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## MULTICENTRIC SQUAMOUS CELL CARCINOMA IN SITU ("BOWEN-LIKE" DISEASE)

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.

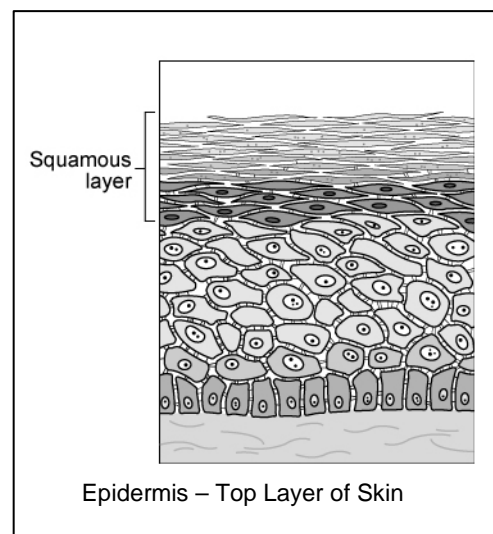
### ***What is this tumor?***

Squamous cell carcinoma *in situ* is a disordered growth of the skin epidermis that may extend to include epithelium of the upper part of the hair follicles.

The growths affect pigmented areas of skin and most occur at multiple sites in the same animal. Sometimes there are oral (mouth) lesions.

### ***What do we know about the cause?***

This tumor is analogous to Bowen's disease in humans, which is associated specifically with type-34 papilloma virus. In animals, some cases have been shown to have papilloma virus infection so they are probably virally induced. There are many different types of papilloma virus in all species of animals. The viruses are species specific so there is no cross-infection between animals and people. The tumors occur on pigmented skin and are themselves pigmented so they are not sunlight related.



### ***Why has my pet developed this tumor?***

Your dog or cat is infected with one of these papilloma viruses. Many viruses are carried by normal animals without any clinical signs. We people all carry several types of papilloma viruses. In humans there are over 130 subtypes of human-specific papillomavirus and eighty of these have been fully gene-sequenced. However, we know little about canine and feline papilloma viruses and only two subtypes have been fully characterized in the dog and two subtypes are recognized in cats.

Sometimes the infection is recent but more often the immune system of an infected animal becomes less competent over time, the infection persists and the induction of the tumor occurs later. The papilloma viruses are very resistant to adverse conditions so can survive for long periods in the environment. They can gain access to the body when the skin is softened when wet, through cuts and abrasions and with the assistance of biting insects and ticks (fleas, mosquitoes, et cetera).

The viruses attach themselves to the cell DNA (nucleic acid) and upset the normal regulatory mechanisms of cell division so that the cell divides abnormally and more frequently. The virus does this by activating certain gene fragments of DNA (growth-promoting oncogenes), at the same time inactivating suppressor genes that would normally limit cell proliferation, and also by altering the genes that regulate normal, programmed cell death.

### ***Is this a common tumor?***

This disease is rare in cats and very rare in dogs.

### ***How will this tumor affect my pet?***

This disease is a solitary or multifocal plaque that may be papillated, or become hairless. Sometimes the tumor remains static for years; in other cases it quickly multiplies. The few reported cases have not shown invasion of other parts of the body.

### ***How is this tumor diagnosed?***

Accurate diagnosis relies upon microscopic examination of tissue. Various degrees of surgical sampling may be needed such as needle aspiration, punch biopsy and full excision. Cytology is the microscopic examination of cell samples. This is used for rapid or preliminary tests but is not fully diagnostic for these tumors. Definitive diagnosis, prediction of behavior (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 may be a small part of the mass (biopsy) or the whole lump. The information from the whole lump will also indicate whether the cancer has been fully removed. Histopathology also rules out other cancers.



### ***What types of treatment are available?***

Treatment is surgical removal of the tumors.

In humans, a cream called "Imiquimod", has been used to treat papilloma virus lesions. It is an immune modifying agent that stimulates interferon production. Preliminary trials in animals are promising.

### ***Can this tumor disappear without treatment?***

This tumor rarely disappears without treatment but as development is a multi-step process, it may stop at some stages. The body's own immune system can kill cancer cells but it is rarely 100% effective, particularly if there is persistent underlying viral infection. Rarely, loss of blood supply to a tumor will make it die but the dead tissue will probably need surgical removal.

### ***How can I nurse my pet?***

Preventing your pet from 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 needs to be kept clean and your pet should be prevented from interfering with the site by rubbing, licking, biting or scratching. Any loss of sutures or significant swelling or bleeding should be reported to us. If you require additional advice on post-surgical care, please ask.

***How / When will I know if the tumor is permanently cured?***

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

Sometimes this cancer remains static for years but sometimes it rapidly multiplies.



In the few studies on this disease, the lesions have not recurred after surgical excision (mean follow-up time 11 months). The disease is currently considered to be biologically pre-malignant.

***Are there any risks to my family or other pets?***

No, although this tumor is probably caused by an infectious agent (virus), the viruses are species specific and it is not transmissible to humans. The tumors in dogs, cats and people are not transmitted between species nor indeed from dog to dog or cat to cat.