



PATIENT

Xena Benedetti

SPECIES

Feline

BREED

DSH

SEX

SF

AGE

11 years

WEIGHT

13 lbs.

PRESENTING CLINICAL SIGNS

P seen on 3/10 for a urinary tract infection and was started on Amoxicillin and Gabapentin. P started to improve but then p started having symptoms again after 1 week of completing the Amoxicillin. P UR small frequent amounts, inappropriate. O has not noticed any blood. O reprints 3rd bladder issue in 6 months.

Abnormal PE/Chem/CBC/UA Results: See attached UA results from 3/10: WBC, RBC, Rods See attached radiograph: no obvious stone observed, 1 small and abnormal shaped kidney Specific gravity- 1.020, trace protein, negative glucose, minor blood

ULTRASONOGRAPHIC EXAMINATION OF THE URINARY SYSTEM

Urinary System

The urinary bladder was normal in size and tone. Mild uniform homogeneously prominent, primarily caudoventral to cranioventral urinary bladder wall was present. No evidence of mural mineralization was noted. Pinpoint to focal mineral noted in dorsal trigone. The ventral urinary bladder wall measured 0.27 cm width. Anechoic urine was present in the bladder without evidence of sediment or calculi. No evidence of urinary bladder neoplastic criteria was noted. The urethra was normal in structure and tone to a depth of 2.0 cm. Subjective subtle reactive tissue / fat was noted around the urinary bladder. No evidence of free fluid was present.

INTERPRETED BY

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(Canine and Feline)

Normal size and margination were present in the left kidney. A normal 1:3 cortex / medulla ratio was maintained. The medulla and cortices were uniform in texture with some increased echogenicity and mild loss of corticomodullary symmetry and definition expected for the age of the patient. Minor pyelectasia was present. The left kidney measured 4.3 cm in length.

IMAGING PERFORMED BY

Jasmine Palacios
SDEP Attendee

Mild asymmetrical primarily lateral margination with probable minor lateral cortical infarctions were present in the right kidney. A normal 1:3 cortex / medulla ratio was maintained. The medulla and cortices were uniform in texture with some increased echogenicity and moderate loss of corticomodullary symmetry and definition expected for the age of the patient. Minor pyelectasia was present. The right kidney was subnormal in size compared to the left kidney, yet within normal limits for renal size for felines, measuring 3.2 cm in length.

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ULTRASONOGRAPHIC FINDINGS

- Left kidney mild chronic renal changes with minor pyelectasia
- Right kidney moderate chronic renal changes exhibiting borderline subnormal size, minor pyelectasia, and probable minor lateral cortical infarctions
- Mild primarily ventral cystitis pattern

REFERRING VET

Dr. David Gray

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INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

DATE

3/30/22

Recheck urine culture and sensitivity on a sterile urine sample, as well as additional renal staging to include baseline UPC, given the quiet urinary bladder sediment, is recommended. Continuation of antibiotic therapy ideally based on culture and sensitivity results is recommended if clinically indicated. Minor Idiopathic / Interstitial cystitis is suspected.



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The pyelectasia noted in both kidneys is nonspecific yet suspected to be secondary to mild to moderate chronic renal changes or potential pelvic scarring with mild low-grade pyelonephritis possible yet considered less likely.

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Periodic monitoring of renal parameters is advised. Pending recheck urine culture and sensitivity, conservative therapy for idiopathic / interstitial cystitis may prove beneficial.

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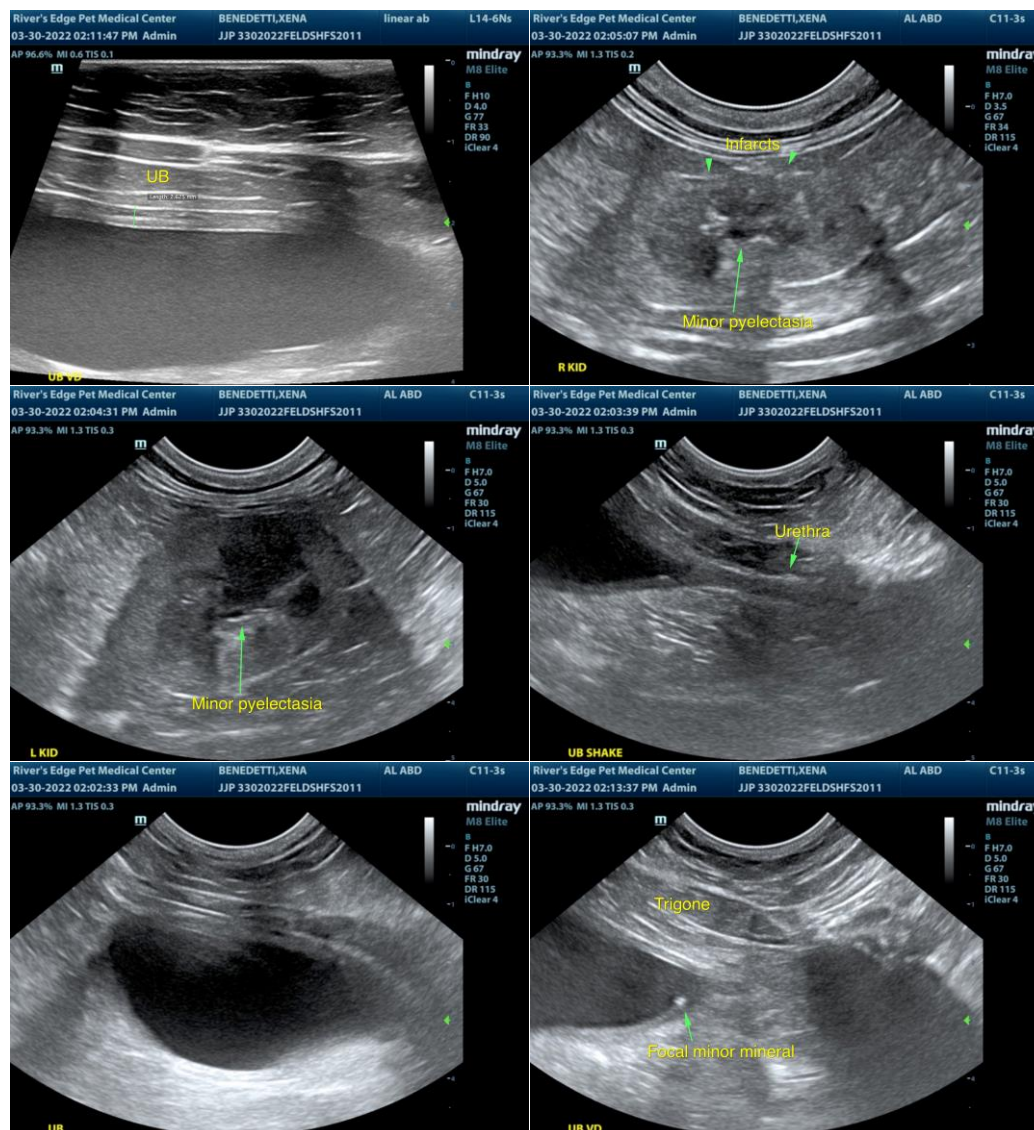
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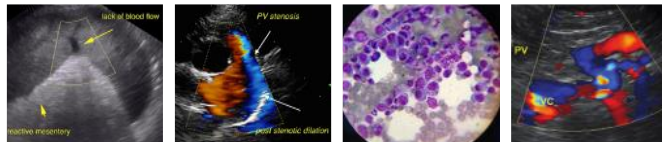
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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.


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<http://www.sonopath.com/FelineCystitis>
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Description: Feline idiopathic cystitis (FIC) is defined as recurrent stranguria and hematuria in cats in the absence of an underlying cause. It is considered to be an exclusionary diagnosis once radiographs, ultrasound, coagulation profile, and aerobic urine culture by cystocentesis have eliminated the possibilities of urinary tract infection, urolithiasis, coagulopathies, and neoplasia. Clinical signs may resolve spontaneously within 3-7 days, with 30-50% recurrence within a year. Cats most frequently acquire the disease between the ages of 2 and 6, and although any breed is susceptible, Persian cats are overrepresented among those affected. Overweight spayed females and neutered males in a multi-cat household are at higher risk than their lean, solitary, or intact counterparts. Indoor, sedentary, dry-food eaters are at higher risk than outdoor cats that eat *ad libitum*. Psychosomatic influences—change of residence, new household members, pet additions, change of household objects—on the urinary bladder have been shown to play an important role in the pathophysiology of the disease. Neurogenic inflammation, decreased glycosaminoglycan concentration, and increased bladder permeability are tissue alterations found on histopathological review of affected bladders. Neurotransmitter P is increased in affected tissue and may be specifically targeted in eventual courses of treatment.

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Clinical Signs: In the absence of an underlying urinary tract infection or evidence of neoplasia, FIC may present in an acute or chronic form with the following intermittent lower urinary tract symptoms: inappropriate urination (> 6 times/week in 70% of cases); stranguria (70%); hematuria (50%); and pollakiuria (80%).

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Diagnostics: Since FIC is a diagnosis of exclusion, abdominal radiographs, abdominal ultrasound, blood pressure, coagulation profile, and urine culture are all required to rule out other differentials. Biopsy of the bladder wall can be useful to evaluate for lymphocytic plasmacytic inflammation, which can occur in some cases. Taking a history and having a thorough conversation about the cat's environmental stressors are imperative.

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Treatment: Given that no specific cause has been cited and that FIC is considered a multifactorial disease, multimodal therapy is recommended. To date, no specific therapeutic has been effective in treating FIC. Palliation with pain management can be achieved with buprenorphine (0.02 mg/kg PO, IM, or IV BID-TID for 3-4 days). Practitioners have attempted the following with varying results: the introduction of a strict canned food diet; a change of feeding location in multi-cat households; and stimulating increased water intake using tuna or clam juice additives or circulating water fountains. To date, the most scientifically valid evidence points to the need for reducing urine concentration, which is achieved with canned food diets. In multiple studies, the simple act of switching to a canned therapeutic diet has been shown to reduce the risk of recurrence significantly. One study showed that only 11% of cats on a canned diet exhibited recurrent signs after a year, while those on a dry food diet displayed a 40% recurrence rate. Urine concentration can be reduced further by adding additional water into servings of canned food. Reduction of stress may be

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achieved by increasing litter box hygiene, placing the litter box in a quieter environment, and providing separate food, water, and litter areas for the affected patient in a multi-cat household. It has been suggested that Feliway, the feline facial pheromone, can be used as a calming agent for cats when they are in unfamiliar surroundings. Feliway mimics the natural facial hormone released when a cat marks his or her territory by face rubbing. For unresponsive or severe cases, amitriptyline (10 mg PO Q24hr at bedtime) has been shown to have visceral analgesic, anticholinergic, mucosal mast cell inhibition, and anti-noradrenergic properties. Amitriptyline is considered standard therapy, but is only pursued once the preceding husbandry and feeding practices have proven to be ineffective. Amitriptyline should be used with caution in patients with cardiac disease or arrhythmias, and if instituted, should be used long-term. Studies indicate that short-term use of amitriptyline can result in faster recurrences. Note: Urine retention may occur while therapy is being administered. Biochemical panels should be monitored while a patient is undergoing amitriptyline therapy as liver enzyme elevation can occur. Glycosaminoglycan supplementation (pentosan polysulphate 2-10 mg/kg PO BID) has shown modest success (10-20%) in human trials for idiopathic cystitis. If used, a powder form is recommended to avoid the stress of pill administration (feline Cosequin capsules contain a powder that can be sprinkled onto food). Antiviral agents have not been shown to be effective, and even though researchers have suggested that the concurrent presence of *Calicivirus* may play a role and virus-like particles have been identified in urethral plugs and urine, no adequate evidence of a viral etiology has yet been demonstrated. A double-blind placebo trial suggested that glucocorticoids had no clinical benefits in 12 cases. All cases were self-limiting, in spite of whether the subjects were medicated with corticosteroids or not.

If hematuria seems persistent despite therapy and does not follow a typical FIC pattern (i.e., resolving within one week but recurring within a few weeks), cystoscopy or surgical evaluation may be indicated. Biopsies can be obtained, which allows for histopathology and bladder wall culture.

Environmental enrichment is also important to reduce stress. Providing vertical climbing surfaces, such as cat trees, increasing the number of litter boxes on different floors of the house (the rule of thumb is the number of litter boxes per house should equal the number of cats plus one), and increasing owner attention time, scheduled playtime, as well as supervised outdoor activity can decrease stress for cats.

Conclusion: Effective treatment of FIC involves a multi-modal approach with a strong emphasis on husbandry. Pet owners should focus on the fastidious upkeep of litter boxes and feed their cats canned food to both increase dietary water intake and maintain their cat's lean body weight. Stress management is also key and can be facilitated with environmental enrichment as well as an understanding of feline behavior.

References:

Buffington CA, Westropp JL, et al. Clinical evaluation of multimodal environmental modification (MEMO) in the management of cats with idiopathic cystitis. *J Feline Med Surg* 2006;8:261-68.



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Westropp JL, Kass PH, Buffington CA. Evaluation of the effects of stress in cats with idiopathic cystitis. *Am J Vet Res* 2006;67:731-36.

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