3-month-old, male, European short-haired cat with well-demarcated crusts in right pinna and right forelimb

Which of the following is the most likely diagnosis?

1. Food allergy
2. Cutaneous horn
3. Dermatophytosis
4. Perforating dermatitis **CORRECT**
5. Eosinophilic plaque

**Signalment**: 3-month-old, male, European short-haired cat.

**History**: The cat was presented with two cutaneous lesions (Fig. 1, 2 and 3), one in the internal aspect of the right pinna and the other on the lateral aspect of the right forelimb, in the radio-ulnar region. Both lesions appeared as multiple, partially coalescing and relatively well-demarcated areas covered with thick, scaly and crusty, cone-shaped, brownish-yellowish material (Fig. 2 and 3). The lesion in the ear was associated with moderate pruritus. Laboratory abnormalities were not present and the cat had no other systemic signs.

**Histopathologic Description**: Histological examination of skin biopsies is characterized by the presence of exophytic, columnar to conic, confluent areas of necrosis and crusts (Fig. 4), containing cellular debris admixed with numerous degenerate collagen fibers; these fibers are typically vertically oriented and perpendicular to the adjacent and non-ulcerated epidermis (Fig. 5). Masson's trichrome staining reveal the presence of reddish central cores within the degenerated collagen fibers, as opposed to the blue homogeneous staining of normal collagen fibers (Fig. 6). In the crust, admixed with the collagen fibers, are cellular debris and inflammatory cells. In the underlying dermis, a marked inflammatory infiltrate is evident, consisting of eosinophils and mast cells, with fewer macrophages and lymphocytes (Fig. 7 and 8). Cells are embedded in a moderately oedematous stroma. The epidermis at the margin of the ulcer is irregularly hyperplastic.

**Morphologic diagnosis**: Perivascular to interstitial dermatitis, mastocytic and eosinophilic, with conical exophytic crusting projections and trans-epidermal collagen elimination.

**Name of the disease**: Feline acquired reactive perforating dermatitis (perforating collagenosis).

**Comment**: Feline acquired reactive perforating dermatitis (perforating collagenosis) is a rare disease. The lesions are characterized by multiple, exophytic, conical, brownish-yellowish crusts, developing over different areas of the body, such as the shoulders, neck, axilla, flanks, hip, trunk, legs and nose. Sometimes lesions coalesce in a linear conformation. The lesions are firmly adherent and hemorrhagic if the crusts are pulled off. There is no age, gender or breed predisposition. Histological examination shows a superficial moderate to marked interstitial dermatitis with eosinophils and mast cells as the main inflammatory cells. The thick conical crust consists of necrotic debris and inflammatory cells intermixed with numerous collagen fibers that are eliminated through the epidermis. The collagen fibers are typically vertically oriented and showed different degrees of degeneration and segmental staining abnormality (red fibers) in sections stained with Masson's trichrome. This staining abnormality has been described in animals with other forms of collagen diseases, such as cutaneous asthenia, acquired skin fragility and feline eosinophilic granuloma complex and, although not being specific, it presumably indicates some kind of abnormality in collagen metabolism. However, transmission electron microscopy performed by Scott and Miller revealed a normal banding and organization of collagen dermal fibres in affected areas. The most widespread opinion
is that the feline perforating dermatitis represents a reaction pattern rather than a true disease, often secondary to self-induced trauma in allergic skin diseases or as a reaction to suture material. It has been suggested, based on certain clinical features and on the response to treatment with topical collagen I and III inhibitors, that this disease is related to abnormal collagenesis during wound healing. The cats described in the veterinary literature variably responded to treatment with oral ascorbic acid (vitamin C), depomedrol, topical betamethasone, or topical halofuginone. In human medicine, the generic term of perforating dermatoses includes a group of dermatoses that is characterized by the formation of umbilicate papules with a “horny” central plug, caused by the transepidermal elimination of altered dermal material (collagen or elastin). From a clinical and histopathological point of view, these diseases are classified in 4 main forms, based on the type of injury, epidermal destruction and on the nature of the material eliminated: the elastosis perforans serpiginosa (EPS), the reactive perforating collagenosis (RPC), the Kyrle disease (KD) and the perforating folliculitis (PF). The EPS and the RPC can appear both in an hereditary and in an acquired form, while the KD and the PF are acquired in most cases. At the basis of the pathogenesis of this group of diseases, there is an anomaly and a focal damage of collagen followed by the elimination of the destroyed collagen through the epidermis. Precipitating factors can be represented by low temperatures and blunted trauma, especially in the case of hereditary forms. In acquired forms, however, the lesions are most often associated with concurrent diseases such as diabetes, kidney failure or other systemic diseases. As for the causes, these are not precisely defined, but an abnormal response to superficial traumas, such as for example scratching, is thought to play a role. The feline disease bears some resemblance to the human reactive perforating collagenosis although it can appear without a history of previous trauma and is normally not associated with chronic renal failure or diabetes in adult animals. No hereditary forms have been apparently described in the veterinary literature.

References:


Miller WH, Griffin CE, Campbell KL. Muller & Kirk’s Small Animal Dermatology, 7th Ed, 2013, pp.1168–70. Elsevier


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Figure 1. 3-month-old, male, European short-haired cat. The cat was presented with two cutaneous lesions, one in the internal aspect of the right pinna and the other on the lateral aspect of the right forelimb, in the radio-ulnar region.

Figure 2. 3-month-old, male, European short-haired cat. The lesion appears as multifocal to coalescing, well-demarcated plaques, covered with thick, scaly and crusty, cone-shaped, brownish-yellowish material. The lesion was moderately pruritic.
Figure 3. 3-month-old, male, European short-haired cat. The lesion on the lateral aspect of the right forelimb has the same appearance as the lesion in the pinna.

Figure 4. 3-month-old, male, European short-haired cat. A very thick eosinophilic crust with a conical appearance is present protruding from the ulcerated epidermis. The crust is composed of cellular debris, inflammatory cells and variably degenerated collagen fibers (H&E).
Figure 5. 3-month-old, male, European short-haired cat. The collagen fibers in the crust are oriented vertically and perpendicularly to the epidermal surface (H&E).

Figure 6. 3-month-old, male, European short-haired cat. The affected collagen fibers multifocally show the presence of segmental and central red cores (Masson’s trichrome).
Figure 7. 3-month-old, male, European short-haired cat. In the superficial dermis is a perivascular to interstitial infiltration mainly composed of eosinophils. The cells are embedded in a moderately oedematous stroma (H&E).
Figure 8. 3-month-old, male, European short-haired cat. Fewer mast cells are intermixed with the eosinophils in the inflammatory infiltrate (H&E).