

Medicine

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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 $\rightarrow \uparrow$ sebum
- oestrogen $\rightarrow \downarrow$ sebum

- Sweat glands
 - innervated 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) \rightarrow prevent water loss from skin by oil layer
 - * less preservatives \rightarrow less risk of allergy
- Emollients
 - Moisturise, lubricate, protect skin
 - *Vehicles without active drug*
- Glucocorticoids

Phototherapy

- UVB
- Psoralen UVA
 - Psoralen:
 - * natural photosensitiser from plant source
 - * cross-link DNA strands on excitation with UVA
 - Cumulative exposure to PUVA $\rightarrow \uparrow$ 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 N₂*
 - Causes cell membrane destruction \rightarrow death
- **Laser**

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** / **tinea**sis
 - * *Trichophyton*
 - * *Epidermophyton*
 - * *Microsporum*
 - Yeast
- Deep: less common
 - Chromomycosis
 - Sporotrichosis

2.5 Scabies

Agent

Caused by the mite *Sarcoptes scabiei 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, immunosuppression or heavy infestation

2.6 Acne

- *Chronic inflammation of pilosebaceous units*

Pathogenesis

Key components are:

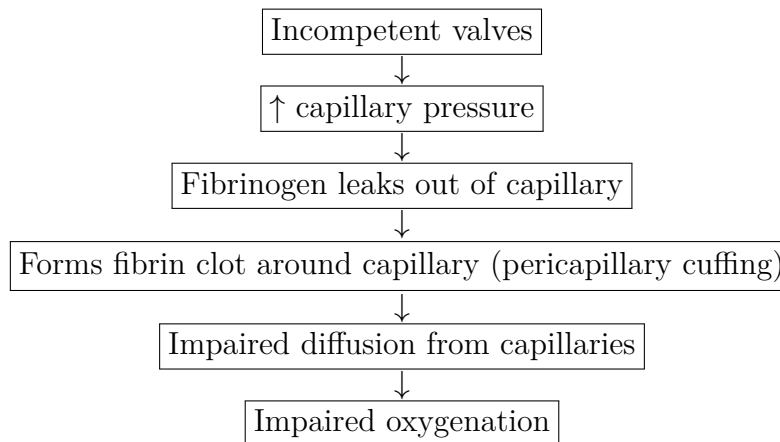
- ↑ Sebum production
- Colonisation of pilosebaceous ducts by *Propionibacterium acnes*
- Occlusion of pilosebaceous ducts

2.7 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. meningoencephalitis
- **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