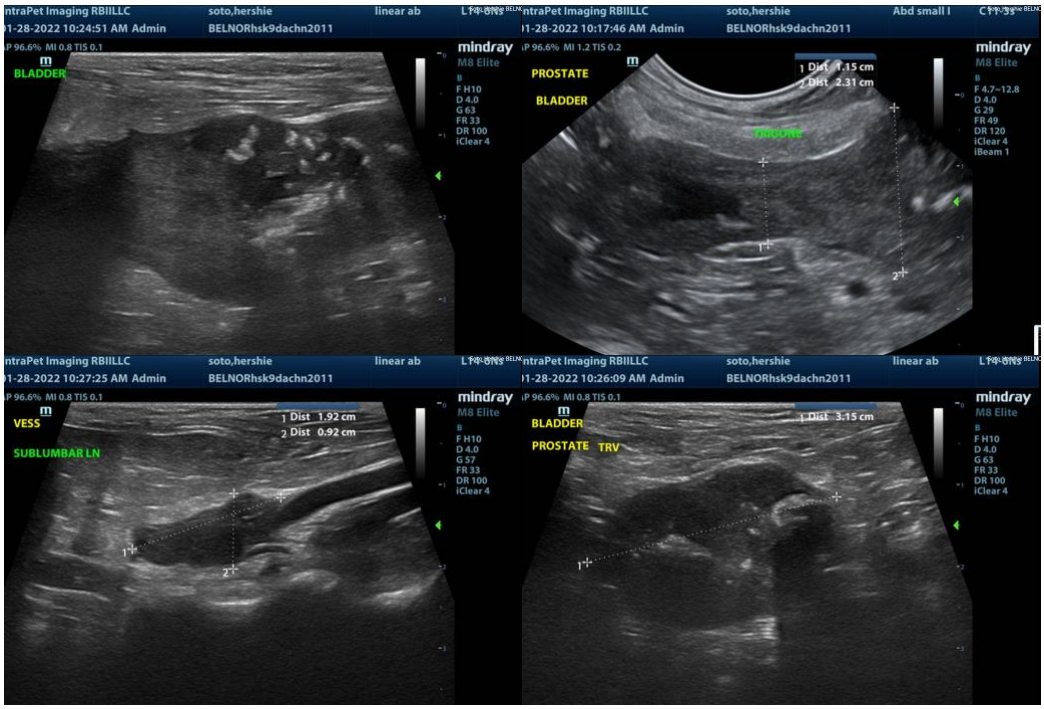
- Prostatic urethral trigonal mass, strongly consistent with carcinoma
- Enlarged iliac lymph nodes
- Age-related renal and pancreatic changes
- Slightly swollen left adrenal gland

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Referral for urethral stent placement and chemotherapeutic intervention recommended. Early metastatic pattern to the iliac lymph nodes. The lower urinary tract structure is completely disrupted in this patient. The mass is highly vascular and significantly inflamed peripherally.







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
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Canine Prostatic Neoplasia

http://www.sonopath.com/ProstaticCarcinoma

Description: Prostatic neoplasia is frequently seen in dogs and can be diagnosed via ultrasonographic examination. The most commonly diagnosed prostatic neoplasms are adenocarcinoma and undifferentiated carcinoma. Transitional cell carcinoma (TCC) frequently spreads from the urinary bladder and urethra to the prostatic tissue (see the "Transitional Cell Carcinoma" chapter for more details). Metastatic squamous cell carcinoma, lymphoma, hemangiosarcoma, and leiomyosarcoma have been reported, but are less prevalent. Prostatic neoplasia has been documented in cats, but is quite rare.

Clinical Signs: Prostatic neoplasia presents in both neutered and intact males; however, a 2002 study suggested that neutered males were at greater risk for developing prostatic neoplasia than intact males. Typically, prostatic neoplasia is seen in older dogs (mean age of 10 years). Breed predilection includes mixed breed dogs, Shetland Sheepdogs, Dobermans, Scottish Terriers, and Airedale Terriers. Clinical signs and commonly reported signs from owners typically include: stranguria, frequent urinations, hematuria, dyschezia, weight loss, and decreased appetite. Other findings upon physical examination include fever, ataxia, pain upon rectal examination, and pain upon spinal palpation.

Diagnostics: Ultrasonographic examination should be performed if prostatic neoplasia is suspected. Common ultrasonographic findings include an enlarged, irregular prostate that typically has a hypoechoic appearance. Multifocal, poorly coalescing hyperechoic foci are also seen in prostatic malignancies. Hyperechoic foci are due to mineralization of the prostate; they cause far field shadowing. Cystic components can also be observed and are thought to indicate abscessation and/or necrosis. It can be difficult to differentiate chronic bacterial prostatitis from a prostatic neoplasia; however, regional lymphadenopathy is much more common with prostatic neoplasia than it is with chronic bacterial prostatitis. Malignancies of the prostate have often metastasized by the time of diagnosis. Frequent sites of metastases include the sublumbar lymph nodes, the pelvis, lumbar vertebrae, and the lungs. If metastases to the pelvis or lumbar vertebrae have occurred, bony lysis will often be noted radiographically. Metastasis to the liver, brain, kidney and spleen may occur. A definitive diagnosis of a prostatic neoplasm can be achieved through biopsy as well as fine needle aspiration (FNA) or through ultrasound-guided traumatic catheterization.

A complete and thorough workup includes a CBC, biochemical profile, urinalysis, as well as three radiographic views of the thorax, an abdominal ultrasound, and an ultrasound-guided prostatic biopsy or FNA, if indicated. Urinalysis may reveal hematuria and pyuria. Prostatic fluid analysis can also be helpful in identifying neoplastic cells.

Treatment: Unfortunately, once diagnosed, prostatic carcinoma offers a poor prognosis; prostatectomy, chemotherapy, and radiation therapy have proven unsuccessful in improving quality or length of life. Nonsteroidal anti-inflammatory drugs (NSAIDs), such as deracoxib, meloxicam, and piroxicam, have been used for their palliative, anti-neoplastic properties with prostatic carcinomas. Certain tumors, including various carcinomas (e.g. TCC, prostatic carcinoma, mammary carcinoma, squamous cell carcinoma) overexpress COX-2, which converts arachidonic acid to prostaglandin G2 (PGG2)/prostaglandin H2 (PGH2), and ultimately to prostaglandin E_2 (PGE_2). The metabolite, PGE_2, is associated with increased inflammation, tumor invasiveness, angiogenesis, and reduced apoptosis. In vivo and in vitro, NSAIDs inhibit COX-2, resulting in the suppression of PGE_2, and thereby inhibiting tumor growth and metastasis. This effect has been achieved with both non-selective COX inhibitors as well as COX-2 inhibitors (the latter will suppress COX-1 at increased doses).

Some cases of prostatic carcinoma are managed palliatively with cyst/abscess ultrasound-guided drainage, antibiotic infusion, systemic antibiotics, and NSAID treatment and/or chemotherapy. Anecdotally, it has been observed that patients that often present clinical signs of hematuria or dysuria

owing to cyst or abscess formation may be treated with repeat ultrasound-guided drainage. This appears to work especially well if there is a considerable cystic component to the prostatic tumor. The key is to image the prostate adequately, drain any cysts that are present, sample the abnormal parenchyma (FNA or biopsy), and potentially infuse antibiotics directly into the cystic cavities if a suppurative fluid is retrieved. The patient should be monitored clinically over time and reevaluated to see if cysts recur. Every case responds differently to treatment, and the behavior of parenchymal and cystic growth will vary.

Currently, investigational studies involving fluoroscopic-guided direct chemotherapeutic embolization through the iliac arteries as well as urethral stent placement are offered by select tertiary veterinary facilities that have an interventional radiology department. Ultrasound-guided endoscopic diode laser ablation through a perineal urethrostomy is also being attempted as a salvage and palliative procedure.

Conclusion: Prostatic neoplasia is more commonly detected in neutered male dogs than intact males. Diagnosis is typically obtained using ultrasound, cytology, and histopathology. Unfortunately, traditional therapy typically yields a guarded to poor long-term prognosis, but palliation with NSAIDs and/or chemotherapy can temporarily improve clinical signs. Investigational techniques may provide additional therapeutic options but are currently experimental.

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