

BASIC INFORMATION

Description

Bone tumors are malignancies that either begin in bone (primary tumor) or spread to bone from other parts of the body (secondary or metastatic tumor). Primary tumors are by far the more common type. The most common primary tumor in dogs is osteosarcoma (85%), followed by chondrosarcoma.

Seventy-five percent of primary tumors occur in leg bones, but they can also occur in the skull, ribs, or spine. Primary tumors occur very rarely in cats, with osteosarcoma and related tumors being the most common types. Primary tumors commonly appear in only one location in one bone, whereas secondary tumors may occur in multiple sites.

Causes

Although tumors can develop at the site of a previous fracture or orthopedic surgical procedure, the cause of most bone tumors is unknown.

Clinical Signs

Bone tumors typically occur in older, male, large- and giant-breed dogs. Dogs with bone tumors usually become suddenly lame. The lameness typically is not associated with trauma, but sometimes minor events can result in a fracture of the diseased bone. The lameness associated with bone tumors progresses rapidly to non-weight-bearing lameness, with the animal holding the leg up. There may also be swelling of the limb at the tumor site and loss of muscle (atrophy) in the rest of the leg. Common sites for primary tumors are the shoulder, carpus (wrist), and stifle (knee).

Diagnostic Tests

Sudden onset of dramatic lameness with no known trauma in an older, large dog strongly suggests the possibility of a bone tumor. X-rays may show classic signs of a bone tumor, such as combined bone destruction and bone production. Other diseases, such as fungal infections, can cause similar x-ray changes, so a definitive diagnosis cannot usually be made from the x-rays alone.

A bone biopsy is usually recommended to confirm the presence of a tumor, to determine the tumor type, and to provide information that affects the treatment options. Laboratory tests and chest x-rays are done to look for tumors elsewhere and to assess the status of other organs. If a metastatic tumor is suspected, a thorough search is undertaken for the origin of the tumor.

TREATMENT AND FOLLOW-UP

Treatment Options

The main treatment of primary tumors is amputation of the affected leg. In the case of osteosarcoma, amputation is done to relieve the intense pain associated with the tumor. The surgery rarely cures the disease, because microscopic metastasis has usually occurred by the time of diagnosis. Chemotherapy is used after amputation to slow the progression of the metastatic cancer. (See also the hand-outs on **Limb Amputation** and **Chemotherapy and Your Pet**.) Other bone tumors, such as chondrosarcoma, may benefit more from amputation if metastasis has not already occurred.

When amputation is not an option, limb-sparing surgery, chemotherapy, or radiation therapy may reduce the pain caused by the tumor and improve the dog's quality of life for a short period of time. Limb-sparing surgery allows the dog to keep the leg but does not change the overall prognosis. The surgery is a very demanding procedure and significant complications can occur, so it is often performed by an experienced veterinary surgery specialist.

Follow-up Care

Following surgery, the incision is observed daily for signs of infection (excessive redness, swelling, pain, or discharge), and the sutures or staples are removed in 10-14 days. It is important to provide the animal with surfaces that allow a secure footing, especially for the first few days while it is adjusting to using three legs. Most dogs and cats do extremely well after amputation. Obese and very large dogs and dogs with other orthopedic or neurologic diseases are the least likely to do well as amputees.

Prognosis

Osteosarcoma is highly malignant, with most dogs surviving only 10-12 months after the initial diagnosis when treated with amputation and chemotherapy. Measurement of alkaline phosphate (ALP) levels in the blood is somewhat helpful in identifying dogs that may not live as long (elevated ALP before surgery) and dogs that may have longer survival times (ALP drops after surgery). Survival time following amputation alone is about 5 months. Amputation for osteosarcoma in cats is often curative, so prognosis is better.

Bone tumors are very painful, and euthanasia should be considered if specific treatment is not an option. Dogs with chondrosarcoma have longer survival times following amputation, especially if metastasis has not occurred at the time of diagnosis. Metastatic bone tumors, although uncommon, generally have a very poor prognosis because of the presence of tumors elsewhere in the body.