

# Vector-Borne Diseases in Cats

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## In the Literature

Lappin MR. Update on flea and tick associated diseases of cats. *Vet Parasitol.* 2018;254:26-29.

## FROM THE PAGE ...

Several vector-borne pathogens have been detected in cats. A detailed history should be obtained, and potential pathogen transmission should be considered when the patient has come in contact with vectors such as ticks and fleas, as exposure may lead to clinical disease.

*Anaplasma phagocytophilum*, the causative agent of feline anaplasmosis, is transmitted by *Ixodes* spp ticks. Fever, anorexia, and lethargy are the most common clinical signs.<sup>1</sup> *Rhipicephalus sanguineus*, another tick species, can transmit *Ehrlichia canis* to cats but is not as well characterized in cats as in dogs.<sup>2,3</sup> Risk for exposure to these pathogens coincides with the geographic range of these tick species.<sup>2-4</sup>

Fleas can transmit *Bartonella henselae*, *B clarridgeiae*, and *B koehlerae* to cats.<sup>2,5</sup> Numerous clinical signs (eg, fever, swollen lymph nodes, uveitis, myocarditis, endocarditis, osteomyelitis) have been associated with feline bartonellosis.<sup>6</sup> Occupational risk for exposure exists for veterinarians and support staff due to potential transmission of *Bartonella* spp by cat scratches and flea bites.<sup>6</sup>

Hemolytic anemia in cats can result from infection with *Mycoplasma haemofelis*, *Candidatus M haemominutum*, and/or *Candidatus M turicensis*.<sup>7-9</sup> More severe feline hemoplasmosis is associated with *M haemofelis* or coinfection with other hemoplasmas. Transmission is believed to occur via flea bites and by direct cat-to-cat transmission via saliva (eg, from fighting).<sup>10</sup>

Feline rickettsiosis, caused by *Rickettsia felis* and transmitted by the flea *Ctenocephalides felis*, may manifest as fever in a subset of cats, but past studies have been inconclusive on the role of *R felis* in clinical disease.<sup>5,11</sup>

The most reliable method for detecting any of these pathogens is PCR testing using blood of acutely ill cats,<sup>4,5,10</sup> which can be combined with serologic assays to detect antibodies, depending on the stage of infection. Clinically ill cats can be treated with doxycycline (5 mg/kg PO q12h or 10 mg/kg PO q24h). Duration of treatment varies from 7 to 10 days for hemoplasmosis and 14 to 28 days for anaplasmosis and bartonellosis.<sup>1,12-14</sup>

Prevention is recommended for any cat at risk for exposure to ticks and/or fleas. Effective ectoparasite control should be strongly recommended to reduce this risk.

## ... TO YOUR PATIENTS

Key pearls to put into practice:

- 1 Ticks and fleas can transmit *Anaplasma* spp, *Ehrlichia* spp, *Bartonella* spp, *Mycoplasma* spp, and *Rickettsia* spp to cats. These pathogens may be associated with disease, so it is important to determine potential exposure to these vectors when evaluating clinically ill cats.
- 2 PCR testing using blood of acutely ill cats is the most reliable diagnostic test for any of these pathogens. Doxycycline is the treatment of choice.
- 3 Flea and tick prevention should be considered for any cat that may come in contact with these vectors.

See next page for references.

## References

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## Suggested Reading

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## Research Note: Estradiol Effect on Bone-Marrow-Derived Mesenchymal Stem Cells

Fracture nonunion increases patient morbidity and healthcare costs. Bone grafts are often used in these defects but have several drawbacks. Bone-marrow-derived mesenchymal stem cells (BMSCs) may be an appealing alternative due to their trophic properties and immune-suppression function. 17 $\beta$ -estradiol has been shown to improve the osteogenesis and proliferation potential of mesenchymal stem cells in humans. This study evaluated the effect of 17 $\beta$ -estradiol on exploiting autologous BMSCs for healing of radial nonunion segmental defects in 20 rabbits. Through serial radiologic assessment and histopathologic evaluation, 17 $\beta$ -estradiol was found to provide BMSCs with improved osteogenic capacity and an accelerated rate of bone healing.

### Source

Mazdeh DZ, Mirshokraei P, Emami M, Mirshahi A, Karimi I. 17 $\beta$ -estradiol improves the efficacy of exploited autologous bone marrow-derived mesenchymal stem cells in non-union radial defect healing: a rabbit model. *Res Vet Sci.* 2018;118:11-18.

## Research Note: Effect of Cardiomyopathy & Diabetes Mellitus on SDMA in Cats

Considering the potential benefits of renoprotective nutritional treatment in cats in preazotemic stages of kidney disease, early diagnosis of kidney disease is critical. Symmetric dimethylarginine (SDMA) increases as glomerular filtration rates decrease, with a mean time of 17 months before serum creatinine elevations are observed. However, little is known about the influence of comorbidities on SDMA in cats. Human models have shown that SDMA may be influenced by other diseases. This study examined possible relationships between SDMA and hypertrophic cardiomyopathy and diabetes mellitus. In cats, SDMA does not appear to be affected by hypertrophic cardiomyopathy. However, diabetes mellitus appears to lower SDMA levels, making it a less predictable marker for cats with concomitant diabetes mellitus and chronic kidney disease.

### Source

Langhorn R, Kieler IN, Koch J, Christiansen LB, Jessen LR. Symmetric dimethylarginine in cats with hypertrophic cardiomyopathy and diabetes mellitus. *J Vet Intern Med.* 2018;32(1):57-63.