Limb Sparing Trials and Canine Osteosarcoma (5-Sep-2003)

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Osteosarcoma (OSA) is a common malignancy in dogs. Clinical problems include local disease control and metastasis. Amputation and postoperative chemotherapy remain the standard of care although limb sparing has become a suitable alternative to amputation in selected cases. Controlled, randomized and prospective trials can be performed to study both local and systemic control of cancer in pet animals. Pets with cancer are attractive models because of increased incidence of some cancers (10x greater incidence of OSA in dogs versus people); pets are out bred with intact immune system; shorter time to local recurrence and metastasis (trial end points reached sooner); reduced costs (compared to human trials); owner compliance with randomization and follow-up; necropsy compliance (documentation of toxicity and outcome); large enough animals for surgical intervention and orthopedic implants; similar physiology of drug metabolism, excretion and tumor susceptibility; relative exemption from animal rights groups criticism due to spontaneous nature of disease and fact that animals often receive "state of the art" treatment plus or minus the investigational intervention.

Almost 500 dogs have undergone limb sparing for OSA in the last 20 years at CSU while several thousand had amputation for local disease control. Two separate NIH funded trials were completed involving limb sparing. The first demonstrated that preoperative radiation and intra-arterial cisplatin could induce substantial percent necrosis in the tumor; there was a radiation dose response for % tumor necrosis that was lower than that to induce normal bone necrosis and that increased tumor necrosis led to decreased local recurrence [1,2]. Another trial looked at the influence of a locally implanted biodegradable cisplatin polymer on local recurrence and demonstrated improved local control with the local chemotherapy [3].

Pet animals offer a unique and readily accessible resource of "real cancer" that are a natural bridge between invitro or rodent models and human trials. The veterinary profession is willing and capable of contributing to comparative oncology trials and has a demonstrated and creditable track record in this area.

References


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