Diagnostic Exercise
From The Davis-Thompson Foundation*

Case #: 124 Month: July Year: 2019

Answer Sheet

Title: Dog, skin, necrotizing, hyperplastic, hyperkeratotic dermatitis

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Gross description: Multifocal well-demarcated ulcers, yellowish coalescent crusts, and raised verrucose-like scaly lesions surrounded by a thin erythematous rim.

Figure 1: Dog, skin, 20x (top), 2x (bottom), H&E.
Figure 2: Dog, skin, 20x, H&E.
Figure 3: Dog, skin, 2x (top), 20x (bottom), H&E.
Figure 4: Dog, skin, 10x (top), 20x (bottom), H&E.
**Microscopic description:** Moderate to severe, abrupt, focally extensive epidermal hyperplasia, multifocally with a papillary profile, always associated with severe ortho- and parakeratosis and infundibular keratosis. Several apoptotic cells are evident at every level of the epidermis involving also the follicular infundibulum and often associated with lymphocytic satellitosis. Mild superficial perivascular lymphoplasmacytic infiltrate with occasional neutrophils is present. In the corneous layer, numerous coci are detected (data not shown).

**Diagnosis:** Severe multifocal necrotizing hyperplastic dermatitis with ortho- and parakeratosis, compatible with hyperplastic erythema multiforme.

**Discussion:** The presence of numerous apoptotic cells at all level of the epidermis, the involvement of the infundibula, and the satellitosis are typical lesions of the erythema multiforme. An interface dermatitis is not really evident; it might have been paucicellular or possibly not detectable due to the use of corticoids. The presence of hyperplasia suggests that this could be a form of hyperplastic erythema multiforme. Onset soon after a therapeutic treatment suggests that the etiology could be related to drugs. Since after suspension of drugs there was no improvement of the disease, but a progression, we think that this could be a drug-induced, rather than drug-related, erythema multiforme.

Because of the apparent possible worsening of the disease after corticoid treatment and because of the spreading of raised papillary-like lesions, the main differential diagnosis was a papilloma virus infection. Microscopically, however, the lesions are not always papillary, they
involve also the follicles and, despite the presence of hypergranulosis, they lack cytopathic viral effects, such as koilocytes and viral inclusions bodies. For these reasons, the diagnosis of multiple papillomas is less likely. Finally, we would like to mention that some of the lesions recall some aspects of the proliferative necrotizing otitis of kittens, with which they share the gross aspects, the apoptosis, the hyperplasia, and the hyperkeratosis, but lacking the eosinophilic infiltrate and the clinical distribution.

Erythema multiforme is an acute, self-limited mucocutaneous reaction triggered by drugs, infections, food additives, neoplasia, and immune conditions, both in humans and pets.\(^1\,2\,3\,4\) The hyperplastic form is uncommon and reported mostly in cats.\(^2\) In our peculiar case, there is only minimal involvement of the anal mucocutaneous junction and less than 10% of the cutaneous surface involvement, so that the lesions are compatible with erythema multiforme minor. A compresence of viral infection cannot be excluded, while a drug reaction to treatment against otitis is strongly suspected.

**References and Recommended literature:**

*The Diagnostic Exercises are an initiative of the **Latin Comparative Pathology Group (LCPG)**, the Latin American subdivision of The Davis-Thompson Foundation. These exercises are contributed by members and non-members from any country of residence. Consider submitting an exercise! A final document containing this material with answers and a brief discussion will be posted on the CL Davis website ([http://www.cldavis.org/diagnostic_exercises.html](http://www.cldavis.org/diagnostic_exercises.html)).

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