DOCTORS ACADEMY

BETTER EDUCATION. BETTER HEALTH.

Training the Clinical Anatomy Trainer Level 2

Teaching Objectives

Teaching Objectives

- Presentations
  - Large group teaching
  - Small group teaching
- Prosection-based teaching
- Osteology teaching
- Surface anatomy
- Innovative teaching
- Conceptual teaching
- Innovative teaching with or without use of aids

Head

1. Anatomy

1.1. Skull Base

1. Define the boundaries and contents of the anterior, middle and posterior cranial fossae.
2. Identify on the skull the foramen for the cranial nerves and major blood vessels.
3. Describe the venous drainage and main venous sinuses.
4. Explain the organisation and function of the meninges.
5. Dural partitions.

1.2. Gross Anatomy of the Cortex

1. Demonstrate the relationship between the cortices and the individual cranial fossae.
2. Describe the key components of the Circle of Willis.
3. Explain the flow of cerebrospinal fluid around the brain.
4. Relate the different regions to their functions.

1.3. Gross Anatomy of the Midbrain, Pons and Medulla

1. Demonstrate the relationship between the regions of the brainstem and the skull base.
2. Relate the different regions to their functions.
3. Describe various pathologies occurring within these regions and explain the neurological consequences.

1.4. Gross Anatomy of the Thalamus, Cerebellum and Spinal Cord

1. Define the regions by anatomy and function.
2. Relate the different regions to their functions and spinal tracts.
3. Describe various pathologies occurring within these regions and explain the neurological consequences.

1.5. Face

1. Surface marking of parotid gland, parotid duct, facial nerve.
2. Describe the vasculature of the face (arterial supply and venous drainage).
3. Description of the course/surface marking of V1, V2 and V3 branches in the face.
4. Define the 'danger area'.
5. Describe the boundaries of the orbit and its relationship with the muscles and vessels supplying the eye.
6. Explain the innervation and action of orbital muscles.
7. Elucidate the anatomical regions of the sinuses and their clinical significance.
8. Demonstrate the innervation of facial muscles & explain salient clinical pathologies.

1.6. Course of Cranial Nerves V, VII, IX and X

1. Define the course of these cranial nerves (intra-cranial and extra-cranial).
2. Explain their function.
3. Identify the important relations of these nerves.
4. Describe relevant clinical pathologies in relation to these nerves.

2. Functional Physiology

2.1. Mechanism of Vision

1. Explain the role of the autonomic nervous system in vision.

2. Understand the visual pathways involved.
3. Describe various pathologies occurring along these pathways & explain the clinical presentation.

2.2. Mechanism of Smell and Taste

1. Describe the neural circuitry involved in smell and taste perception.
2. Describe common pathologies affecting these senses.

Neck

1. Anatomy

1.1. Triangles of the Neck

1. Define the surface anatomy, boundaries, subdivisions and contents of the triangles of the neck.
2. Describe the fascial coverings of the neck.
3. Describe the course of CCA and branches of ECA.
4. Identify the important glands within the neck and describe their anatomy.
5. Describe what structures may be affected by trauma to different regions of the neck.

1.2. Tongue, Larynx and Pharynx

1. Describe the muscles of the tongue and their innervations and action.
2. Describe the structure and innervation of the larynx and explain the consequences of pathologies within this region.
3. Demonstrate the regions of the pharynx, describe the innervation and functions of the muscles within this region.
4. Describe the pharyngeal pouch.
5. Describe the structure of the trachea and important relations.

1.3 Autonomic Nervous System of the Head and Neck

1. Describe the parasympathetic innervations of the head and neck and the role of the parasympathetic nervous system.
2. Describe the sympathetic innervations of the head and neck and the role of the sympathetic nervous system.

1.4. Developmental Embryology of the Branchial Arches

1. Summarise the embryological development of the branchial arches.
2. Describe the post-natal structures and their functions.

2. Functional Physiology

2.1. Mechanism of Speech

1. Summarise the three stages of speech: conceptualisation, formulation & articulation.
2. Identify the important regions associated with speech.
3. Describe common pathologies, how they affect the different stages of speech and relate these to the clinical presentation.

Thorax

1. Anatomy

1.1. Thoracic wall, Mediastinum and Breast

1. Provide an overview of the thoracic wall.
2. Define the divisions of the mediastinum and their boundaries.
3. Describe the contents of the mediastinum.
4. Define the anatomical boundaries of the breast, its blood supply and lymphatic drainage.

1.2. Heart and Lungs (Surface Anatomy)

1. Describe the surface anatomy of the heart.
2. Describe the surface anatomy of the lungs.
3. Identify the surface markings of the pleura and the innervation.

1.3. Heart and Lungs (Prosection)

1. Describe the features of the various chambers of the heart and the coronary vasculature.
2. Identify the layers of the pericardium, the innervation and clinical significance.
3. Describe the anatomical features of the lungs and the pulmonary vasculature.
4. Identify the impressions on the lungs, name the fissures and the lobes of the lung.
5. Identify the structures at the hilum.

1.4. Thorax and Vasculature

1. Describe the surface anatomy of the veins entering the heart and the major vessels arising from the heart and their associated branches.
2. Describe the venous drainage of the thoracic wall including the azygos vein, hemiazygos vein and accessory hemiazygos vein.
3. Describe the origin and course of the right lymphatic duct and the thoracic duct.

1.5. Developmental Embryology of the Heart

1. Summarise the embryological development of the heart.
2. Understand the clinical implications of congenital cardiac disorders.
3. Describe the common congenital cardiac disorders & explain the pathophysiology.

1.6. Autonomic Nervous System of the Thorax

1. Describe the parasympathetic innervations of the heart and lungs and the role of the parasympathetic nervous system in the thorax.
2. Describe the sympathetic innervations of the heart and lungs and the role of the sympathetic nervous system in the thorax.
3. Explain the role of baroreceptors in maintaining haemodynamic stability.

2. Functional Physiology

2.1. Mechanism of Respiration

1. Describe the neural networks involved in respiration.
2. Explain the role of carbon dioxide in maintaining respiratory drive.
3. Describe common pathologies affective respiration.

Abdomen, Pelvis and Perineum

1. Anatomy

1.1. Hepato-biliary-pancreatic System

1. Describe the surfaces of the liver, its relations and vascular supply.
2. Identify the structures at the porta hepatis and biliary tree.
3. Understand the importance of Calot's triangle.
4. Describe the regions of the pancreas, its relations and vascular supply.
5. Describe the course of the pancreatic duct.

1.2. Spleen, Kidneys, Ureter

1. Describe the surfaces of the spleen, its relations and vascular supply.
2. Describe the surfaces of the kidney, its relations and vascular supply and identify the structures at the renal hilum.
3. Define the anatomy of the ureters, vascular supply, innervation, relations and constrictions.

1.3. Transpyloric Plane

1. Define the transpyloric plane on a subject.
2. Identify the structures traversed by this plane.
3. Describe the relations of these structures to each other and any relevant clinical implication.

1.4. Vasculature of the Abdomen

1. Describe the vascular supply and lymphatic drainage of the abdomen.
2. Identify the branches of the aorta, their vertebral levels and the regions supplied.
3. Understand the clinical significance of the porto-venous anastomoses within the abdomen.

1.5. Pelvis

1. Describe the male and female pelvic organs, and their relations.
2. Identify the structures of the male and female internal genitalia.
3. Describe the vascular supply, lymphatic drainage and innervation to these organs.

1.6. Perineum and External Genitalia

1. Describe the pelvic floor (coccygeus and levator ani).
2. Identify the pelvic fascia, walls and plexus.
3. Describe the male and female external genitalia.
4. Describe the course of the male urethra.
5. Describe the parts of the prostate gland and its relations.
6. Describe the anal region, sphincters, ischiorectal fossa and perineal body.

1.7. Developmental Embryology of the Gut

1. Summarise the embryological development of the gut.
2. Explain how the embryological origins give rise to intraperitoneal and retroperitoneal structures.
3. Describe common congenital malformations and relate these to their clinical presentation.

1.8. Developmental Embryology of the Urogenital System

1. Summarise the embryological development of the urogenital system.
2. Describe common congenital malformations, explain their pathophysiology and relate these to their clinical presentation.

1.9. Autonomic Nervous System of the Gut

1. Describe the role of the autonomic nervous system within the gut.
2. Discuss the enteric nervous system and its functions.
3. Understand the pathophysiology of Hirschsprung's disease and relate this to the clinical presentation.

1.10. Autonomic Nervous System of the Reproductive Organs

1. Describe the role of the autonomic nervous system for the reproductive organs.
2. Describe the role of the autonomic nervous system in sexual function.

2. Functional Physiology

2.1. Control of Micturition

1. Understand the role of the autonomic nervous system in micturition.
2. Explain the mechanisms behind stress, urge and mixed incontinence.

2.2. Mechanism of Defecation

1. Understand the role of the autonomic nervous system in urge and control of defecation.

Upper Limb

1. Anatomy

1.1. Types of Joints and Cartilages

1. Describe the different joint types in the body giving examples of each and relate these clinically.
2. Describe the different cartilage types in the body giving examples of each and relate these clinically.

1.2. Brachial Plexus

1. Describe the anatomical location of the brachial plexus.
2. Identify the roots, trunks, divisions, cords and terminal branches and explain the clinical presentation of pathologies in these regions.
3. Describe the course of the terminal branches of the brachial plexus, their relations and their innervations.

1.3. Upper Back, Arm and Cubital Fossa

1. Define the boundaries of the triangular and quadrangular space and their contents.
2. Identify the muscles of the upper back involved in movement of the pectoral girdle and explain their function.
3. Define the dermatomes of the upper limb on a subject.
4. Define the boundaries of the cubital fossa, its contents and their relations.

1.4. Forearm, Wrist and Hand

1. Identify the muscles of the flexor and extensor compartments.
2. Describe the ulna and radius and provide an overview of fractures of these bones.
3. Identify the structures at the wrist and explain carpal tunnel syndrome.
4. Provide an overview of the anatomy of the hand.
5. Describe the boundaries and contents of the anatomical snuff box.
6. Understand the osteology of articulated wrist.

1.5. Vasculature of the Upper Limb and Structures in the Wrist Joint

1. Define the vascular supply to the upper limb on a subject (including palmar arches).
2. Identify peripheral venous access sites.
3. Define the boundaries and contents of the anatomical snuff box.
4. Identify the structures crossing the wrist on the flexor and extensor aspects.

1.6. Developmental Embryology of the Upper Limb

1. Summarise the embryology of upper limb development.
2. Understand Swanson's Classification for congenital limb malformations and describe examples of upper limb malformations.

Lower Limb

1. Anatomy

1.1. Hip Joint, Femur and Gluteal Region

1. Describe the hip joint, femur and gluteal region.
2. Describe the salient osteology of the pelvis and the femur.
3. Identify femoral fracture types and describe the management.
4. Provide an overview of muscles in this region.

1.2. Thigh (Hip to Knee)

1. Describe the compartments of the thigh, their contents and relations.
2. Define the boundaries and contents of the femoral triangle.
3. Define the boundaries and contents of the adductor canal.
4. Define the dermatomes of the thigh on a subject.

1.3. Leg and the Popliteal Fossa

1. Describe the compartments of the leg, their contents and relations.
2. Define the boundaries and contents of the popliteal fossa.
3. Define the dermatomes of the leg on a subject.
4. Explain compartment syndrome and describe the management.

1.4. Tibia, Ankle and Foot

1. Describe the tibia, ankle joint and bones of the foot.
2. Explain the movements of the ankle and sub-talar joints.
3. Provide an overview of the arches of the foot.

1.5. Lumbo-sacral Plexus and Innervation to Lower Limb

1. Describe the lumbo-sacral plexus.
2. Identify the major nerves and their branches and describe their course through the lower limb.
3. Identify the sites of nerve compression and the clinical presentation of pathologies in these regions.

1.6. Vasculature of the Lower Limb

1. Define the arterial supply to the lower limb on a subject.
2. Describe the venous drainage of the lower limb including surface marking of the long and short saphenous veins.
3. Briefly describe the clinical/operative procedures associated with the lower limb arteries and veins.

1.7. Developmental Embryology of the Lower Limb

1. Summarise the embryology of lower limb development.
2. Understand congenital limb malformations and describe examples of lower limb malformations.

Functional Physiology

1.8. Mechanism of Walking

1. Summarise the phases of the gait cycle.
2. Explain the movement of the joints at each phase of the gait cycle.
3. Understand the pathology behind gait changes.

Spine

1. Anatomy

1.1. Vertebrae

1. Describe the bony features of the vertebrae.
2. Contrast the differences in structure of the cervical, thoracic, lumbar and sacral vertebrae.
3. Identify the ligaments of the vertebrae.
4. Describe the primary and secondary curvatures of the spine.

1.2. Spinal Cord and Spinal Cord Disorders

1. Describe the anatomy of the spinal cord including the coverings and blood supply.
2. Demonstrate an understanding of the divisions of the autonomic nervous system.
3. Describe the spinal tracts within the spinal cord and their functions.
4. Understand and explain the clinical syndromes associated with pathologies of the spinal cord.

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