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Osteomyelitis

What is Osteomyelitis?

Osteomyelitis is an active infection of bone that causes severe inflammation, bone destruction, pain, and significant clinical lameness depending on which bone(s) is affected. It is most often caused by a bacterial infection, but can also be caused by fungal agents. There are numerous different ways animals can develop osteomyelitis. A young animal may get it from a blood-born infection that settles in the growth plates of bones. Adult dogs can get a spinal form from inhaling grass awns or from the migration of penetrating foreign objects (e.g. small twig). Some dogs with fungal pneumonia will develop a concurrent fungal bone infection. Infection can also be the results of direct exposure of the bone to the environment at the time of fracture, from deep bite wounds, or after orthopedic surgery.

Diagnosis

Most patients present for exam with a history of lameness or generalized pain. They may appear very ill or act only slightly lethargic. Many will have a low-grade fever, but not always. During exam a painful focus is often identified on a limb or along the spine. The painful area may be swollen and tender to the touch. X-rays typically reveal a mixed destructive and proliferative bone response and swelling of surrounding soft tissue. This typical x-ray appearance can be delayed for up to two weeks after the onset of lameness. Blood cultures or direct lesion sampling are attempted at this point to definitively identify the organism responsible for the infection and ongoing bone destruction.

Treatment

The backbone of treatment is long-term antibiotic therapy, based on culture and sensitivity results (identification of the organism and determination of what kills it) and removal of any underlying causes such as foreign material. Patients are typically on the antibiotic(s) for a minimum of six weeks. In the case of a fungal infection, anti-fungal medications are utilized for much longer periods of time. In chronic and/or severe cases of osteomyelitis, surgical debridement (removal of dead tissue and inflammatory debris) may need to be performed so that the body can completely clear the infection. Infected surgical implants (bone plates, screws, pins) usually need to be removed after bone healing is completed in order to completely clear the infection. This is because certain bacteria produce a slime layer called a glycocalyx or biofilm that prohibits the body's immune system and antibiotics from reaching the bacteria, thereby allowing the implant to act as a source and/or harbor of infection. In general, prognosis for patients with osteomyelitis is fair to good, if early measures are taken to definitively identify the offending organism and to aggressively treat the condition.