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## **AUTO-IMMUNE DERMATOSES IN CATS**

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Auto-immune (AI) dermatoses are rare in cats. They are characterized by the deposition of antibodies at various levels of the epidermis and basement membrane or by immune complexes within the basal membrane. The recognition of these conditions is mandatory because some of them, if not all, belong to the differential diagnosis of common conditions such as hypersensitivity dermatoses.

### **Pemphigus complex**

Numerous forms of pemphigus have been described in humans but in feline dermatology, only **pemphigus foliaceus (PF)** is relatively frequently encountered. This group of diseases is characterized by the deposition of antibodies within the epidermis, the subsequent proteolysis of intercellular bounds and finally, by intraepidermal splitting. The target proteins within the epidermis belong to the family cadherin. These proteins are intercellular molecules and components of the desmosomes.

In **PF**, splitting occurs between the stratum spinosum and the stratum corneum or within the stratum spinosum and results in intraepidermal pustules followed by crusts, erosions and sometimes secondary bacterial infections. PF pustules are usually easily recognized because of their size (bigger than normal bacterial pustules), localization (ear pinna, face, especially planum nasale, claw beds), their symmetrical distribution and their colour (honey). The diagnosis is more complex when pustules are absent and when the changes are localized to the face. In fact, in such cases, PF may be misdiagnosed as hypersensitivity dermatosis. Long lasting PF is usually associated with systemic signs such as fever, anorexia, apathy. The diagnosis is based on the cytological examination and/or histological examination of a pustules, or when these lesions are absent, on fresh crusts.

Cytologically, PF is characterized by acantholysis involving rafts of keratinocytes surrounded by non-degenerated neutrophils. One should however notice that acantholysis is not pathognomonic of PF and that several infectious disease such as bacterial or fungal infection may also trigger acantholysis. As well,

some drugs and some neoplastic conditions may be associated with similar changes. It is consequently mandatory to rule out these conditions before to begin an immunosuppressive treatment for auto-immune disease.

**Pemphigus Vulgaris (PV)** is characterized by suprabasal splitting, which means that the destruction of the desmosomes occurs mainly between the stratum basale and the stratum spinosum. Additionally, mucous membranes are often affected which is not a classical feature of PF. PF consequently results in a more severe, often life-threatening disease, clinically characterized by vesicles and ulcerations. Unfortunately, vesicles are fragile and transient and most clinical cases are only ulcerative. These changes occur mainly in the oral cavity and muco-cutaneous junctions. All affected cats are systemically ill. The diagnosis is based on the histological examination showing the typical “tomb stones” feature within the epidermis.

<b>Feline auto-immune diseases: Targeted structures and antigens</b>		
<b>Disease</b>	<b>Structure</b>	<b>Antigen</b>
Pemphigus foliaceus	Stratum spinosum/ Stratum corneum	Desmoglein I, Desmocollin?
Pemphigus vulgaris	Basal layer/stratum spinosum	Desmoglein III
Bullous pemphigoid	Basal membrane	Collagen XVII
Mucous membrane pemphigoid	basal membrane	Collagen XVII, laminin 5
Lupus	basal membrane	NA

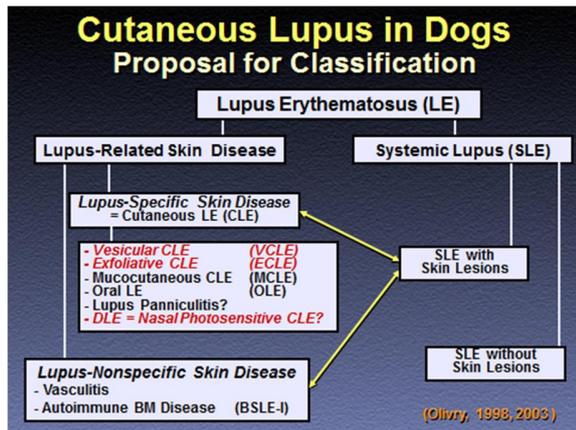
Other forms of pemphigus have rarely been reported in cats and their existence is doubtful.

**Bullous pemphigoid** has rarely been described in cats. This disease belongs to the group of sub-epidermal blistering diseases and the targeted antigen is collagen XVII which is located within the basal membranes. Proteolysis of this molecule consequently results in dermo-epidermal cleaving and subsequent ulcerations. Vesicles should precede these ulcerations but are very transient. Changes are mainly localized in the mouth, on the lips, nostrils and ears.

**Mucous membrane pemphigoid** is the most frequent (less rare!) sub-epidermal blistering disease in animals, especially in cats. Targeted antigens are also located within the basal membrane and the clinical signs are very similar to those of Bullous pemphigoids. Vesicles, erosions ulceration occurring within the mouth, on the lips, on the ears and periocular. The diagnosis of all sub-epidermal blistering

diseases is based on histological examination with subsequent immunofluorescence to localize more precisely the location of the splitting.

**Lupus erythematosus** is also a generic name for a constellation of diseases, all characterized by the deposition of immune complexes within organ such as the skin, the joints, the kidney etc... Lupus conditions have been poorly described in cats and convincing reported cases are pretty rare. This is



especially true for the cutaneous forms which may be misdiagnosed as feline exfoliative dermatosis.

A counterpart of the canine **discoid lupus** has been described in cats and presents with erosions/ ulcerations of the face and pinnae.

Systemic lupus was also described in some cats and affected animals usually present with several of the following changes: anaemia, polyarthritis,

glomerulonephritis, stomatitis and skin changes. The latter may be erosive, ulcerative or exfoliative and are usually localized on the face and feet or generalized.

The diagnosis of lupus is based on the histological examination of the skin lesion, showing junctional inflammation and apoptosis within the epidermis and the fulfilling of criteria for the systemic lupus. It is worth noticing that ANAs are rarely positive in cats with systemic lupus.

The treatment of auto-immune dermatoses is based on the use of immunosuppressive drugs such as prednisolone, dexamethasone, triamcinolone, cyclosporine or chlorambucil. It is worth noticing that azathioprine which is often used in dogs is extremely toxic in cats and should be avoided. The diagnosis of AI dermatoses should be confirmed before to use these drugs with these dosages. It is also important to monitor properly the efficacy and the side-effects of the drugs mentioned below.

Treatment of feline auto-immune conditions			
Drugs	usual daily dosages	Main Side-effects	Monitoring
Prednisolone	4-6mg/kg	PUPD, Skin Atrophy, cystitis	Blood count, chemistry panel, Urinalysis
Dexamethasone	0,5-0,7mg/kg	idem	Blood count, chemistry panel, Urinalysis
Chlorambucil	0,1-0,2mg/kg	GI, Myelosuppression	Blood count, chemistry panel
Cyclosporine	7 mg/kg	GI	(Blood count, chemistry panel)

