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CYTOLOGY, HISTOPATHOLOGY AND BIOPSIES

What is cytology?

Cytology is the microscopic examination of cell samples. These samples may sometimes be collected from the surface of the lesion under investigation, or more typically the sample is obtained by use of a special needle. Cytology is used for rapid or preliminary tests to establish a working diagnosis and plan surgery. The technique can be used to give rapid results at the time of surgery, but it does not indicate accurately the rate of growth of a cancer. Cytology cannot show whether the cancer is invading surrounding tissues or if it has been completely removed. Cytology is therefore less diagnostic than histopathology (see below) and can be misleading for some cancers. Speed of answer and low cost have to be balanced against the relatively high diagnostic failure rate.



What is histopathology and when is it used?

Histopathology is the preparation (preservation, thin slicing or sectioning, and staining with various dyes) and microscopic examination of samples of tissue. With this type of laboratory examination, the diagnostic accuracy is usually high. The veterinary pathologist can often also add opinion on whether the cancer has been completely removed and what is the most likely future progress of the case (prognosis). This information helps your veterinarian to decide the best treatment for your animal.

What is a biopsy?

A biopsy is the surgical removal and examination of a sample of tissue from a suspicious lesion. A small amount of the cancer is sometimes removed because removal of the whole tumor is impossible. A biopsy can also be useful before surgery to plan the surgical approach or other treatment, and can increase the chances of a successful outcome.

However in many cases, particularly where it is easy to get good surgical margins around the mass, it is more appropriate to take the whole lump not just a biopsy.

Will taking the sample hurt my pet?

Taking samples will not be painful because your veterinarian will give an appropriate local or general anesthetic.

Are there any risks to my pet?



Biopsy Punch

From Dermatology by Ralf
Mueller
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The main risks to your pet are either from the disease they have or from the anesthetic. In a few cases, particularly with cancer of the blood vessels or biopsies from organs such as the liver, there can be excessive bleeding.

How can I nurse my pet after the biopsy?

After surgery, your pet should not be allowed to interfere with the operation site, which also needs to be kept clean. Any loss of stitches or significant swelling or bleeding should be reported to your veterinarian. If you require additional advice on post-surgical care, please ask.

What happens to the biopsy?

Before leaving your veterinarian, the sample of tissue is put in a preservative. In the pathology laboratory, water is slowly removed from the sample. After many hours, the sample can be embedded in wax. Very thin slices (sections) are cut and mounted on glass slides. The wax is then removed and the sections stained with dyes so they can be examined with the microscope by the pathologist.

Although it is routine, the laboratory technique requires skilled technicians. The sample typically passes through thirty separate fluids and undergoes eight different processes.

When will I know the results?

Despite all the technical stages, almost all histopathology reports are sent out within two working days of receipt of the sample. Extra techniques such as softening bones so they can be cut easily or special stains, and marker techniques to identify specific types of cells, are occasionally needed. These extra techniques take longer.

Who is the pathologist?

Veterinary medicine has an ever-expanding range of knowledge and skills, so (as in human medicine) there are specialists in different subjects. A veterinary pathologist is a registered veterinarian who gives an opinion, based on specialized training and experience. Your veterinarian chooses a pathologist carefully because treatment will be based on his/her advice. The pathologist's report is written for your veterinarian in technical language.



What can histopathology tell me about my pet's cancer?

It is frequently impossible to say what "lumps and bumps" are by just looking at them. The pathologist looks at the microscopic appearance to decide. If they are not cancerous, the pathologist's report will reassure you that there is nothing seriously wrong. Cancers are usually classified by their tissue of origin and appearance. Benign and malignant tumors are separated by the criterion of invasion. Many tumors have more than one name with some names borrowed from human literature, often to the confusion and detriment of clarity as few tumors in animals are identical to those in people. Some pathologists split tumors into many different subgroups and others "lump" groups together because the different categories merge into each other.

How will I know how the cancer will behave?

The veterinary pathologist usually adds a prognosis, which describes the probability of local recurrence or metastasis (distant spread).

In many cases, the diagnosis and prognosis indicate there can be a complete cure. Sadly, there are some cases where the diagnosis and prognosis indicate that surgical removal and/or drug treatment will only give temporary remission and in time the cancer will probably recur or spread. The pathology results will help you and your veterinarian to plan future treatment for your pet.

Are there any limitations?

Recurrence and metastasis (spread of the tumor to other sites in the animal) even when considered likely are not a 100% certainty and likely outcomes (prognoses) are based on probabilities. The behavior of a few tumors is difficult to predict.

Occasionally, particularly where it is difficult to obtain a large enough sample, microscopic diagnosis is not possible. A few results are also inconclusive (needing a second biopsy). Your veterinarian will be able to tell you if the sample from your pet is one of these.