

CHAPTER 1

STUDY CHECKLIST OF THE THORAX

THORACIC WALL

Skin and Appendages

Mammary gland — see chapter on Upper Limb

OSTEOLOGY

Thoracic cage, 12 thoracic vertebrae and their features.

Ribs

- Arrangement, true and false
- Typical and atypical
- Articulations, costal cartilages

Sternum

- Parts
- Jugular notch
- Sternal angle

JOINTS

- Costovertebral
- Costotransverse
- Sternocostal
- Sternal, sternal angle, xiphisternal junction (see sternoclavicular joint in the chapter on Upper Limb).

MYOLOGY

Three layer arrangement of muscles (as in Abdomen)

Intercostal Muscles

- Arrangement
- Function
- Nerve supply, angiology

Diaphragm (an important muscle of respiration — see chapter on Abdomen)

- Attachments
- Nerve supply
- Function
- Blood supply and venous drainage
- Referred pain
- Paralysis (paradoxical respiration)
- Hiccough, cough, etc.

Accessory Muscles of Respiration (arms fixed and arms free)

NEUROLOGY

- Dermatomes especially axial line and gap between C4 and T2
- Myotomes
- Thoracic (intercostal) nerves: origin, course, relationship to the muscles of the thoracic cage and the ribs, supply extending to the abdominal region

ANGIOLOGY

Arteries

- Internal thoracic arteries including anastomoses between thoracic and abdominal aorta
- Anterior and posterior intercostal arteries, including their origin, anastomoses, importance in coarctation of the aorta, relationship to the ribs

Veins

- Anterior and posterior intercostal veins, including relationship to the azygos system of veins

Lymphatics

- Lymphatic drainage of the chest wall

FUNCTIONAL ASPECTS OF THE THORACIC WALL

(in particular the thoracic cage)

- Respiratory
- Support (vertebral column)
- Protective, both thoracic and upper abdominal viscera

THORACIC CAVITY

- Definition
- Boundaries

- Mediastinum — superior
— inferior anterior
 middle
 posterior } boundaries, contents etc. of each part
- Pleura: parietal and visceral, including nerve supply, lymphatic drainage, reflections, etc.
- Pleural cavities (costodiaphragmatic recess)
- Pericardium: parietal and visceral, including nerve supply
- Pericardial cavity

THORACIC CONTENTS

Lower Respiratory Tract

Trachea

- Level of commencement and of bifurcation (carina)
- Nerve supply, lymphatic drainage, etc.
- Presence and function of cartilage

Bronchi

- Differences between size and direction of right and left main bronchi (important in foreign body aspiration)
- Lobar bronchi
- Knowledge of existence of bronchopulmonary segments
- Presence and function of cartilage
- Nerve supply
- Blood supply and venous drainage
- Lymphatic drainage

Lungs

- Differences between right and left lungs, lobes, segments (see above)
- Lymphatics/arterial and venous arrangement
- Hila

Heart

- Atria and ventricles, parts, openings, valves and special characteristics (inflow and outflow tracts)
- Conducting system
- Cardiac plexus (superficial and deep parts)
- Coronary arteries and venous drainage of the heart
- Embryology including fetal circulation, neonatal changes of foramen (fossa) ovale and ductus (ligamentum) arteriosum

- Relations of the ligamentum arteriosum (especially to the left recurrent laryngeal nerve)

Great Vessels, etc

- Aorta: course, relations, branches
- Brachiocephalic veins
- Superior vena cava: course, relations
- Inferior vena cava tributaries
- Pulmonary vessels: course, relations
- Azygos system of veins in detail, special significance

Esophagus

(Remember it commences in the cervical region and ends in the abdomen.) This should be studied in its entirety rather than in sections.

- Muscular arrangement of the wall
- Attachment
- Relations throughout its course
- Nerve supply
- Blood supply and venous drainage especially hepatoportal venous anastomosis
- Lymphatic drainage
- Cardio-oesophageal junction
- Constrictions

NEUROLOGY

Phrenic Nerve

- Course, especially relations from origins to destination
- Roots, referred pain, effects of lesion

Vagus Nerve

- Vagus (parasympathetic) Xth cranial nerve — course, especially relations (note asymmetry, especially of the recurrent laryngeal nerves)
- A full knowledge of its function and the structures it supplies

Sympathetic Trunks

- origin, course, branches, a thorough knowledge of the arrangement of the sympathetic nervous system, pre- and postganglionic fibres, ganglia, branches, destination, cervicothoracic ganglion; splanchnic nerves
- *Horner's Syndrome*

Cardiac plexus

Pulmonary plexus

Oesophageal plexus

Lymphatic Drainage

of the contents of the thorax — in detail

- Site of lymph nodes
- Thoracic duct — course, relations, function, termination
- Thymus

SPECIAL ASPECTS OF THE THORAX

(including functional and clinical aspects)

- Respiration
 - quiet, deep and forced thoracic (intercostal), abdominal (diaphragmatic), thoracoabdominal
 - accessory muscles of respiration
 - movements of the thoracic cage, pump handle and bucket handle movements.
 - anatomy of inspiration and expiration; cough, hiccough
 - pneumothorax, bronchospasm (asthma)
- Mediastinal obstruction: anatomy of the thoracic inlet
- Lesions of nerves: sympathetic chain, recurrent laryngeal nerve, phrenic nerve
- Referred pain, e.g. angina pectoris, diaphragm
- Hepatoportal venous anastomoses
- Lymphatic spread of carcinoma especially mammary gland (upper limb), lung, oesophagus

IMAGING ANATOMY

- A thorough knowledge of a normal chest X-ray is essential
- Bronchogram, barium swallow, cardiac catheterisation etc.

SURFACE ANATOMY

Landmarks

Sternoclavicular joint, jugular notch, tip of acromion, sternal angle, 2nd rib, xiphisternal junction, counting ribs and intercostal spaces.

Planes and Lines

Median, parasternal, midclavicular, midaxillary, paravertebral.

Outlines of

Trachea, pleura, lungs, (right and left, apex and base, and oblique and horizontal fissures)
heart, (apex, sites for auscultation) oesophagus, brachiocephalic veins, arch of aorta
diaphragm.

Clinical

Inspection, palpation, percussion, auscultation, radiology.