

NEWS FROM THE WORLD OF ONCOLOGY

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CANINE OSTEOSARCOMA

Osteosarcoma (OSA) is the most common primary bone tumour seen in dogs. This tumour accounts for 85% of all bone tumours. OSA is located in the appendicular skeleton 75% of the time and in other bones (mandible, maxilla, spine, cranium, ribs, nasal cavity and pelvis) 25% of the time. The front limbs are affected twice as often as the rear limbs. OSA usually locates "away from the elbow and towards the knee," proximal humerus and distal femur. This is a disease mainly of large and giant breeds. Saint Bernards, Great Danes, Irish Setters, Doberman Pinschers, Rottweilers, German Shepherds and Golden Retrievers are considered at risk breeds. The median age of onset is 7 years, but there is a focal incidence noted in young dogs between the ages of 18-24 months. Males are at a slightly greater risk than females. OSA has been reported to be associated with metallic surgical implants. This tumour appears to have a mutated tumour suppressor gene (p53). It also over-expresses the COX-2 receptor.



Most dogs with OSA present with lameness. The lameness may be acute or more gradual in onset. In most cases the presumptive diagnosis is made based on radiographs. A classic lytic/proliferative "sun-burst" pattern is noted to the bone, classically located as noted above. Often a triangular deposition of new bone is present on the cortex, at the edge of the lesion. This is called Codman's Triangle and while not pathognomonic, it is highly suggestive of OSA. OSA will rarely cross a joint space. In situations where the bone lesion has the classic appearance, location and is present in a large breed dog, I will not usually recommend biopsy but will instead move forward with definitive therapy. If the lesions are not classic in appearance or location then I will recommend a bone biopsy. It is well documented that small biopsies will often lead to a misdiagnosis and therefore if a biopsy is to be taken a sizable biopsy should be obtained.

The therapeutic approach to OSA is two pronged. The first step is local control of the tumour. In most cases, surgery will involve limb amputation. Amputation is the only way to control pain and would be considered an essential step in preserving quality of life. The vast majority of dogs will do very well with three limbs. Only dogs with severe orthopedic or neurological problems would not be considered candidates for limb amputation. Many clients are initially resistant to limb amputation but eventually come to accept this treatment. In a survey (published in JAAHA in the mid 1990's) of clients who had had their dog's limb amputated, client satisfaction with the procedure exceeded 90%, in fact just as many clients reported they would do the surgery again if faced with the same choice. Prior to surgery three view chest films should be taken. In most cases (90%), there will be micro-metastatic disease in the lungs at the time of diagnosis, but it will be detected radiographically in only 10% of cases at the time of diagnosis.

Surgery is followed with chemotherapy treatments. With no therapy of any sort, the average survival time for dogs with OSA is 1-3 months. With surgery alone the average survival time is 3 months. When surgery is combined with chemotherapy 50% of dogs will be alive at one year, and 20% of dogs will be expected to live beyond 2 years. Due to the fact OSA over expressed COX-2, I usually recommend that dogs be treated with COX-2 inhibitors following the completion of chemotherapy. Severe GI effects can be seen if COX-2 inhibition therapy is combined with chemotherapy treatments.

Continued areas of research include bisphosphonate therapy to help induce apoptosis and inhibit growth, radioisotope therapy to target neoplastic foci and continued development of limb sparing procedures. Limb sparing offers no survival advantage and is only recommended in cases where limb amputation is not possible. This technique is restricted to tumours of the radius and ulna only.

Dr. Kevin Finora is a board certified Oncologist and Small Animal Internist. He sees patients Wednesday (including evenings) to Saturday at VEC/RC South. Please do not hesitate to contact Dr. Finora if you have any cancer related questions.

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