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MAMMARY TUMORS IN CATS

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 for tumors in animals is improving all the time.

We understand that this can be a very worrying time. We apologize for the need to use some technical language. If you have any questions please do not hesitate to ask us.

What is this tumor?

This is a tumor originating from cells of the mammary glands. Most tumors are potentially or already malignant so early surgical removal is important in preventing spread to other parts of the body (metastasis). A cat may have multiple tumors, sometimes of different types, within different mammary glands.

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 seemingly the culmination of a series of circumstances that come together for the unfortunate individual.

Cancer is non-lethal genetic damage of cells (mutations in the DNA genome). Some cats have a genetic tendency to develop cancer and the risk increases with increasing age. However, sex hormones are the most important single factor increasing the risk of a cat developing mammary tumors. If the ovaries and uterus are removed by ovariohysterectomy (spaying) at an early age, there will be less risk of these tumors developing. Conversely, giving a cat female sex hormones increases the incidence.



From: Dermatology by Ralf Mueller
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Cancer induction is a multi-step process and the early, pre-cancerous stages are hyperplasias and dysplasia. These stages are under hormonal disturbances. They continue to be influenced by hormones and are not freely proliferating entities without function. In cats, most such precancerous changes can progress to true cancers.

In some species of animal, viruses are important factors in inducing mammary cancer. Viruses have been found within these tumors in cats but, as far as we are aware, they do not cause the tumors.

Why has my pet developed this cancer?

Some animals have a greater tendency (genetic susceptibility) to cancer. The more divisions a cell undergoes, the more probable is a mutation so cancer is more common in older animals. Mammary tumors begin their abnormal growth under the influence of hormones but if they progress to a malignant stage removing hormones does not affect the course of the tumor.

Are these common tumors?

These are common tumors in female cats, mainly in middle-aged to older animals. Pre-cancerous hyperplasias and dysplasias account for 22% of mammary lumps, benign cancers for 0.9% and malignant cancers for 77%. The Siamese breed is three times more likely to develop mammary tumors than Domestic Short-haired cats. Persian cats also develop tumors frequently. Mammary tumors in cats are more common in Scandinavian countries because spaying of domestic cats is not commonly practised and the female hormone progesterone is frequently used to prevent pregnancy.

Although most cats with these tumors are elderly, malignant tumors can occur in cats as young as two years of age. Mammary tumors are rare in male cats, but do occur.

How will this cancer affect my pet?

The most obvious effect is a lump or multiple lumps in the mammary glands. Some tumors produce secretion (clear, milky or blood-stained fluid which may be expressed from a teat). Benign tumors rarely ulcerate or bleed but ulceration of malignant tumors is not uncommon. Malignant tumors are often firmly attached to the surrounding structures with poorly demarcated edges. Large tumors may lose some of their blood supply so parts of them degenerate. They may have physical effects by pressing into the surrounding tissues. Inflammation and secondary infection are possible with pain and general signs of illness.

If the cancer spreads (metastasizes) to the lungs, there may be shortness of breath and difficulty breathing. Weight loss due to loss of body fat and muscle may occur in the later stages of malignant cancer. The immune system is often damaged, which allows cancers to develop and infections to persist.

How is this cancer diagnosed?

Clinically, these tumors are diagnosed by the typical appearance. Accurate diagnosis of the type (and therefore how it will behave) relies upon microscopic examination of tissue.

Cytology, the microscopic examination of cell samples, is not an accurate method of diagnosis for this group of tumors. Accurate diagnosis, prediction of behaviour (prognosis) and a microscopic assessment of whether the tumor has been fully removed rely on microscopic examination of tissue (histopathology). This is done at a specialized laboratory by a veterinary pathologist. The piece of tissue examined always needs to include the edges of the lump. Examination of the whole lump will 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.

What types of treatment are available?

The most common treatment is surgical removal of the lump. Sometimes this is just the lump and sometimes the whole gland and draining lymph node are removed. Many glands and lymph nodes may be removed if there are several tumors.

Spaying (ovariohysterectomy) early in life reduces the incidence of cancer. Spaying at the time of tumor removal does not affect growths that are already cancerous but can cause some precancerous hyperplasias to regress and disappear. It is unlikely to help reduce further tumor development.

Early mammary tumors are hormone dependent but the hormones involved are different in different species. Medical treatments used in women are unsuitable for use in cats.

Can this cancer disappear without treatment?

Spaying does not affect established cancer or prevent recurrence. Development of cancer is a multi-step process so it may stop at some stages but all these cancers have the potential to progress to malignancy, usually rapidly within months. As they have this potential, early surgical removal is always recommended.

Very occasionally, spontaneous loss of blood supply to the cancer can make it die but the dead tissue will still need surgical removal. The body's immune system is not effective in causing these tumors to regress.

How can I nurse my pet?

Preventing your pet from rubbing, scratching, licking or biting the tumor will reduce itching, inflammation, ulceration, infection and bleeding. Any ulcerated area needs to be kept clean.

After surgery, the operation site similarly needs to be kept clean and your pet should not be allowed to interfere with the site. Any loss of sutures or significant swelling or bleeding should be reported to your veterinarian.

If you require additional advice on post-surgical care, please ask.

How will I know how this cancer will behave?

Histopathology will give your veterinarian the diagnosis that will indicate the type and how it is likely to behave. There is significant variation between animals in their response to tumors and the probability of further tumor development.



Any mammary lesion may be inflamed (mastitis) and a few lumps are solely due to inflammation.

Benign non-cancerous growths are hyperplasias (overgrowth) and dysplasias (abnormal growth). They include those arising from the epithelium that normally produces milk (lobular or epithelial hyperplasia, occasionally called 'adenosis'), growth including the connective tissue between the glands as well (fibroadenomatous change or fibroepithelial hyperplasia) and growth due to expansion of the ducts that take the milk to the teats (cystic ducts, ductal ectasia or hyperplasia).

Benign cancers are adenomas. Some arise only from the milk-producing epithelium (simple adenomas). Others include other tissues such as the myoepithelium and connective tissue between the glands and are a progression of fibroadenomatous change.

Malignant cancerous growths develop from the epithelium that normally produces milk or the ducts (simple carcinoma or adenocarcinoma).

As well as the type of tumor, the clinical stage it has reached and the mitotic index (number of cells dividing) and whether there is local invasion are important factors in behaviour.

When will I know if the cancer is permanently cured?

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

It is very difficult to promise complete cure once your cat has developed mammary tumors but the following general guidelines may help. In cats, most hyperplasias progress to neoplasia. Mammary tumors are age dependent so an older queen will have a higher probability of recurrence and the proportion of malignant tumors increases with age.

Tumors of less than 1" diameter at the time of surgery have a median postoperative survival of 3 years. Tumors greater than 1" diameter have a median survival of less than six months. Most secondary tumors are in lungs and, in contrast to women, rarely in bones.

Multiple tumors are also common. Growth in the different glands is usually multifocal in origin and not spread from a single initial site. It is therefore advisable to have your cat checked frequently to ensure there is no regrowth of a tumor and no new ones have appeared.

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.