Osteomyelitis

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BASIC INFORMATION

Description

Osteomyelitis is bone inflammation caused by infection. Infection most commonly arises from external sources of contamination, such as puncture wounds, openings in the skin over a fracture, or shearing injuries that result in loss of skin and muscle (with exposure of underlying bone). Osteomyelitis can also occur as a consequence of surgery. Infections in nearby tissues may spread to bone, and, occasionally, infections can spread to bone via the bloodstream from other areas of the body.

Causes

Bacteria are the most common cause of osteomyelitis. Bacteria commonly involved include staphylococci (staph), streptococci (strep), and coliform bacteria (such as *Escherichia coli*). Anaerobic bacteria (those that thrive in the absence of oxygen) are also important causes of osteomyelitis. Brucellosis, a disease most often present in breeding dogs, may infect bone. Other bacterial agents are involved less often.

A number of fungal infections, such as blastomycosis, coccidioidomycosis, cryptococcosis, histoplasmosis, and aspergillosis, which ordinarily enter the body through the nose and lungs, can spread to bone.

Clinical Signs

Some cases of osteomyelitis develop suddenly (acute osteomyelitis), with signs arising within 5-21 days after an injury, surgery, or other illness. The bone affected may be swollen, painful, and warm to the touch. Lameness, fever, lethargy, and decreased appetite usually occur. Other signs may be present, depending on the underlying cause and primary location of the infection.

Chronic osteomyelitis develops months to years after an injury, surgery, or previous illness. The affected leg is often lame and painful. If the infection has broken through to the skin surface, a draining hole or tract may be seen. Other systemic signs are uncommon, although intermittent fever and lethargy may be observed.

Diagnostic Tests

Diagnosis often requires a combination of clinical signs, x-ray findings, and laboratory test results. Most x-ray changes do not appear in bone for at least 2 weeks after the onset of the infection. A complete blood count may reveal evidence of infection and chronic anemia. Samples from the affected tissues may be submitted for culture.

When the diagnosis is not confirmed by these tests, bone scans and/or surgical exploration of the site may be recommended. With surgery, biopsies can be submitted for bacterial culture and histopathology. Other tests may be required to determine the underlying cause of the infection and to rule out other diseases that cause similar clinical signs.

TREATMENT AND FOLLOW-UP

Treatment Options

Acute bacterial osteomyelitis is usually treated with 4-6 weeks of antibiotics. Some cases require more long-term treatment. For fungal osteomyelitis, antifungal drugs are usually needed for months. (See also the handout for each fungal disease.) In addition to medical therapy, contaminated injuries are cleaned, débrided (removal of dead tissue), and allowed to drain. Fractures are repaired, and the leg is stabilized. Shearing injuries may require frequent, sterile bandage changes.

Long-term antibiotics are administered for chronic bacterial osteomyelitis. Many cases also require surgery to remove dead bone, remove contaminated surgical implants (plates, screws, pins, wires), and stabilize the leg. Bone grafts may be used to stimulate bone healing when the infection is resolved, and special techniques may be performed that concentrate antibiotics at the site. Amputation may be considered for severe cases that do not respond well to these treatments. Some of these procedures may require your pet be referred to a veterinary surgery specialist.

Follow-up Care

Frequent examinations are usually needed to monitor response to treatment and to change bandages and assess healing. X-rays are often repeated every 4-6 weeks until bone healing is complete. Blood tests may be repeated to determine whether the infection is resolving. Some cases require monitoring for many months.

Prognosis

Prognosis depends on the severity of the condition and the response to therapy. Fungal osteomyelitis is difficult to treat but may resolve with months of therapy. Surgical débridement and appropriate antibiotic therapy may achieve cure rates close to 90% for acute bacterial osteomyelitis. Early diagnosis combined with aggressive, appropriate therapy provides the best chance for a cure.

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