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FINE NEEDLE ASPIRATION CYTOLOGY: A NON-INVASIVE METHOD OF EVALUATION OF CUTANEOUS AND SUBCUTANEOUS NODULES CLIENT INFORMATION SHEET

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What is fine needle aspiration cytology?

This diagnostic technique is designed to obtain a small amount of cellular material from a nodule or mass, most often from cutaneous or subcutaneous sites or from masses within the thoracic or abdominal cavities. A small needle is inserted into the nodule, generally attached to a syringe. Suction is applied to the syringe to aspirate cellular material into the needle. This material is then forced onto a glass slide and spread into a thin film. This slide is then stained to identify cells within the sample. Cytologic evaluation (slide-reading) is then performed by your veterinarian or by a veterinarian at a diagnostic lab called a clinical pathologist. In-house cytology is most often used to diagnose benign fatty tumor (lipomas) or benign dermal cysts; most other specimens are sent to an outside diagnostic lab.

Why is this procedure recommended?

It is nearly impossible for even the most experienced veterinarian to make a visual diagnosis that differentiates a benign process from malignant cancer within most skin nodules. Early malignant tumors can often appear quiet and benign and some can have very slow initial growth rates. Fine needle aspiration (FNA) cytology is a non-invasive technique that does not require anesthesia and very rarely requires sedation (determined by patient's level of cooperation and the location and size of the nodule).

In one study, after samples not containing adequate cells for evaluation were excluded, this technique was described as 90.9% accurate for identifying the cause of nodular conditions of the skin, and was 97.9% specific for diagnosing cancer as compared to surgical biopsy.

If benign disease is identified, then it does not require removal (other than rare circumstances when a benign mass is causing discomfort for the patient); this saves money for the family and discomfort for the patient by avoiding unnecessary surgery. If a malignant process is diagnosed, then your veterinarian will recommend removal of the nodule with a wide margin to attempt surgical cure. The surgery to remove a known malignant process is more intensive than one to remove a benign or undiagnosed tumor. This reduces cost because it reduces the need for a second, more aggressive surgery that may be needed if the malignant process had not been first diagnosed by the cytology technique and removed adequately with the first surgery.

If cancer is not identified using this technique, have we eliminated the possibility of a cancerous condition?

Unfortunately, as noted above, cytology is not 100% accurate at making an accurate diagnosis. Your veterinarian will use his or her experience and judgment to match the cytology results to the appearance of the nodule. If no cells are obtained, or the cells identified do not match the veterinarian's clinical

diagnosis, or a cytology result leaves your doctor otherwise concerned, your veterinarian may recommend a small biopsy into, or removal of, the nodule for biopsy (histopathologic diagnosis).

Is a fine needle aspirate uncomfortable for my dog or cat?

This procedure is generally very well tolerated by dogs and cats because the needle used to obtain cells for cytology is often smaller than the needles used to administer vaccines.

Will my veterinarian ever recommend that a nodule be re-aspirated at a later date?

Generally speaking, if a benign process has been identified via cytology, it will then be monitored. If this nodule enlarges rapidly or has any other appearance that does not match the benign diagnosis, re-aspiration or biopsy may be recommended.

My dog has several dermal nodules. Should all of them be tested using this technique?

I generally recommend that all dermal nodules be evaluated by FNA cytology because a patient may have several benign nodules along with a malignant/cancerous one. Once a nodule has been determined to be benign, it can be documented on a "patient body map", a diagram that indicates the location and diagnosis of cutaneous nodules for future comparison in the event that a new nodule has been identified.

Exceptions to the "aspirate everything!" rule are syndromes of multifocal benign skin growths such as benign adenomas of poodles and terriers or epidermal inclusion cysts of Norwegian Elkhounds. These patients can develop dozens of papules or nodules that tend to be identical in appearance. Once such a benign representative nodule has been diagnosed, you may be asked to monitor for and report changes in any of the similar lesions. This rule exception should be used with caution as it does not apply to another multifocal benign syndrome, lipomas. A patient may have lipomas AND a malignant soft tissue sarcoma or a mast cell tumor at the same time, in different locations in the skin, and the visual/textural presentation can be identical between these benign and cancerous diseases.

When is cytology NOT the recommended first diagnostic step for skin nodules?

There are very few circumstances when FNA cytology is less than ideal and when a small biopsy is the better choice for making a diagnosis. One such example is a nodule in the oral cavity that would require heavy sedation or anesthesia to obtain a sample. Because of the need for sedation in this situation, it may be more ideal to obtain a small surgical biopsy rather than attempt fine needle aspiration cytology.

What are other disadvantages of fine needle aspiration cytology?

If a malignant tumor is identified using FNA cytology, removal is recommended. Histopathologic evaluation is then required to confirm the diagnosis and determine if adequate margins were achieved. Therefore, the cytology represents a small additional expense when a tumor is ultimately removed after cytology. However, pre-surgical determination of the margins required for malignant tumors reduces the chance of needing a second surgery and avoidance of unnecessary removal of benign nodules, both of which represent a financial savings.

Misdiagnosis is a possible disadvantage (malignant tumors misdiagnosed as benign have been reported in approximately 1/3 of skin nodules that were diagnosed as benign via cytology in one study), but this is a less common event when your veterinarian works together with the clinical pathologist to provide the most accurate diagnosis possible.