Signs in Dermatology; Photodermatology

Immunobullous disorders

- The Nikolsky sign – a firm sliding pressure with the finger separates normal-looking epidermis from dermis, producing an erosion; also seen in TEN

- Bulla-spread phenomenon - gentle pressure on an intact bulla forces the fluid to spread under the skin away from the site of pressure (also k/a Asboe–Hansen sign, or the "indirect Nikolsky" or "Nikolsky II" sign)

Casal's necklace (Pellagra dermatitis)

- Development of sharply demarcated area of erythema on dorsa of hands, wrists, forearms, the face & V of the neck (photoexposed parts of the skin)
- F/B well-demarcated area of pigmentation
- The sharply demarcated lesions on the neck & upper central part of the chest - known as Casal's necklace

NF1

- Button hole sign: Molluscum fibrosum - Small, superficial, soft, skin-colored to darker, dome-shaped nodules, which can be pushed through a defect in the skin

- The Crowe sign- Pathognomonic presence of axillary freckling in NF1
- Present in about 30% cases

Carpet tack sign (DLE)

- Characteristic lesion is a well-demarcated, discoid/annular, erythematous plaque with adherent scales
- When the scale is removed, its undersurface shows keratotic spikes which have occupied the dilated pilosebaceous canals

Dermatomyositis

- Dermatomyositis – Characterized by autoimmune inflammatory injury to striated muscle & skin
- Heliotrope (a lilac-colored flower) erythema: Faint lilac erythema, periorbitally, usually associated with edema
- Gottron's papules: Violaceous, atrophic papules over the knuckles & pressure points
- Gottron's sign: Symmetrical, lilac erythema & edema over interphalangeal or metacarpophalangeal joints, elbows & knees
- Shawl sign: Symmetrical confluent violaceous erythema extending from dorsolateral aspect of hands, forearms & arms to deltoid region, shoulders & neck
- Mechanic's hand: Confluent symmetric hyperkeratosis along ulnar aspect of thumb & radial aspect of fingers

Psoriasis

- Grattage test - Scales in a psoriatic plaque can be accentuated by grating with a glass slide
- Auspitz sign- 3 steps
- Step A: Gently scrape lesion with a glass slide - This accentuates the silvery scales (*Grattage test positive*). Scrape off all the scales
- Step B: Continue to scrape the lesion – A glistening white adherent membrane (*Burkley's membrane*) appears
- Step C: On removing the membrane, punctate bleeding points become visible - *positive* Auspitz sign

Leprosy (Hansen's disease)

- Cardinal signs

A case of leprosy is a person having one or more of the following three cardinal signs & who has yet to complete a full course of treatment:

- Hypopigmented or reddish skin lesion(s) with definite loss/impairment of sensations
- Involvement of the peripheral nerves, as demonstrated by definite thickening with loss of sensation in the area of distribution
- Positive skin smear for acid - fast bacilli

‘Groove sign’ of Greenblatt

- Inguinal syndrome (secondary stage) of lymphogranuloma venereum
- Enlargement of the femoral & inguinal lymph nodes separated by the inguinal ligament

Homan’s sign (DVT)

- When symptomatic, onset of DVT is usually acute with swelling, pain & cyanosis
- Pain worsens on dorsiflexion of foot

Photodermatology

- Electromagnetic radiation: any kind of radiation consisting of alternating electric and magnetic fields and which can be propagated even in the vacuum
- Solar spectrum consists of electromagnetic (EM) radiations extending from

➢Very short wavelength cosmic rays
➢X-rays & γ-rays
➢Ultraviolet
➢Visible
➢Infrared radiation
➢Long (wavelength) radio and television waves

UV, Visible & Infrared light

- Light having wavelength b/w 200 - 400 nm – ultraviolet radiation (UVR); classified as:
- UVC (200–290 nm): does not reach Earth's surface as it is filtered by the ozone layer of the atmosphere
- UVB (290–320 nm): 0.5% of solar radiation reaching Earth's surface; reaches only up to the epidermis; causes sunburn; does not pass ordinary glass
- UVA (320–400 nm): 95% of solar radiation reaching Earth's surface; penetrates both epidermis and dermis; causes photoaging & tanning of the skin; passes through ordinary window glass

- Visible light: Extends between 400 and 700 nm; is part of EM spectrum perceived by eyes
- Infrared radiation: Extends beyond 700 nm; is responsible for heating effect

Sunburn

- Etiology: Action spectrum: UVB which induces release of cytokines in skin, resulting in pain, redness, erythema edema and even blistering
- Skin type: Most frequent and intense in individuals who are skin type I & II
- Clinical features
- Seen in light skinned
- Areas overexposed to UVR become painful and deeply erythematous after several hours
- Redness peaks at 24 h and subsides over next 48–72 h, followed by sheet-like peeling of skin and then hyperpigmentation

Treatment

- Prevention
- Avoiding overexposure to sun (e.g., sunbathing), especially by light-skinned individuals
- Using protective clothing and sun shades
- UVB protective sunscreens
- Symptomatic treatment
- Calamine lotion provides comfort
- Topical steroids help, if used early
- Nonsteroidal anti-inflammatory drugs like aspirin relieve pain & also the inflammation

Tanning

- Etiology: Following exposure to UVR, pigmentation occurs in two phases:
- Immediate pigmentation: Occurs within 5 min of exposure to UVA and is due to:
  - Photo-oxidation of already formed melanin
  - Rearrangement of melanosomes
- Delayed pigmentation: Begins about 24 h after exposure to both UVB as well as UVA; due to:
  - Proliferation of melanocytes
  - Increased activity of enzymes in melanocytes resulting in increased production of melanosomes
  - Increased transfer of newly formed melanosomes to adjoining keratinocytes

- Clinical features
- Pigmentation following exposure to light occurs in two phases:
- Immediate pigmentation lasts for about 15 min
- Delayed pigmentation lasts for several days
- Degree of pigmentation depends on the constitutional skin color
- Lighter skins burn on UV exposure while darker skins tan

Photoaging

- Etiology
- Photoaging involves changes in epidermis and dermis
- Action spectrum: Epidermis is affected primarily by UVB and dermis by both UVA and UVB
- Manifestations
- Photoaged skin appears dry, deeply wrinkled, leathery and irregularly pigmented
- Comedones are present, especially around the eyes
- Histologically: marked elastotic degeneration

Polymorphic Light Eruption (PMLE)

- Etiology
- Action spectrum: UVA (more frequently incriminated) or UVB (less frequently)
- Probably a delayed hypersensitivity to a neoantigen produced by the action of UVR on an endogenous antigen
- Epidemiology
- Prevalence: Fairly common dermatosis
- Gender: Female preponderance
- Age: Usually in third to fourth decade

Clinical features

- Described as polymorphic eruption, but in a given patient lesions are usually monomorphic
- Small, itchy, papules, papulovesicles or eczematous plaques on an erythematous background
- Develop 2 h to 2 days after exposure to UVR
- Sites of predilection
- Most frequently seen on the sun-exposed areas:
- Dorsae of hands, nape of neck, 'V' of chest and dorsolateral aspect of forearms
- Face and covered parts are occasionally involved
- Course
- Recurrent problem, begins in spring and persists through summer

Treatment

- Photoprotection:
- Avoid exposure to sunlight
- Use of appropriate clothing
- Sunscreens: Important to use UVA sunscreens (i.e., inorganic sunscreens. Or those containing benzophenones, avobenzone, tinosorb, etc.)
- Symptomatic treatment:
- Topical/systemic steroids, depending on severity
- Antihistamines
- Hardening of skin: With gradually increasing doses of UVB or PUVA
- Unremitting PMLE: Azathioprine, thalidomide and cyclosporine are useful

- Phototoxic
- Reaction- Non-immunological
- In all individuals exposed to chemical and light in adequate dose
- Photoallergic
- Reaction- Immunological response
- To a photoproduct created from chemical by light
- Occurs in sensitized individuals

- Clinical features
- Phototoxic reactions
- Dose of drug/chemical needed: Large
- Latent period: Reaction immediate (within minutes to hours) after exposure to light and can occur after first exposure
- Morphology: Initially, there is erythema, edema, and vesiculation
- F/B desquamation and peeling
- Finally the lesions heal with hyperpigmentation (similar to sunburn).

- Photoallergic reactions
- Dose of drug/chemical needed: Small
- Latent period: Reaction occurs on second or third day
- Does not occur on first exposure but after second or later exposures
- Symptoms: Itching often severe. Aggravated after sun exposure
- Morphology: Photoallergic reactions are similar to phototoxic reactions but are more eczematous

- Investigations
- Phototoxic reactions
- *No investigations required*
- Photoallergic reactions
- *Photopatch tests*

Treatment

- Phototoxic reactions
- Photoprotection
- Withdrawal of drug: Only necessary, if excessive exposure to UVR cannot be avoided
- Symptomatic treatment:
- Topical steroids
- Nonsteroidal anti-inflammatory drugs
- Photoallergic reactions
- Photoprotection: Very important
- Withdrawal of drug & substitution with a chemically unrelated drug is essential
- Symptomatic treatment:
- Mild disease: Topical steroids and antihistamines
- Severe disease: Systemic steroids, azathioprine & methotrexate in severe dermatosis

- Solar radiation can be both a ‘boon’ or ‘bane’ to the skin

Thank you