

Case of the Month April 2025

A 10-year-old, spayed female, Pit Bull Terrier began developing a small, slightly erythematous, slightly firm region on the right dorsal shoulder. This progressed over several months to firm, nodular, thick, alopecic, crusted, slightly itchy skin along the dorsum/shoulders bilaterally. An impression smear revealed leukocytes and cocci. Improvement with cefpodoxime (Simplicef) was noted over a 1-1.5-month period with hair regrowth but no change in the thickened skin. Skin scrapes were negative for Demodex mites. At her latest exam, there was widespread firm dermal nodules forming plaques along the dorsum/lateral shoulders with alopecia and yellow crusts. There was occasional bleeding when scratched, and the lesions were mildly pruritic. The dog had elevated ALP and ALT.

Figure 1.



Figure 2.



Figure 3.



Figure 4.



Figure 5. H&E, 4x magnification, Scale bar= 200 μ m.

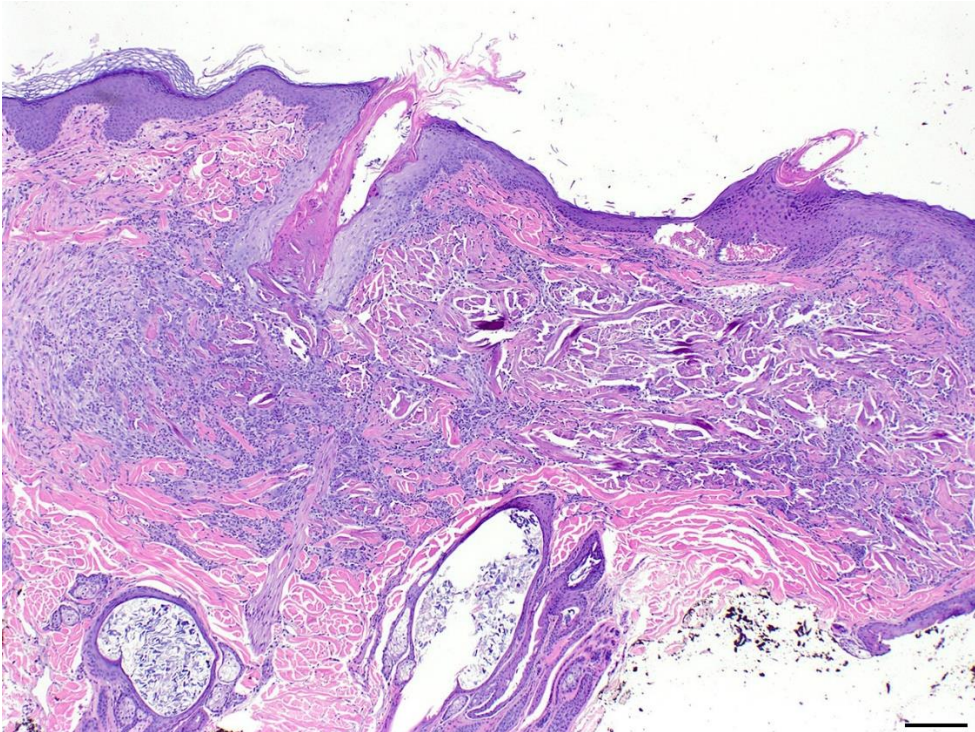


Figure 6. H&E, 20x magnification, Scale bar= 50 μ m.

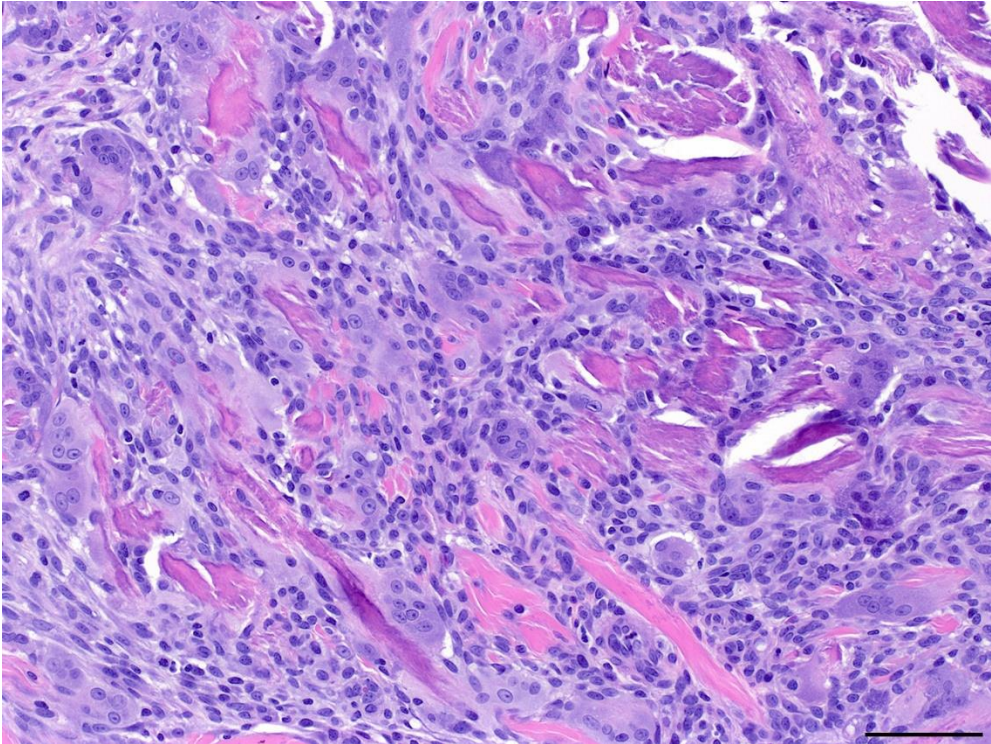


Figure 7. H&E, 2x magnification; Scale bar= 1000 μ m.

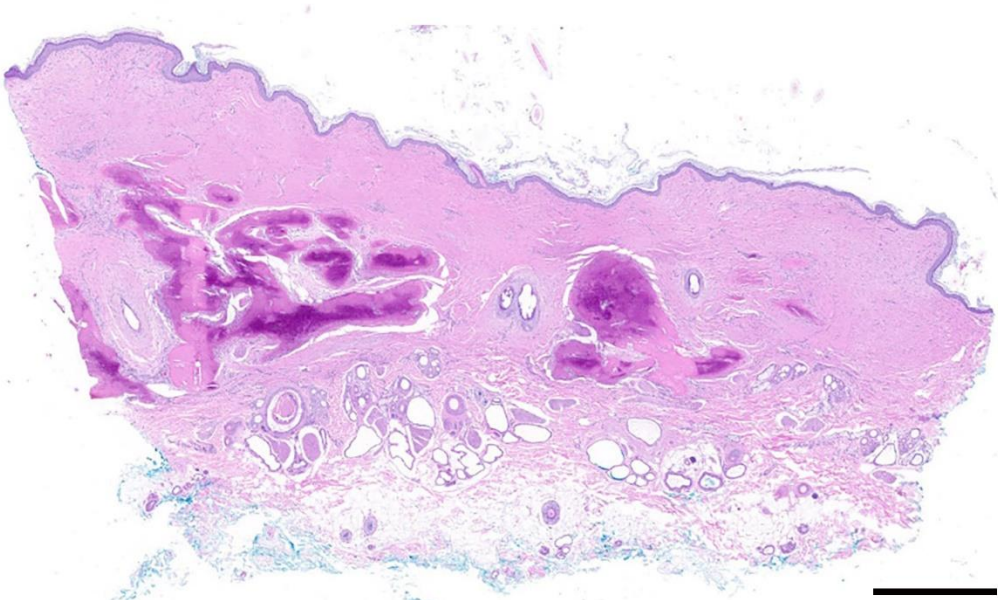
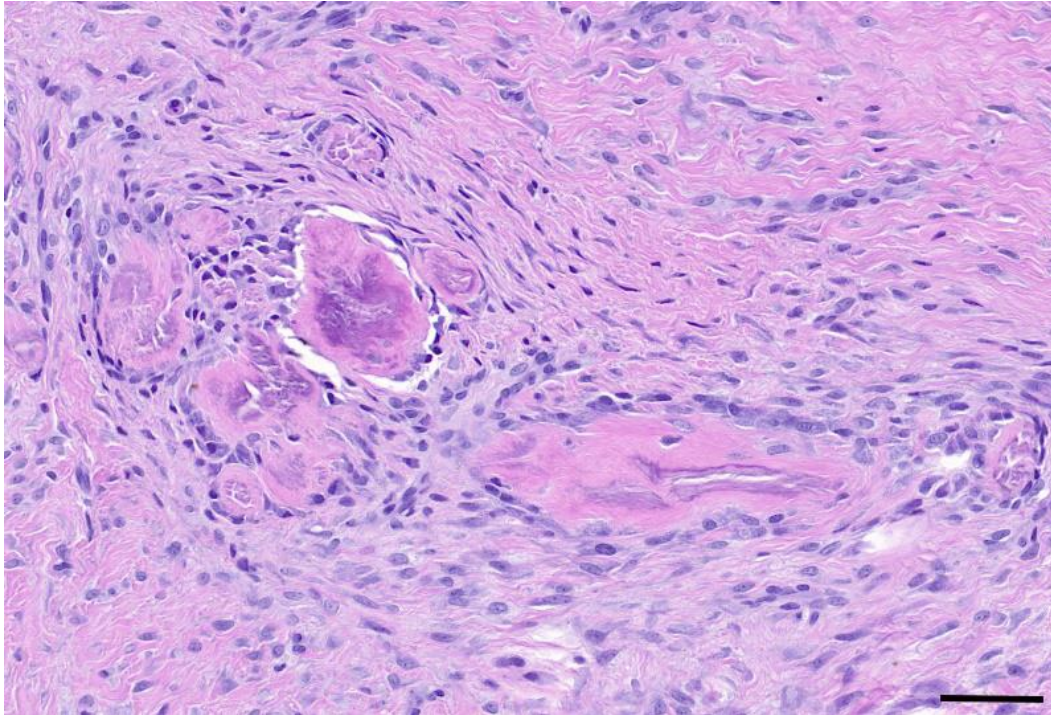


Figure 8. H&E, 20x magnification; Scale bar= 50 μ m.



Which of the following is the correct diagnosis?

- A. Metastatic osteosarcoma
- B. Mycobacterial infection
- C. Deep pyoderma
- D. Calcinosis cutis**

Histopathologic description

Diffusely covering the epidermis is a large amount of basketweave, orthokeratotic keratin which, in the biopsy from the right shoulder, is also intermixed with a serocellular crust containing cellular debris and abundant basophilic granular material (mineral). In the biopsies from the shoulder, the epidermis is diffusely, moderately hyperplastic. Multifocally infiltrating and expanding the superficial to deep dermis are numerous epithelioid macrophages and multinucleated giant cells that surround basophilic granular material (mineralized collagen). In other areas, most prominently in the biopsy from the right dorsum, there are areas of bone formation (osseous metaplasia). Both of these lesions are surrounded by a large amount of dense fibrous connective tissue (fibrosis). Hair follicle infundibula are moderately to markedly dilated and contain abundant orthokeratotic keratin and less often aggregates of mineral.

Multifocally, secondary hair follicles are moderately atrophic, though hair follicles are cycling normally.

Morphologic Diagnosis

Severe, chronic, multifocal to coalescing, granulomatous dermatitis with collagen mineralization, osseous metaplasia, and fibrosis (calcinosis cutis/osteoma cutis).

Comments

Calcinosis cutis is an uncommon skin disorder characterized by abnormal mineral (apatite) deposition in the dermis, epidermis, and subcutis. Such deposition is mainly localized to collagen and elastin fibers in the dermis. Calcinosis cutis can be classified as metastatic, iatrogenic, dystrophic, or idiopathic. Metastatic calcinosis cutis is seen in dogs with impaired kidney function or associated with blastomycosis and paecilomycosis. Iatrogenic calcinosis cutis has been reported mainly in association with administration of calcium-containing products to the skin. Dystrophic calcinosis cutis, by far the most common type in dogs, is predominantly associated with iatrogenic hyperadrenocorticism, less often endogenous hyperadrenocorticism, rarely systemic diseases such as leptospirosis.

A recent retrospective study reported that Labrador Retrievers, Boxers, and Rottweilers are the most affected breeds. A strong sex predisposition was not reported, although 56% of dogs identified in the study were males. The median age (11 years) of dogs with endogenous hyperadrenocorticism and calcinosis cutis was significantly higher than the age (6 years) of dogs with iatrogenic hyperglucocorticism and calcinosis cutis.

Clinically, calcinosis cutis presents as highly inflammatory and firm-to-the-touch, ulcerated, white plaques. Small, firm, erythematous papules can be observed in early stages. The most common location is on the trunk or dorsal neck, but axillae and abdomen are also commonly affected. In the present case, the dog showed an increased firmness extending on the dorsal trunk and shoulders. As follow up, she was diagnosed with endogenous hyperadrenocorticism and treated with trilostane. This case is slightly unusual as calcinosis cutis is most commonly associated to iatrogenic hyperglucocorticism (54% of cases), whereas endogenous hyperadrenocorticism is only associated with 23.9% of cases of canine calcinosis cutis.

Histologically, calcinosis cutis is characterized by multifocal to diffuse mineralization present throughout all layers of the dermis, which is the most common histopathological feature (58.6%) cases. Osseous metaplasia has been reported in 19.5% of cases, while epidermal atrophy is seen in 30.4% of cases. Mild to moderate fibrosis is also commonly present (63% of cases).

Therapeutically, the localized use of topical DMSO to facilitate the dissolution of the mineral along with the discontinuation of glucocorticoid administration has been reported successfully. In cases of endogenous hyperglucocoticism, the management of the endocrinopathy is essential. In cases of fungal infection, an appropriate antifungal medication along with supportive skin care has been shown effective.

References

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