



IJRB

## Cancer in Animals with Special Reference to Osteosarcoma in Dogs: A Review

Subha Ganguly<sup>1\*</sup>, Kausar Qadri<sup>2</sup>, Arpita Padhy<sup>3</sup>, Praveen Kumar Praveen<sup>4</sup> and Rajesh Wakchaure<sup>5</sup>

<sup>1</sup>Associate Professor and Head; <sup>3</sup>Assistant Professor, Dep.t of Veterinary Microbiology, <sup>2</sup>Assistant Professor, Dept. of Veterinary Medicine, <sup>4</sup>Assistant Professor, Dept. of Veterinary Microbiology, Public Health and Epidemiology,

<sup>5</sup>Associate Professor, Dept. of Animal Genetics and Breeding, Arawali Veterinary College (Affiliated with Rajasthan University of Veterinary and Animal Sciences, Bikaner),

N.H. – 52 Jaipur Road, V.P.O. Bajor, Dist. Sikar, Pin – 332001, Rajasthan, India

\*Corresponding Author Email: [ganguly38@gmail.com](mailto:ganguly38@gmail.com)

### ABSTRACT

*Cancer is the leading cause of death among older dogs. It accounts for approximately 50% of deaths each year but can be successfully treated if diagnosed early. The medical science that studies cancer in animals is called veterinary oncology and veterinarians that specialize in cancer diagnosis and treatment are called veterinary oncologists. Dogs can get various kinds of cancer. Cancer in dogs is one of the leading cause of deaths in dogs but it can be successfully treated.*

**Key words:** Cancer, Dogs, Oncology

### INTRODUCTION

Neoplasia (nee-oh-PLAY-zhuh) is the uncontrolled, abnormal growth of cells or tissues in the body, and the abnormal growth itself is called a neoplasm or tumor. It can be benign (bee-NINE) or malignant. Benign neoplasms do not grow aggressively, do not invade the surrounding

body tissues, and do not spread throughout the body. Malignant neoplasms, on the other hand, tend to grow rapidly, invade the tissues around them, and spread, or metastasize, to other parts of the body. The word “tumor” or “mass” is often used to describe the actual swelling or other physical appearance of a neoplasm. The word “cancer” is often confused with neoplasia, but only malignant neoplasms are truly cancers. Neoplasia is common in pet animals and the incidence increases with age.

Cancer accounts for almost half of the deaths of pets over 10 years of age. Dogs get cancer at roughly the same rate as humans, while cats get fewer cancers [1].

### Causes

Cancer is a multifactorial disease, which means it has no known single cause. However, it is known that hereditary and environmental factors can contribute to the development of cancer in dogs.

Symptoms of cancer in dogs may include:

- Lumps (which are not always malignant, but should always be examined by a vet)
- Swelling
- Persistent sores
- Abnormal discharge from any part of the body
- Bad breath
- Listlessness/lethargy
- Rapid, often unexplained weight loss
- Sudden lameness
- Offensive odor
- Black, tarry stools (a symptom of ulcers, which can be caused by mast cell tumors)
- Decreased or loss of appetite
- Difficulty breathing, urinating or defecating

**Susceptibility**

Older dogs are much more likely to develop cancer than younger ones, and certain breeds are prone to specific kinds of cancers. Boxers, Boston Terriers and Golden Retrievers are among the breeds that most commonly develop mast cell tumors. Large and giant breeds, like Great Danes and Saint Bernards, are much more likely to suffer from bone cancer than smaller breeds. It is important for the owner to be familiar with the diseases to which their specific breed of dog might have a breed predisposition[2].

**Treatment**

Some dog owners opt for no treatment of the cancer at all, in which case palliative care, including pain relief, may be offered. Regardless of how treatment proceeds following a diagnosis, the quality of life of the pet is an important consideration. Some canine cancers can be cured, and almost all patients receive at least some benefit from treatment. In cases where the cancer is not curable, there are still many things which can be done to alleviate the dog's pain. Good nutrition and care from the dog's owner can greatly enhance quality of life.

Each type of neoplasia requires individual care and may include one or a combination of treatment therapies such as surgery, chemotherapy, radiation, cryosurgery (freezing), hyperthermia (heating) or immunotherapy, dietary changes or other things to help your pet better respond to treatment. Once you have a diagnosis, your veterinarian will discuss the best treatment option(s) for your pet and the risks and side effects associated with each option. Pain management is also an important part of treatment. In some instances, your veterinarian may refer you to a board-certified oncologist (cancer specialist) and/or specialty clinic depending upon the recommended course of treatment. Some types of neoplasia can be cured, but other types can only be managed to decrease spread and prolong your pet's comfort and life as much as possible.

How early a neoplasm is detected and the type of neoplasm are often the biggest factors determining the success of treatment. Sometimes, euthanasia is considered when a pet has neoplasia (especially with some cancers) [3].

**Osteosarcoma in Dogs**

Osteosarcoma refers to the most common bone tumor found in dogs. Bone cancer can affect any breed of dog, but it is more commonly found in the larger breeds. The disease is extremely aggressive and has a tendency to spread rapidly into other parts of the dog's body (metastasize). There are treatment options available, but generally the long term prognosis for the animal is poor. Bone cancer can be found in cats as well, but it is rare [4].

**Symptoms and Types**

Many signs of bone cancer are subtle. They can include swelling, lameness, and joint or bone pain. In some cases, dogs suffering from bone cancer will appear tired or have anorexia. Occasionally, dogs will exhibit a mass growth on their body or a painful inflammation around the site of the tumor [5].

**Cause**

Current knowledge of the disease has not linked genetics or gender to the condition, but bone cancer does appear more often in large to giant breeds of dogs. Some studies have shown a slight increase in the development of osteosarcoma among dogs that have experienced a blunt bone injury [6].

**Diagnosis**

Use of X-rays to view the mass, often using several angles to get an accurate picture. Other tests include biopsies, blood tests, bone scans, and CAT scans to view the bone areas, and the mass, if discovered. If the diagnosis is bone cancer, it is important to note that the prognosis is often unfavorable and that there are numerous side effects to the treatment options [7].

**Treatment**

Treatment options vary and depend on the type and stage of cancer. Common treatments include surgery, chemotherapy, radiation therapy and immunotherapy. A combination of therapies may be used. Success of treatment depends on the form and extent of the cancer and the aggressiveness of the therapy. Early detection offers the best chance for successful treatment.

**Summary**

The cure of cancer depends on the type and extent of the neoplasia, as well as the aggressiveness of therapy. Benign neoplasms are

usually easier to treat, and treatment of any type of neoplasia is more likely to be successful if the neoplasms are detected early. Although some neoplasms (especially the more aggressive cancers) cannot be cured, treatment can prolong your pet's life and improve their quality of life.

#### REFERENCES

1. Demonbreun, W.A. and Goodpasture, E.W., Infectious Oral Papillomatosis of Dogs. *Am. J. Pathol.* **1932**, 8(1): 43–56.
2. Dorn C.R., Taylor, D.O., Chaulk, L.E. and Hibbard, H.H., The prevalence of spontaneous neoplasms in a defined canine population. *Am. J. Public Health Nations Health*, **1966**, 56(2): 254–265.
3. Hueper, W.C., Environmental carcinogenesis in man and animals. *Ann. N.Y. Acad. Sci.* **1963**, 108: 963–1038.
4. Jarrett, W.F., Martin, W.B., Crighton, G.W., Dalton, R.G. and Stewart, M.F., Transmission experiments with leukemia (Lymphosarcoma). *Nature*. **1964**, 202: 566–567.
5. Knox, G., Epidemiology of childhood leukaemia in Northumberland and Durham. *Br. J. Prev. Soc. Med.* **1964**, 18: 17–24.
6. Lloyd L.C., Epithelial tumours of the skin of sheep. Tumours of areas exposed to solar radiation. *Br. J. Cancer*. **1961**, 15: 780–789.
7. Lombard, I.S., Moloney, J.B. and Rickard C.G., Transmissible canine mastocytoma. *Ann. N. Y. Acad. Sci.* **1963**, 108: 1086–1105.