Pityriasis Rosea
Begins on medial aspect on lower legs but can become circumferential; Clinically mimics cellulitis
Micro: Spongiotic dermatitis, vascular proliferation, dilated, thickened blood vessels in papillary dermis, hemosiderin, chronic inflammation

Spongiotic Dermatitis
Intraepidermal intercellular edema (spongiosis)
- presence of widened intercellular spaces between keratinocytes, with elongation of the intercellular bridges
- may be associated inflammation
- with chronic disease, there can be progressive psoriasiform hyperplasia, usually accompanied by diminishing spongiosis (lichenification)

Atopic Dermatitis
Aka Eczema
Dx: “spongiotic dermatitis consistent with eczematous dermatitis”
“Atopic Triad:" 1) Atopic dermatitis, 2) Seasonal allergies, 3) Asthma
Acutely→ Edema can form vesicles
Chronically→ Lichenification
Can appear similar histologically: Contact dermatitis and Nummular or Id reactions

Stasis Dermatitis
Begin on medial aspect on lower legs but can become circumferential;
Clinically mimics cellulitis
Micro: Spongiotic dermatitis, vascular proliferation, dilated, thickened blood vessels in papillary dermis, hemosiderin, chronic inflammation

Pityriasis Rosea
First→ “Herald patch”
Followed by secondary lesions 1-2 weeks later, Self-resolving ~1 month Christmas tree pattern
Clinical DDX: secondary syphilis, cutaneous T cell lymphoma
Micro: Spongiotic dermatitis with mounds of parakeratosis. Extravasated RBCs. Some exocytosis of lymphocytes.
**Lichenoid Dermatitis**

Band-like infiltrate that hugs the dermoepidermal junction

**Interface Dermatitis**

Basal keratinocyte hydropic change with vacuolization and variable lymphocytic inflammation

**Lichen Planus**

Common entity, unknown etiology; Pruritic, purple, papules

**Micro:** Compact hyperkeratosis (lack of paraker.)
- Band-like inflammatory Infiltrate
- Civatte bodies
- Wedge-shaped hypergranulosis
- “Saw-tooth” rete ridges

Single lesion on trunk? Consider Lichen Planus-like Keratosis (LPLK)

**Lichen Sclerosus**

Predilection for anogenital skin
Glans penis = “balanitis xerotica obliterans”

**Micro:** Homogenization of dermal collagen
- Variable band of chronic inflammation BELOW edema and homogenization
- Vacuolar change
- Atrophic epidermis

**Fixed Drug Reaction**

Take Drug → One or few circumscribed erythematous to violaceous/brown plaques
Lesions recur at same site with rechallenge

**Micro:** Vacuolar change
- Lymphs along DEJ and in dermis
- Necrotic keratinocytes
- Usually Eos, some Neuts
- Prominent pigmentary incontinence
Graft-vs-host Disease (GVHD)

Usually post-stem cell transplant (transplanted immunocompetent T-cells attack new host)

Involves skin, liver, GI tract → rash, ↑LFTs, diarrhea, and vomiting

Acute: Interface dermatitis with necrotic/dyskeratotic keratinocytes; “Satellite cell necrosis”- association of lymphs to necrotic keratinocytes

Chronic: Sclerosis of the dermis, Compact hyperkeratosis, Lichenoid reaction

Lupus Erythematosus

Chronic cutaneous lupus/discoid lupus erythematosus (DLE)- usually only limited to the skin

Micro: epidermal atrophy, basal vacuolization, thickened basement membrane zone

Subacute cutaneous lupus (SCLE)- may be associated with mild systemic disease (arthralgias, etc.) but must r/o SLE

Micro: Epidermal atrophy
Intense basal vacuolar change
Necrotic keratinocytes
Patchy to moderate chronic inflammation
Dermal mucin usually prominent

Immunofluorescence: IgM, IgG, C3 → granular BM deposition
Psoriasiform Dermatitis

- marked, uniform elongation of the rete ridges

Reactive arthritis (Reiter’s disease)
Pityriasis rubra pilaris
Lichen simplex chronicus/Chronic spong. derm.
Psoriasiform drug eruptions
Herald patch of pityriasis rosea
Secondary syphilis (sometimes)

Psoriasis

**Clinical Findings:**
- Erythematous plaques and silvery white scale
- Extensor surfaces
- Scale is micaceous (oyster-like)

**Microscopic Findings:**
- Psoriasiform hyperplasia
- Confluent parakeratosis
- Hypogranulosis
- Neutrophils in the stratum corneum/epidermis
- Thinning of supra-papillary plates
- Dilated BV in dermal papillae

Other Psoriasiform Disorders

- Reactive arthritis (Reiter’s disease)
- Pityriasis rubra pilaris
- Lichen simplex chronicus/Chronic spong. derm.
- Psoriasiform drug eruptions
- Herald patch of pityriasis rosea
- Secondary syphilis (sometimes)
Granulomatous Reaction

Discrete collections of histiocytes with variable numbers of multinucleated cells and lymphocytes
Characterized by:
- Arrangement of granulomas
- Presence or absence of necrosis, suppuration, or necrobiosis
- Presence of foreign material or organisms

Must evaluate any granulomatous process for infection → FITE, GMS
Polarized light examination for foreign material

Granuloma annulare

Self-limited dermatosis; Unknown etiology
Rashes are often annular (round)
**Micro:** Areas of necrobiosis in superficial or mid dermis
Surrounding palisaded histiocytes and lymphocytes
Central mucin collection

Necrobiosis lipoidica

Associated with diabetes; Often bilateral shins

**Micro:** Normal epidermis (unless ulcerated)
Linear palisading of chronic inflammation with some aggregates resembling germinal centers
“layer cake” appearance
Necrobiosis of collagen between
Plasma cells
May extend to septae of fat

Other Granulomatous Processes

Granulomatous Rosacea - Persistent erythema and telangiectasia; Usually on cheeks, chin, and nose; Perifollicular and perivascular granulomas with chronic inflammation

Tuberculosis – Caseating granulomas; +FITE/AFB

Sarcoidosis - “Naked” non-caseating granulomas

Foreign body reaction – Foreign body giant cells and polarizable (foreign) material

Rheumatoid nodule - Subcutaneous/deep, Extensive necrobiosis with fibrin deposition centrally, often multi-focal
**Vesiculobullous Reaction**

Vesicles or bullae at any level within the epidermis/DEJ

Specific diagnosis depends on: 1) anatomical level of the split, 2) the underlying mechanism, 3) pattern of other inflammation

**Pemphigus Vulgaris**

Autoantibody to desmosomes

**Intraepidermal vesicle**

**Suprabasilar acantholysis** ("tombstoning")

**Bullous Pemphigoid**

Autoantibody to hemidesmosomes at DEJ

**Subepidermal cleft** with abundant Eosinophils

**Dermatitis Herpetiformis**

Subepidermal split with numerous **neutrophils** in dermal papillae and microabscesses

Granular IgA staining on IF

Highly associated with **Celiac disease**

**Vasculopathic Reaction**

Pathological changes in blood vessels

Includes **vasculitis** and **vascular occlusive diseases**

**Leukocytoclastic vasculitis**

Histologic reaction pattern due to immune complex deposition

**Micro:** Fibrinoid necrosis of blood vessel walls
Endothelial cell swelling
Perivascular neutrophilic infiltrate
**Karyorrhexis** (nuclear dust)
RBC extravasation

**Thrombotic Vasculopathy**

Histologic reaction pattern denoting presence of non-inflammatory small vessel **fibrin thrombi**

Many possible etiologies (e.g., DIC, hypercoagulable state, etc..)
# Panniculitis

**Panniculitis** = Inflammation of the Fat

<table>
<thead>
<tr>
<th>Septal</th>
<th>NO Vasculitis</th>
<th>YES Vasculitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erythema Nodosum</td>
<td>Polyarteritis Nodosa</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lobular</th>
<th>NO Vasculitis</th>
<th>YES Vasculitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others: Histioytic cytophagic panniculitis, α1-antitrypsin deficiency, pancreatic, sclerema neonatorum, subQ fat necrosis of the newborn,</td>
<td>Erythema Induratum</td>
<td></td>
</tr>
</tbody>
</table>

- **Erythema Nodosum**: Red, tender nodules, on shins. Associated fever, malaise, arthralgias
  - **Micro**: Thickening of fibrous septae
    - Lymphohistiocytic infiltrate
    - Some “spill over” into adjacent fat lobules
    - **NO vasculitis**
    - Multi-nucleate giant cells, granulomas

- **Polyarteritis Nodosa**
  - May be systemic or cutaneous-only
  - Tender painful nodules on the legs with livedo reticularis
  - **Vasculitis** of small and medium sized arteries
  - Overlap with microscopic polyangiitis
  - May have fever, malaise, arthralgias, and myalgias, peripheral nerve involvement

- **Other Common Diagnoses:**
  - **Arthropod Bite Reaction**
    - Various degrees of: *wedge-shaped* perivascular lymphocytic infiltrate with eosinophils
    - Spongiosis, Ulceration, blister formation
    - Dermal edema, necrosis
    - Insect tissue fragments, Spiders → more neutrophils
Dermatophyte reaction

**Superficial fungal infection secondary to dermatophytes**  
*(Trichophyton, Epidermophyton, Microsporum)*

- Helpful Clue = Neutrophils in stratum corneum
- Fungal stains *(GMS, PAS-D)* highlight hyphae

Sandwich sign = Parakeratosis or compact orthokeratosis underlying basket-woven stratum corneum (dermatophytes located in between)

### Morbilliform Drug Reaction

Histologic findings are nonspecific and clinical correlation is essential

"SPD with Eos"

**Superficial perivascular** and interstitial dermal infiltrate

Most often polymorphous infiltrate of lymphocytes, neutrophils, and **eosinophils**

Subset have vacuolar interface change

### Pernio (aka Chilblains)

Caused by exposure to cold, damp conditions

**Micro:** Superficial and deep perivascular infiltrate of lymphocytes

Prominent **perieccrine** inflammatory infiltrates

### Chondrodermatitis nodularis helicis (CNH)

Lesion of **outer helix** of **ear** that is usually result of trauma; **Clinically** concerning for malignancy

**Micro:** Ulceration

- Central fibrin deposition
- Granulation tissue in base
- Adjacent telangiectatic vessels & parakeratosis
- Cartilage usu. unininvolved