

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

First MBBS

Anatomy

1. General Anatomy :

TOPICS

1. Introduction:

- Subdivisions of Anatomy
- Nomenclature:
 - Terms used for describing the position of the body:
Anatomical, supine, prone, lithotomy
 - Anatomical planes:
Median or sagittal, coronal, transverse, oblique
 - Terms in Gross anatomy:
Anterior, posterior, superior, inferior, medial, lateral
 - Terms in Embryology:
Ventral, dorsal, cranial/ cephalic/ rostral, caudal
 - Terms related to the limbs:
Proximal, distal, radial, ulnar, tibial, fibular, preaxial and postaxial borders, flexor, extensor, palmar and plantar surfaces.
 - Terms used for hollow organs:
Interior, exterior, invagination, evagination
 - Terms used for solid organs: Superficial, deep
 - Terms used to indicate the side of the body: Ipsilateral, contralateral
 - Terms used describing the muscles: Attachment, origin, insertion, belly, tendon, aponeurosis, raphe.
 - Terms used for describing the movements:
Flexion, extension, adduction, abduction, medial rotation, lateral rotation, circumduction, pronation, supination, inversion, eversion. Plantar flexion, dorsiflexion, protraction, retraction, opposition.

2. Skin and subcutaneous tissue:

Superficial fascia
Deep fascia

3. Skeletal muscles:

Features
Nomenclature
Blood supply
Nerve supply
Action
Classification of muscle groups
Applied anatomy
Tendon
Aponeurosis

4. Cartilage:

- Hyaline
- Elastic
- Fibro

5. Bone:

- General: Exoskeleton, examples- remains of it in humans
- Endoskeleton: Functions
- Classification:
 - Morphological: long, short, miniature, flat, irregular pneumatic, sesamoid
 - Structural: compact, cancellous
 - Developmental: membranous, cartilaginous
 - Microscopic: lamellar, Non-lamellar
 - Regional: axial, appendicular
- Long bone:
 - Parts: diaphysis, metaphysis, epiphysis
 - Types of epiphyses: pressure, traction, atavistic Blood supply to a long bone
 - General concepts of ossification:
 - Primary centre, secondary centre, medico-legal importance, age, sex and height.

6. Joints: Classification, features and examples:

- Based on movements
- Based on axes of movements- uniaxial, biaxial, polyaxial
- Based on the tissue intervening between the bones:
 - Fibrous: - sutures
- syndesmosis
- gomphosis
 - Cartilaginous -primary }
-secondary } synarthrosis (solid)
 - Synovial -simple }
-compound } diarthrosis (cavitated)
-complex }
- Based on morphology:
 - Simple: one pair of male and female surfaces
 - Compound: more than one pair of surfaces
 - Complex: with intracapsular menisci or articular disc

7. Blood vessels and lymphatics:

1 hr

- Artery, arteriole and capillaries
- Vein, venules and capillaries
- Anastomosis: arterio-arterial; veno-venous; arterio-venous
- Lymphatics: lymph channels and lymph nodes

8. Nervous system: Central and peripheral- an overview:

- Components
- Functions

2. Gross Anatomy

Upper Limb:

- Pectoral region & Axilla
- Front of arm & Cubital Fossa
- Superficial dissection of the back of the trunk, scapular region & Back of arm
- Joints of the shoulder girdle; Back of forearm & Hand
- Front of forearm And hand
- Elbow, radioulnar, wrist and joints of the hand

Lower Limb:

- Anterior and medial aspects of the thigh
- Gluteal region and posterior aspect of the thigh
- Hip joint , popliteal fossa , back of leg
- Anterior and lateral aspect of the leg, dorsum of the foot and the knee joint
- Tibio fibular joints, ankle joint and joints of the foot.
- Sole of the foot

Abdomen & Pelvis:

- Anterior abdominal wall and external genitalia
- Abdominal cavity, stomach & Intestines
- Liver, pancreas, duodenum & Spleen
- Kidney, Suprarenal and posterior abdominal wall
- Pelvic viscera
- Blood vessels nerves and muscles of the pelvis
- Perineum

Thorax :

- Thoracic Wall ,Lungs and Pleura
- Superior And Middle Mediastinum including heart, blood vessels and pericardium
- Superior And Posterior Mediastinum And Joints Of Thorax.

Head And Neck:

- Posterior Triangle Of The Neck.
- Anterior Triangle Of The Neck.
- Face And Scalp
- Cranial Cavity
- Orbit And Lacrimal Apparatus
- Parotid And Infratemporal Fossa.
- Submandibular Region And Deep Dissection Of The Neck
- Deep Structures Of The Back Of The Neck And Trunk.

Neuroanatomy:

- Introduction
- Peripheral nervous system
- Central nervous system
- Meninges and blood supply

- v. Cerebrospinal fluid
- vi. Cranial nerves
- vii. Autonomic nervous system Sympathetic
- viii. Autonomic nervous system Parasympathetic
- ix. Ascending and descending pathways

3. Histology

GENERAL HISTOLOGY TOPICS

1. Introduction: relevance of Histology in Medicine; Tissue processing; Principles of microscopy; cells and cell organelles; EM picture of protein synthesizing, Steroid synthesizing, absorptive and ion transporting cells
2. Epithelial tissue I: Surface/ lining epithelium: Simple squamous, cuboidal, columnar, pseudostratified. Stratified: squamous- keratinized, non-keratinized; transitional
3. Epithelial tissue II: Glandular epithelium Glands: mucous, serous and mixed
4. Connective tissue I: Loose areolar, elastic, cartilaginous, reticular; adipose Dense connective tissue: Irregular and Regular
5. Connective tissue II: Cartilage- hyaline, elastic and fibro
6. Connective tissue III: Bone- compact and cancellous
7. Highly specialized connective tissue: Lymphoid tissue/ Immune system I: Distribution: lymphatic follicles/ nodules- solitary, aggregates: Lymph node and spleen.
8. Lymphatic tissue II: Tonsil and thymus Myeloid tissue
9. Muscular tissue: Smooth muscle; Striated muscle- skeletal and cardiac
10. Nerve tissue/ Neural tissue: Neurons and neuroglia Spinal and sympathetic ganglia Cerebral cortex and cerebellar cortex Nerve- peripheral nerve; optic nerve; nerve endings

SYSTEMIC HISTOLOGY

TOPICS

1. Digestive system I:
General plan of GIT- Oesophagus
2. Digestive system II:
Oral cavity, lip, tongue, taste buds, salivary glands, Parotid (serous), sublingual (mucous) and submandibular (mixed)

3. Digestive system III:
Stomach: body, fundus and pylorus
4. Digestive system IV:
Small and large intestines: Duodenum, jejunum and ileum; appendix, colon
5. Digestive system V:
Liver, gall bladder, pancreas – exocrine (acinar); Pancreas- endocrine (Islets of Langerhans)
6. Urinary system:
Kidney- cortex, medulla; juxtamedullary apparatus (Demonstration)
Kidney- medulla; ureters and urinary bladder
7. Male reproductive system:
Testis; epididymis; vas deferens; prostate; Seminal vesicle and penis
8. Female reproductive system I:
Ovary- Graffian follicle; corpus luteum; fallopian tube Uterus- different stages of functional activity (Demonstration); vagina
9. Female reproductive system II:
Mammary gland- lactating; non-lactating; placenta; umbilical cord
10. Integumentary system:
Skin- hairy, glabrous; appendages; cutaneous receptors (Demonstration)
11. Respiratory system I:
Upper respiratory tract- nasal cavity; olfactory mucosa; Respiratory mucosa; epiglottis and trachea
12. Respiratory system II:
Lower respiratory tract- extra and intra- pulmonary bronchi; Lung parenchyma
13. Cardiovascular system:
Elastic artery, muscular artery, medium-sized vein, Large veins, capillaries (Demonstration); conducting system of the heart (Demonstration)
14. Endocrine system I:
Pituitary, pineal; review of endocrine tissues in the pancreas, testis and ovary
15. Endocrine system II:
Thyroid, parathyroid and adrenal
16. Special sense organs:
Eye; eye-lid; cornea; sclero-corneal junction; retina

4. Embryology

GENERAL EMBRYOLOGY

Introduction:

- Relevance of Embryology to medicine; Brief account of male and female reproductive system; testis and ovary; migration of primordial germ cells into the gonadal ridge; differentiation of gametes

- Ovum, oogenesis, growth of the ovarian follicle, uterine cycle; ovulation
- Sperm, spermatogenesis, spermiogenesis, normal sperm count, seminal fluid, abnormal conditions.
- Sex determination; Principles of family planning

First two weeks of development :

- Fertilization process ; site ; results : in-vitro fertilization; cleavage; blastocyst formation.
- Implantation : types ; formation of decidua; its subdivisions ; abnormal implantation.
- Formation of embryoblast and trophoblast ; development of embryoblast into bilaminar germ disc; development of trophoblast ; formation of cytotrophoblast and syncytiotrophoblast.
- Amniotic membrane ; yolk sac ; extraembryonic mesoderm ; extraembryonic coelome ; connecting stalk ; chorion ; formation of prochordal plate.

Third week of development

- Embryoblast ; primitive streak ; primitive node ; formation of intraembryonic mesoderm ; trilaminar germ disc ; notochord ; buccopharyngeal and cloacal membranes ; pericardial bar.
- Trophoblast : secondary yolk sac ; intraembryonic coelome and allantoic diverticulum ; intra embryonic mesoderm and its subdivisions; derivatives of ectoderm, endoderm and mesoderm.

Fourth week of development

- Formation of somites ; neural tube ; cephalo – caudal and lateral foldings of the embryo ; establishment of the body form ; formation of the gut and its subdivisions ; vitelline duct

Foetal membranes and the placenta :

- Placenta : formation, functions ; features, types ; circulation ; placental barrier ; abnormalities
Umbilical cord ; amnion, amniotic fluid, its functions ; chorion laevae; decidua ; amniocentesis

Twins : formation, types, conjoint twins, multiple pregnancies

Causative factors for congenital malformations

SYSTEMIC EMBRYOLOGY

1. Development of musculoskeletal system
2. Development of GIT and respiratory systems:
 - Body cavities and serous membranes
 - Stomach
 - Midgut: rotation of the gut, liver, extrahepatic biliary system
 - Hindgut
 - Diaphragm, spleen and lesser sac
 - Trachea and lungs
3. Development of genitourinary system:
 - Kidney
 - Ureter, Urinary bladder
 - Testis, ovary
 - Descent of gonads
 - Genital ducts
 - External genitalia
4. Development of cardiovascular system:
 - Heart loop and formation of the chambers of the heart
 - Septa and valves of the heart
 - Intraembryonic vessels
 - Major veins
 - Foetal circulation and changes after birth
5. Development of face and pharyngeal apparatus:
 - Pharyngeal arches and their derivatives
 - Pharyngeal pouches, pharyngeal clefts, first arch syndrome and common birth defects
 - Face, oral cavity, soft palate and associated anomalies
6. Development of nervous system:
 - Neural tube: brain vesicles and their derivatives, neural crest and its derivatives
7. Development of organs of special senses
 - Eye and ear
8. Development of skin and its appendages
 - Skin and its appendages
 - Mammary gland and anomalies
9. Development of endocrines

5. Genetics

1. Introduction :

- A.** Definition:
 - a. Medical genetics
 - b. Cytogenetics
 - c. Clinical genetics

- B.** History:
 - a. Gregor Mendel
 - b. Mendelian laws of inheritance
 - c. Mitosis
 - d. Meiosis

2. Chromosomes:

- a. Structure
- b. Classification of human chromosomes
- c. Karyotyping- methodology
- d. Sex chromatin
- e. Lyon hypothesis

3. Chromosomal disorders:

- Importance of non-disjunction
- Numerical abnormalities
 - Polyploidy
 - Aneuploidy
 - Trisomy and monosomy
 - Down's syndrome
 - Patau's syndrome
 - Edwards's syndrome
 - Klienfelter's syndrome
 - Turner's syndrome
 - Mosaicism
 - Causes of numerical abnormalities

- Structural abnormalities
 - Deletion, inversion, translocation and ring chromosomes
 - Isochromosomes, chromosomal fragile sites, fragile X chromosome

4. Chromosome at molecular level:

- Structure of DNA- RNA
- Genetic code
- Genetic mutation
- Mutagens

5. Clinical genetics

- Pedigree chart
- Inheritance

6. Diagnosis of Genetic disease

- Prenatal diagnosis
- Indications
- Chorionic villi biopsy
- Maternal sera
- Amniocentesis

7. Genetic Counselling :

- a. Definition
- b. Indication
- c. Basis of gene therapy

8. Recent advances in Genetics:

- a. Polymerase chain reaction
- b. Recombinant DNA
- c. Cloning
- d. Stem cell technology