Pathology Skin

PIGMENTATION DISORDERS

Vitiligo
- Autoimmune destruction of the melanocytes causing a lack of pigmentation
- Obvious on African Americans (who’s scan is patchy and white), apparent on Caucasians when they try to tan
- Irregular areas of complete depigmentation

Melasma
- Hyperpigmentation around the eye
- Commonly occurs in pregnancy, called the “mask of pregnancy”
- Lesions regress when pregnancy is completed

Freckles (Ephelis)
- Regions of pigmentation, commonly on the sun-exposed areas
- Macules of focal hyperpigmentation
  - Melanocytes Normal is Number
  - Melanin concentration is greater
- Get darker during the summer, lighter in the winter (dependent on sun exposure)

Albinism
- Deficiency of tyrosinase prevents the formation of melanin within the melanocytes
- Presents with white skin, white hair, and translucent corneas
- ↑risk for skin cancers, highly susceptible to sunburn

Congenital Nevus (birthmark)
- Represent the most benign lesion of melanocytes
- Flat macules of hyperpigmentation that are present at birth and have no risk of tumorigenesis
- The presence of hair lets you know they are normal

Nevocellular Mole
- Benign tumor of the melanocytes that are strongly associated with sunlight
  - Very well circumscribed = Benign
  - Consistent Pigmentation = Benign
- Carry a small risk of turning to cancer if not monitored and allowed sun exposure
- This made Cindy Crawford world famous
Pathology Skin

**Dysplastic Nevus**

- The evil, more malignant version of a mole
  - Poorly demarcated, not well circumscribed
  - Inconsistent pigmentation
- Still small risk of transformation to cancer, but greater than a mole
  - These should be examined and excised by a dermatologist

**Malignant Melanoma (Cancer)**

- This is the most evil, most malignant version of the mole
  - Very poorly demarcated, not well circumscribed
  - Very inconsistent pigmentation
  - Tend to be very large and generally flat
- Elevated risk with sunburns and from the presence of dysplastic nevus
  - Fair-Skinned, Blonde, Blue-eyes are all at ↑ risk
- These are going to spread both along the epidermis (↑ surface area) and into the epidermis (depth and raising above the skin)
- The only treatment is radical resection with complete surgical excision with complete margins and chemo if has already spread
  - May spontaneous regress on its own!

<table>
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<tr>
<th>DISEASES OF PIGMENTATION</th>
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<tr>
<td>Disease</td>
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<tr>
<td>Vitiligo</td>
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EPIDERMAL/DERMAL LESIONS

Acanthosis Nigracans

- **Hyperpigmentation** and thickening of the skin (leather-like appearance)
  - Found in the *axilla* and *groin*
- Indicates an internal malignancy
  - Usually *gastric* and *pulmonary cancer*

Seborrheic Keratosis

- **Benign hyperproliferative** disorders of the *elderly*
- Commonly found on the face, they look as though they can be “plucked off”
- Under the scope you will see a *proliferative epidermis* into the dermis with the formation of *keratin horn cysts*
  - Cyst-like spaces within the epidermis that are filled with keratin
- Is benign, and you remove them only if they get infected
- If the vignette is *very old* and it is a *benign lesion*, pick this

Psoriasis

- This is a largely raised papules and plaques that have a characteristic appearance
  - Occur on the pressure point areas (knees, elbows, scalp)
  - There is an *Erythmatous plaque* with *Silver Scaly Lesions*
  - Attempts to remove these plaques produces pinpoint bleeding
- **Mechanism**
  - ↑Turnover of the epidermis, undergoing epidermal hyperplasia (Acanthosis)
  - Hyperkeratinization (extra keratin on top of the scales)
  - Look for Monroe Microabscesses
- **Treatment**
  - *Topical Steroids* or ultraviolet radiation

Erythema Multiforme

- Presents as a *target lesion* with a *central region of redness, surrounded by nothing,* with an *expanding region of red inflammation*
- Associated with a number of conditions including infection, drugs and cancer

Erythema Nodosum

- Erythematous nodules of *subcutaneous fat* that occur on the *shins and knees*
- Areas of redness associated with various inflammatory disorders, common in women
**Uticaria**

- Hives, generated from mast cell degranulation
- Present as red macules (short) that may raise up to papules, or even to translucent wheals

**Atopic Dermatitis / Contact Dermatitis**

- Type 4 Hypersensitivity reaction that follows exposure of an allergen
- Lesion normally presents hours to days after exposure in the shape of the object
  - Watch band, sandal, shoe, latex glove
- May itch, but is generally not problematic

**Impetigo**

- **Honey-colored** crusting lesion caused by infection
- Common in young children
- Causative agent is a Strep Pyogenes or Staph Aureus

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**EPIDERMAL/DERMAL DISEASES**

<table>
<thead>
<tr>
<th>Disease</th>
<th>Character</th>
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<tbody>
<tr>
<td>Acanthosis Nigracans</td>
<td>This is a <strong>paraneoplastic syndrome</strong> caused by a visceral malignancy (gastric, lung, intestines)</td>
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<tr>
<td></td>
<td>Is a <strong>thickening</strong> and a <strong>darkening</strong> of the skin in the axilla and/or groin</td>
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<tr>
<td>Seborrheic Keratosis</td>
<td><strong>Benign</strong>, hyperprolific disorder of the elderly that is <strong>not</strong> preneoplastic</td>
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<td>Look for <strong>keratin horn cysts</strong> or the appearance of being able to “pluck” it off</td>
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<tr>
<td>Psoriasis</td>
<td><strong>Erythematous red plaques</strong> with <strong>silvery scales</strong> that <strong>bleed when picked</strong> found on extensor surfaces</td>
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<td>Causes a hyperkeratosis and hyperproliferation of the epithelium</td>
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<td></td>
<td>Treat with <strong>topical corticosteroids</strong></td>
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<tr>
<td>Erythema Multiforme</td>
<td><strong>Target Lesion</strong> with central red mark, surrounded by a <strong>ring of clear</strong>, then an ring of red</td>
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<td>Erythema Nodosum</td>
<td><strong>Red lesion on the fronts of shins and knees</strong></td>
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<td>Uticaria</td>
<td><strong>Wheals</strong> caused by <strong>mast cell degranulation</strong> (hives)</td>
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<td>Contact Dermatitis</td>
<td><strong>Type 4 hypersensitivity reaction that develops hours to days after contact in the pattern of the object touching the skin</strong></td>
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BLISTERING DISEASES

**Pemphigus Vulgaris**
- Fatal autoimmune disease with IgG against desmosomes that hold the epidermis together, targeting the link between epithelial cells
  - Intracytoplasmic bridges are destroyed, but the basal layer stays intact
  - Basal layer forms tombstones after the rest of the cells shear off
- Creates easily ripped blisters on the skin and mouth
  - These easily get ripped off, ↑ risk of infection
  - They can heal without scarring
- Look for Antibodies in a net-like distribution across the epidermis

**Bullous Pemphigoid**
- Autoimmune disease with IgG against hemidesmosomes that holds the basal layer to the epidermis
  - Intracytoplasmic bridges are intact, but the basal layer rips
  - Smooth surface is left behind, while the epidermis holds tightly to itself
- Because tightly held, they are turgid and do not tear easily
  - These do not get easily ripped off, there is no ↑ risk for infection
  - Do not occur on the mouth
- Antibodies will be only at the dermal-epidermal junction

**Dermatitis Herpetiformis**
- Is an IgA Autoimmune Disease against Gluten and Gliadin
  - This is the same target and antibody as in Celiac Sprue (GI Block)
- Antibody-Antigen complexes deposit at tips of dermal papillae
  - Type III hypersensitivity reaction
  - Deposition of complexes at tips cause elevation of epidermis, resulting in blister
- Responds to a Gluten-Free Diet

**Pemphigus** is the real thing, and is the worse one to have; it kills you, so it leaves Tombstones.
**Pemphigoid** is pemphigus-like, and isn’t as bad; it doesn’t kill you, so its nice and smooth

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MALIGNANT TUMORS

Squamous Cell Carcinoma

Squamous Cell Carcinoma, wherever it is in the body, will have a carcinoma in situ phase, and can be identified by cytoplasmic bridges and keratin pearls. You will see this again in GI and in Lung.

- Tumor that occurs in older individuals on sun-exposed areas
  - Caused by exposure to UVB radiation
  - Fair skin, Hydrocarbons, Burns, and radiations ↑risk
  - Xeroderma Pigmentosum (absence of the enzymes required to repair thymidine dimers created by UVB radiation) significantly ↑risk

- Has a premalignant condition called Actinic Keratosis
  - Sun-exposed areas generate cutaneous horns
  - These are brown-black rough nodules on the skin
  - Premalignant and essentially means “here comes the cancer”

- Has another premalignant condition called Bowen’s Disease
  - Is just a carcinoma in situ

- Often does not metastasize though can invade locally

- Key Associations
  - Keratin Pearls – whorls of pink material within the tumor
  - Cytoplasmic Bridges – look for these in vignette, they are desmosomes
  - Carcinoma in Situ – tumor is entire width of epithelium without invasion

Basal Cell Carcinoma

The history and incidence is almost the same as SCC. Look for Pearly or Greasy description with a central ulceration to differentiate from SCC.

- It is the single most common tumor in humans
  - Occurs in the elderly and in sun-exposed areas

- Described as a raised papules with translucent, pearly lesion of hair-bearing skin
  - May ulcerate in the center of the lesion (not shown)

- Under the scope we will see a basaloid proliferation
  - Invasive nests in the dermis that are lined with deeply staining cells
  - Because they line up, we call them palisading
  - Because they are dark, they look like basal cells, thus basaloid

- Very rarely metastasizes but is horribly locally invasive

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