

Appendicular Osteosarcoma in Dogs

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Introduction

Osteosarcoma is an aggressive malignancy of the bone that is common in large and giant breed dogs. “OSA” typically is discovered when a companion pet is noted to be persistently lame, sometimes despite receiving pain medication. Most patients experience this lameness over a period of several days to weeks. Swelling, tenderness, decreased activity, changed behavior and decreased appetite are also symptoms that may be noted.

How the Diagnosis is Made

Radiographs (x-rays) of the affected leg are very helpful in discerning this cancer. Bone lysis, or erosion of the bone, can be noted. Also, abnormal bone production is another characteristic noted on radiographs.

Obtaining a sample of cells via bone biopsy is the gold standard to confirm the diagnosis of OSA. This procedure requires general anesthesia. Following the procedure, the specimen is submitted for histopathology analysis. This evaluation typically requires several days to be completed .

Thoracic radiographs are recommended prior to proceeding with a bone biopsy. Three view chest radiographs are performed to rule out any obvious evidence of early metastases. Approximately 10% of patients are noted to have radiographic evidence of spread of this cancer when initially evaluated. It is important to note that even without obvious evidence of metastases on x-rays, osteosarcoma commonly has already started to microscopically advance through the body. These cells pose the threat of cancer progression that will eventually cause the patient’s deterioration.

A bone scan (nuclear scintigraphy) test can help to detect spread of this cancer to other bones in the body. This is a rare occurrence in most patients.

Definitive Therapy: Two steps are required

- 1) Address the “primary” tumor: This refers to treating the bone lesion. Amputation of the affected leg or full course radiation therapy can be performed to remove or eradicate the active cancer cells. In some locations, a limb sparing surgery can be performed, in which a portion of the bone is removed and an allograft (donor bone) or metal implant is used to replace the diseased bone.

2) Address the microscopic metastases: This refers to medication (Chemotherapy) to kill cancer cells that have migrated to distant locations. There are several chemotherapy protocols utilized for this purpose. Each has its advantages and disadvantages. Carboplatinum and doxorubicin are currently the drugs that are utilized most frequently, either alone or in combination, for most veterinary OSA patients. Six total treatments of carboplatinum have recently been noted to provide greater than 500 days of survival for veterinary patients. **The bottom line: combination of definitive local therapy and chemotherapy can provide at least one year of survival time for most patients.**

Other Treatment Options: Palliative therapy

“Palliation therapy” means treatment of the pain accompanying this disease. Surgery (amputation of the affected limb), or short course radiation therapy can be very helpful to directly reduce the pain of the bone affected. Medical therapy can also help control discomfort. There are oral medications (eg non steroidal antiinflammatory agents, narcotics or neurotropic agents) which are very effective. Also, injectable medications administered as an IV infusion (bisphosphonate therapy) have been shown to be very beneficial. **The bottom line: although pain therapy is very helpful, the average survival time for patients treated with this approach is 4 -6 months.**

Future Therapy Directions

Stereotactic radiation therapy is currently being investigated at Colorado State University as an option to address the primary OSA site. Oral antiangiogenesis therapy, which can slow blood supply to cancer cells, is showing promise to treat OSA. Piroxicam, a non steroidal anti-inflammatory (NSAID) is most commonly used. This once daily administered capsule is also very effective to address pain. Side effects include gastrointestinal upset and kidney toxicity.

What About my dog...what can I expect?

Each individual patient responds to treatments differently. What may be helpful for some animals (eg amputation), may not be feasible for other animals to have an acceptable quality of life. Our goal is to review all the information unique to your pet and discuss available and realistic options for therapy.