

News

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DIAGNOSING PEMPHIGUS FOLIACEUS

Pemphigus foliaceus (PF) is the most common autoimmune skin disorder of both dogs and cats. While there is no sex predilection for this disorder, certain canine breeds are at risk for developing the disease. These are: Chow chow, Akita, Doberman pinscher, Schipperke, Newfoundland, and Spitz. It is unusual to see PF in a dog less than 2 years of age, although the majority of patients show signs of the condition before 5 years of age.

The lesions of PF consist of erythematous macules and papules that progress to pustules and eventually to crusts. The pustular stage is short-lived, so most affected patients present with a yellowish-brown crusting dermatitis. Clinically, the lesions themselves can be difficult to distinguish from lesions of bacterial pyoderma, however, there are several distinguishing characteristics. The first is the location of the lesions: with pemphigus, lesions often start on the face (periocular, bridge of nose) and pinnae, and progress to involve the trunk and foot pads (especially in the dog) or nailbeds and peri-areolar region (cats). Bacterial pyoderma rarely affects these areas. The second distinguishing feature is the actual lesion. With PF, pustules are often larger than pyoderma pustules, and while the latter are usually centered over a hair follicle (folliculitis), PF pustules may or may not be centered over a hair and can span several hair follicles. PF pustules are often surrounded by an erythematous halo, and may coalesce producing target or serpiginous lesions. PF and bacterial pyoderma both may have patchy alopecia and epidermal collarettes develop as secondary lesions. A final distinguishing characteristic is the condition of the pet. Dogs and cats with PF are often sick, febrile and inappetent, whereas most pets with pyoderma are not.

Besides bacterial pyoderma, other differentials for PF in the dog include: zinc responsive dermatosis, superficial necrolytic dermatitis (hepatocutaneous syndrome), dermatomyositis, mycosis fungoides, dermatophytosis, demodicosis, eosinophilic furunculosis, drug reactions, lupus erythematosus and pemphigus erythematosus. In cats, severe allergic (miliary) dermatitis and dermatophytosis can mimic PF.

DIAGNOSIS

When presented with a patient having a severe, crusting to ulcerative dermatosis that is antibiotic non-responsive, involves the face, pinnae, nose and foot pads; and is accompanied by fever and malaise, one should be suspicious that the animal has autoimmune skin disease. However, after proceeding with a diagnostic work-up, it is not uncommon to find the "immune panel" to be negative, and the skin biopsies non-diagnostic. Thus, the definitive diagnosis of autoimmune skin disease can be difficult to make.

Diagnosis of PF is accomplished by having clinical signs and history suggestive of PF, ruling out other disorders (such as demodicosis, dermatophytosis) with simple laboratory tests such as dermatophyte cultures and skin scrapings, lack of response to appropriate antibiotics, and seeing histopathologic evidence of PF. Ideally, when collecting samples for histopathology, always look for intact pustules. Do not scrub the surface of the skin prior to collecting the sample, and be careful not to disrupt the pustule. If you cannot find a pustule, look for papules with erythematous halos, or freshly ruptured, crusted lesions (with erythema around the edges). Another good location is the outside margin of an affected footpad, where biopsy-

DIAGNOSING PEMPHIGUS FOLIACEUS

(cont'd.)

ing a freshly crusted area is often very rewarding. If using a biopsy punch, use at least a 6 mm punch and collect 2-3 or more representative samples. Place your samples on a small piece of a tongue depressor, dermal side in contact with the wood, prior to placing them in the formalin. (This helps prevent the samples from curling). When submitting your samples, always remember to give the pathologist historical information on the patient, signalment, and a good description of the lesions. This will greatly improve the quality of the report that you receive. Keep in mind that it is sometimes necessary to repeat biopsies for a definitive diagnosis, although this is greatly reduced if multiple samples are collected from carefully selected sites.

After collecting the lesions for histopathology, if any intact pustules remain, rupture the head of the pustule with a 25 g needle and make a smear on a glass slide. Alternatively, remove the crust from a lesion and make an impression smear. Cytology findings of large round epithelial cells (acanthocytes) in conjunction with neutrophils and/or eosinophils, in the absence of bacteria, supports the diagnosis of PF.

Other diagnostics that should be performed include a CBC, biochemical and thyroid profiles, and urinalysis. Elevations in WBC counts with a neutrophilia are expected. The biochemical profile may have elevations in serum globulins and total protein. Some animals may also be hypothyroid and/or have autoimmune thyroiditis. Urinalysis should be normal in most PF cases. Evidence of systemic disease, such as anemia and proteinuria, suggests lupus erythematosus rather than PF. For patients with PF, the ANA, Coombs, and RA factor tests are generally unrewarding and unnecessary.

The final laboratory test to consider is immunoperoxidase skin testing. This is a staining procedure done on formalin-fixed skin specimens, which looks for the presence of antibodies in the intercellular region of the epidermis. Samples submitted for histopathology can be used here, if indicated, although false positive and false negative reactions do occur. If it is unclear that the histologic changes are consistent with PF, immunoperoxidase staining would be a useful supportive test.

[Contributed by Karin M. Beale, DVM, Dipl. ACVD, Houston, TX]

LAB TIPS

EFFECT OF TRANSPORTATION ON BACTERIAL VIABILITY

Clients often ask about the preferred method of transporting urine samples to the laboratory for culture, and the effect of transport time and storage temperature on the viability of organisms.

To address these questions, the following study was performed: Urine samples with pyuria (n = 18) submitted in RTT to Antech's Houston laboratory were divided into several aliquots. One aliquot was inoculated immediately onto blood/MacConkey agar and cultured aerobically for 72 hours in the Houston laboratory. The urine aliquots were also placed into 3 tubes: RTT, grey top urine culture tube (Transport Kit, KT), and Copan Swab (CS) for transport to Antech's Irvine laboratory, where they were stored at 4-8° C and at room temperature (RT). They were next inoculated onto blood/MacConkey agar for aerobic culture and examined after 24, 48 and 72 hours.

Fourteen urine samples cultured positive for bacteria and 4 were negative. There was no observed effect of storage time, storage temperature, or type of storage tube on these culture results, or on the amount of bacterial growth (light, moderate or heavy).

Conclusion: Based on these findings, we consider RTT to be the preferred collection tube for urine culture. Routine transport time *does not* influence urine culture results.

FERRET SERUM/PLASMA CREATININE LEVELS ARE LOWER ON DILUTED SAMPLES

Blood samples from ferrets are usually of small volume, and therefore dilution may be necessary to run chemistry tests. However, a discrepancy was observed in creatinine concentrations measured in undiluted versus diluted samples. To investigate this observation, creatinine concentrations were measured in undiluted and diluted (1:2 with distilled water) serum or plasma from 10 ferrets. Albumin, AST, BUN, CPK, total bilirubin and total protein were similarly compared.

Creatinine concentrations were significantly lower (mean difference 28%; p < 0.05) when determined on diluted serum or plasma. There was no significant effect of sample dilution on the other analytes tested.

Conclusion: Creatinine concentrations may be falsely decreased when ferret samples require dilution for analysis. To minimize our need to dilute ferret plasma samples, please try to fill the green Microtainer specimen tubes to the top line.

- References:** Griffin, CE, Kwochka, KW, MacDonald, JM. *Current Veterinary Dermatology*. Mosby Year Book, St. Louis, 1992, pp 141-148; Kummel, D., *Current Veterinary Therapy XIII*. WB Saunders, Philadelphia, 1995, pp 636-637; Scott, DW, Miller WH, Griffin, CE, *Muller and Kirk's Small Animal Dermatology*, 5th ed. WR Saunders, Philadelphia, 1995, pp 558-571.

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