

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- $\alpha$  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<sub>2</sub>*
  - 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** / **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

## 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

### Features

Most types have the following clinical features:

**Acute**

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

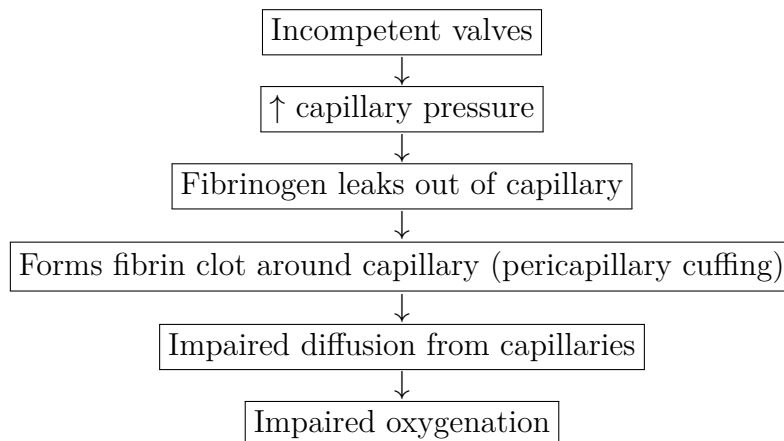
**Chronic**

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

## 2.8 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