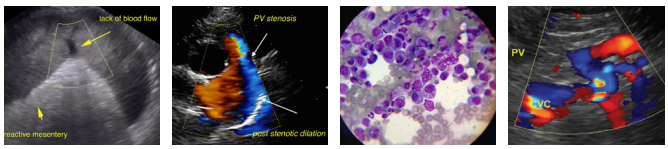

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1-800-838-4268 info@sonopath.com

PATIENT

Duke Burgess

SPECIES

Canine

BREED

Labrador Retriever

SEX

Neutered Male

AGE

8 Years

WEIGHT

79.4 Pounds

INTERPRETED BY

Eric Lindquist, DMV

DABVP, Cert. IVUSS

IMAGING PERFORMED BY

Kalenius

HOSPITAL NAME

Willamette VH

REFERRING VET

Dr. Neuhaus

INVOICE

35868

DATE

3/3/22

PRESENTING CLINICAL SIGNS

Hyporexia over the past five months progressing to anorexia. Sunday O swiched food. O stated past two days or so pt has been very lethargic and not himself. Last night pt poss ate dinner but O is unsure. o stated that pt V+ multiple times last night and it was yellow bile and full of grass, O woke up this AM and pt had V+ over night and when O found pt this AM he was shaking and ADR. pt has not been exposed to fish/ salmon anytime recently that O knows of. O stated that pt was put on bravecto and poss had a seizure like episode a week later. o took pt in 3-4 weeks later, this event is unknwon timeline comapred to todays history
Abnormal PE/Chem/CBC/UA Results: EXAM QAR, mm pnk/sl tacky, crt <2 s, tachypnea with normal bv sounds, no murmur or arrhythmia noted, abd tense/painful, peripheral lymphadenopathy, fever 103.3F _ 2/21 rDVm labs CBC = nsf. WBCs 5.1k, lymphopenia 969 Chem = alb 1.6, amyl 1622, chol 594, Cl 107, Crea 2.2, SDMA 19, T4 0.7 3/2 intake labs fecal direct = no flukes or ova seen CBC = HCT 48%, WBCs wnl 12.5k, stress leukogram, lymphs 0.89k chem17 = Crea 2.4, BUN 30, alb 2.1, chol 380, amylase >2500, lipase 5846 EPOC = Crea 2.52, BUN 28, lytes wnl, K 4.2, lactate wnl 1.72 UA = >1.050, pH 7.0, WBCs 28/hpf, suspect cocci bacterial confirmation kit = no bacteria detected cPL snap = strong abnormal FecalG, collect sample as able

ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN

Urinary System

The **bladder** in this patient was mildly thickened with slight echogenic mural changes. No calculi or masses were noted. Slight micropolypoid changes were noted. This is a frequent finding in older animals and may be linked to a history of chronic urinary tract infection or active urinary tract infection. Urinalysis would be recommended with culture if any evidence of inflammatory sediment is present. The region of the trigone and visible pelvic urethra were normal. The pelvic urethra was imaged 1.0 cm beyond the cystourethral junction.

The **kidneys** presented normal size and contour and largely age related changes, minor. The kidneys do not appear end stage. The left kidney measured 8.38 cm. The right kidney measured 7.87 cm. Free fluid noted around both kidneys.

Adrenal Glands

The **left adrenal gland** measured 0.40 cm and was isoechoic to surrounding fat. The **right adrenal gland** was not visualized.

Spleen

The **spleen** was enlarged with scalloping contour. Enhanced surrounding mesentery noted. Mild vascular congestion noted.

Liver

The **liver** revealed increased portal markings. Hypoechoic parenchyma to falciform fat. Irregular contour. The gallbladder presented a minor amount of debris. No evidence of passive congestion. Disease is not diffuse enough to create portal hypertension.

Gastrointestinal

The **stomach** itself was unremarkable. Variable increased submucosal echogenicity noted in portions of the small intestine. The ileocecal junction revealed cecal stasis with enhanced mesentery, consistent with typhlitis.

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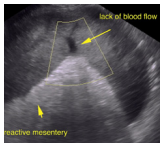

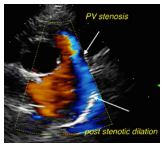

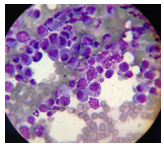
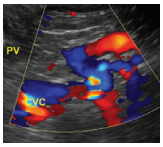

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Pancreas

The **pancreas** presented mixed hypoechoic parenchymal changes with enhanced surrounding mesentery.

Free Abdomen

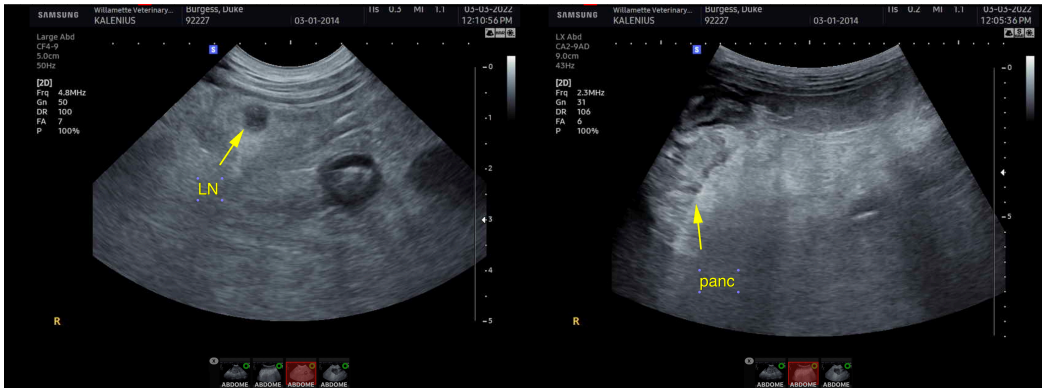
Reactive mesentery noted throughout the cranial abdomen. Occasional rounded hypoechoic lymph node present.

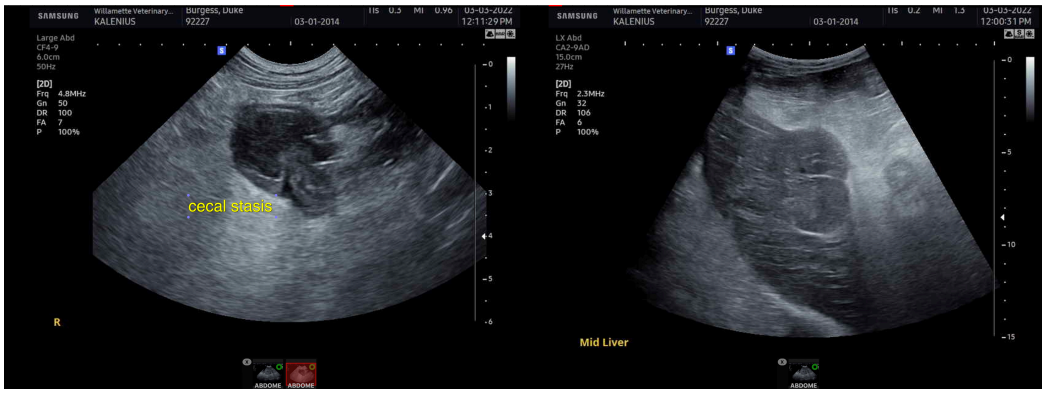
ULTRASONOGRAPHIC FINDINGS

- Typhlitis pattern
- Free fluid and reactive mesentery
- Swollen spleen and liver
- Concurrent pancreatitis

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Strong concern for underlying neoplasia, given the free fluid noted. Recommend ultrasound guided abdominocentesis with cytospin of the free fluid. FNA of the spleen and liver recommended. This is a non-specific presentation, given that the albumin levels are not <1.5, and there is no evidence of diffuse liver disease causing portal hypertension, and there is no evidence of passive congestion from thoracic disease. Strong concern for lymphomatosis, mastocytosis or similar. The albumin loss is likely owing to protein losing enteropathy. Plasma expanders, treatment for enterotoxins, pain management, broad-spectrum antibiotics, GI protectants all indicated. Recheck sonogram in 24-48 hours.





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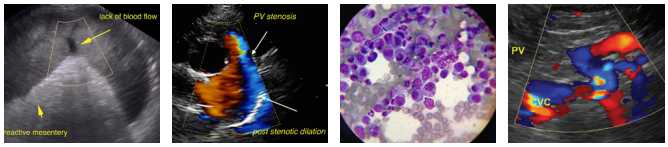

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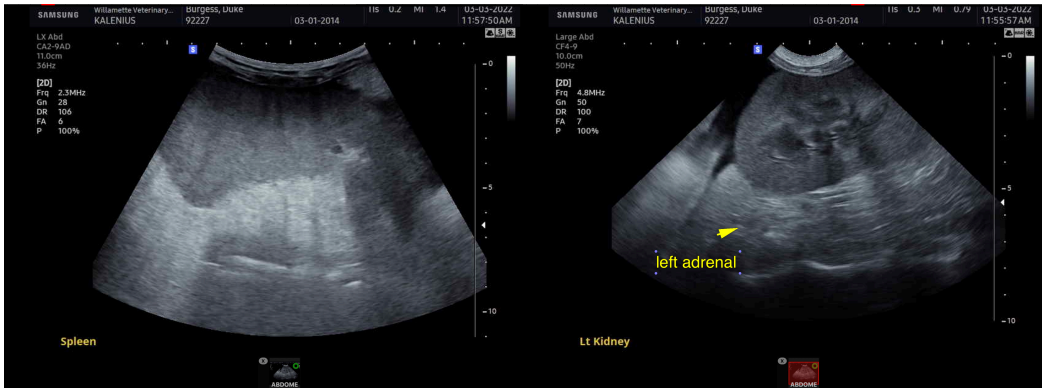

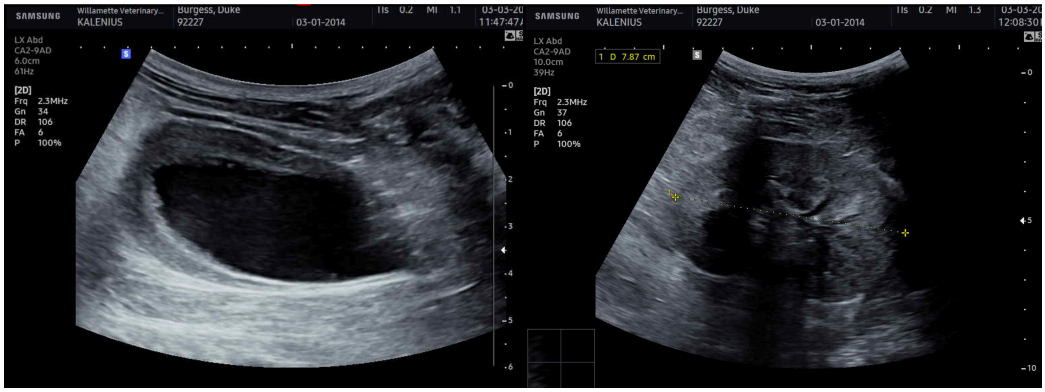

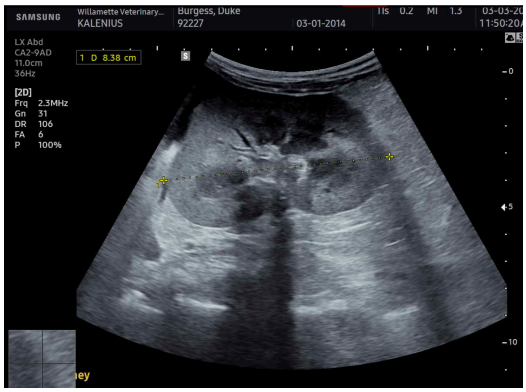

The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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

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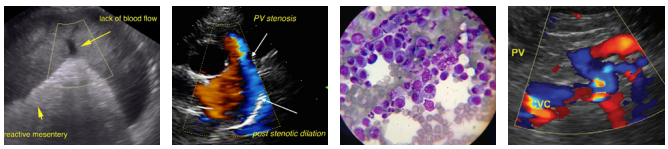

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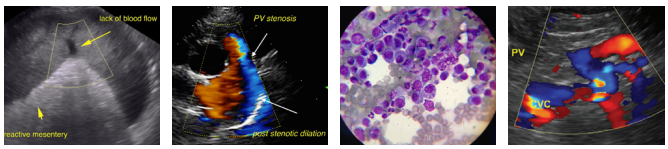
Fever of Unknown Origin

http://www.sonopath.com/FUO

Description: The definition of a fever of unknown origin (FUO) has not been clearly defined for animals. Currently, it is either understood to be a fever that does not resolve within the period one would expect for a "self-limiting infection" being treated with appropriate antimicrobial therapy, or that for which an underlying diagnosis has not been determined despite considerable diagnostic effort. The common causes of FUO were summarized concisely in a presentation at the American College of Veterinary Internal Medicine 2004 Forum. The presenters synthesized information from three veterinary papers on the subject, which suggested the following:

Final Diagnosis	Bennett (dogs & cats)	Dunn and Dunn (dogs only)	Lunn (dogs & one cat)	Total
Infection	21	16	10	47
Immune	18	22	6	46
Bone marrow disease	4	22	2	28
Neoplasia (outside marrow)	0	10	2	12
Miscellaneous	2	12	2	16
No diagnosis	0	19	2	21
TOTALS	45	101	24	170

The types of infection diagnosed in this case series were varied, ranging from discospondylitis (8 cases), blastomycosis (6), and bacterial endocarditis (4), to leishmaniasis (1), prostatitis (1), and *Ehrlichia canis* infection (1); a multitude of other infectious causes also fell within the spectrum. Of the cases in which immune-mediated disease was found, 44% had immune-mediated polyarthritis. Bone marrow diseases included myeloproliferative disease, myelodysplasia (8), lymphocytic leukemia (8), myeloma (3), chronic granulocytic leukemia (3), lymphoblastic leukemia, and malignant histiocytosis. The types of neoplasia located outside the bone marrow included lymphoma (6), metastatic disease (2), and neoplasms of the lung, spleen, and stomach. Finally, miscellaneous diseases included hypertrophic osteodystrophy (6), meningitis (3), portosystemic shunt (3), lymphadenitis (2), panosteitis, and intervertebral disc disease. Overall, the most common causes across all cases were polyarthritis (44), lymphoid neoplasia (15), discospondylitis (8), myelodysplasia (8), hypertrophic osteodystrophy (6), and blastomycosis (6).



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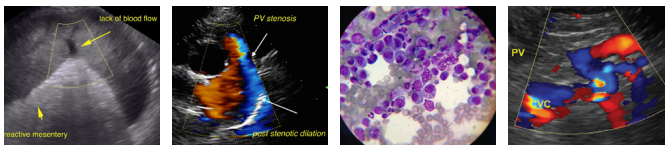
Clinical Signs: Animals usually present with either persistent or waxing and waning fevers ranging from 103ºF to 106ºF. Other clinical signs depend on the underlying cause of the fever. Careful and thorough physical examination is required to assess potential causes.

Diagnostics: FUO etiologies are partly related to geography, and thus locale or travel history should factor into a practitioner's diagnostic approach. A patient's lifestyle may also provide clues regarding exposure to certain etiologic agents. Therefore, conducting a thorough history can unveil important pieces of the diagnostic puzzle. Physical examination is especially important and should include an inspection of all accessible lymph nodes, palpation and movement of the joints, a fundic examination, a neurological evaluation, spinal and limb palpation and range of motion tests, and a rectal examination.

A minimum database should include a CBC reviewed by a clinical pathologist, as well as a biochemical profile and urinalysis. Retroviral testing should also be considered in cats. In areas where tick-borne disease is prevalent, in-house testing should be performed early. Advanced laboratory work can include: urine culture, blood culture, and infectious disease panels (PCR and/or serology). In dogs, one may screen for the following infectious agents: *Ehrlichia* spp., *Borrelia burgdorferi*, Rock Mountain Spotted Fever, *Bartonella* spp. (culture and PCR), and *Leptospira* spp. in cases of hepatic or renal involvement. In cats, one should evaluate for FeLV, FIV, feline infectious peritonitis (FIP) virus, toxoplasmosis, *Hemoplasma* spp. (*Mycoplasma*), and *Bartonella* spp. (culture and PCR). Testing for *Ehrlichia* spp., *Rickettsia* spp., and *Anaplasma phagocytophilum* can also be considered. A fungal assay is indicated if the patient lives in or has had exposure to a region with a higher incidence of fungal disease. Other infectious disease tests may be performed depending on the geographical location of the pet. Screening for *Brucella* should be done in breeding dogs. Immune-mediated disease screening can include a Coomb's test, a slide agglutination test (if the patient is anemic), and an antinuclear antibody (ANA) test. Immune disease is often a diagnosis of exclusion.

Imaging should include thoracic radiographs, abdominal ultrasound, and/or abdominal radiographs. Ultrasound can be very useful for assessing evidence of cholangiohepatitis, pyelonephritis, chronic urinary tract infection, abscess formation, peritonitis, and neoplasia; it also permits an examination of the intra-abdominal lymph nodes. An echocardiogram can offer assessment for vegetative endocarditis, whereas spinal radiographs offer assessment for discospondylitis. In cases where all other testing has proven negative and the patient has not responded to broad-spectrum antibiotics and supportive care, arthrocentesis should be considered to evaluate for septic joint disease, immune-mediated polyarthritis, and infectious disease. Finally, one can consider assessing the cerebrospinal fluid for meningoencephalitis, GME, and meningitis/arteritis. A bone marrow exam should be performed if blood dyscrasias are noted on the CBC.

Treatment: Treatment of the fever depends entirely on the underlying cause. Ideally, a thorough diagnostic plan will yield a diagnosis that will guide the appropriate therapeutic course. However, if an exhaustive approach has not produced a definitive diagnosis and there is no response to broad-spectrum antibiotics, trial therapy with immunosuppressive agents such as prednisolone can be considered to treat presumed immune-mediated diseases. Given the potential for negative



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sequelae should an underlying infection be present, one must be certain that the investigation is thorough and monitor the patient's response carefully.

Conclusion: If a documented fever has not responded to antibiotics, antipyretics, or general nursing care, it is important to obtain a diagnosis to guide more specific treatment. A systematic physical examination and thorough history-taking will help inform further diagnostics in addition to what is revealed by the minimum database.

References:

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