MAVP Case 15
Case History

Case #: D23-040617

Presenter(s) & Institution:
Brittany Rasche, DVM, DACVP
Kansas Veterinary Diagnostic Laboratory, Manhattan, KS
Department of Diagnostic Medicine/Pathobiology, College of Veterinary Medicine, Kansas State University

Signalment: 7-month-old spayed female mixed breed dog

Clinical History:
This dog was previously suspected to have puppy strangles (juvenile cellulitis), which resolved with dexamethasone. Relapse of skin lesions started about one week ago (approximately 3 weeks after discontinuing dexamethasone). This time, lesions started with a few pustules on the ventral abdomen and multifocal crusting along the trunk. Lesions progressed to erosive/ulcerative lesions around the vulva, anus, and ventral abdomen with widespread crusting lesions over the trunk, limbs, interdigital skin, head, muzzle, and eyelids. No footpad, nasal, or oral lesions are noted. Lesions along the ventral abdomen and interdigital skin are moist (suspected moist pyoderma). Mild suppurative exudate is present in both ears. The dog is very pruritic and had a fever of up to 104.7 F yesterday. Impression smears from ruptured pustules showed cocci and acantholytic cells.

MAVP Case 14

Case Synopsis

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Histopathology/Cytologic Findings:
Haired skin (reported right inguinal region and left lateral trunk – not on submitted slide): Along the epidermis are multiple large subcorneal pustules containing numerous neutrophils, occasional eosinophils, and several acantholytic keratinocytes. These pustules occasionally extend deep into the follicular infundibula, and the remaining basal layers of keratinocytes occasionally exhibit mild to moderate spongiosis. Along the epidermal surface are multifocal thick crusts consisting of large numbers of degenerating granulocytes with several intermixed acantholytic keratinocytes, brightly eosinophilic proteinaceous fluid, and hemorrhage. The superficial dermis underlying subcorneal pustules is often mildly to moderately expanded by edema with low to moderate numbers of perivascular to interstitial neutrophils, eosinophils, lymphocytes, and macrophages.

Multiple special histochemical stains (Gram, GMS, PAS) are applied with adequate positive controls. Gram stain reveals low numbers of gram-positive cocci within follicular infundibula and in crusts along the epidermal surface. GMS and PAS do not reveal any overt fungal organisms.

Morphologic Diagnosis and Etiology:
Haired skin (reported right inguinal region and left lateral trunk): moderate to severe multifocal acantholytic and neutrophilic subcorneal pustular dermatitis with superficial dermal edema and perivascular to interstitial neutrophilic and eosinophilic dermatitis

Comments:
Histologic examination reveals a severe subcorneal pustular dermatitis with marked acantholysis. This lesion pattern in combination with the clinical history is highly suggestive of pemphigus foliaceus. Acantholytic keratinocytes with pustular dermatitis are occasionally observed with bacterial pyoderma or dermatophytosis; however, acantholytic cells are not typically a predominant component of the histologic lesions in those cases. Epidermal hyperplasia, parakeratosis, and thicker crusts in one biopsy from the left lateral trunk (not included on submitted slide) are indicative of a more chronic nature to some of the lesions.

Histochemical stains reveal low numbers of gram-positive cocci within follicular infundibula and along the crusts overlying the epidermis; this likely represents a secondary superficial bacterial pyoderma. No overt dermatophytes are observed with GMS or PAS stains.

Pemphigus foliaceus is one of the most common autoimmune skin diseases of dogs. Affected dogs typically present with superficial cutaneous pustules, which erupt to form erosions with thick crusts, especially along the nasal planum, dorsal muzzle, periocular skin, pinnae, paw pads, and trunk. Canine pemphigus foliaceus is typically associated with production of IgG autoantibodies against desmocollin-1, which is an important component of desmosomes that maintain adhesion between keratinocytes in the superficial epidermis. This immune response against the desmosomes of the superficial epidermal keratinocytes is thought to result in loss of cohesion between these keratinocytes, leading to acantholysis and separation of epidermal layers. For unknown reasons, these acantholytic keratinocytes are often surrounded by numerous neutrophils and/or eosinophils, forming large subcorneal pustules, which together are a key histologic feature of this disease.

Most cases of canine pemphigus foliaceus are considered idiopathic, but, in some cases, certain drugs or drug combinations have been proposed as possible triggers for pemphigus foliaceus; however, this has not been proven and is only speculative. The very young age of onset in this dog (<7-months-old) is unusual, raising concerns for a possible role of developmental immune dysregulation and/or vaccine or drug exposure as a trigger.

References:

1. Jordan TJM, Bizikova P. Canine and Feline Pemphigus Foliaceus-an Update on Pathogenesis and Treatment. *Vet Clin North Am Small Anim Pract*. 2025;55(2):321-336. doi:10.1016/j.cvsm.2024.11.010
2. Gross TL, Ihrke PJ, Walder EJ et al. S*kin Diseases of the Dog and Cat, Clinical and histopathologic diagnosis*, 2nd edition. Oxford, UK: Blackwell Publishing, 2005.