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HOW TO APPROACH A WORK UP FOR FEVER OF UNKNOWN ORIGIN (FUO) IN DOGS AND CATS

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Clinical presentation:

Animals usually present with either persistent or waxing and waning fevers ranging from 103-106F. The basic definition of FUO has not been clearly defined in animals and is thought to be a fever, which does not resolve within the time frame one would expect with a “self limiting infection” or an underlying diagnosis has not been determined with “considerable diagnostic effort”.

Causes of fever of unknown origin:

In a presentation at ACVIM 2004 meeting, Lunn summarized the three main veterinary papers that have been published with regards to the cause of FUO (Lunn KF. Fever of Unknown origin: appropriate choice of diagnostic tests), ACVIM Proceedings 2004 p570-572).

Final Diagnosis	Bennett (both dogs and cat cases represented)	Dunn and Dunn (Dogs)	Lunn (Dogs and 1 cat)	Total	%
Infection	21	16	10	47	28
Immune mediated	18	22	6	46	27
Bone marrow disease (includes neoplasia)	4	22	2	28	16
Neoplasia (outside marrow)	0	10	2	12	7
Miscellaneous	2	12	2	16	9
No diagnosis	0	19	2	21	12
TOTALS	45	101	24	170	99%

Types of infection diagnosed in this case series:

- discospondylitis (8)
- blastomycosis (6)
- bacterial endocarditis (4)
- soft tissue abscesses (4)
- peritonitis (1)
- prostatitis (1)
- sepsis with immunodeficiency (1)
- leishmaniasis (1)

- bacteremia (3)
- pyothorax (3)
- pulmonary foreign body/ abscess (3)
- FIP (3)
- stump pyometra (2)
- bronchopneumonia (2)
- osteomyelitis (2)
-

toxoplasmosis (1)
 Lyme disease (1)
 Ehrlichia canis (1)

- The prevalence of certain diseases is geographically related which will then affect your particular diagnostic work up (based on prevalence of diseases in your area).
 - Of the cases series on immune mediated disease, 44% of cases with immune disease had immune mediated polyarthritis.
 - The types of bone marrow diseases that were detected included: myeloproliferative disease, myelodysplasia (8), myeloma (3), lymphoid leukemia (8), and chronic granulocytic leukemia (3), lymphoblastic leukemia (1) and malignant histiocytosis (1).
 - Types of neoplasia not in bone marrow: lymphoma (6), metastatic disease (2), neoplasms of the spleen, lung and stomach.
 - Miscellaneous diseases: hypertrophic osteodystrophy (6), meningitis (3), PSS (3), lymphadenitis (2) and panosteitis (1) and IVDD (1).
- Therefore the most common cause in all was polyarthritis (44), then lymphoid neoplasia (15), discospondylitis (8), myelodysplasia (8), HOD (6) and blastomycosis (6).

Diagnostic work up:

Minimum database should include: **History** (assess travel, vaccination history, indoor vs. outdoor status, exposure to other animals, concurrent disease, previous disease problems and response to therapy thus far); **physical exam** (pay attention to lymph nodes, joints, fundus, neurological exam, rectal exam);

Fundic exam and Basic Laboratory work:

(CBC, biochemical profile, urinalysis); Viral titers (cat). **Advanced Laboratory work** includes: urine culture, blood culture and **infectious disease screen**. In the dog this will include a 4 DX / Fast Panel PCR test/ Tick serology (Lyme, Ehrlichia and RMSF) and possibly a Bartonella culture and PCR. Toxoplasmosis and FIP screening should be considered in the cat. A fungal screen is typically not done in NJ unless indicated by travel history or some other clinical finding, but should be pursued in regions with higher prevalence of fungal disease. Screening for Brucella should be done in breeding dogs. Advanced infectious disease tests are done depending geographic location/ travel (ex: Leishmaniasis, Babesia etc). Immune mediated disease screening can include an ANA and Coomb's test (if anemic) and can sometimes be a diagnosis of exclusion.

Imaging: Thoracic radiographs; abdominal radiographs and/ or abdominal ultrasound. **Ultrasound** can be very useful to assess for evidence of cholangiohepatitis, pyelonephritis, chronic UTI, abscess formation, peritonitis, neoplasia etc. An echocardiogram is utilized to assess for vegetative endocarditis. Spinal



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radiographs and back palpation are done to assess for discospondylitis. In cases in which all other testing is negative and the patient has not responded to broad spectrum antibiotics and IV fluids, joint taps should be considered to assess for septic joints and immune mediated polyarthritis and infectious disease. Lastly, a CSF tap can be considered to evaluate for meningoencephalitis, GME, and meningitis/ arteritis. A bone marrow exam is done especially if there are blood dyscrasias.

Typically, a thorough work up will aid in obtaining a diagnosis in hopes of guiding appropriate medical therapy.

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