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**DERMATOPATHOLOGY SUBMISSION GUIDELINES**

*The following guidelines are recommended for submission of skin biopsies.*

*Diagnostic accuracy can be improved through optimal selection of biopsy site, correct biopsy technique, proper handling of specimens, and providing detailed clinical information for the pathologist.*

Skin biopsy is an important and common diagnostic procedure in dermatology practice. The veterinary clinician is challenged to take a representative sample from active lesions and to handle the sample in a way that will provide optimum results. Close attention to communication of appropriate clinical details to the anatomic pathologist, selection of biopsy site and biopsy technique have a marked impact on the diagnostic yield of this procedure. Be aware that skin biopsies are complex and, in many cases, they yield a descriptive histologic diagnosis rather than a definitive clinical diagnosis.

The histological findings are helpful to (1) rule-out differential diagnoses (2) guide therapy (3) redirect the clinical investigations and (4) establish a diagnosis in conjunction with the clinical lesions and history.

**Basic skin biopsy technique**

The skin biopsy technique is a minor surgical procedure. The thick haircoat of dogs and cats enables the clinician to perform multiple biopsies with little risk of scarring. Sample handling can be challenging.

If the cutaneous area looks infected it is advised to use topical antiseptics or a course of systemic antibiotics for two weeks before proceeding with the biopsy.

The following recommendations should be considered:

For ALL skin samples:

1. **DO NOT scrub the skin surface.** In some cases, the diagnostic lesions are in the superficial layer of the epidermis, the stratum corneum. Extra crusts can be placed into the formalin container to be processed along with the skin biopsies.
2. When using local anaesthesia, make sure the anaesthetic drug is injected in the subcutis rather than the dermis. Dermal injection can cause artefactual changes.
3. Choice of biopsy type: Excisional/incisional surgical biopsies are preferable compared to punch biopsy for subcutaneous lesions as they are more likely to include the relevant tissue in the sample. It is not uncommon for a punch to miss a lesion in the subcutis entirely. An incisional elliptical biopsy is preferred for ulcers and bullae to preserve the integrity of the lesion.
4. **Handle the fresh specimen very GENTLY.** Do not squeeze with forceps. Compression artifact decreases diagnostic potential.
5. **Blot and place the biopsy sample free floating IMMEDIATELY in 10% neutral buffered formalin.**
6. Do not place the sample in cassettes used for biopsy processing or between sponges as these cause compression artifacts if the sample is not completely fixed.
7. Use a separate container for each specimen representative of an anatomical site or if there is a clinical variation in the appearance of the lesions.

For punch skin biopsies:

1. A minimum of three 6-mm punch biopsies per case (cats and dogs) would be recommended, unless the lesion is focal. 8-mm biopsies are great, especially when sampling alopecic areas. 4-mm punches should only be used for nasal planum, footpad specimens or very small lesions.
2. Use a new punch for each patient. Blunt punches cause tissue compression and artifact.
3. Use the cutting action of the tool rather than pressure. Only rotate the punch in one direction.

**Hints on Site Selection**

In addition to the biopsy technique, the selection of the biopsy site(s) can help to improve the diagnostic potential.

1. Biopsy site selection should be representative of the clinical appearance of the lesions, particularly if a spectrum of lesions are present. A minimum of 3 samples is recommended.
2. In cases of alopecia, samples from areas of most advanced hair loss are optimal. Skin from the junctional zone between normal and alopecic skin should be avoided.
3. In cases of ulceration a sample from the centre of the ulcer AND a sample from the margin of the ulcer are optimal.

**The line technique for alopecic skin biopsies**

Ideally, skin is sectioned in the laboratory parallel to the hair growth to allow all regions of the hair follicle to be examined. In densely haired skin samples, the orientation for trimming is simple. When the patient is alopecic and/or lightly pigmented, it becomes very difficult to identify the direction of hair growth at trimming.

The line technique is an easy method to indicate the orientation of hair growth in alopecic skin samples.

1. Prior to sampling usese a fine or preferably ultrafine indelible marker to draw a 1-2 cm line in the direction of the flow of remaining hair. The marker does not rinse in formalin but it is dissolved during the processing procedure.

2. Write a note on the submission form that you used this technique.

3. The histology technician will then be able to bisect the sample directly over your marked line for optimal assessment by the pathologist.

**Key information to include on the pathology request form**

A complete but concise clinical history including an accurate macroscopic description of the skin lesion(s) will greatly aid the pathologist with interpretation and assist in arriving at a diagnosis that correlates with the clinical picture. The following information should be provided:

* Patient breed, age, gender and neuter status
* Precise anatomical site of the lesion(s) and sample(s)
* Clinical description of the lesion(s), including any evolution in appearance
* Distribution of lesion(s)
* Duration of lesion(s)
* Clinical impression and differential diagnoses
* Prior skin biopsy result(s) or dermatological diagnoses
* Any recent or current medications
* Any other relevant clinical history

The provision of clinical images to the pathologist may be helpful for histologic interpretation. These can be emailed to [csuk@antechmail.com](mailto:lab@dwr.co.uk) (please tick the corresponding box on the submission form).

**Influence of medical therapy**

Corticosteroids and other immunosuppressive and immunomodulatory drugs can decrease the severity and composition of inflammatory infiltrates in tissue, as well as alter or mask diagnostic lesions. If possible, withdraw all immunosuppressive and immunomodulatory drugs for at least two weeks prior to biopsy sampling. Biopsy sampling, whilst on these treatments if clinically required, can be performed, however please ensure relevant information is provided on the submission form.

**Ancillary laboratory tests**

Ancillary tests on formalin fixed and histologically processed tissue may be performed or recommended where appropriate. Histochemical special stains such as Gram stain, PAS stain and Ziehl-Neelsen stain are commonly performed to further investigate the presence of infectious agents in the examined tissue sections. These are typically performed in house at no additional cost, at the pathologist’s discretion. This is not as sensitive at detecting infection compared to culture and therefore if infection is suspected clinically it would be advised that a separate sample should be submitted for culture. PCR for infectious agents can also be used on formalin fixed tissue however this is also less sensitive compared to testing on fresh tissue.

Immunohistochemistry can be used to identify particular viral antigens within the tissue. Immunohistochemistry and PCR for Antigen Receptor Rearrangements (PARR) are also useful tools to help differentiate chronic inflammation from neoplasia and in particularly lymphoid neoplasia.

**TURNAROUND TIMES**

The vast majority of histopathology reports will be issued within *1-3 working days* following receipt of a sample in the laboratory. Please be aware that skin biopsies are often complex, time consuming and likely to require additional special stains. This can prolong the reporting time. We will endeavour to notify you if this is the case.

**GENERAL ENQUIRIES**

For any queries related to the submission of skin biopsies please contact the laboratory.

Email: CSUK@antechmail.com

Telephone: 0808 258 3536