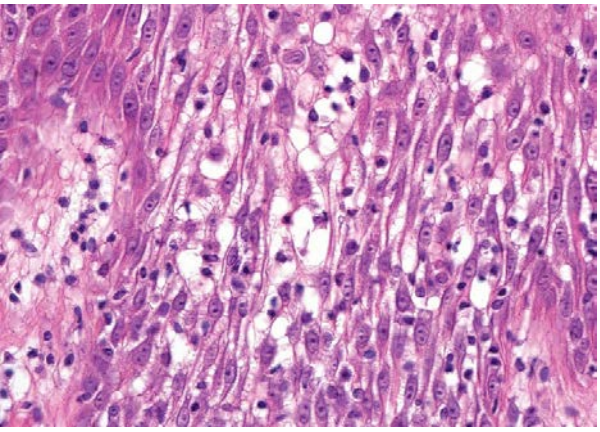
Prepared by Kurt Schaberg

Introduction to Inflammatory Dermpath

Spongiotic Dermatitis

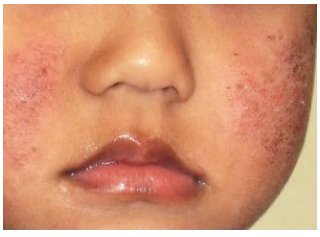
intraepidermal intercellular edema (spongiosis)



- 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

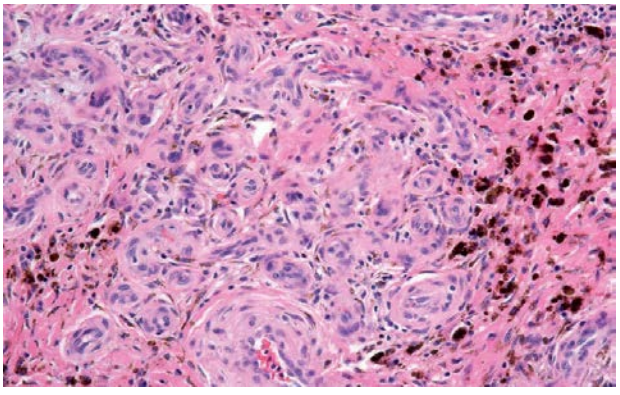
Acutely→ Edema can form vesicles
Chronically→ Lichenification

Can appear similar histologically: Contact dermatitis and Nummular or Id reactions

Stasis Dermatitis

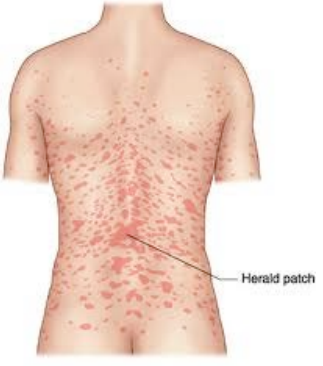
Begins on medial aspect on lower legs but can become circumferential;
Clinically mimics cellulitis

Micro: Spongiotic dermatitis, vascular proliferation, dilated, thickened blood vessels in papillary dermis, hemosiderin, chronic inflammation

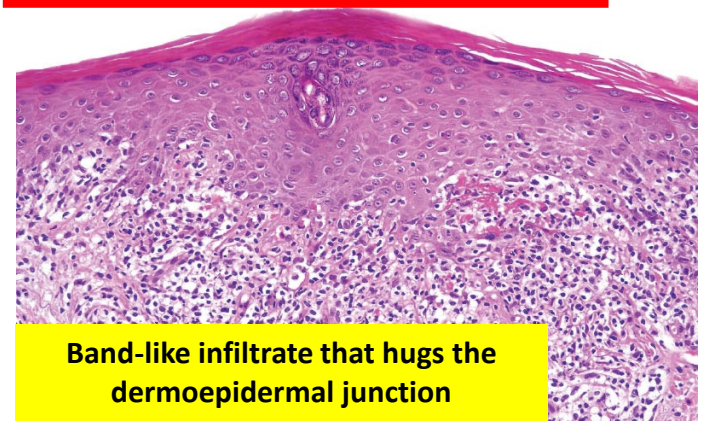


Pityriasis Rosea

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.

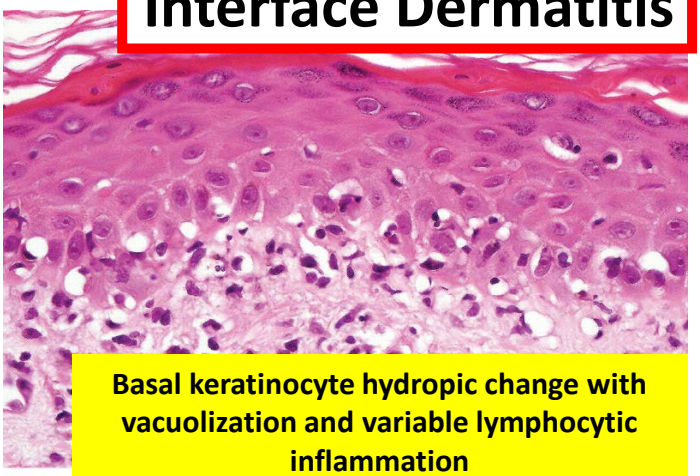


Lichenoid Dermatitis



Band-like infiltrate that hugs the dermoepidermal junction

Interface Dermatitis

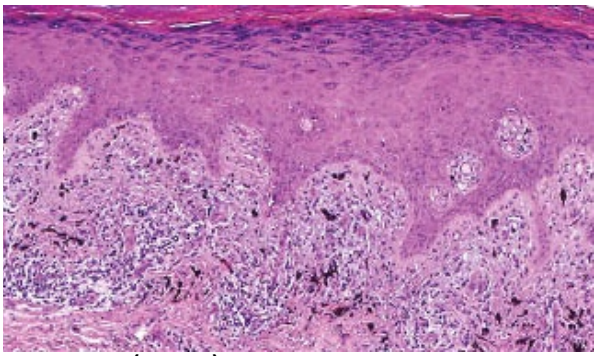


Basal keratinocyte hydropic change with vacuolization and variable lymphocytic inflammation

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

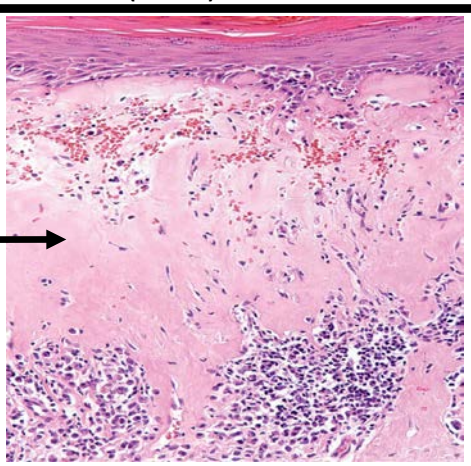


Single lesion on trunk? Consider Lichen Planus-like Keratosis (LPLK)

Lichen Sclerosus

Predilection for anogenital skin
Glans penis = "balanitis xerotica obliterans"

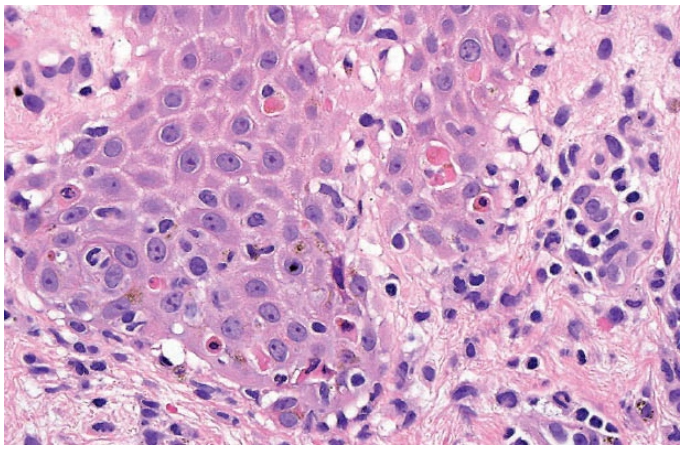
Micro: Homogenization of dermal collagen
Variable band of chronic inflammation BELOW edema and homogenization
Vacuolar change
Atrophic epidermis



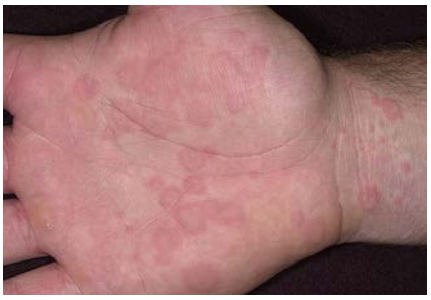
Fixed Drug Reaction

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

Micro: Vacuolar change
- Lymphs along DEJ and in dermis
- Necrotic keratinocytes
- Usually Eos, some Neuts
- Prominent pigmentary incontinence



Erythema Multiforme



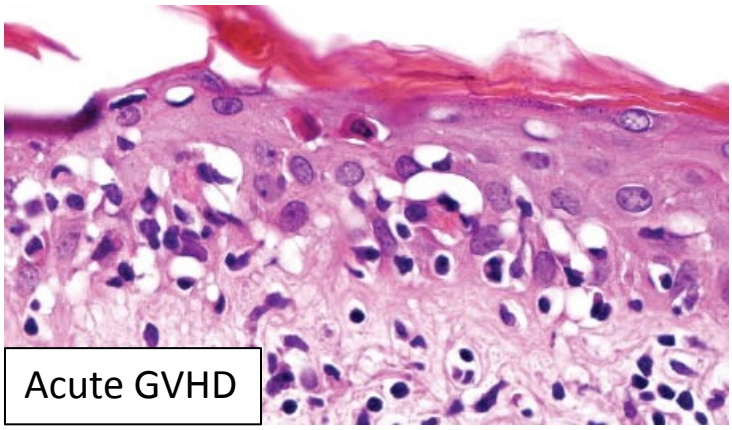
Acute, self-limited disease.
Reactive in nature (usu. HSV, Mycoplasma, or Drug).
Targetoid, dusky lesions which tend to be distributed symmetrically in acral locations
On spectrum with Stephen-Johnson Syndrome and Toxic Epidermal Necrolysis

Micro:
Erythema multiforme→ Interface dermatitis with necrotic keratinocytes
SJS/TEN→ Severe to full-thickness epidermal necrosis with variable inflammation

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 GVHD

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

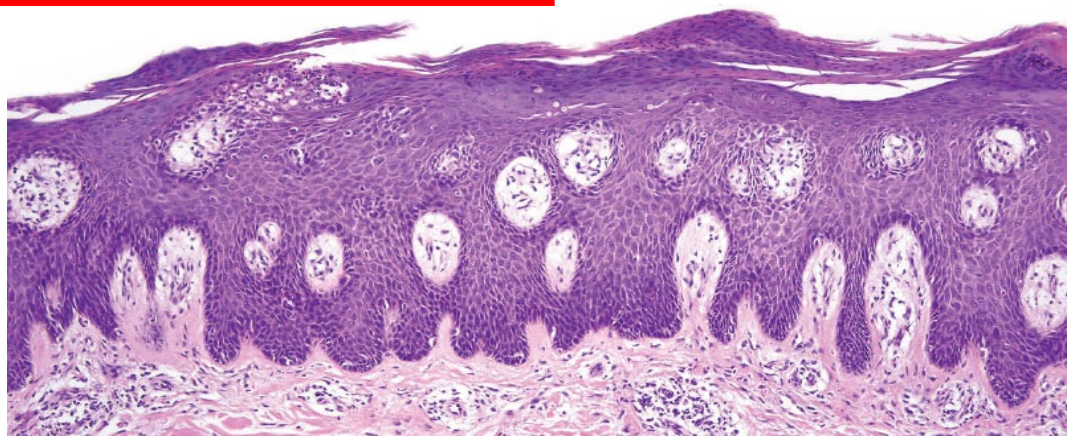
Subacute cutaneous lupus (SCLE)- may be associated with mild systemic disease (arthralgias, etc.) but must r/o SLE

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

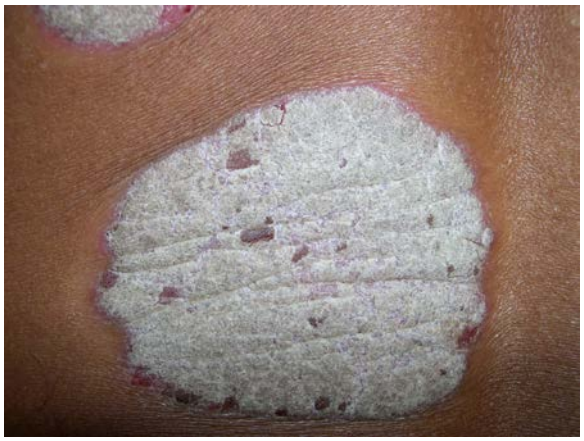
Immunofluorescence: IgM, IgG, C3 → granular BM deposition

Psoriasiform Dermatitis

marked, **uniform** elongation of the rete ridges



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)

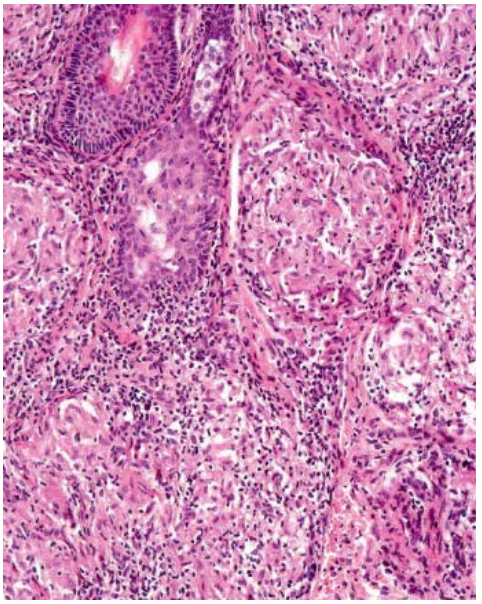
Granulomatous Reaction

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**

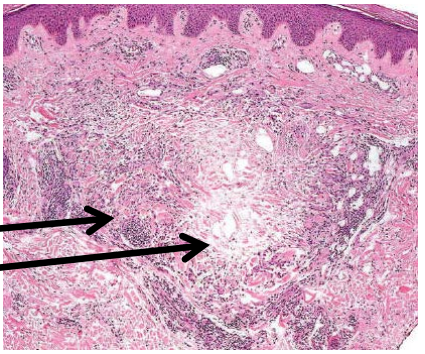
Polarized light examination for foreign material



Sarcoidal Granulomas

Granuloma annulare

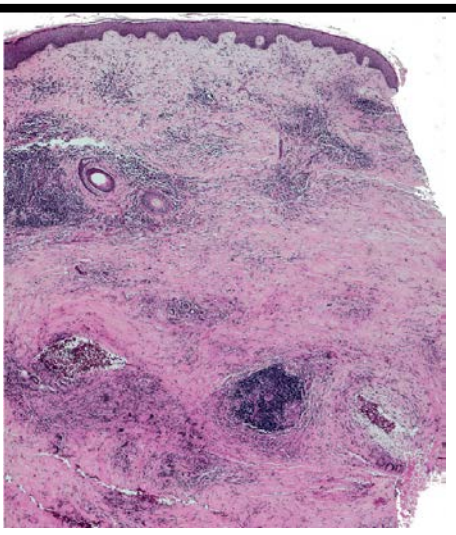
Self-limited dermatosis; Unknown etiology
Rashes are often annular (round)
Micro: Areas of necrobiosis in superficial or mid dermis
Surrounding palisaded histiocytes and lymphocytes
Central mucin collection



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

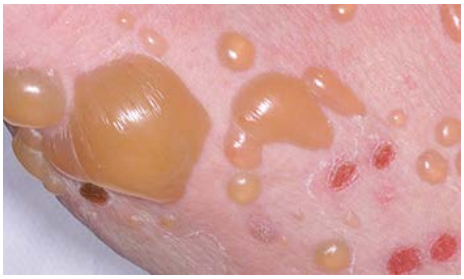
Tuberculosis – Caseating granulomas; +FITE/AFB

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

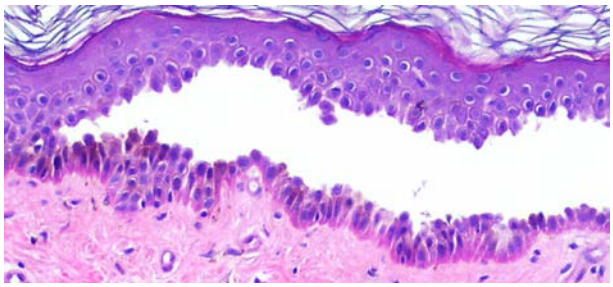


Vesicles or bullae at any level within the epidermis/DEJ

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

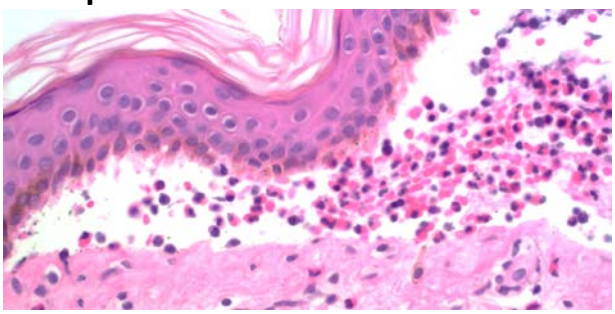
Pemphigus Vulgaris

Autoantibody to desmosomes
Intraepidermal vesicle
Suprabasilar acantholysis ("tombstoning")



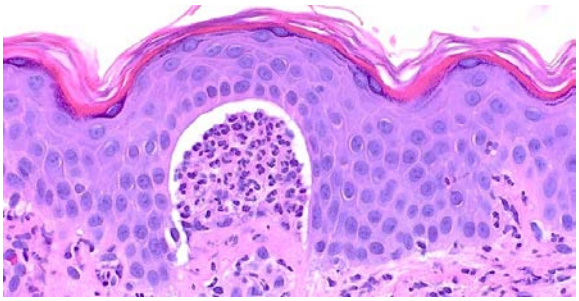
Bullous Pemphigoid

Autoantibody to hemidesmosomes at DEJ
Subepidermal cleft with abundant **Eosinophils**



Dermatitis Herpetiformis

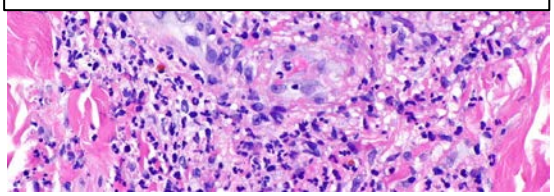
Subepidermal split with numerous **neutrophils** in dermal papillae and microabscesses
Granular **IgA** staining on IF
Highly associated with **Celiac disease**



Vasculopathic Reaction

Pathological changes in blood vessels
Includes **vasculitis** and **vascular occlusive diseases**

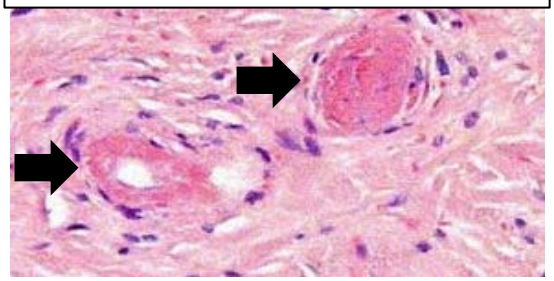
Leukocytoclastic vasculitis



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 noninflammatory small vessel **fibrin thrombi**
Many possible etiologies (e.g., DIC, hypercoagulable state, etc..)

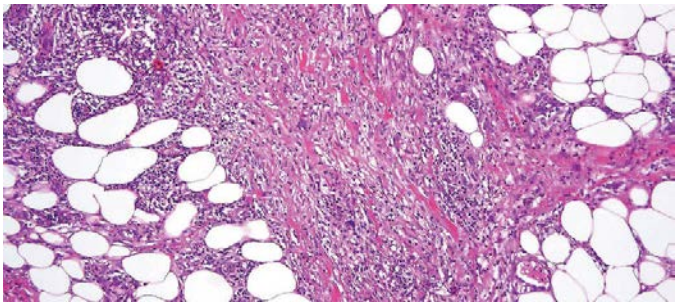
Panniculitis = Inflammation of the Fat

	NO Vasculitis	YES Vasculitis
Septal	**Erythema Nodosum**	**Polyarteritis Nodosa**
Lobular	**Others**: Histiocytic cytophagic panniculitis, α1-antitrypsin deficiency, pancreatic, sclerema neonatorum, subQ fat necrosis of the newborn,	**Erythema Induratum**

Erythema Nodosum

Red, tender nodules, on <u>shins</u>
Associated fever, malaise, arthralgias

Micro: Thickening of fibrous septae
Lymphohistiocytic infiltrate
Some "spill over" into adjacent fat lobules
<u>NO</u> vasculitis
Multi-nucleate giant cells, granulomas

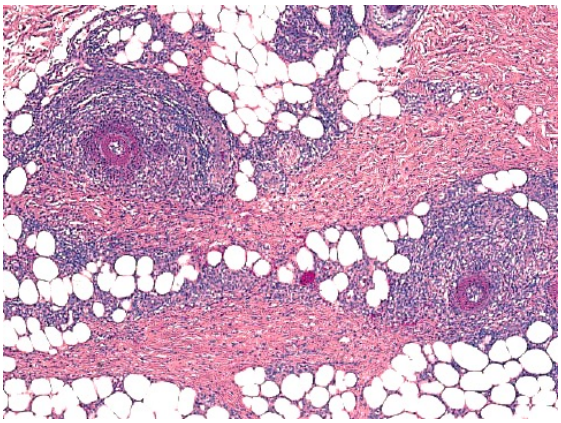


Polyarteritis Nodosa

May be systemic or cutaneous-only
Tender <u>painful nodules on the legs</u> with livedo reticularis

Vasculitis of small and medium sized arteries
Overlap with microscopic polyangiitis

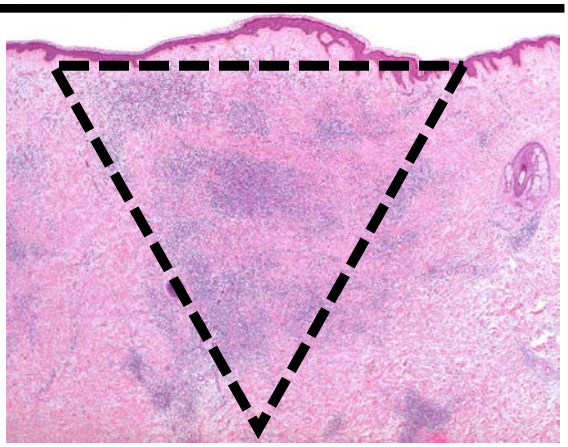
May have fever, malaise, arthralgias, and myalgias, peripheral nerve involvement



Other Common Diagnoses:

Arthropod Bite Reaction

Various degrees of:
<u>wedge-shaped</u> <u>perivascular lymphocytic</u> infiltrate with **eosinophils**
Spongiosis, Ulceration, blister formation
Dermal edema, necrosis
Insect tissue fragments,
Spiders→ more neutrophils

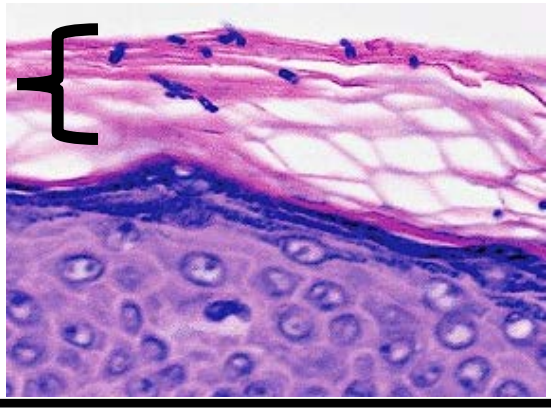


Dermatophyte reaction

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

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

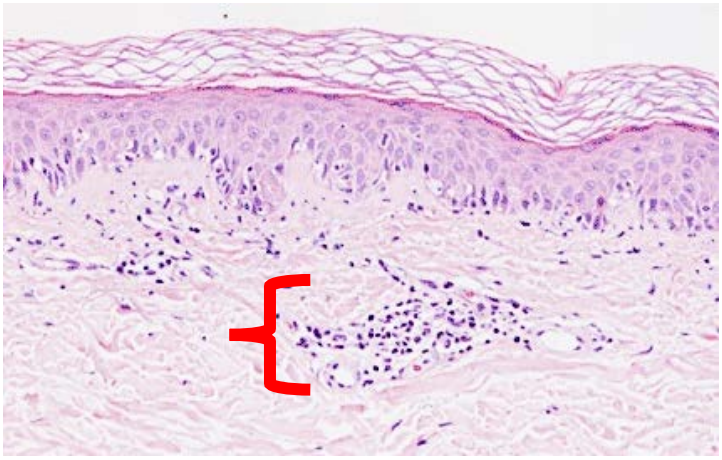
Sandwich sign = Parakeratosis or compact orthokeratosis underlying basket-woven stratum corneum (dermatophytes located in between)



Morbilliform Drug Reaction

Histologic findings are nonspecific and clinical correlation is essential

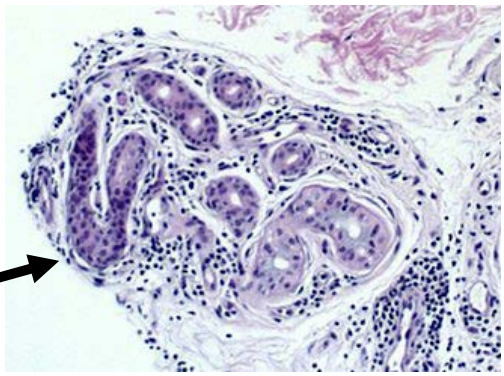
"SPD with Eos"
Superficial perivascular and interstitial dermal infiltrate
Most often polymorphous infiltrate of **lymphocytes**, neutrophils, and **eosinophils**
Subset have vacuolar interface change



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. uninvolved