DERMATOLOGY PEARLS

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PEARL OF THE MONTH: OPTIMIZING SKIN BIOPSIES

Getting a diagnosis of "chronic dermatitis" is always frustrating, but there are ways to maximize the yield of this diagnostic procedure. It is first important to remember that skin biopsy results are complementary diagnostics to a good history, physical examination findings, and other laboratory results. Receiving diagnostic biopsy results starts with the choice of **when** to biopsy an animal. Skin biopsies should be performed in cases of suspected neoplasia, vesicular or ulcerative diseases, unusual or atypical cases, and in cases which have not responded to conventional trial therapy. In general, skin biopsies should be performed within 3-4 weeks of the onset of the disease, since more chronic lesions can be difficult to interpret due to changes secondary to infection, scarring or steroid therapy. Since secondary infection can alter histopathologic findings, pretreatment with antibiotics for 2-3 weeks may be necessary. Steroid therapy can also change biopsy results, and ideally patients should not receive oral or topical steroids within 2-3 weeks and injectable long-acting steroids within 6-8 weeks of performing the biopsy procedure (severe, life-threatening cases would obviously be an exception to this rule).

Choosing **what** to biopsy is also very important in obtaining diagnostic results. If possible, choose primary lesions such as papules, pustules, vesicles, macules, or nodules. In suspected cases of discoid lupus erythematosus, selecting early depigmented lesions (before erosion or scarring occurs) is key to accurate diagnosis. Even if primary lesions are not present, diagnostic information can be obtained from crusts, which should be carefully preserved with the skin biopsies. Lesions which are less likely to be diagnostic include excoriations, ulcers, or chronically scarred areas. More information is gained by performing multiple (3-5) samples, obtained from a variety of lesions.

Knowing **how** to appropriately perform skin biopsies is also important. Local anesthetic (0.5-1cc of 1-2% lidocaine injected with a 25G needle subcutaneously under the lesion) and/or mild sedation will be needed. Hair overlying the lesion may be gently clipped, but the clipper blades should not touch the skin. Do not prep the areas, as important skin debris will be lost. 6mm punch biopsies are preferred for most cases - 4mm punches may be necessary for difficult areas such as near the eye, on the ear, and on the nasal planum or footpads of smaller patients. Use new, sharp biopsy punches, as older used ones tend to shear and distort tissue and create artifact. Excisional biopsy with a scalpel may be indicated for larger or nodular lesions or for diseases of the subcutaneous fat. Place the area of interest in the center of the biopsy punch and do not include a significant amount of normal skin with the biopsy (if normal skin is wanted for comparison, take a sample from an adjacent area). If too much normal skin is included, the lesion may be missed when the biopsy is processed and cut, and only 'normal' skin placed on the slide. If a large lesion appears different in the center and leading edges, biopsy both areas. When handling the skin biopsy, avoid crush artifact by grasping only the subcutaneous tissue with thumb forceps.

Prior to fixation, skin biopsies should be placed fat side down on pieces of wooden tongue depressor to prevent tissue folding and aid in orientation when samples are processed. Biopsies from radically different lesions or nodules should be tagged with a suture or placed in individually labeled containers for differentiation. Within 5 minutes of obtaining the specimens, skin biopsies should be fixed in 10% neutral phosphate buffered formalin (minimum 10 parts formalin to 1 part tissue for adequate fixation). Samples larger than 1 cm should be partially transected at 1 cm intervals to allow adequate formalin penetration. In general, Michel's media is no longer commonly used by veterinary dermatologists. All cases are examined histopathologically and, if needed, formalin fixed tissue can be further processed for immunodiagnostic procedures such as direct immunofluorescence or immunoperoxidase staining. Immunofluorescence for autoimmune skin diseases can be helpful in some cases, but is fraught with many false negative and false positive results, and so can only be utilized in conjunction with histopathologic findings.

Finally, **who** to send skin biopsies to is very important in obtaining expert interpretation. Results are optimized by utilizing experienced dermatopathologists. It is also essential to give a complete history, including description and distribution of lesions, other symptoms and results of pertinent diagnostic tests, current or past therapy/response to therapy, and the clinician's differential diagnoses. These elements are important to allow the pathologist to formulate an accurate diagnosis, and if there are questions, most pathologists are happy to discuss their findings with the clinician.