

Information for Oncology Clients

Mammary Tumors in Dogs

Comprehensive Cancer Care Service

Ryan Veterinary Hospital of the University of Pennsylvania

Mammary gland (“breast”) tumors are the most common type of tumor in the un-spayed female dog. Breeds at risk for developing mammary gland tumors include toy and miniature Poodles, Spaniels, and German Shepherds. The average age of dogs at diagnosis is 10-11 years. There may be one or several tumors, and they can occur in one or more glands. The last two sets of glands (the 4th and 5th glands) are most commonly affected. The tumors can be firm or soft, well-defined lumps or diffuse swellings. Tumors can be attached to underlying tissues or moveable, skin-covered or ulcerated. They can be different sizes, and they may grow slowly or quite fast. Most dogs are seen by the veterinarian for signs associated with the primary tumor and are otherwise feeling well. A few dogs are diagnosed with advanced metastasis (tumors that have spread to elsewhere in the body, such as the lungs and lymph nodes) and might be feeling ill from their tumors at the time of diagnosis.

The risk for developing mammary gland tumors is closely associated with exposure to the female sex hormones estrogen and progesterone in the early years of development. Mammary gland tumors predominantly affect female dogs and are extremely rare in males. Hormones are necessary for normal mammary gland development. However, they may also be involved in the initial stages of cancer development and lead to tumor development many years later. Hormones may also provide continued stimulation to tumors and therefore contribute to tumor progression. Hormonal therapy is a common treatment in women with breast cancer and may also be helpful in the treatment of canine mammary gland tumors. Early spaying (ovariohysterectomy: removal of the ovaries and uterus, which removes the source of estrogen and progesterone) significantly decreases the risk for tumor development. Studies have shown that spaying a dog before her first, second or third heat cycle can significantly decrease the risk for developing mammary gland tumors later in life.

Mammary gland tumors can be either malignant (cancerous) or benign (non-cancerous) and arise from the different types of tissues (epithelial or glandular tissues, and mesenchymal or connective tissues) in the mammary gland. The most common types are tumors from the glandular tissues and include adenoma, carcinoma, and adenocarcinoma. Half of all mammary gland tumors are benign and can be treated successfully with surgery alone, while half are malignant and have the potential for metastasis. The outcome for patients with malignant mammary gland tumors depends on several factors including tumor type, histologic grade (appearance of the tumor cells under the microscope and how similar or dissimilar they are to normal tissues), tumor size, and tumor stage (presence of spread to other parts of the body, called metastasis).

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We recommend that all mammary gland masses are surgically removed and biopsied to determine the tumor type and grade. Dogs with benign tumors usually do not require further treatment, but patients with malignant tumors should be staged (evaluated for metastasis by tests such as chest X-rays and sometimes abdominal ultrasound). Dogs with small (less than about 1 inch diameter), low histologic grade carcinomas, and adenocarcinomas with no evidence of metastasis, may be treated effectively with surgery alone. Dogs with large or invasive tumors, high histologic grade, sarcomas (tumors of mesenchymal origin), lymph node involvement and/or other sites of spread are at risk for both recurrence of the original tumor and metastasis.

Hormonal therapy in the form of ovariectomy may be beneficial in un-spayed dogs with carcinomas or adenocarcinomas. In a previous study at the Veterinary Hospital of the University of Pennsylvania it was shown that dogs spayed either at the same time of their tumor removal or within two years prior to the tumor surgery lived significantly longer than dogs that remained un-spayed after their tumors were removed. Chemotherapy may also be indicated in dogs with aggressive tumors.

Owners can play an important role in their dog's health. The protective effect of early ovariectomy is substantial, and dogs that are not intended for breeding should be spayed before their first or second heat. Obesity and a high fat diet in the first year may also increase the risk for tumor development, so not overfeeding young growing dogs could be beneficial. If a dog develops a mammary tumor which is removed and treated effectively, it is still important for her owner to examine her at regular intervals for any new lumps, bumps, or swellings and take her in for regular veterinary checkups, as it is possible for additional tumors to develop in the future if she has any mammary tissue remaining. All lumps should be surgically removed and biopsied. Early diagnosis and treatment are crucial for a good outcome.

Canine mammary tumors have many similarities to breast cancer in women. In both, it is a disease that affects the middle-age to older patients, and the most common tumor types are similar. The treatments are similar, and patients with small tumors and early, localized disease can be cured. However, for patients with tumors that have spread elsewhere in the body, the prognosis is guarded. Canine mammary gland tumors are good models for breast cancer in women, and clinical research studying mammary gland tumors in dogs has the potential to benefit both dogs and women.

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