Episode 45 Hypopigmented Lesions

Differential for hypopigmented lesions: (PAINTS)
● P- post inflammatory hypopigmentation, pityriasis alba, piebaldism, progressive macular hypomelanosis, pinta, pigmented mosaicism
● A- ash leaf macules
● I- idiopathic guttate hypomelanosis (IGH)
● N- naevus depigmentosus, nevus anemicus
● T- tinea versicolor
● S- scleroderma (classic salt & pepper appearance), sarcoidosis, steroids

1)Hypopigmented lesions
- Umbrella term that refers to any form of decreased or absent skin pigmentation caused by the changes in melanin, hemoglobin, or any other causes
- Accentuate to a lesser extent with Wood's lamp compared to vitiligo

2)Hypomelanosis
- Reduction of epidermal melanin

3)Depigmented lesions
- Complete loss of pigment (as seen with vitiligo)
- Wood's lamp = appear stark white

Post Inflammatory Hypopigmentation
Can develop from:
1) Inflammation from other rashes (e.g. atopic dermatitis, seborrheic dermatitis)
2) Trauma to the skin
3) Skin treatments (e.g. hydroquinone)
Key to identifying underlying etiology = controlling inflammation (first stage in management)

Pityriasis Alba
- Prepubertal children (ages 3-16)
- Hypopigmented macules or patches that may have subtle scale with defined but irregular area
- Malar area and forehead
- Patient usually has a history of hay fever, asthma, eczema, and/or xerosis
- Worsens during the summer due to the sun tanning the adjacent unaffected skin
- Diagnosed clinically, self-limiting process
- Management: moisturizing skincare routines, low potency corticosteroids, or calcineurin inhibitors (e.g. pimecrolimus or tacrolimus), sun protective measures

Piebaldism
- Autosomal dominant disorder
- Mutation in c-KIT oncogene -> abnormal melanocyte migration from the neural crest cells
  - Other disorders with c-KIT mutations:
    - Mastocytosis
    - Acral or mucosal melanomas
- c-KIT mutation in piebaldism -> drives leukoderma, affecting the central forehead, central frontal scalp, mid portion of the extremities, and central anterior trunk
- Poliosis = white lock of hair on mid frontal scalp
- Benign, depigmentation permanent, typically non-progressive
- Tx: aimed to improve cosmesis with skin grafting, cell transplantation, hair dye for poliosis

*If suspected, perform workup to rule out Waardenburg syndrome = rare disorder characterized by facial dysmorphism, diminished pigmentation of the skin, hair, or iris, and sensorineural hearing loss.

Progressive Macular Hypomelanosis
- Young females
- Symmetric hypopigmented poorly demarcated smooth macules or patches on the lower back or abdomen
- Unclear etiology (*C. acnes* could be contributor)
- Wood's lamp = punctiform red to orange fluorescence localized to the follicle
- Tx: phototherapy, combined topical benzoyl peroxide and clindamycin, oral isotretinoin
- Repigmentation seen in >80% of patients with UVB
- Self-limiting, benign
- 72% of patients develop reoccurrence

Pinta
- Caused by bacterium *Treponema carateum* (Rural Central & South America)
- Children and young adults
- Three stages:
  - Primary infection = begins as one or several small papules (painless but pruritic) on exposed surfaces of extremities
    - Enlarge over the course of 3-9 months to form secondary lesions
  - Secondary lesions = scaly reddish papules and sometimes psoriasiform plaques
  - Third stage = lesions become hypopigmented

Pigmentary Mosaicism
- Whirled or swirling patterns of hypopigmented patches that follow the lines of Blaschko.
- Two or more genetically different populations of cells existing side by side within the skin, which mutate early in the life of an embryo

Ash leaf Macules

- Most common manifestation of tuberous sclerosis
- Develop infancy to childhood
- Well demarcated hypopigmented lesions that range in size from few mm to several cm
- Asymmetric distribution, especially over trunk and buttocks
- Rarely on face
- Poliosis if it affects the scalp
- Biopsy = normal number of melanocytes, but less melanin
- Woods lamp = can help reveal spots that are difficult to visualize on fair patients
  - Tuberous sclerosis:
    - Autosomal dominant
    - Mutations in hamartin or tuberin proteins -> wide variety or hamartomas (benign growths made up of an abnormal mixture of cells and tissues)
    - 5 cutaneous findings to know for:
      1)Ash leaf macules
      2)Adenoma sebaceum
      3)Shagreen patches
      4)Koenen tumors
      5)Café au lait macules

Idiopathic Guttate Hypomelanosis

- "White freckles"
- Adults with excessive sun exposure
- Sharply demarcated hypopigmented to depigmented macules seen over the sun exposed extremities
- Tx: cryotherapy, topical intralesional steroids, retinoids, variety of lasers

Naevus Depigmentosus

- Functional deficiency in melanin transfer from melanocytes to keratinocytes
- Not actually depigmented, but a hypopigmented patch
- Birth or first few months of life
- Common congenital nonprogressive hypopigmented lesion that is stable in shape and distribution, but grows in proportion with overall body growth
- Presents as: solitary, unilaterally hypopigmented patch irregular serrated borders, which commonly do not cross midline

Nevus Anemicus

- Congenital nonprogressive skin anomaly
- Solitary, well-defined hypopigmented patch on the trunk that is first noticed in early childhood or sometimes at birth
- Unrelated to true pigment changes
- Localized vascular variance where the vessels are hypersensitive catecholamines -> vasoconstriction and pallor of the affected skin, which mimics hypopigmentation
- Does not create reactive erythema in response to heat, cold, or trauma (will have persistent pallor)
- Woods lamp = won't highlight nevus anemicus (vs. vitiligo which will appear stark white)
- Tx: not necessary unless signs of Phakomatosis pigmentovascularis -> refer for vascular work up

Tinea Versicolor

- AKA Pityriasis Versicolor
- Malassezia yeast digest oils on the skin into azelaic acid, which inhibits melanocyte melanin production -> hypopigmentation
- Appears as hypopigmentation when sun exposure tans the surrounding skin
- Without sun exposure = tan to red macules and patches and plaques with scale
- In skin of color can manifest as hypo or hyperpigmentation
- KOH = "spaghetti and meatballs" correlates with hyphae and spores
- Tx: selenium sulfide, zinc pyrithione washes, topical antifungals terbinafine, ciclopirox, ketoconazole, and oral antifungals like fluconazole (in diffuse or resistant cases)

Scleroderma

- AKA System Sclerosis
- Umbrella term which includes:
  1) Limited systemic sclerosis (which includes **C**REST syndrome)
     - Anti-**c**entromere antibodies
  2) Diffuse systemic sclerosis
     - Anti-topoisomerase I antibodies
- Multisystem immune condition often associated with prominent pigmentary changes
- All ages, typical onset 30-50 yrs
- More common in African Americans + women
- Two types of pigmentary changes:
  1) Vitiligo-like depigmentation (aka scleroderma leukoderma)
     - Spares follicles -> classic **"salt and pepper" appearance** of skin
  2) Diffuse hyperpigmentation accentuated in sun exposed areas
- Other cutaneous changes to know:
  - Sclerodactyly (skin tightening on the fingers)
  - Matted telangiectasia of the face and palms
  - Calcinosis cutis
  - Xerotic itchy skin
- Extracutaneous manifestations: Interstitial lunge disease, pulmonary HTN, lower esophageal dysmotility, gastroparesis,

scleroderma renal crisis (rapid rise in creatinine + marked HTN)
- Tx: rheumatology referral, glucocorticoids, methotrexate, mycophenolate mofetil and ACE inhibitors (to prevent renal crisis)

Sarcoidosis
- Genetically predisposed patients + possible antigen (mycobacterium, HSV, EBV, mold, mildew, industrial organic dust, or meds such as highly activated antiretroviral therapy) -> sets off the formation of non-caseating granulomas
- Granulomas most commonly show up in the lungs and hilar lymph nodes (impact eyes, heart, and CNS)
- Presentation = 3 P's
  - Papules, plaques, lupus pernio (lesions on areas affected by the cold; e.g. nose, ears)
- Hypopigmented sarcoidosis = normally seen in darker skin types
  - Papules with surrounding hypopigmentation macules or well demarcated round to oval patches or plaques
  - Mechanism unclear (believed to be attributed inhibition of melanogenesis due to cell injury associated with inflammation)
- All sarcoidosis patients need to be seen by an ophthalmologist and pulmonologist
- Labs include: CBC, CMP, UA, ACE levels, QuantiFERON Gold + Baseline EKG
- Tx: Topical, intralesional, or systemic steroids, steroid sparing agents such as: tetracyclines, antibiotics, antimalarials, methotrexate, and the TNF alpha inhibitors adalimumab and infliximab are also used.

Steroids
- Reduce number or activity of the melanocytes -> hypopigmentation
- Weeks to months after injection
- Can present in linear fashion due to migration of steroids locally in the lymphovascular channels
- Typical spontaneous resolution occurs within 6-9 months