CHAPTER 1

STUDY CHECK LIST OF THE UPPER LIMB

SKIN AND ITS APPENDAGES

Mammary gland, structure, relationships, lymphatic drainage (important in females because of carcinoma of the breast), blood supply and surface anatomy.

FASCIA

- Superficial fascia
- Deep
  - Pectoral — axillary
  - Clavipectoral fascia
  - Brachial fascia (medial/lateral intermuscular septa) and fascial compartments
  - Antebrachial fascia (flexor/extensor retinacula)
  - Palmar aponeurosis: central, medial and lateral parts
  - Fascial spaces of the palm (hand)
  - Intermediate palmar septum
  - Thenar space
  - Middle palmar space
  - Fibrous flexor sheaths
  - Fascial sheaths of vessels
- Fascial spaces of the hand and their clinical importance; thenar space infections
- Fibrous and synovial sheaths of the long tendons of the hand independent movement of the fingers tendon sheath infections

OSTEOLOGY

- Shoulder girdle: clavicle, scapula
- Transmission of forces from the upper limb to the axial skeleton
- Fall on the outstretched hand
- Functions of the clavicle

- Fracture of the clavicle — causes, dangers
- Muscles attaching the upper limb to the trunk
    - Upper limb and vertebral column
    - Upper limb and thoracic wall
- "Winging" of the scapula
- Movements of the shoulder girdle with special reference to movements of the scapula and clavicle (including muscles with their nerve supply)
- "Cervical rib" and its effects/thoracic outlet syndrome
- Humerus, radius, ulnar (fractures and their implications)
- Carpal bones
    - Arrangement
    - Intercarpal joint spaces
    - Fractured scaphoid, cause, site, method of palpation, blood supply

MYOLOGY

- Muscles of the axillary region
- Muscles of the arm — flexor and extensor compartments
- Muscles of the forearm
    - Anterior: superficial/deep flexors
    - Posterior: superficial/deep extensors
- Muscles of the hand
    - Thenar and hypothenar muscles
    - Intermediate muscles

JOINTS

- Sternoclavicular and its importance acromioclavicular joint
- Shoulder (glenohumeral) joint
    - Capsule and ligaments
    - Relations
    - Stability; sacrifice of stability for mobility
    - Importance of the musculotendinous (rotator) cuff
    - Direction and dangers of dislocation
    - Movements (including muscles and nerves responsible)
    - Functions of the supraspinatus and deltoid muscles
    - Effects of lesion of the axillary nerve and tests for its integrity
    - Effects of rupture of the supraspinatus tendon

- Elbow joint
  - Capsule and collateral ligaments
  - Relations
  - Movements
  - Dislocation
  - Supracondylar fracture with its dangers
- Radioulnar joints
  - Interosseous membrane
  - Muscles/nerves involved
  - Pronation/supination
  - Functional importance
  - Limiting factors
  - Effect of fracture of the radius/ulnar, position of the bones (with reasons)
  - The "carrying angle"
- Wrist joint
- Saddle joint of the thumb
- Metacarpophalangeal joints, etc.

NEUROLOGY

- Brachial plexus
  - Roots, trunks, divisions, cords, branches
  - Relations
  - Effects of injury (e.g. avulsion of roots) or lesions at various levels
- Main nerves of the upper limb including the effects of lesions at various levels
  - Long thoracic nerve
  - Axillary nerve
  - Musculocutaneous nerve
  - Ulnar nerve: deep branch
    (claw hand)
  - Median nerve: anterior interosseous nerve
    (sleep paralysis, ape hand)
  - Radial nerve: posterior interosseous nerve
    (sleep paralysis, wrist drop)
  - Tests for integrity of nerves: sensory and motor sites where nerves can be palpated
  - Relations of nerves to bones and danger of fractures

  - Motor and sensory deficiencies of the hand resulting from injury

    e.g. To the radial nerve in the midhumeral region
    To the median and ulnar nerves at the elbow and
    To the radial nerve at the wrist

- Myotomes, dermatomes and cutaneous nerve supply and their clinical relevance
- Cutaneous nerve supply of the hand: the contribution of the radial, ulnar and median nerves
- Three major nerves related to the humerus — axillary, radial and ulnar; sites of fracture of the humerus endangering these nerves and the results of injury at this level
- Autonomic nerve supply to arteries, etc.
- Referred pain especially C_4 (diaphragm) and angina pectoris

ANGIOLOGY

- *Arteries* of the upper limb

  - Origin and course of the main arteries: axillary, brachial, radial, ulnar, anterior and posterior interosseous, superficial and deep palmar arches including their surface anatomy
  - Sites where the main arteries are palpable and can be compressed parts of the axillary artery, relations, branches to the thoracic wall and around the scapula, etc.
  - Anastomoses around the scapula and relation to coarctation of the aorta anastomoses around joints/collateral circulation — shoulder, elbow, wrist blood supply of the hand destination of most of the blood to the upper limb (in principle)

- Fractured humerus and danger to the brachial artery "intravenous" injection in the cubital fossa (accidental arterial injection)
- *Veins* including general arrangement

  - Superficial and deep veins according to their relationship to the deep fascia
  - Superficial veins: dorsal venous arch, cephalic and basilic veins (including sites where they pierce the deep fascia), median cubital vein, intravenous injection (see also cubital fossa)
  - Deep veins: venae comitantes (function and importance)
  - Axillary vein — its main tributaries and relations
  - Perforating/connecting veins

- *Lymphatic drainage*

  - General, superficial and deep lymphatics

- Arrangement of the axillary lymph nodes
- Cubital lymph nodes
- Lymphatic drainage of the mammary gland

SPECIAL REGIONS AND FEATURES

Axilla

- Shape, boundaries (walls) and contents
- Mammary gland (axillary tail)

Cubital Fossa

- Surface anatomy, boundaries
- Contents
- Intravenous injection
- Brachial artery

Wrist

- Surface anatomy and relations
- Flexor and extensor retinacula
- Slashed wrist
- Movements of the wrist joint
- Carpal tunnel (syndrome)

Anatomical Snuff Box

- Boundaries
- Floor
- Contents

The Hand as a Functional Unit

- Small muscles of the hand
- Carpometacarpal (saddle) joint of the thumb
- Importance of the thumb (contrast the monkey's "hand", i.e. paw)
- Movements of the thumb
- Power (prehensile) and precision grips
    - Digits 2,3,4 and 5 — movements, metacarpophalangeal and interphalangeal joints

Bursae of the Upper Limb

THE UPPER LIMB AS A FUNCTION UNIT (COMPARE WITH LOWER LIMB)

- Mobility for prehension/precision, etc.
- Manual dexterity
- Climbing, swimming etc.

IMAGING ANATOMY

- Bones
- Joints
- Angiography

SURFACE ANATOMY