

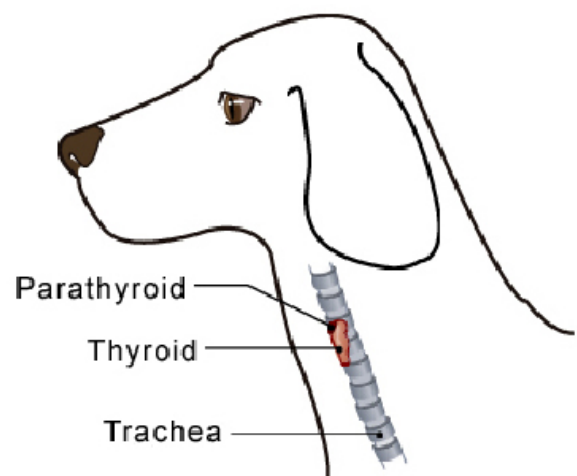
Parathyroid Tumors

These notes are provided to help you understand the diagnosis or possible diagnosis of cancer in your pet. For general information on cancer in pets ask for our handout "What is Cancer". Your veterinarian may suggest certain tests to help confirm or eliminate diagnosis, and to help assess treatment options and likely outcomes. Because individual situations and responses vary, and because cancers often behave unpredictably, science can only give us a guide. However, information and understanding about tumors and their treatment in animals is improving all the time.

We understand that this can be a very worrying time. If you have any questions please do not hesitate to ask us.

What are the parathyroid glands?

The four parathyroid glands (two on each side) are closely associated with the thyroid gland, located just below the larynx or "voice box" in the neck. They are endocrine glands, meaning they produce specialized chemicals called "hormones". Hormones regulate and integrate many activities to maintain internal stability of the body. The hormones pass directly into the blood to affect target cells elsewhere. The parathyroid glands produce parathyroid hormone that, with Vitamin D and with specific cells (C-cells) in the thyroid gland, regulates calcium concentration in the blood. This is essential for normal functioning of muscles (including the heart) and kidneys, and for the formation and maintenance of healthy bones and teeth.



What are parathyroid tumors?

"May be secondary to chronic kidney disease or unbalanced nutrition."

Parathyroid tumors in dogs include non-cancerous cysts, which formed before birth. Enlarged parathyroid glands due to cell overgrowth (hyperplasia) may be secondary to chronic kidney disease or unbalanced nutrition. Most parathyroid cancers are benign (adenomas) and slow growing. Some are malignant (spreading). Both benign and malignant parathyroid cancers produce hormones. The hormones produce signs of overactive parathyroids (hyperparathyroidism), which may include weakening of bones with fractures or lameness. Sometimes there is also loosening and loss of teeth.

What do we know about the cause?

The reason why a particular pet may develop this, or any cancer, is not straightforward. Cancer is often the culmination of a series of circumstances that come together for the unfortunate individual.

Cancer is essentially the result of non-lethal genetic damage to cells (mutation) with "external" contributory factors that may include radiation, chemicals, hormones and infections. The mutated cells upset the normal regulation of cell death and replacement. They do this by activating growth-promoting oncogenes (cancer genes), inactivating suppressor genes and altering the genes that regulate normal, programmed cell death (apoptosis).

Parathyroid cysts in dogs are the result of abnormal development before birth. Hyperplastic parathyroid glands may be secondary to stimulation by low blood calcium in chronic kidney disease or unbalanced nutrition. We know little about the causes of the true cancers of these glands, but they could also be due to chronic overstimulation.

Why has my pet developed this cancer?

Some animals have a greater tendency (genetic susceptibility) to cancer. Some breeds have far more cancers than others, often of specific types. The more divisions a cell undergoes, the more probable is a mutation so cancer is more common in older animals whose cells have undergone many divisions, or in cells that divide frequently.

Are these common tumors?

Parathyroid cysts are common in dogs. Hyperplasia and tumors are uncommon in dogs and cats.

How will these cancers affect my pet?

Parathyroid cysts produce no clinical signs. With hyperplasia and functional tumors, clinical effects are related to increased blood calcium. In severe cases, they may induce increased thirst and increased urination with incontinence, digestive upsets, behavioral changes, weakness and fainting, weakening of bones, fractures and lameness. There may also be loosening and loss of teeth. These clinical signs may also be seen in secondary hyperparathyroidism due to kidney disease and in hypercalcemia associated with some other cancers.

How are these cancers diagnosed?

"Your veterinarian may suspect the presence of a functional parathyroid tumor based on abnormal blood tests for calcium and parathyroid hormone levels."

Your veterinarian may suspect the presence of a functional parathyroid tumor based on abnormal blood tests for calcium and parathyroid hormone levels. Ultrasound examination may detect larger tumors.

Definitive diagnosis of tumor type relies upon microscopic examination of tissue samples. Your veterinarian may obtain a diagnostic sample by punch or wedge biopsy (removal of a portion of the mass), or by excision of the entire mass; the larger the sample, the more accurate the diagnosis. Cytology, the microscopic examination of small samples of cells, is not diagnostic for these tumors. Accurate diagnosis and prediction of behavior (prognosis) rely on microscopic examination of tissue (histopathology). Histopathology also rules out other forms of cancer. Your veterinarian will submit the samples to a specialized laboratory for examination and diagnosis by a veterinary pathologist. Although the submitted piece of tissue may be a small part of the mass (biopsy) or the whole lump, only by examining the entire lump will the pathologist be able to indicate whether the cancer has been fully removed.



The histopathology report typically includes words that indicate whether a tumor is 'benign' (non-spreading, local growth) or 'malignant' (capable of spreading to other body sites). These, together with the origin or type of tumor, the grade (degree of resemblance to normal cells or 'differentiation') and stage (how large it is and extent of spread) indicate how the cancer is likely to behave. The veterinary pathologist usually adds a prognosis (what will probably happen). This may include information on local recurrence or metastasis (distant spread).

What types of treatment are available?

"Surgical removal of the tumor may result in a rapid fall in blood calcium."

Parathyroid adenomas are usually removed surgically. Parathyroid hormone is only active for twenty minutes in the blood so surgical removal of the tumor may result in a rapid fall in blood calcium. Post-operatively, short-term treatment to maintain the blood calcium level may be needed until the body is able to compensate.

Can these cancers disappear without treatment?

It is not common, but the loss of blood supply to a cancer can make the cells die. Unfortunately, the disappearance of the cancer is rarely complete.

How can I nurse my pet?



After any surgery, you need to keep the incision site clean and dry and prevent your pet from interfering with it. Report any loss of stitches or significant swelling or bleeding to your veterinarian. You may be asked to check for signs that would indicate low blood calcium (which occurs in approximately one third of dogs) and to give calcium and Vitamin D supplements. If you require additional advice on post-surgical care, please ask.

How will I know how the cancer will behave?

The histopathology report will give your veterinarian the tumor diagnosis that helps to indicate how it is likely to behave. The veterinary pathologist usually adds a prognosis that describes the probability of local recurrence or metastasis (distant spread).

When will I know if the cancer is permanently cured?

'Cured' has to be a guarded term in dealing with any cancer.

The prognosis for parathyroid tumors depends on the severity of secondary changes due to the prolonged raised blood calcium before surgery, and the ability to prevent or manage severe, postoperative low blood calcium. If there is evidence of severe kidney disease, the pet may need lifelong medical management and survival may be short. Malignant tumors may spread to the local lymph nodes and occasionally the lung but this is rare.

Cats that undergo surgery for parathyroid tumors usually survive longer than a year.

Are there any risks to my family or other pets?

No, these are not infectious tumors and are not transmitted from pet to pet or from pets to people.

This client information sheet is based on material written by: Joan Rest, BVSc, PhD, MRCPath, MRCVS

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