Medicine

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2022-06-30

Contents

Chapter 1

Cardiology

1.1 Presenting problems in CVS disease

Features of benign murmur

- Soft
- Midsystolic
- Heard at left sternal edge
- No radiation
- No other cardiac abnormalities

Chapter 2

Dermatology

2.1 Anatomy and physiology

- Layers of skin:
  - Epidermis: further layered into (from out→in)
    - corneum
    - lucidum
    - granulosum
    - spinosum
    - basale
  - Dermis: contains
    - blood vessels
    - nerves
    - pilosebaceous units (hair follicle + sebaceous gland)
  - Subcutis: adipose

Epidermal appendages

- Hair follicles:
  - phases of growth
    - anagen:
      - active growth
      - lasts years in scalp hairs
    - catagen:
      - transitional
      - lasts days (in scalp)
    - telogen:
      - resting
      - lasts months (in scalp)
- Sebaceous glands
  - usually *associated with a hair follicle*

  - androgens → ↑ sebum
  - oestrogen → ↓ sebum
- Sweat glands
  - innerved by *sympathetic cholinergic* fibres

2.2 Principles of management of skin disease

Topical treatments

- Ointments vs Creams
  - Ointments preferred to creams for dry skin (e.g. chronic eczema) as
    - more hydrating
      - 80% oil + 20% water in ointments (vs 50-50 for creams) → prevent water loss from skin by oil layer
    - less preservatives → less risk of allergy
- Emollients
  - Moisturise, lubricate, protect skin
  - *Vehicles without active drug*
- Gluocorticoids

Phototherapy

- **UVB**
- **Psoralen UVA**
  - Psoralen:
    - natural photosensitiser from plant source
    - cross-link DNA strands on excitation with UVA
  - Cumulative exposure to PUVA → ↑ risk of SCC, so reserved for UVB resistance
- Uses
  - Psoriasis
  - Atopic eczema
  - Vitiligo
  - Chronic urticaria

Systemics

- Antihistamines
- **Retinoids**
  - *Anti-inflammatory*
  - Promote *differentiation of skin cells*

    - **Teratogenic**
        * must be prescribed with robust contraception
        * females must have negative pregnancy test before, during, and after therapy

- **Immunosuppressants**
    - Glucocorticoids e.g. prednisolone
    - Methotrexate
    - Azathioprine

Biologics

- Biological *inhibitors* of *proinflammatory cytokines*
- **TNF-α inhibitors**
    - Infliximab
    - Etanercept
- **Interleukin inhibitors**
    - Ustekinumab: IL-12, 23
    - Guselkumab: IL-23
    - Secukinumab: IL-17
- *Rituximab*:
    - Binds to CD20 $\rightarrow$ cause ADCC of B cells
    - As terminally differentiated plasma cells don't have CD20 they're safe
    - Use: pemphigus vulgaris

Non-surgical therapy

- **Cryo**
    - *Liquid* N_2
    - Causes cell membrane destruction $\rightarrow$ death
- Laser
- PDT / photodynamic therapy

2.3 Skin cancers

Classification

- Non-melanoma skin cancer (NMSC): most common
    - SCC
    - BCC
- Melanoma
    - Less common
    - More metastatic risk $\rightarrow$ cause of most skin cancer deaths

2.4 Fungal infections

Types

- Superficial
  - Dermatophytes: aka **ringworm / tineasis**
    - *Trichophyton*
    - *Epidermophyton*
    - *Microsporum*
  - Yeast
- Deep: less common
  - Chromomycosis
  - Sporotrichosis

2.5 Scabies

Agent

Caused by the mite *Sarcoptis scabies hominis*

Diagnosis

- Identify the skin burrow
- Visualize the mite by dermatoscope / extracting with a needle

Treatment

- Affected + all asymptomatic family members / physical contacts
- Topical permethrin / malathion
  - 2 applications
  - 1 wk apart
  - Whole body, except head
- Oral Ivermectin:
  - Single dose
  - For poor adherence, immunosuppresion or heavy infestation

2.6 Acne

- *Chronic inflammation* of *pilosebaceous* units

Pathogenesis

Key components are:

- ↑ Sebum production
- Colonisation of pilosebaceous ducts by *Propionibacterium acnes*
- Occlusion of pilosebaceous ducts

Features

- Hallmark: **comedone**
- Greasiness of skin

Management

- **Mild disease**
  - Topical Benzoyl peroxide
  - Topical Retinoids
  - Topical antibiotics
    - Erythromycin
    - Clindamycin
- **Moderate disease**: topical *plus*
  - Systemic tetracycline
  - Oestrogen containing OCP
  - Isotretinoin: if inadequate response to topical+systemic therapy for 6 months
- **Severe disease**
  - Isotretinoin 0.5-1 mg/kg for 4 months:
    - Reduce sebum secretion and follicle colonisation
    - Teratogen
    - Pregnancy must be avoided during treatment *and* within 2 mo of drug cessation
  - Systemic glucocorticoid (with isotretinoin)
  - If unable to use isotretinoin
    - UVB phototherapy
    - PDT

2.7 Eczemas

- Seborrhoeic dermatitis is associated with *Malassezia* yeasts

Features

Most types have the following clinical features:

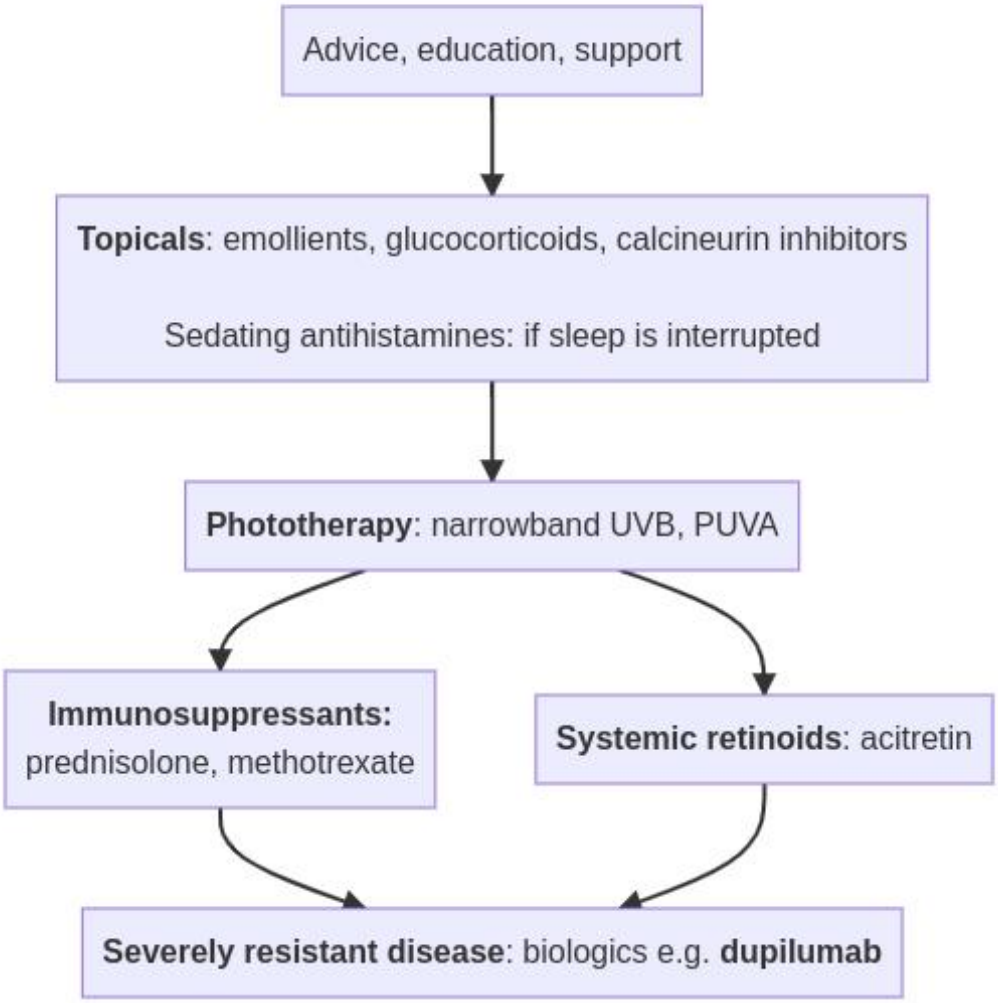
Acute

- Ill-defined erythema, oedema
- Papules, vesicles, bullae
- Exudation
- Scaling

Chronic

- Above features
- Lichenification
  - Skin thickening with pronounced skin markings, 2° to chronic scratching
  - Fissures
  - Dyspigmentation

Management of eczema



2.8 Psoriasis

- Chronic inflammatory hyperproliferative skin disease
- **Characteristics**
  - **Well-defined erythematous scaly plaques**
  - Affecting **extensor surfaces, scalp, nails**

Histological features

- Keratinocyte hyperproliferation + abnormal differentiation → nucleated stratum corneum cells (transit time from basale to corneum reduced to 5 from 28 → keratinocytes reach the surface while immature)
- Inflammation with Th-1 and Th-17 infiltration
- Tortuosity of dermal capillaries and release of VEGF

Exacerbating factors

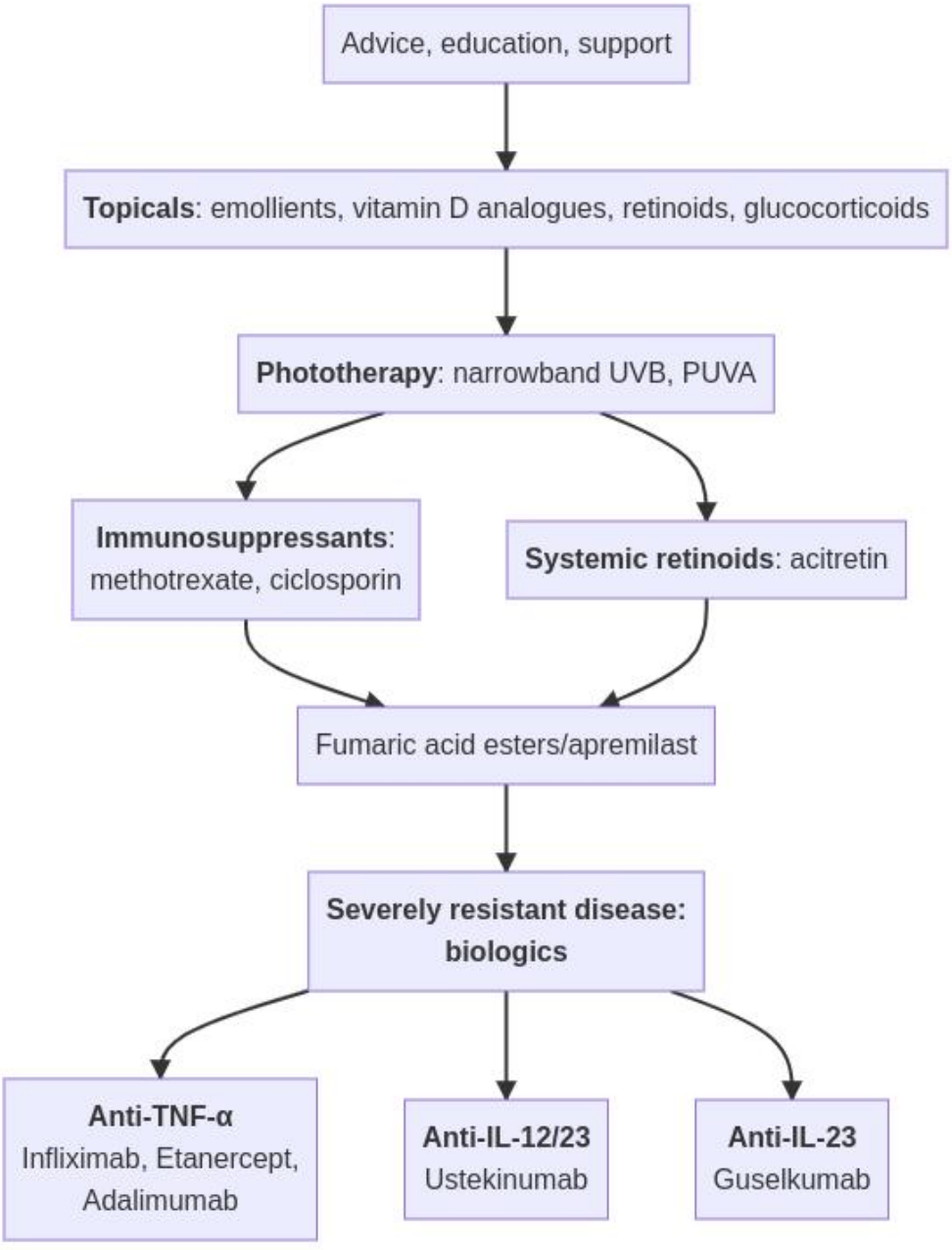
- **Sunlight**
- **Trauma**
- **Infection**
  - β-haemolytic strep ↑ guttate psoriasis
  - HIV may initally present with severe psoriasis
- **Drugs**
  - Antimalarials
  - β-blockers
  - Lithium
  - NSAIDs
- **Stress and anxiety**

Clinical types

- **Plaque** psoriasis:
  - most common
  - well-demarcated erythematous plaques
  - silver-white scales in untreated
    - bleed on scraping (due to dilated vessels underneath) → **Auspitz sign**
  - **Sites**
    - extensor surfaces
      - elbows
      - knees
      - lower back
    - scalp
    - nails

- **Guttate** psoriasis:
  - follows *Strep* throat
  - common in children/adolescent
  - UVB highly effective
  - may herald the onset of plaque psoriasis in adulthood
- **Erythrodermic** sporiasis: generalised → medical emergency
- **Pustular** psoriasis

Management of psoriasis



2.9 Hypopigmentation

Causes

- Vitiligo
- Albinism
- Pityriasis alba
- Pityriasis versicolor

Vitiligo

- **Acquired**
- Cell-mediated **autoimmune destruction of melanocytes**
- Loss of melanocytes → hypopigmented patches

Albinism

- **Autosomal recessive**
- **Reduced melanin production** by **normal number of melanocytes**
- ↑↑ risk of sunburn, skin cancer

2.10 Hyperpigmentation

Causes

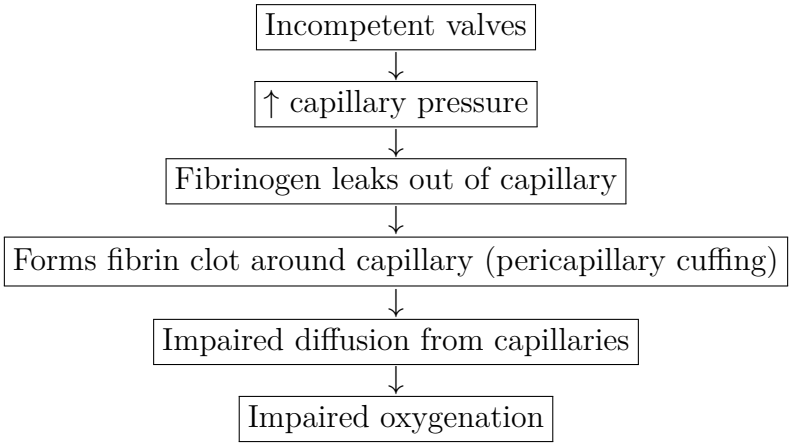
- **Endocrine**
  - Melasma/chloasma:
    - in pregnancy / some OCP users
    - discrete patches of facial pigmentation
  - Addison's disease
  - Cushing's syndrome
  - Nelson's syndrome
    - hyper-ACTH 2° to bilateral adrenalectomy for Cushing's
    - due to loss of -ve feedback from plasma cortisol
  - CKD
- **Drugs**
  - Amiodarone
  - Anti-cancers:
    - Bleomycin: Hodgkin's
    - Busulfan: CML
  - Choroquine
  - Psoralens

2.11 Pseudorandom factoids

SPF (sun protection factor)

- $\frac{\text{UV dose for producing erythema with sunscreen}}{\text{UV dose for producing erythema without sunscreen}}$

Mechanism of venous ulceration



Chapter 3

Neurology

3.1 Raised ICP

- Normal ICP = **5-15 mmHg**

Causes

- **ICSOL**
  - Intracranial haemorrhage
  - Tumours e.g. glioma
  - Brain abscess
- **Hydrocephalus**: blockade of CSF circulation
  - Obstructive / non-communicating
  - Communicating
- **Cerebral oedema** e.g. meningoencephilitis
- **Venous sinus obstruction** e.g. cerebral venous thrombosis

Features

- **Headache**
- **Vomiting**
- **Diplopia / blurred vision**: Due to *6th nerve palsy*
  - 6th nerve palsy due to
    - stretching of the long, slender nerve
    - compression against petrous temporal bone
- **Papilloedema**
- **Bradycardia**
- **Hypertension**
- **Depressed consciousness**

Management

- According to cause:
  - Mass lesion → surgical decompression
  - Hydrocephalus → *ventriculoperitoneal shunt* operation
  - Oedema → glucocorticoids
- Supportive:
  - Head elevation
  - Fluid balance
  - BP control
  - Diuretics: mannitol

3.2 Neurological emergencies

- **Status epilepticus**
- **Stroke**
- **Subarachnoid haemorrhage**
- **Cord compression**
- **GBS**
- **Myasthenia gravis** (if bulbar and/or respiratory)