

Case of the Month May 2026

A 5-year-old, spayed female, Pit Bull Terrier mix presented with a 2-week history of crusts and worsening skin lesions, mild lethargy, and mildly decreased appetite. Crusting lesions started on the nose and spread to the ears, muzzle, hocks, and all paws, with mucoid green discharge OU. On physical exam, the lesions included crusting, depigmentation, and swelling of the nose/nasal planum. Crusting was noted at the ear base, tips of the pinnae, lateral face, hocks, and on areas on the dorsum. All four paws showed hyperkeratosis on all paw pads, and all paws were swollen. Biopsies were collected prior to initiating any treatments.

Figure 1.



Figure 2.



Figure 3.



Figure 4.

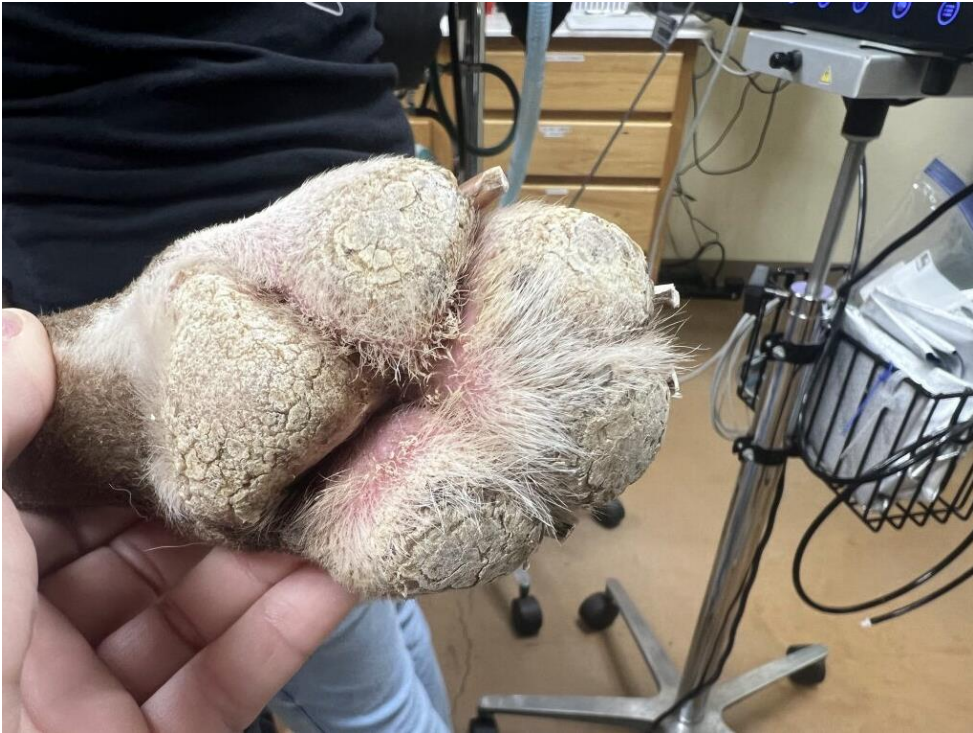


Figure 5. H&E, 2x magnification.

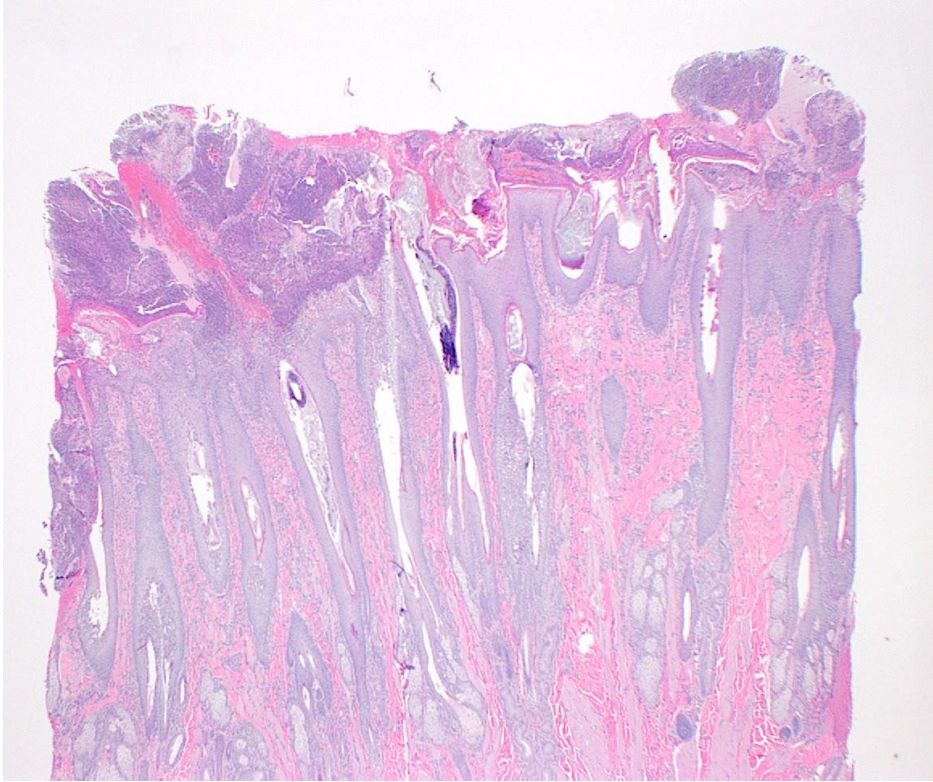


Figure 6. H&E, 10x magnification.

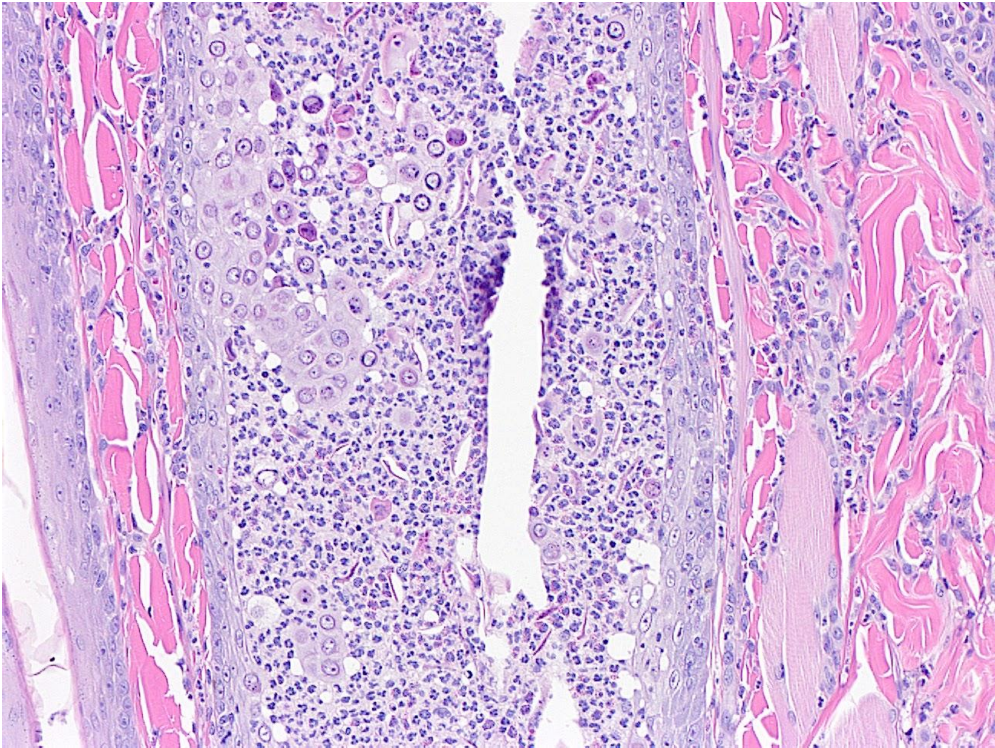


Figure 7. H&E, 20x magnification.

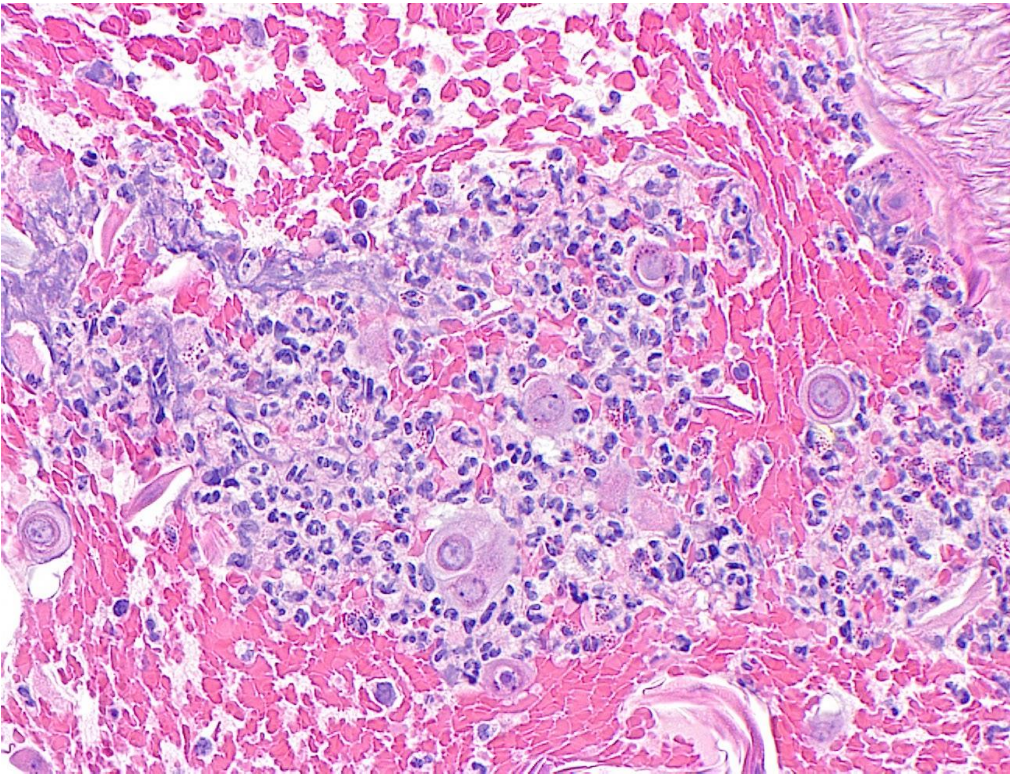


Figure 8. H&E, 20x magnification.

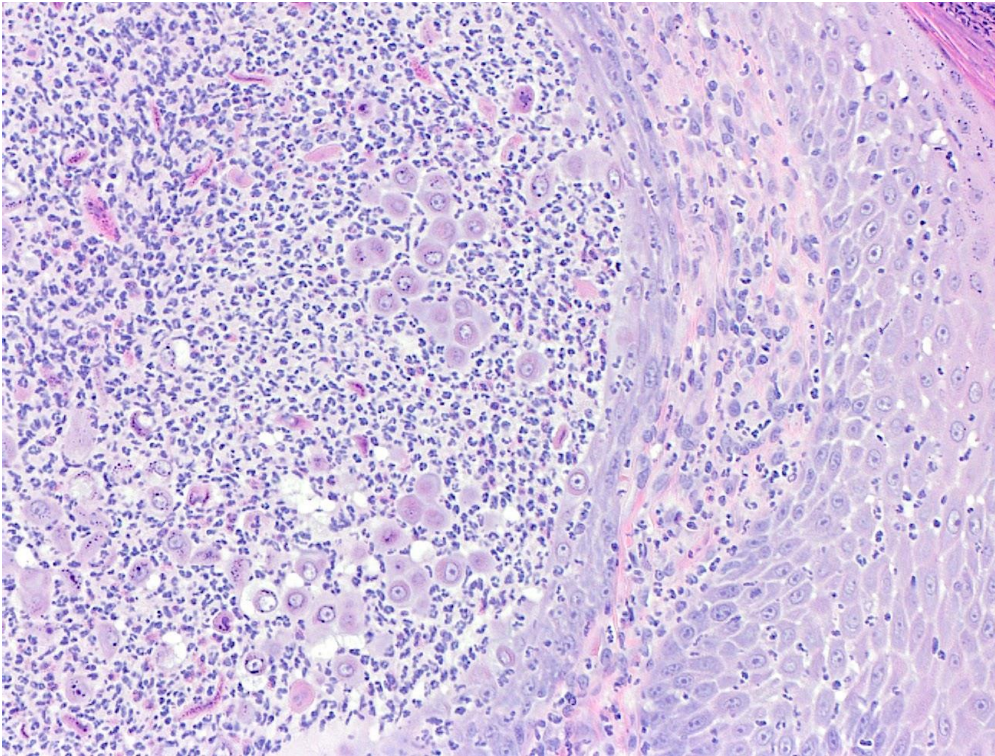
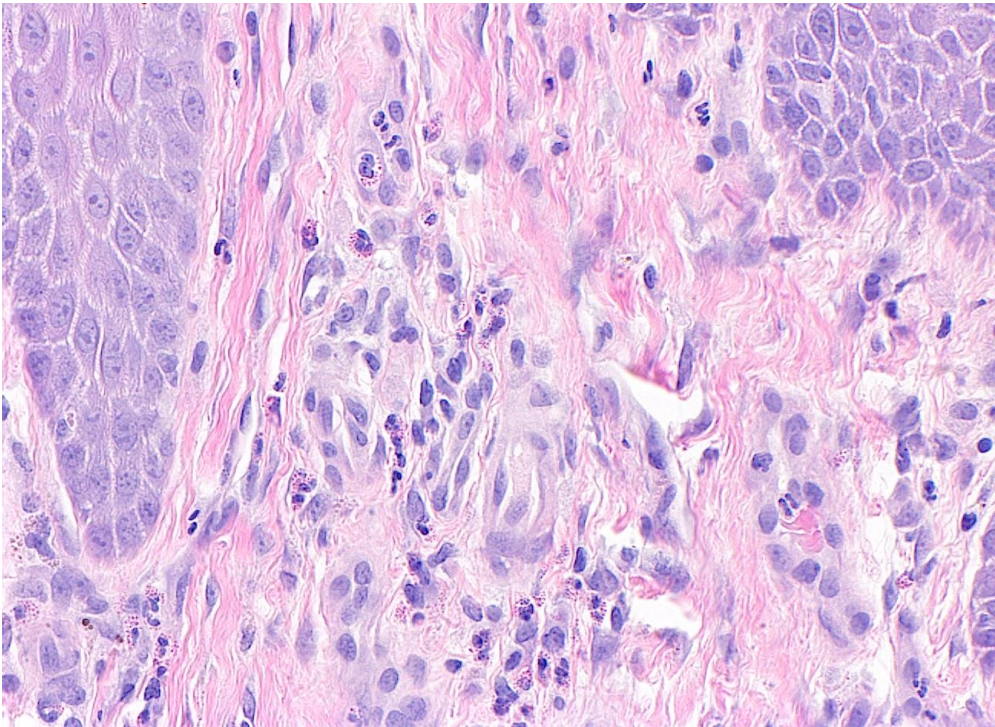


Figure 9. H&E, 40x magnification.



Which of the following is the most likely diagnosis?

- A. Superficial pustular dermatophytosis
- B. Pemphigus foliaceus
- C. Pemphigus vulgaris
- D. Bullous impetigo

Histopathologic description

Diffusely, the epidermis is moderately to markedly and irregularly hyperplastic. The surface is diffusely covered by thick serocellular crusts composed of abundant proteinaceous fluid, orthokeratotic and parakeratotic keratin, numerous degenerate neutrophils and eosinophils, and moderate to large numbers of viable and degenerate acantholytic cells. Multifocally, hair follicle infundibula are distended by numerous neutrophils, fewer eosinophils, and large numbers of acantholytic cells seen individually and in rafts. Acantholytic cells inside affected hair follicles are frequently seen actively detaching from the luminal surface. Multifocally surrounding superficial dermal blood vessels and adnexal units are numerous neutrophils with fewer histiocytes and eosinophils. Occasionally, apocrine glands are infiltrated by neutrophils (hidradenitis).

Morphologic Diagnosis

Moderate, multifocal, chronic, subcorneal pustular dermatitis and folliculitis with serocellular crusts and numerous superficial and intrafollicular acantholytic cells.

Comments

Pemphigus foliaceus (PF) is the most common autoimmune disorder of the skin in dogs. The family pemphigus means “blister.” The name foliaceus refers to the leaf-like crusting that develops when the superficial pustules rupture and dry.

In a healthy individual, desmosomal proteins adhere keratinocytes to their neighbors. Immune cells are positioned in the epidermis to detect antigens that enter the skin. In order to prevent the immune system from attacking itself, T and B lymphocytes are trained in the thymus and the bone marrow, respectively, before entering circulation. Overly reactive lymphocytes that do not pass the test are eliminated via apoptosis. In pemphigus foliaceus, B lymphocytes produce autoantibodies that recognize components of the desmosomes (primarily desmocollin-1 in dogs and desmoglein-1 in human beings) as foreign. When autoantibodies bind to the desmosomal adhesion proteins, they disrupt the adhesion between keratinocytes in the stratum granulosum, resulting in detachment of keratinocytes from one another, a process called

acantholysis. Acantholytic keratinocytes, neutrophils, and interstitial fluid accumulate between the stratum corneum and the underlying epidermis, forming subcorneal pustules, which are a key diagnostic feature of pemphigus foliaceus. These pustules are typically large, spanning multiple hair follicles. Grossly, the lesions are bilaterally symmetric, a pattern which is characteristic of an autoimmune, nutritional, or metabolic disease. When the stratum corneum covering the pustule is displaced, the pustule ruptures, creating “honey-colored” crusts. Pemphigus vulgaris –a cousin of PF– is a rare and clinically more severe condition in dogs that involves autoantibodies targeting desmoglein-3, a desmosomal protein located in the lower epidermis that leads to suprabasilar clefting and subsequent ulceration.

Acantholytic cells may also be observed in dogs with superficial pustular dermatophytosis or superficial pyoderma owing to the exfoliative toxins produced by some bacteria (particularly staphylococci). Interestingly, pemphigus foliaceus in humans is histologically indistinguishable from bullous impetigo, a form of superficial pyoderma, and requires immunofluorescence for diagnosis. In dogs, PF can frequently be distinguished from pyoderma by the locations and symmetric distribution of the lesions. Whereas the classic demonstration of PF manifests on the face (including nasal plum, periocular skin, and pinnae), and paw pads, pyoderma more commonly affects the trunk and/or ventrum of dogs. Asymmetry of lesions should prompt further investigation for superficial pustular dermatophytosis (ie, PAS stain). Nevertheless, trunk-dominant PF has been identified in dogs as a recognized clinical variant in which lesions primarily affect the trunk. Currently, PF cannot be cured but can be successfully controlled with long-term immunosuppressive therapy, such as systemic corticosteroids or cyclosporine. Overall, the prognosis for pemphigus foliaceus is quite good.

Drug-induced PF has been reported in dogs following exposure to some antibiotics and topical flea/tick treatments. In cases of drug-induced PF, withdrawal of the triggering drug often leads to remission of the disease.

References

Bizikova, P., Linder, K.E. and Olivry, T. (2014), Fipronil–amitraz–S-methoprene-triggered pemphigus foliaceus in 21 dogs: clinical, histological and immunological characteristics. *Vet Dermatol*, 25: 103-e30. <https://doi.org/10.1111/vde.12117>

Bizikova P, Linder KE, Mamo LB. Trunk-dominant and classic facial pemphigus foliaceus in dogs – comparison of anti-desmocollin-1 and anti-desmoglein-1 autoantibodies and clinical presentations. *Vet Dermatol*. 2022;33:414–425. <https://doi.org/10.1111/vde.13094>

Gedon NKY, Bizikova P, Olivry T, Mendoza-Kuznetsova E, Oberkirchner U, Robertson JB, et al. Histopathological characterisation of trunk-dominant canine pemphigus foliaceus, and comparison with classic facial and insecticide-triggered forms. *Vet Dermatol.* 2023;34:425–440. <https://doi.org/10.1111/vde.13174>

Izydorczyk V, Pye C. Pemphigus foliaceus in cats. *Can Vet J.* 2024;65(3):297-300.

Lepe K, Yarrarapu SNS, Zito PM. Pemphigus Foliaceus. [Updated 2023 Aug 8]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2026 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK499829/?report=classic>.

Tyler J.M. Jordan, Petra Bizikova, Canine and Feline Pemphigus Foliaceus—an Update on Pathogenesis and Treatment, *Veterinary Clinics of North America: Small Animal Practice*, Volume 55, Issue 2, 2025, Pages 321-336, <https://doi.org/10.1016/j.cvsm.2024.11.010>.

Contributors

Joy Stephan, undergraduate student
Texas A&M University, College Station, Texas, USA.

Lauren Stranahan, DVM, PhD, DACVP
Department of Veterinary Pathobiology, Texas A&M University, College Station, Texas, USA.

Acknowledgements

Clinical images provided by Addy Brongo, DVM of Belton Veterinary Clinic in Belton, Texas, USA.