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-α, 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
- 1st 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
  - Tacktic
  - 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.

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**Drug Reaction - Diagnosis**

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

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**Treatment**

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