Invisible Dermatoses

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Pitted Keratolysis
Clinical

- Discrete pits or craterlike lesions on the plantar surfaces
- Range from 1 to 7 mm in diameter and are similar in depth
- Some pits have a brownish color that may give the feet a dirty appearance
- Most cases are asymptomatic
- Hyperhidrosis is often noted on the feet
- Typically malodorous
Histopathology

- *Corynebacterium* genus Gram-positive, pleomorphic, aerobic rods
- Bacteria can hydrolyze keratin
- Hyperhydration greatly enhances growth of corynebacteria on the feet
  - Pitted keratolysis developed in 53% of 387 military volunteers whose feet remained wet for 3 or more days
Laboratory

- Wood’s Lamp shows characteristic coral red fluorescence
- Fluorescent examination of the patient's intertriginous areas may be helpful
  - Other corynebacteria-induced infections such as erythrasma and trichomycosis axillaris commonly coexist
Tinea Versicolor
Tinea Versicolor

- Small and scaly white-to-pink-to-tan-to-dark spots
- Upper arms, chest and back, and may sometimes appear on the neck and face
- Prevents the skin from tanning normally
Histopathology

- May have minimal changes in stratum corneum
- Rarely sandwich sign
- PAS/GMS to confirm
Ichthyosis
Histopathology

- Normal orthokeratosis
- May vary with compact hyperkeratosis
- Rarely melanin pigment incontinence
- Minimal inflammatory infiltrate
DDX

- Rule out congenital ichthyosiform erythroderma
Calcaneal Petechiae
Self-limited, asymptomatic, trauma-induced darkening of the posterior or posterolateral aspect of the heel that occurs primarily in young adult athletes. The lesion is clinically insignificant. Similar lesion termed black palm (tache noir) has been described on the thenar eminence in weightlifters, gymnasts, golfers, tennis players, and mountain climbers.
Intracorneal collection of rbcs in various stages of degeneration
- May only have hemosiderin pigment
- Usually linear arrangement
- Rule out concomitant melanocytic neoplasm, tinea

Histopathology
Macular Amyloidosis
Clinical

- Pruritic eruption that is variable in severity often hyperpigmented
  - Small dusky-brown or grayish pigmented macules distributed symmetrically over the upper back and, in some patients, the arms
  - About 50% have reticulated or rippled pattern of pigmentation
- Nylon Towel Dermatitis
Histopathology

- Amyloid stains
  - Congo-red stain
  - Periodic acid-Schiff (PAS)
  - Methyl violet
  - Crystal violet
  - Cotton dyes (pagoda red, Sirius red)
  - Fluorescent dyes (thioflavin-T and Phorwhite BBU)

- Amyloid deposits are usually found within the dermal papillae
  - Globular, resembling colloid bodies, and may be in contact with basal cells at the DEJ
Urticaria
Clinical

- Lasts a few hours before fading without a trace
  - New areas may develop as old areas fade
  - Vary in size from as small as a pencil eraser to as large as a dinner plate and may join together to form larger swellings
  - Usually are itchy, but may also burn or sting

- 10-20 percent of the population will have at least one episode in their lifetime
  - Usually disappear quickly in a few days to a few weeks. Occasionally, a person will continue to have hives for many years
Histopathology

- Paucicellular
- Papillary dermal edema with scattered neutrophils and eosinophils
- Chronic or persistent lesions may have increased infiltrate
- Always rule out vasculitis
Brachioradial Pruritis
Itch, burning and/or changed sensation arise in the areas of skin on either or both arms.

- Most commonly affected area is the mid-arm.
- Affected skin may appear entirely normal.
- Changes may arise from rubbing and scratching purpura and ecchymoses.
22 patients with BRP-11 had cervical spine radiographs

- The radiographs showed cervical spine disease that could be correlated with the location of pruritus in each of these 11 patients

CONCLUSIONS

- Patients with BRP may have underlying cervical spine pathology

Histopathology

- Non-specific epidermal changes, depending upon patient scratching
- Scant superficial perivascular and interstitial infiltrate of mixed mast cells and rare eosinophils
- Giemsa or Leder stain to confirm
- Rule out urticarial bullous pemphigoid or pemphigus vulgaris
Argyria
Gray to gray-black staining of skin and mucous membranes produced by silver deposition

Early gray-brown staining of the gums develops, later progressing to involve the skin diffusely

Slate-gray, metallic, or blue-gray color and may be clinically apparent after a few months to years

Viscera tend to show a blue discoloration, including the spleen, liver, and gut
Pathogenesis

- Long-term systemic treatment with silver salts containing drugs
  - Silver protein suspension for chronic gastritis or gastric ulcer, or as nose drops
  - Colloidal silver dietary supplements are marketed widely for cancer, AIDS, diabetes mellitus, and herpetic infections
  - Occupational disease in workers who prepare artificial pearls or who are employed in the cutting and polishing of silver
  - Smallest amount of silver reported to produce generalized argyria in humans ranges from 4-5 g to 20-40 g.
     - Silver at 50-500 mg/kg body weight is the lethal toxic dose in humans
     - Normal human body contains about 1 mg silver
Histopathology

- Small, round, brown-black granules appear singly or in clusters
  - Spare both the epidermis and its appendages, appearing in greatest numbers in the basement membrane zone surrounding sweat glands.
  - Favor the connective tissue sheaths around pilosebaceous structures and nerves
  - Predilection for elastic fibers and are best visualized as strikingly refractile with dark-field illumination
  - An increase in the amount of melanin in exposed skin also appears to occur
- May decolorize the silver by placing histologic sections into 1% potassium ferricyanide in 20% sodium thiosulfate
Morphea
Usually asymptomatic and onset of lesions is insidious

Arthralgias occasionally localized to an affected extremity

Deep morphea may be associated with arthralgias, arthritis, myalgias, and carpal tunnel

En coup de sabre lesions of linear morphea
  - Can present with seizures, headache, and visual changes
Histopathology

- Some cases need comparative biopsies of adjacent normal skin
  - Atrophoderma of Pasini and Peirini
- Inflammatory phase with plasma cells
- Decreased thickness of dermis
- Dermal sclerosis
The Ultimate Invisible Dermatosis!
CADASIL
(Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy)
Clinical

- Young adults, most symptoms by 60 yrs
- Migraines with or without an aura, mood disturbances, focal neurologic deficits, strokes, and dementia
- Recurrent subcortical ischemic events causing permanent deficits in as many as 2/3 of patients
Lesions usually symmetrically situated within the white matter and deep gray nuclei-periventricular white matter is preferentially involved.

Usually in the frontal lobe, temporal lobe, subinsular white matter, and internal and external capsules with relative sparing of the inferior frontal and occipital white matter in the early stages.

Brainstem affected in 45% of cases.
Mutations in the Notch 3 gene cause degeneration of vascular smooth muscle cells and multiple small infarcts in the white and deep gray matter of the brain.

Numerous areas, granular, electron-dense, osmiophilic material abutted vascular smooth muscle cells.
Granular osmiophilic material abutting basement membrane of pericytes

Am J Dermatopathol. 2005 Apr;27(2):131-4. Cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL): a hereditary cerebrovascular disease, which can be diagnosed by skin biopsy electron microscopy.

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The advantage of a bad memory is that one enjoys several times the same good things for the first time.

-- Friedrich Nietzsche