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Dermatology

Differential diagnosis of ulcerative skin disease in the dog & cat

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Introduction and General Information
Ulcerative skin diseases are relatively uncommon in the dog and somewhat more common in the cat. Severe ulcerative skin diseases are rare in both species. However, they assume greater clinical significance than their frequency would imply since many ulcerative skin diseases are severe and some are potentially life-threatening. Many localized or generalized ulcerative skin diseases appear visually similar and cannot be differentiated easily on a clinical basis.

Terminology
Clinical descriptions of ulcerative skin diseases are often inaccurate. An ulcer is a defect of the skin extending entirely through the epidermis into the dermis or even deeper into the subcutaneous tissue. An erosion is a superficial denudation of the skin confined to the epidermis. The dermal-epidermal junction is not damaged by the initial pathologic process. (However, many erosions become ulcers rather quickly as secondary inflammation and microorganisms destroy the exposed lower layers of the epidermis and the basement membrane zone causing the defect to enter the dermis.) Excoriations are commonly confused with primary erosions or ulcers. An excoriation is produced by trauma or self-trauma and, depending on the depth of tissue involvement, may be either an erosion or an ulcer.

General Clinical Features
Many ulcerative skin diseases appear visually similar. Consequently, the underlying disease usually cannot be determined by visual inspection. Skin biopsy frequently is required for differentiation. Ulcerative skin diseases are characterized clinically by focal, multi-focal or generalized loss of epithelium. Sero-cellular, hemorrhagic or purulent debris collects and may adhere to the ulcer or erosion. Self-grooming may remove the debris giving the epithelial defect a moist, glistening appearance. Self-grooming of erosions is especially common in the cat. Secondary suppuration may be present.

Establishing a Diagnosis
Signalment, history, physical examination, diagnostic testing and occasionally, response to therapy are the information most useful in establishing a diagnosis in dermatology. Signalment (age, breed, sex) may be useful in directing index of suspicion and prioritizing differential diagnoses. Age may be quite useful. Heritable defects leading to skin fragility seen in dogs or cats usually become evident shortly after birth or at least within the first year of life. Middle-aged to older animals are at greater risk for the development of autoimmune or neoplastic skin disease. As more data are collected, breed predilections are becoming more and more important in prioritizing ulcerative skin diseases. Sex predilections for ulcerative skin diseases are not commonly noted. History is very useful in prioritizing potential differential diagnoses. General history always should be determined referable to diet, environment, use, home skin care, recent exposures, other household pets, and the presence or absence of pruritus in other animals or people in the environment. Specific history relating to the ulcerative skin disease
should include age of onset, duration of lesions, rapidity of onset, initial site of lesions, progression, current or recent medications, presence or absence of pruritus, and possible seasonality or other pattern indicating predictability. Response or lack of response to previous therapy (especially corticosteroids) is diagnostically important. Remember that most animals will groom an ulcer even without the presence of underlying pruritic skin disease.

General physical examination should be followed by more specific examination of the skin. The pattern of ulceration is important diagnostically. Ulcers may be focal, multifocal or generalized. The distribution of lesions may be important. Ulcerative lesions may preferentially affect mucocutaneous junctions, specific mucous membranes such as the oral cavity, pressure points, distal extremities, or less specific body regions such as the head, ventrum or relatively non-haired regions. Progression may be slow (indolent) or rapid with previous smaller lesions coalescing. Focal ulceration (solitary or indolent ulcers) commonly reflects extensive preceding dermal changes under the ulcer. Infectious, neoplastic or collagenolytic diseases are likely causes. In progressive ulcerative skin disease (multifocal or generalized) the primary disease process can originate either in the lower epidermis, at the dermal-epidermal junction, or in the superficial dermis. Autoimmune diseases, drug hypersensitivities, some neoplasms and potentially heritable metabolic anatomic defects leading to fragility commonly cause progressive ulcerative disease. The presence or absence of identifiable primary skin lesions such as vesicles, bullae, or vesico-pustules may be quite useful. As in other types of lesions, self-trauma can lead to excoriations, inflammation, lichenification, and alopecia which can obliterate underlying primary skin lesions.

**Diagnostic Procedures**

All likely secondary causes of excoriation mimicking primary ulcerative or erosive skin disease must be ruled out. Remember that the barbed tongue of a cat can remove debris such that a self-traumatized lesion may appear similar to primary ulcerative lesions. Cytology should always be performed on ulcerative skin diseases. While inflammatory cells and microorganisms usually are present, the identification of acantholytic cells (indicative of pemphigus) or possible neoplastic cells may suggest a diagnosis. Skin biopsy is the single most useful diagnostic procedure for the evaluation of ulcerative disease of the skin, mucocutaneous junctions or mucous membranes. Since focal ulceration (solitary or indolent) commonly reflects extensive preceding dermal changes under the ulcer, the ulcer itself should be sampled. In progressive ulcerative skin disease (multifocal or generalized) areas immediately adjacent to ulcers as well as ulcers, should be sampled since sampling ulcerated skin will provide the pathologist with a specimen of the dermis lacking the overlying epidermis. In multifocal, generalized or rapidly extending erosive or ulcerative skin diseases, the primary disease process may have originated in the lower epidermis, at the dermal-epidermal junction, or in the superficial dermis. If an infectious etiology is suspected for focal ulcerative disease, skin biopsy specimens may be submitted for sterile maceration for bacterial or fungal culture. If ulcerative skin disease is believed to be due to severe self-trauma (excoriations), the differential diagnosis of pruritus should be pursued.

**Canine Ulcerative Skin Diseases**

Ulcerative skin diseases in the dog can be grouped predominantly into genodermatoses, autoimmune skin diseases, erythema multiforme and toxic epidermal necrolysis, neoplasia, metabolic/endocrine abnormalities, infectious, physico-chemical and toxic, allergic, and idiopathic. Diseases discussed will include the listings below:

Genodermatoses - Cutaneous asthenia, hereditary epidermolysis bullosa, canine familial
dermatomyositis, canine Darier’s disease, familial cutaneous vasculopathy of German Shepherd Dogs, nasal parakeratosis of Labrador Retrievers

Autoimmune - Pemphigus vulgaris, bullous pemphigoid, mucous membrane pemphigoid, systemic lupus erythematosus, discoid lupus erythematosus, vesicular cutaneous lupus, deep facial pemphigus foliaceus, pemphigus erythematosus, vasculitis, epidermolysis bullosa acquisita, paraneoplastic pemphigus, Vogt-Koyanagi-Harada-like syndrome, linear IgA disease

Erythema multiforme and toxic epidermal necrolysis - These reactions patterns can be seen in conjunction with adverse drug reactions, neoplasia or infectious [esp. viral] skin diseases.

Neoplasia - Many (especially squamous cell carcinoma, sweat gland adenocarcinoma, some subgroups of lymphosarcoma such as mycosis fungoides)

Metabolic/endocrine - Superficial necrolytic dermatitis (metabolic epidermal necrosis), calcinosis cutis, other depositional diseases

Infectious - Subcutaneous and deep mycoses, deep pyoderma (esp. German Shepherds), other rare bacterial skin diseases, demodicosis, Candidiasis

Physico-chemical/toxic - Thermal burns, chemical burns, spider bites, snake bites, toxic shock syndrome

Allergic - Eosinophilic folliculitis/furunculosis of the face, severe self-trauma due to atopic dermatitis, food allergy

Idiopathic – Proliferative arteritis of the nasal philtrum (St. Bernards)

**Feline Ulcerative Skin Diseases**

Ulcerative skin diseases in the cat can be grouped similarly into genodermatoses, auto-immune skin diseases, erythema multiforme and toxic epidermal necrolysis, neoplasia, metabolic/endocrine abnormalities, infectious, physico-chemical and toxic, allergic, and idiopathic. Diseases discussed will include the listings below:

Genodermatoses - Cutaneous asthenia, epidermolysis bullosa

Autoimmune - Pemphigus vulgaris, bullous pemphigoid, mucous membrane pemphigoid, systemic lupus erythematosus, facial pemphigus foliaceus, vasculitis

Erythema multiforme and toxic epidermal necrolysis – These reactions patterns can be seen in conjunction with adverse drug reactions, neoplasia or infectious [esp. viral] skin diseases.

Neoplasia - Many (especially squamous cell carcinoma, sweat gland adenocarcinoma, some subgroups of lymphosarcoma such as mycosis fungoides)

Metabolic/endocrine - Superficial necrolytic dermatitis (metabolic epidermal necrosis), calcinosis cutis, other depositional diseases, feline skin fragility syndrome

Infectious - subcutaneous and deep mycoses, viral diseases (feline herpes virus, calicivirus, rhinotracheitis, FIV, FeLV, feline cowpox), rare bacterial skin diseases, Candidiasis

Physico-chemical/toxic - Thermal burns, chemical burns, spider bites, snake bites
Allergic - Indolent ulcers, eosinophilic plaques, eosinophilic granuloma, insect (mosquito bite) hypersensitivity, severe self-trauma due to food allergy, atopic dermatitis (much more common than in the dog)

Idiopathic - Indolent ulcers, eosinophilic plaques, eosinophilic granuloma, feline idiopathic ulcerative dermatosis, proliferative necrotizing otitis of kittens

References


