Dermpath and Musculoskeletal Pathology Section

Assignment page, skin and musculoskeletal pathology.

Robbins: Chapter 25, Skin Pathology
        Chapter 26, Skeletal and Soft Tissue Tumors

Clinical lab Source:

Arthritis Panel,
Rheumatoid factor,
Rhabdomyolysis panel,
Aldolase,
CPK,
LDH,
AST,
Myoglobin, urine and serum,

Wheater: Chapters 21 and 22

Slide assignment:

Refer to the skin and musculoskeletal sections of the lab manual..

Pay special attention to the following skin slides: 31, 52, 87, 93, 116, 151, 154, 157, 190

And the following musculoskeletal slides: 7, 23, 134, 156

Online cases, there are two, one for derm and one for musculoskeletal. These are due by the time of our 4th unit exam.

Case 15 (CD case 15): Mr. Phillips’ lymph nodes.
Case 14 (CD case16): Mrs. Robinson’s morning stiffness

Paper cases:

There are several paper cases for this unit, they are found at the end of the muscle and skeletal unit.
Disorders of Skin

I) Some functions

- Immune system processing - Langerhans cells
- Water regulation
- “holds us together”
- vitamin D

II) Composition

- corneum; granulosa; spinosum; basal layer; membrane; dermis
- connective tissue; vessels; immune; pigmentation cells; hormonally active
Immune processing

Dermal/epidermal interaction:

cytokines for kertanization
endothelial cell regualtion
constant interplay and “tuning”
III) Basic patterns indicating injury; you can see the changes; pigmented or not etc.

### DEFINITIONS OF MACROSCOPIC TERMS

**Excoriation** Traumatic lesion breaking the epidermis and causing a raw linear area (i.e., deep scratch); often self-induced

**Lichenification** Thickened and rough skin characterized by prominent skin markings (as lichen on a tree trunk); usually the result of repeated rubbing

**Macule** Circumscribed lesion, 5 mm or smaller in diameter, characterized by flatness and distinguished by coloration (patch is greater than 5 mm)

**Onycholysis** Separation of nail plate from nail bed

**Papule** Elevated dome-shaped or flat-topped lesion 5 mm or less across (nodule is greater than 5 mm)

**Plaque** Elevated flat-topped lesion, usually greater than 5 mm across (may be caused by coalescent papules)

**Pustule** Discrete, pus-filled, raised lesion

**Scale** Dry, horny, plate-like excrescence; usually the result of imperfect cornification

**Vesicle** Fluid-filled raised lesion 5 mm or less across (Bulla is greater than 5 mm. Blister is the common term for either.)

**Wheat** Itchy, transient, elevated lesion with variable blanching and erythema formed as the result of dermal edema

### DEFINITIONS OF MICROSCOPIC TERMS

**Acantholysis** Loss of intercellular cohesion between keratinocytes

**Acanthosis** Diffuse epidermal hyperplasia

**Dyskeratosis** Abnormal, premature keratinization within cells below the stratum granulosum

**Erosion** Discontinuity of the skin showing incomplete loss of the epidermis

**Exocytosis** Infiltration of the epidermis by inflammatory cells

**Hydropic swelling (ballooning)** Intracellular edema of keratinocytes, often seen in viral infections

**Hypergranulosis** Hyperplasia of the stratum granulosum, often due to intense rubbing

**Hyperkeratosis** Thickening of the stratum corneum, often associated with a qualitative abnormality of the keratin

**Lentiginous** A linear pattern of melanocyte proliferation within the epidermal basal cell layer

**Papillomatosis** Surface elevation caused by hyperplasia and enlargement of contiguous dermal papillae

**Parakeratosis** Keratinization with retained nuclei in the stratum corneum. On mucous membranes, parakeratosis is normal.

**Spongiosis** Intercellular edema of the epidermis

**Ulceration** Discontinuity of the skin showing complete loss of the epidermis revealing dermis or subcutis

**Vacuolization** Formation of vacuoles within or adjacent to cells; often refers to basal cell–basement membrane zone area
IV) Lesions resulting in changes in pigmentation

- vitiligo

- autoimmune

- humeral self destruction
  of melanocytes
- depigmentation

- freckle - localized incr pigmentation

- melasma - estrogens; facial pigmentation of pregnancy

- lentigo - LINEAR proliferation of melanocytes at basal layer; hyper pigmentation
nevus - “mole” - benign proliferation of young melanocytes; present at birth

Table 27-1. VARIANT FORMS OF NEVOCYTOPLASMIC NEVI

<table>
<thead>
<tr>
<th>Nevus Variant</th>
<th>Diagnostic Architectural Features</th>
<th>Diagnostic Cytologic Features</th>
<th>Clinical Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congenital nevus</td>
<td>Deep dermal and sometimes subcutaneous growth around adnexa, neurovascular bundles, and blood vessel walls</td>
<td>Identical to ordinary acquired nevi</td>
<td>Present at birth; large variants have increased melanoma risk</td>
</tr>
<tr>
<td>Blue nevus</td>
<td>Nonnestled dermal infiltration, often with associated fibrosis</td>
<td>Highly dendritic, heavily pigmented nevus cells</td>
<td>Black-blue nodule; often confused with melanoma clinically</td>
</tr>
<tr>
<td>Spindle and epithelioid cell nevus (Spitz nevus)</td>
<td>Fascicular growth</td>
<td>Large, plump cells with pink-blue cytoplasm; fusiform cells</td>
<td>Common in children; red-pink nodule; often confused with hemangioma clinically</td>
</tr>
<tr>
<td>Halo nevus</td>
<td>Lymphocytic infiltration surrounding nevus cells</td>
<td>Identical to ordinary acquired nevi</td>
<td>Host immune response against nevus cells and surrounding normal melanocytes</td>
</tr>
<tr>
<td>Dysplastic nevus</td>
<td>Large, coalescent intraepidermal nests</td>
<td>Cytologic atypia</td>
<td>Potential precursor of malignant melanoma</td>
</tr>
</tbody>
</table>

- junctional

- dermal

- compound

- “Spitz”

- halo

- blue - very dendritic
- Dysplastic nevus - BK moles

- Melanoma - “flag sign”

- NODULAR (VERTICAL) growth; important (compared with radial)

- Clark’s level – I through IV

- Today we measure the depth

  <0.76, good; 0.76-1.5 moderate risk; >1.5mm high risk.

- skin - meninges - retina - conjunctiva - iris - anus - nail beds

- can be widely metastatic - site of origin
V) Epithelial lesions

- basic patterns

- pigmentation, +/-
- acanthosis

- perkeritosis

- hyperkeratosis

- seborrheic keratosis

- Acanthosis nigricans - hyper pigmentation on flexor surfaces; internal malignancy
20% of adults have an occult adenocarcinoma somewhere.

- polyps and papillomas

- cysts (wen from the Old English meaning welt)

Tumors of adenexal origin (basal cells that give rise hair shafts, sweat glands etc.)
Atypical, premalignant and malignant

- actinic keratosis (solar)

- keratoacanthoma; now classed as squamous cell ca

Ref: Robbins, Pathologic Basis of Dis.
- squamous cell carcinoma

- basal cell carcinoma
VI) Dermal tumors

Fibrous lesions
- fibromas
- scars
- xanthomas
- Dermatofibroma

Ref: Robbins, Pathologic Basis of

- DFSP (dermatofibrosarcoma protuberans)

- sarcomas
  Fibroblastic
  - vascular
  - Kaposi’s
  - benign hemangioma
  - leiomyoma vascular wall or arrector pilla

- primary lymphoid proliferations - reactive - malignant (primary and metastatic)
- MF with Sz cells in peripheral blood - T cell lymphoma - helper variety

Ref: Robbins, Pathologic Basis of Dis

- Histiocytosis X

Ref: Robbins, Pathologic Basis of Dis

- specialized or neuroendocrine - Merkel cell carcinoma
- metastatic cancer in dermis or epithelial covering
  
  - melanoma
  
  - lymphoma

- breast

- renal cell

- lung

VII) Inflammatory dermatosis - epithelium and or dermis

- Acute - many types - immunologic response generally

- urticaria - hives - localized mast cell degranulation - incr vascular perm.

- “wheal” reaction (not spelled wheel)

- IgE

- reaction to be sting or drug

- can be generalized
**Eczematous dermatosis - “to boil over”**

<table>
<thead>
<tr>
<th>Type</th>
<th>Cause or Pathogenesis</th>
<th>Histology*</th>
<th>Clinical Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact dermatitis</td>
<td>Topically applied antigen Pathogenesis: delayed hypersensitivity</td>
<td>Spongiotic dermatitis</td>
<td>Marked itching or burning or both; requires antecedent exposure</td>
</tr>
<tr>
<td>Atopic dermatitis</td>
<td>Unknown, may be heritable</td>
<td>Spongiotic dermatitis</td>
<td>Erythematous plaques in flexural areas; family history of eczema, hay fever, or asthma</td>
</tr>
<tr>
<td>Drug-related eczematous dermatitis</td>
<td>Systemically administered antigens or haptens (e.g., penicillin)</td>
<td>Spongiotic dermatitis; eosinophils often present in infiltrate; deeper infiltrate</td>
<td>Eruption occurs with administration of drug; remits when drug is discontinued</td>
</tr>
<tr>
<td>Photocerematous eruption</td>
<td>Ultraviolet light</td>
<td>Spongiotic dermatitis; deeper infiltrate</td>
<td>Occurs on sun-exposed skin; patch testing may help in diagnosis</td>
</tr>
<tr>
<td>Primary irritant dermatitis</td>
<td>Repeated trauma (rubbing)</td>
<td>Spongiotic dermatitis in early stages; epidermal hyperplasia in late stages</td>
<td>Localized to site of trauma</td>
</tr>
</tbody>
</table>

*All types, with time, may develop chronic changes.

Ref: Robbins, Pathologic Basis of Dis

**Contact dermatitis - poison ivy reaction**

Ref: Robbins, Pathologic Basis of Dis

- atopic dermatitis - asthma
- drug related

- photo eruption

- primary irritants

- gross appearance - red - papular and vesicular - oozing - crusting

- micro
  - spongiosis - fluid in between cells of epidermis
  - perivascular lymphocytic and eosinophil infiltrate

- Erythema multiforme
  - response to many things

- infection

- immune

- drugs

- target lesion is classic appearance - red macule or papule with darker center

  Stevens-Johnson syndrome: children, hemolysis, crusting of lips
- immunologic in nature

- lymphocytic infiltrate of dermis with degeneration of basal layer of epi

- Erythema nodosum and enduratum

- inflammation of fat and sub-Q tissues

- infections - drugs Ag/Ab mediated I believe

- Pyoderma gangrenosum - UC

VIII) Chronic inflammatory dermatosis - both epi and dermis involved

- general aspects

- persistent acute in some cases

- epithelium reaction - thickening - scaling - roughening - incr turnover rate
- psoriasis - idiopathic ? Ab/Ag

- arthritis

- AIDS

- elbows

- knees

- scalp

- glans of penis

- “salmon” colored plaque covered with “scales”

- whole body in very bad cases

- micro

- acanthosis - elongation of the rete pegs

- “Munro’s” abscess - microscopic, seen in epidermis
- Ag/Ab and C' at sites

- trauma? Involved at sites of frequent injury

- Lichen planus

- skin and mucous membranes

- pruritic purple polygonal papules

- malignant potential?

- band-like infiltrate in superficial dermis

- “saw-toothed” epi/derm junction

- sites of injury (Koebner phenomenon)

- Ag/Ab again
- SLE; there are two forms; LOCALIZED or DISCOID and the SYSTEMIC form

Ref: Robbins, Pathologic Basis of Dis.

- immunofluorescence at epi/derm junction

- actually, both Ab and cell mediated injury

- hair follicle involvement too

IX) Blistering conditions

- versicles and bullae - primary vs secondary causes

- Pemphigus vulgaris but several other forms

- Ag directly against skin and BM

- micro

- SUPRABASALAR CLEFTS and ACANTHOLYSIS
Ref: Robbins, Pathologic Basis of Dis
- can be life threatening
- Ab against desmosome component
- “pressure points”
- face - scalp - groin

Ref: Robbins, Pathologic Basis of Dis

- Bullous pemphigoid

Ref: Robbins, Pathologic Basis of Dis

- autoimmune: hemidesmosome
- if not infected, the blisters will heal without scarring
- linear deposit of IgG and complement at dermal/epidermal junction.
- Dermatitis herpatiformis - NOT ACTUALLY HERPES

- this just means spreading or growing with serpiginous borders
- celiac disease
- gluten free diet helps
- micro
  - much like Pemphigus but only granular IgA deposits
  - MANY EOSINOPHILS
Noninflammatory blistering conditions

- Epidermolysis bullosa
  - pressure sites

- porphyria

- light damage because of light absorbing compounds in skin resulting from inability to metabolize heme groups

Ref: Robbins, Pathologic Basis of Dis. 6th Ed.
X Truly infectious:

- Acne kind of a special form of bacterial and irritant injury

  - propionum bacteria
  - keratin plugging of hair follicles
  - bugs break down sebaceous oils,
    this stuff becomes very irritating

  - abscesses
  - bacterial
  - protozoal
  - worms
  - viruses again primary vs secondary
    - verrucae (warts)

Ref: Robbins, Pathologic Basis of Dis.

- molluscum
- condyloma

- fungi and parasites

- Tinia, capitis, corpus barbae

- Pediculosis (lice)

Ref: Robbins, Pathologic Basis of Dis