

Cancer in Dogs

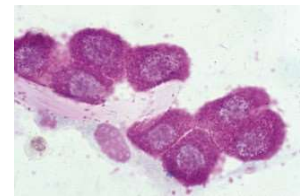


Figure 1. Mast cell

Introduction

Cancer is a very common diagnosis, affecting up to 1 in every 4 dogs during their lifetime. The most common cause of death or reason for euthanasia of dogs in the 2004 Kennel Club health survey was cancer overall and for many breeds. The most common cancers of dogs are mast cell tumours, lymphoma, haemangiosarcoma, soft tissue sarcomas, osteosarcoma (bone cancer), oral tumours (melanoma, squamous cell carcinoma, fibrosarcoma), mammary tumours, pulmonary tumours and urinary tract tumours (transitional cell carcinoma). Mast cell tumours (Figure 1) are the most common skin cancer in dogs and these are more likely to affect older dogs; however, 70% of these tumours can be successfully treated with surgery and sometimes local radiotherapy. Lymphoma is the most frequent life-threatening cancer in dogs, accounting for up to 20% of all tumours and affecting as many as 24 out of every 100,000 dogs. Mammary tumours are one of the most common tumours found in older female dogs; however, spaying can dramatically reduce the risk of this cancer developing. Research has shown that certain breeds have an elevated risk of developing particular cancers, suggesting that there is likely a genetic component or predisposition to cancer (Table 1).

Clinical presentation

Cancer can occur in any body part or system and clinical signs are varied as a result. As well, many of the signs are shared by a large range of other diseases. Affected dogs may present with a lump or a mass lesion or non-specific signs that may include lack of appetite, reduced activity and weight loss. Cases present in many different ways depending on the organ(s) affected. Clinical signs may include vomiting, diarrhoea, a palpable mass in the abdomen or on the skin, lameness, unexplained bleeding, an enlarged lymph node or even simply bad breath due to a mass in the mouth.

Diagnosis

A thorough physical examination of the dog is always an essential part of the diagnostic process (or work-up) as it will determine which further tests will be required. Complete blood cell counts and biochemistry tests can help to reveal which organs are involved and whether there is any concurrent disease. Various imaging modalities, including radiographs, ultrasound studies and sometimes also CT or MRI scans may be helpful in determining the extent of the disease.

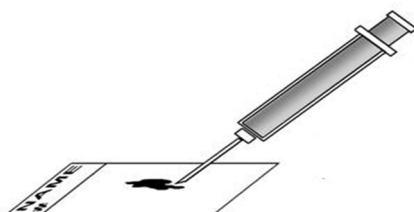


Figure 2. Fine needle aspiration

A diagnosis of cancer is usually based on histopathological examination of a sample that is obtained by a fine needle aspirate (FNA, Figure 2) or biopsy. Once the diagnosis of tumour type is made, further evaluation by a pathologist may be necessary to help establish the grade of the tumour as this will affect prognosis and treatment options.

Staging

Once a diagnosis of cancer has been established, the cancer should be staged. Staging is the process that determine to what extent the cancer has spread throughout the dog's body. The degree of spread will affect prognosis and may affect treatment options. Clinical staging using the TNM system to assess the primary tumour (T), including involvement of adjacent structures, metastasis to local and regional lymph nodes (N) and distant sites (M) should be carried out, as indicated by the biological behaviour of the tumour. The aim of staging is to ensure the best treatment possible is offered and to give a more accurate prognosis (expected outcome). Carcinomas, including mammary cancer, and mast cell tumours mainly undergo metastasis (spread) via the lymphatic system. Bone cancer tends to spread to the lungs. Blood tests, imaging scans, bone marrow and/or lymph node biopsies may be necessary procedures in staging.

Treatment

There are many different types of tumours and the treatment for each will differ. There have been major advances in the treatment of cancer in humans and many new medicines and techniques can be used in dogs too.

Surgery remains one of the best ways to treat most tumours and in many cases can be curative. However, surgery must be bold and well planned; any tumour cells left behind will cause the tumour to grow back.

Radiation therapy is used to treat some tumours, particularly those that occur in the mouth, nose, skin and brain. Certain tumours can be cured, some have their growth slowed and some, unfortunately do not respond at all.

Chemotherapy is used to treat several tumour types. Doses used in animals are carefully calculated to aim to avoid the most serious side effects. For this reason, most forms of chemotherapy used in veterinary medicine are considered to be a form of palliative therapy rather than curative although we can achieve periods of remission with a return to a good quality of life in some cases.

Surgery may be used with adjunctive radiation or chemotherapy.

Your vet will discuss with you the diagnosis and type of cancer as well as the prognosis and management plan. It is up to you to make an informed decision but it is the responsibility of your vet to tell you all the options.

To help remember what you are told, you may wish to take notes or have another family member or friend with you. You do not need to ask all your questions at once. You will have other chances to ask the veterinary surgeon or nurse to explain things that are not clear and to ask for more information.

Before starting treatment, you may want another opinion about your dog's diagnosis and treatment plan. A second opinion is usually sought when there is doubt about the diagnosis whereas a referral is usually to seek specialist management of the case. Your veterinary surgeon may refer you to a specialist, or you may ask for a referral. Specialists who treat cancer include surgeons, medical oncologists and radiation oncologists.

When is it time to say good-bye?

Sadly, there will come a time when your dog is suffering and has lost their quality of life. Often there is a change in behaviour such as hiding or flinching when touched, becoming withdrawn, loss of appetite, reluctance to move, restlessness or difficulty in getting comfortable. If your dog is

no longer his/her "old self", then usually you will know that it is time. It is useful to note the number of good days and bad days in a week and perhaps observe your dog over several weeks to see how they are responding to any treatment you are giving them.

A "good" day might be one where your dog is willing to do those activities it normally enjoys such as going for a walk or playing with a toy and eats and drinks without any coaxing. A "bad" day might be one where you cannot tempt your dog to eat or drink much and/or he/she may have a toileting accident or strain to do any eliminations. When the bad days outweigh the good, you will know that it is time to make decisions about end of life options.

It is important that you feel comfortable having a discussion with your vet practice about end of life options, including the euthanasia procedure, care of the remains and how you wish to be involved. There is a quality of life scale available on the ACT website that can help you to ask yourself if you are able to provide enough help to maintain your ailing dog without further compromising quality of life.

Table 1. Elevated risk of developing particular cancers, by breed.

Type of cancer	Breeds with an elevated risk of developing this cancer
Histocytic sarcoma or Malignant Histiocytosis	Bernese mountain dog, flat-coated retrievers
Osteosarcoma (bone cancer)	Large breeds such as Rottweiler, great Dane, Irish wolfhound, greyhound, Saint Bernard, Doberman, German shepherd, Irish setter, golden retriever, Borzoi, Leonberger
Haemangiosarcoma (blood vessel tumours)	German shepherd, golden retriever.
Mast Cell Tumour (Skin tumours)	boxer, bull dog, bullmastiff, Boston terrier, Staffordshire bull terrier, Rhodesian ridgeback, Weimaraner, Labrador retriever, beagle, golden retriever
Lymphoma/leukaemia	boxer, bull mastiff, basset hound, Saint Bernard, Scottish terrier, Airedale terrier, Bouvier des Flandres, Labrador retriever,
Melanoma	Chow Chow, golden retriever, Pekingese, poodle, Schnauzer, Scottish terrier, cocker spaniel
Mammary tumours	poodles, spaniels, Puli, English setter, pointer, dachshund, German shepherd, Maltese terrier, Yorkshire terrier
Brain tumour	golden retriever, boxer

Adapted from Dobson J (2013), *IRSN Vet Sci* 2013, 941275, Published online Jan 17, 2013, doi: 10.1155/2013/941275 available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3658424/> as Open Access.

Reference: Giuffrida MA, Brown DC, Ellenberg SS and Farrar JT. 2018. Development and psychometric testing of the Canine Owner-Reported Quality of Life questionnaire, an instrument designed to measure quality of life in dogs with cancer. *J Am Vet Med Assoc* 2018;252:1073–1083. DOI: 10.2460/javma.252.9.1073.

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