

**Common Immune-mediated Dermatoses**



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**Discoid Lupus Erythematosus**

- Most common “autoimmune” skin disease?
- Rare in cats
- No clinical or serologic systemic involvement
- Lesions restricted to face?

**DLE - Treatment**

Photoprotection!!!

Topicals

- Steroids:
  - Betamethasone, Synotic®
  - Genesis®, easOtic®
- Immunomodulators: tacrolimus

**Tacrolimus (Protopic®)**

- Macrolactam immunomodulator
- Calcineurin inhibitor
  - Decreases T lymphocyte maturation and activation
  - Decreases production of cytokines (IL-2, IL-3, IL-4, IL-5, TNF-α)
- Does not cause cutaneous atrophy
- Topical (0.03%, 0.1%) or oral applications

**Uses for Tacrolimus (Protopic®)**

- Atopic dermatitis
- Contact hypersensitivity
- Lichenoid dermatoses
- “Autoimmune” disorders
  - Vitiligo
  - Discoid lupus
  - Pemphigus erythematosus
  - Cutaneous lupus erythematosus
  - Alopecia areata, pseudopelade

**DLE - Treatment**

Systemic Agents

- Omega 3 – Omega 6 Fatty Acid Supplements
- Tetracycline group & niacinamide
- Pentoxifylline
- Oral glucocorticoids
- Immunosuppressive agents
  - Azathioprine
  - Cyclosporine

### DLE Pre- and Post-Treatment



### Tetracycline Group and Niacinamide

Multiple anti-inflammatory and immunomodulatory properties

↓ T cell blastogenesis, antibody production, complement activation, leukocyte chemotaxis, PG synthesis, proteases, mast cell degranulation, antigen:IgE histamine release, free radicals; PDE inhibition.

### TC & N Responsive Dermatoses

- Discoid lupus erythematosus
- Vesicular cutaneous lupus erythematosus
- Exfoliative cutaneous lupus erythematosus
- Pemphigus erythematosus
- Pemphigus foliaceus
- Bullous pemphigoid
- Mucous membrane pemphigoid

### TC & N Responsive Dermatoses

- Lupoid onychodystrophy
- Uveodermatologic syndrome (VKH)
- Vasculitis
- Sterile granuloma/pyogranuloma syndrome
- Sterile panniculitis
- Metatarsal fistulae
- Cutaneous histiocytosis
- Sebaceous adenitis (?)

### Pentoxifylline

Multiple anti-inflammatory and immunomodulatory properties:

- ↑ RBC/WBC deformability
- ↓ platelet aggregation
- ↓ IL-1, IL-4, IL-12, TNF- $\alpha$ , T and B cell activation, NK cell activity, T cell adherence to keratinocytes

### Pentoxifylline

- 25 mg/kg q12h
- Infrequent side effects (nausea, inappetence, vomiting)
- Give with food
- Slow onset (4 weeks)

### PTX-Responsive Dermatoses

- Atopic dermatitis
- Contact hypersensitivity
- Vasculitis
- Pinnal thrombovascular necrosis
- Lupoid onychodystrophy
- Familial dermatomyositis
- Cutaneous lupus erythematosus
- Erythema multiforme

### Symmetrical Lupoid Onychodystrophy (Onychitis)

Many breeds: German Shepherd, Rottweiler, Schnauzer, Bearded collie, Greyhound

Adult onset

Symmetrical onychomadesis → onychodystrophy ± onychitis

Life long condition

Otherwise healthy

### SLO - Diagnosis

Exclusion: UA, 4Dx, ANA

Claw biopsy

Response to therapy

### SLO - Therapy

- None
- Clipping, filing, acrylic nail cement
- Glucocorticoids
- Vitamin E
- Omega-6/omega-3 fatty acids
- Tetracycline group/niacinamide
- Pentoxifylline

### SLO Pre- and Post-Treatment



### Cutaneous Lupus Erythematosus

- Unknown frequency
- Systemically normal
- Variable lupus serology

### Diagnosis

- Elimination: CBC, Chemistry, UA, ANA , 4Dx
- Skin biopsy

### Treatment

- Topicals
  - Corticosteroids
  - Tacrolimus
- Systemic agents
  - Tetracycline group & niacinamide
  - Pentoxifylline
  - Corticosteroids
  - Immunosuppressive agents

### Cutaneous Adverse Drug Reactions

- Vastly underreported
- No “diagnostic” tests that will
  - Confirm a drug reaction
  - Identify the offending drug

### Predictable or Idiosyncratic?



### Cutaneous Drug Reactions

- Pleomorphic eruptions
- Immunologic or nonimmunologic mechanisms
- Immunologic sensitization: 7-14 days
- 1<sup>st</sup> reaction usually within 21 days
- Reaction pattern can change at each exposure

### Predisposing Factors

- Nature of drug
- Route of administration
- Prolonged or repeated use of drug
- Simultaneous use of multiple drugs?
- Preexisting medical conditions?
- Simultaneous topical and systemic use of same drug?

## Breed Predispositions

### Localized:

Poodles, Bichon Frises, Yorkshire and silky terriers, Pekingese, Maltese terriers

### Generalized:

Doberman pinscher, miniature Schnauzer, Shetland sheepdog, Dalmatian, Australian shepherd, Old English sheepdog, Scottish terrier, wirehaired Fox terrier, Greyhound

## Common Offending Drugs

### DOGS

- Potentiated sulfas
- Penicillins
- Cephalosporins
- Topicals
- Rabies vaccine

### CATS

- Penicillins
- Cephalosporins
- Sulfas
- Topicals

## Reaction Patterns

- Contact dermatitis
- Exfoliative erythroderma
- Nonlesional pruritus
- Maculopapular
- Erythema multiforme
- Vasculitis
- Fixed reaction

## Reaction Patterns Con't

- Autoimmune-like
- Superficial suppurative necrolytic dermatitis of Schnauzers
- Focal panniculitis
- Toxic epidermal necrolysis
- Urticaria – angioedema
- Miscellaneous

## Contact Dermatitis

Dogs: 26.8 %   Cats: 42.9%

- Ears most commonly affected
- Prompt resolution with dechallenge

## Exfoliative Erythroderma

Dogs: 19.8%   Cats: 0%

- Persistent or paroxysmal
- Prompt resolution with dechallenge

**Nonlesional Pruritus**

Dogs: 11.9%    Cats: 21.4%

- Most often due to flavoring agents, dyes, or binders
- Prompt resolution with dechallenge

**Maculopapular**

Dogs: 9.9%        Cats: 0%

- Mimics superficial folliculitis
- "Sterile" cytology
- Follicular scarring in chronic cases

**Erythema Multiforme**

Dogs: 7.9%        Cats: 7.1%

- Spectrum of severity
- Other causes
- Variable time to resolution with dechallenge

**Erythema multiforme**

- Immunologic stimulation results in single cell death (apoptosis)
- Number and proximity of apoptotic cells dictates severity of clinical lesions
- Trigger events include drugs, foods(?), infectious agents, neoplasia, and idiopathy

**Toxic Epidermal Necrolysis**

Dogs: 1.0%        Cats: 0.0%

- Life threatening condition
- Usually fatal with >30% of body involved
- Very fragile skin
- Severe scarring possible

**Vasculitis**

Dogs: 5.0%        Cats: 7.1%

- Document by diascopy
- Pressure point predisposition
- Severity varies with vessel size
- Slow healing with dechallenge
- Scarring expected

**Fixed Reaction**

Dogs: 2.9%      Cats: 7.1%

- Reaction recurs at the same site with rechallenge
- Variable time to resolution

**Pemphigus-like**

Dogs: 2.9%      Cats: 7.1%

- Lesions clinically and histologically mimic true autoimmune disorders
- Superficial pemphigus and lupus patterns most common
- Variable response time to dechallenge

**Topical Flea Treatment Pemphigus**

- Rare?
- Associated with
  - Promeris
  - Tactic
  - Vectra 3D
  - Advantix
- Transient or persistent

**Superficial Suppurative Necrolytic Dermatitis of Schnauzers**

- Miniature Schnauzers only
- Shampoo triggered
- Systemic and cutaneous signs follow bathing by 48-72 hours
- Prompt healing with dechallenge

**Focal Panniculitis**

Dogs: 2.0%      Cats: 7.1%

- Injection reaction
- Pre-neoplastic ??
- Slow healing with scarring

**Urticaria - Angioedema**

Dogs: 1%      Cats: 0.0%

- More common in practice situation
- Urticaria most commonly seen with topicals
- Rapid resolution with dechallenge

### Miscellaneous

Any eruption on any body part could be drug induced.

### Drug Reaction - Diagnosis

- Suspicion & exclusion
- Skin biopsy
- Spontaneous resolution with dechallenge
  - Which drug??
- Rechallenge??

### Treatment

- Remove offending drug(s)
- Supportive care
- Corticosteroids?
- AVOID DRUG FOREVER!!