**Spongiosis and Spongiotic Dermatitis**

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**Spongiosis**

- 'Spongiosis' as a histologic concept (not a diagnosis!)
  - Intra-epidermal edema accompanies many (if not all) inflammatory skin diseases to some degree
- Important to distinguish spongiosis as...
  - The predominant histologic finding
  - A non-specific feature of other inflammatory dermatoses (e.g. lichenoid/interface, vasculopathic, psoriasiform, etc)
  - Sometimes, there is overlap

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**Spongiosis vs. Spongiotic Dermatitis**

- Not everything 'spongiotic' is a spongiotic dermatitis
- So-called 'patterns of spongiosis'
  - Neutrophilic
  - Eosinophilic
  - Follicular
  - Miliarial

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**Dermatitis with 'Spongiosis'**

**Neutrophilic:**
- Pustular pustulosis
- Reiter’s syndrome
- IgA Pemphigus
- Pemphigus herpetiformis
- Infante acropustulosis
- AGEP
- Palmoplantar pustulosis
- SSSS
- Nonsarar infectious Dermatoses
- Candidiasis
- Beetle dermatitis
  (Paederus)
- Pustular contact dermatitis

**Eosinophilic:**
- Pustulosis (precursor)
- Pemphigus vegetans
- Bullosa pemphigoid
- Cricarial pemphigoid
- Pemphigoid (herpes) gestationis
- Idiopathic eosinophilic spongiosis
- Allergic contact dermatitis
- Atopic dermatitis
- Nódulo dermatoide
- Ogil’s Disease
- Incipientia pigmenti
- Drug reactions
- Autoeczematization

**Follicular:**
- Infundibulofolliculitis
- Acne dermatis (follicular lesions)
- Apocrine miliaria
- Eosinophilic folliculitis

**Milliarial:**
- M. Crystallina
- M. Rubra
- M. profunda

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* Some overlap exists between what Dermatopathologists consider 'spongiotic dermatitis' and so-called patterns of spongiosis
Spongiotic Dermatitis

- Select entities commonly encountered in daily practice
  - Nummular eczema
  - Contact dermatitis
  - Seborrheic dermatitis
  - Pityriasis rosea

Spongiotic Dermatitis

- Nummular eczema
  - Clinical:
    - Tiny papules / papulo-vesicles, may coalesce to form coin-shaped patches, single or multiple
    - Dorsum of hands, extensor forearms, lower legs / outer thigh, posterior trunk

Spongiotic Dermatitis

- Nummular eczema
  - Early lesions – spongiosis leading to vesiculation, vesicles often contain inflammatory cells (may mimic Pautrier’s microabscesses!)
  - Later lesions – progressive psoriasiform hyperplasia (less regular than allergic CD!)

Spongiotic Dermatitis

- Contact Dermatitis
  - Clinical: Irritant CD
    - Reactions vary – simple erythema to purpura to eczematos to vesiculobullous reactions
    - Identified at sites of exposure

Spongiotic Dermatitis

- Contact Dermatitis
  - Clinical: Allergic CD
    - Erythematous papules, small vesicles or weeping plaques
    - Lesions arise 12-48 hrs following exposure to allergen, lesions often extend beyond site of exposure
Spongiotic Dermatitis

• Seborrheic dermatitis
  – Acute/subacute - spongiosis with scale crust
  – Later – psoriasiform epidermal hyperplasia
  – Lymphocytes, macrophages, occasional neuts upon a mildly edematous superficial papillary dermis
  – Note: folliculocentric scale crust favors SD over psoriasis

• Contact Dermatitis
  – Spongiosis leads to intraepidermal vesicles
  – ‘Irritant’ often more marked changes, ballooning/necrosis, possible neuts; varies with irritant concentration
  – ‘Allergic’, spongiosis often with eos, persistent lesions often show scale crust with regular psoriasiform hyperplasia

Spongiotic Dermatitis

• Seborrheic dermatitis
  – Clinical:
    • Erythematous, scaling papules and plaques, sometimes with a greasy appearance
    • Found upon ‘seborrheic’ areas – scalp, ears, eyebrows, eyelid margins, nasolabial areas
    • Males, after puberty; common manifestation in AIDS

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- Pityriasis Rosea
  - Clinical:
    - Oval, salmon-pink lesions; initial scaly plaque 'herald patch' often
    - Trunk, neck, proximal extremities; follow lines of cleavage
    - All ages; often 10 – 35 yo
  - Vaguely undulating epidermis, 'mounded' parakeratosis, usually lessened granular layer
  - Focal spongiosis leads to small vesicles, dyskeratotic cells seen at all levels of epidermis (> in 'herald patch')
  - Pigment incontinence, superficial pap-derm edema, rbc extrav, mild-mod lymph inflammation with macrophages
Spongiotic Dermatitis

• Pityriasis rosea
  – Neuts within parakeratotic mounds favors psoriasis
  – Mounded parakeratosis favors PR (over acute/subacute eczema)
  – Always consider drugs - wide range of drugs may show a PR-like eruption

Spongiotic Dermatitis

• Don’t be fooled - spongiosis in and of itself is a non-specific finding – pitfall!
• Spongiosis may be identified as a part of any number of inflammatory skin disorders
• Look for the predominant reaction pattern
• Examples of overlap…

Don’t Be Fooled!

• Infectious –
  – Fungal infections (dermatophytoses) often mimic the histologic features of psoriasis
  – Some infections may show marked spongiosis as well – even forming marked vesiculation
  – A PAS with diastase stain can quickly lead you to the diagnosis and save the patient additional time and morbidity

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Don’t Be Fooled!

• Psoriasiform
  – Psoriasis, early psoriasis may show spongiosis associated with lymphocyte exocytosis
  – Established psoriasis seen on the palms and soles may show spongiosis – making a distinction from allergic contact dermatitis difficult
  – Erythrodermic psoriasis may also show spongiosis
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Vasculopathic
- Erythema annulare centrifugum (EAC), characteristic annular, erythematous lesion may show a fine scale inside the advancing edge
- Histology shows spongiosis, parakeratosis and an underlying superficial perivascular lymphocytic inflammation, often with a ‘coat-sleeve’ appearance

Don’t Be Fooled!

Spongiotic Dermatitis
- Vascular path
  - Pruritic urticarial papules and plaques of pregnancy (PUPPP), aka polymorphic eruption of pregnancy
  - Epidermal changes, to include spongiosis and parakeratosis with exocytosis of inflammatory cells may be seen in up to 1/3 of cases
  - Lymphocytic vasculitis with varying admixture of eosinophils and variable edema of the superficial papillary dermis
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- Interface/lichenoid
  - Erythema multiforme, early lesions may show intra- and intercellular intraepidermal edema (spongiosis)

Clinical History

- 54 yo woman is seen by her Dermatologist complaining of an itching, burning rash
- Physical exam showed a morbilliform rash on the lower extremities and trunk
- Further questioning revealed that the patient had recently changed one of her blood pressure medications

Drug Eruption

- Drug eruptions are one of the more commonly biopsied inflammatory skin lesions
  - Drug eruptions may show a wide range of histologic patterns
  - Spongiosis with eosinophils is a common pattern
- Any number of medications may incite a rash

Sources

Weedon, Skin Pathology. Churchill Livingstone, 2002
McKee, Pathology of the Skin, Elsevier-Mosby, 2005
Additional micrographs from personal collection
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