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CYTOLOGY, HISTOPATHOLOGY AND BIOPSIES

What is cytology?

Cytology is the microscopic examination of very small cell samples and is most commonly used to help establish a rapid preliminary diagnosis. These samples may be collected by gathering cells from the surface of a lesion under investigation, but more typically the sample is obtained by use of a needle and syringe (needle aspiration). The advantages of this procedure include the speed of a preliminary answer, low cost and, for most patients, low risk and discomfort. However, because only a very small population of cells are microscopically evaluated, cytology is less diagnostic (preliminary diagnosis may be incorrect) than histopathology and can be misleading. Therefore, biopsies are often needed to confirm a preliminary cytological diagnosis. Internal organs can be aspirated with ultrasound guidance as a less invasive means of gathering more information regarding internal tumors or abnormal appearing organs. When obtaining cellular samples from internal organs, sedation may be required and there is a higher risk of bleeding compared to aspiration of abnormal areas on the skin.



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 larger samples of tissue (biopsy). 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 the degree of malignancy (tumor grade). This information helps your veterinary oncologist to decide the best treatment for your animal.

What is a biopsy?

A biopsy is the surgical removal of a sample of tissue from a suspicious lesion with the purpose to obtain a more definitive diagnosis. There are different types of biopsies that differ in size and depth; incisional, excisional, tru-cut, punch and wedge. Your veterinary oncologist will discuss the best type of biopsy for your individual pet. A pre-surgical biopsy can be useful in planning a surgical approach or to determine if other treatment types are more appropriate, increasing the chances of a successful outcome. In other patients, if cytology is highly suggestive of a particular tumor type and the tumor is in an accessible location or if an organ needs to be removed, a pre-surgical biopsy may not be warranted. Biopsies require general or local anesthesia and certain lab tests may be recommended prior to the procedure.



Biopsy Punch

Are there any risks to my pet?

From Dermatology by Ralf
Mueller
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The main risks to your pet with any biopsy procedure are dependant upon their overall health, risk of general anesthesia (if needed), bleeding from the biopsy site and not obtaining a non-diagnostic sample. The risks involved for the procedure recommended for your individual pet will be discussed in more detail.

How can I nurse my pet after the biopsy?

After surgery, your pet should not be allowed to interfere (licking, chewing or biting) with the surgical site. Any loss of stitches, significant swelling, bruising, discharge or bleeding should be reported to your veterinarian.

What happens to the biopsy?

The sample of tissue is first put into a preservative and sent to a laboratory for additional testing. 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?

Almost all histopathology reports are sent out within two to five working days of receipt of the sample. Extra techniques such as bone decalcification or special staining 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 that examines the biopsy samples and will give an opinion of tumor type, based on specialized training and experience. Your veterinary oncologist chooses a pathologist carefully because treatment will be based on his/her advice. If the pathologist's interpretation of the biopsy does not correlate with the clinical picture, a second pathologist review may be recommended.



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 of the tissue obtained from biopsy to establish a diagnosis. Benign and malignant tumors are separated by the criterion of invasion. Malignant tumors are categorized into tumor type, grade (degree of malignancy), invasion, and tumor margins (if the tumor has been completely removed) all of which help predict metastasis (tumor spread) and local recurrence. Recurrence and metastasis, even when considered likely, are not with 100% certainty and estimated 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.

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