I SECTION: BACK.

LECTURE 1. Introduction to anatomy. Topography and body systems.

LAB SESSION 1. Introduction to the course, rules and regulations and syllabus.


Case study 1-1: Herniated Disc at L5-S1 compressing the right spinal nerve root at S1.

Clinical anatomy: laminectomy, fractures and dislocation of the vertebrae, lumbar spinal stenosis, caudal epidural anesthesia, abnormal fusion of vertebrae, injury of the coccyx, cervical ribs, abnormal curvatures of vertebral column, anomalies and effect of aging on the vertebrae, aging of the intervertebral discs, herniation of the nucleus pulposus, injury and disease of zygapophysial joints, Surface anatomy of the vertebral column.

References:


Case study: Multiple sclerosis, Hydrocephalus.

References:

LECTURE 2. Back: Radiological anatomy of the back. Atlantoaxial dislocation; Protrusion of the nucleus pulposus; Lumbar puncture and spinal anesthesia.

LAB SESSION 4. Muscles of the back. Quiz 2 (from lab 2 and 4).

Clinical anatomy: back pain, fracture of the dens, rupture of the transverse ligament of the atlas and/or of the alar ligaments, compression of C2 spinal ganglion, back strains and sprains, reduced blood supply to the brainstem
Medical imagining of the back.

References:

Surface anatomy of the back. Quiz 3.

Spinal cord, its structure, location and anatomical relationships. Structure of spinal nerves. Spinal meninges and cerebrospinal fluid: dura mater, arachnoid mater, pia mater. Extradural (epidural) and subarachnoid spaces, their location and contents. Vasculature of the spinal cord.

Clinical consideration – Spinal cord injury.

Clinical anatomy: compression of the lumbar spinal nerve roots, development of the meninges and subarachnoid space, lumbar spinal puncture, spinal block, epidural block, ischemia of the spinal cord, spinal cord injuries.

Medical imaging of the back.

References:


Overview of the Peripheral Nervous System and of the Visceral Nervous System.


Sympathetic nervous system. Enteric nervous system. Input of the visceral motor system.

Case study: Guillain-Barré Syndrome, Myasthenia gravis.

References:


LAB SESSION 7. Seminar for Back Partial Exam.

II SECTION: THORAX.

Skeleton of the thoracic wall: rib and costal cartilages, intercostals spaces, thoracic vertebrae, sternum.
Joints of the thoracic wall: costovertebral joints, costochondral joints, interchondral joints, sternocostal joints. Movements of the thoracic wall.

Clinical anatomy: rib fractures and associated injuries, flail chest, thoracotomy, rib excision and bone grafting, intercostal space incisions, supernumerary ribs, protective function and aging of costal cartilages, aortic aneurysm and its effect on vertebrae, coarctation of the aorta and enlargement of intercostal arteries, ossified xiphoid processes, and intercostal nerve block, sternal fractures and anomalies, median sternotomy, sternal biopsies, dislocation of ribs, separation of ribs, thoracic outlet syndrome.
Surface anatomy of the thoracic wall skeleton.

References:

Topography, external and internal structure of spinal cord. Arteries of the spinal cord: anterior spinal artery, posterior spinal arteries, radicular arteries, intercostals and lumbar arteries, etc.
Veins of the spinal cord. Descending motor tracts (especially Corticospinal Tract): upper
motor neurons vs. lower motor neurons (localization of origin, crossing, synapses and lesions). Spinal cord reflexes. Sensory Tracts (especially Dorsal Column-Medial Lemniscus, Spinothalamic Tract-localization of origin, crossing, synapses and lesions).

Long ascending tracts. Internal and external appearances (cross sections) of the spinal cord at different levels (horns of gray matter: ventral, dorsal, lateral with types of cells, white matter tracts localization). Pain.

Case study: Brown-Sequard Syndrome, Lumbar Puncture.

References:


Breasts, its vasculature, lymphatic drainage and innervation.

Clinical consideration – Tube thoracostomy; Breast carcinoma.

Clinical anatomy: chest pain, dyspnea, extrapleural intrathoracic surgical access, herpes zoster infection of the spinal ganglia, intercostal nerve block, section of the phrenic nerve, referred pain from the diaphragm, rupture of the diaphragm and herniation of viscera, congenital diaphragmatic hernia, changes in the breast, breast quadrants, breast cancer, polymastia, amastia, polythelia, gynecomastia, thoracic outlet syndrome, dyspnea, herpes zoster infection, thoracocentesis, intercostal nerve block.

References:
Chambers of the heart and openings. Cardiac valves and their auscultatory areas. Heart tamponade. Quiz 8.
Pericardium. Heart: structure of the wall, location and relations, parts, surfaces and borders.
Case study no 7-1: Angina Pectoris; 7-2: Acute Myocardial Infarction (MI).

Clinical anatomy: surgical significance of the transverse pericardial sinus, exposure of the IVC and SVC, pericarditis, pericardial effusion, cardiac tamponade, pericardiocentesis, positional abnormalities of the heart, percussion of the heart, valvular heart disease, aneurysm of the ascending aorta, stroke or cerebrovascular accident.

References:

Coronary arteries. Heart attack. Area of supply of the cardiac wall.
Vasculature and innervation of the heart. Conducting system of the heart. Roots of the great vessels of the heart. Pulmonary and systemic circulations. Adult structures derived from the dilatations of the primitive heart. Discussion on fetal circulation.
Case study no.5-1: Postductal Coarctation of the Aorta.

Clinical anatomy: variations of the coronary arteries, coronary heart disease, angina pectoris, coronary bypass graft, coronary angioplasty, collateral circulation via the smallest cardiac veins, EKG, coronary occlusion and the conducting system of the heart, artificial pacemaker, cardiopulmonary resuscitation, fibrillation and defibrillation of the heart, cardiac referred pain, transposition of the great vessels, tetralogy of Fallot, persistent truncus arteriosus, patent ductus arteriosus, embryology of the right atrium, basis for naming of the aortic and pulmonary valves, atrial and ventricular septal defects, congenital aortic stenosis, premature closure of the foramen ovale.


Trachea: bifurcation, differences between right and left main bronchi. Lobular and segmental bronchi – innervations and blood supply. Quiz 10.


Case study no. 6-3: Tension Pneumothorax.

Clinical anatomy: injuries to pleurae, pulmonary collapse, pneumothorax, hydrothorax, hemothorax, thoracocentesis, insertion of chest tube, thoracoscopy, pleuritis, pleural adhesion, pleurectomy and pleurodesis, auscultation and percussion of the lungs, apical lung cancer, aspiration of foreign bodies, bronchoscopy, lung resections, segmental atelectasis, bronchial asthma, pulmonary embolism, lung cancer and mediastinal nerves, lymphatic drainage after pleural adhesion, bronchogenic carcinoma, pleural pain, pulmonary hypoplasia.

References:


References:


Clinical anatomy: levels of the viscera relative to the mediastinal divisions, mediastinoscopy and mediastinal biopsies, widening of the mediastinum, age changes in thymus, location of the left brachiocephalic vein in children, coarctation of the aorta, aneurysm to ascending aorta, variations in the great vessels injury to the recurrent laryngeal nerves, blockage of esophagus, laceration of the thoracic duct, variations of the thoracic duct, alternate venous routes to the heart, treacheoesophageal fistula.

References:

LECTURE 6. Partial Thorax.


III SECTION: ABDOMEN.


Clinical anatomy: clinical significance of fascia and fascial spaces of abdominal wall, protuberance of the abdomen, abdominal hernias, palpation of anterolateral abdominal wall, superficial abdominal reflexes, injury to nerves of the anterolateral abdominal wall, abdominal surgical incisions, reversal of venous flow and collateral pathways of superficial abdominal veins, external supravesical hernia, postnatal patency of umbilical vein, maldescent of testis, inguinal hernias, cremasteric reflex, hydrocele, cysts and hernias of canal of Nuck, hematocoele, torsion of spermatic cord, anesthetizing scrotum.

References:


References:

Inguinal region – hernias: types and examination. Peritonitis; Ascites; Paracentesis.

Posterior abdominal wall – overview. Fascia of the posterior abdominal wall.
Muscles of the posterior abdominal wall. Somatic nerves of the posterior abdominal wall.
Autonomic nerves and ganglia of the posterior abdominal wall. Blood vessels of the posterior abdominal wall: abdominal aorta and its branches, inferior vena cava and its tributaries. Lymphatic drainage of the posterior abdominal wall and lymphatic trunks of the abdomen.
Clinical consideration – Abdominal Aortic Aneurysm.

Clinical anatomy: psoas abscess, posterior abdominal pain, partial lumbar sympathectomy, pulsations of the aorta and abdominal aortic aneurysm, collateral routes for abdominopelvic venous blood.

References:
LAB SESSION 21. Stomach: parts, wall, topography, blood and nerve supply.

Duodenum, jejunum and ileum: parts, wall, topography, blood and nerve supply. Differences between jejunum and ileum. Appendix and large intestine: parts, wall, topography, blood and nerve supply, small and large intestine. Rectum: parts, topography, blood and nerve supply. Spleen: ligaments and blood supply. Quiz 17.


Clinical consideration – Sliding and paraesophageal hiatal hernia; Esophageal reflux; Splenomegaly; Splenectomy.

Clinical anatomy: esophageal varices, pyrosis, displacement of the stomach, hiatal hernia, congenital diaphragmatic hernia, pylorospasm, congenital hypertrophic pyloric stenosis, carcinoma of the stomach, gastrectomy, gastric ulcers, visceral referred pain, paraduodenal hernias, duodenal ulcers, gallstones in the duodenum, developmental changes in the mesoduodenum, embryology of the small intestine, ischemia of the intestine, ileal diverticulum, positions of the appendix, appendicitis, appendectomy, laparoscopy, mobile ascending colon, colitis, colectomy ileostomy, colonostomy, colonoscopy, diverticulosis, volvulus of sigmoid colon, rupture of the spleen, splenectomy, splenomegaly, accessory spleens, splenic needle biopsy, splenoportography.

References:

Overview of the Hypothalamus and the Limbic System.


References:

LECTURE 8. Abdomen: Barrett esophagus; Gastric and duodenal ulcers; Crohn Disease; Ulcerative Colitis.


Clinical anatomy: subphrenic abscesses, hepatic lobectomies and segmentectomies, aberrant hepatic arteries, variations in the relationships of the hepatic arteries, unusual formation of the portal vein, liver biopsy, rupture of the liver, hepatomegaly, cirrhosis of the liver, liver transplantation infundibulum of the gallbladder, mobile gallbladder, variations in the cystic and hepatic ducts, accessory hepatic ducts, gallstones in the duodenum, cholecystectomy, portal hypertension and portasystemic shunts, blockage of the hepatopancreatic ampulla,
accessory pancreatic tissue, pancreatitis, pancreatectomies, rupture of the pancreas, pancreatic cancer.

References:

Definition and structure of the peritoneum. The relationship of the viscera to the peritoneum.

Clinical anatomy: peritoneum and surgical procedures, peritonitis, ascites, paracentesis, intraperitoneal injection and peritoneal dialysis, flow of inflammatory exudate, peritoneal adhesions and adhesiotomy, function of the greater omentum, abscess formation, spread of pathological fluids, flow of ascetic fluids and pus, fluid in the omental bursa, intestine in the omental bursa, severance of the cystic artery.

References:


Clinical consideration – Horseshoe kidney; kidney stones. 

Clinical anatomy: retroperitoneal pneumography, perinephric abscess, nephroptosis, renal transplantation, renal cysts, pain in the pararenal region, accessory renal vessels renal and ureteric calculi, congenital anomalies of the kidney and ureters. 

References: 


Surface anatomy of the abdomen. 

References: 

LECTURE 10. Partial Abdomen 

LAB SESSION 27. Seminar for Abdomen Partial Exam 

IV SECTION. PELVIS. 

Structure of the bony pelvis, its planes, divisions and bones. Detailed description of ilium, ischium, pubic bone, sacrum and coccyx. Orientation of the pelvis and pelvic dimensions.
Pelvic joints and ligaments: lumbosacral joint, sacroccygeal joint, sacroiliac joints, pubic symphysis.

**Clinical anatomy:** sexual differences in the pelvis, pelvic diameters, pelvic fractures, spondylosis and spondylolisthesis, relaxation of pelvic joints and ligaments during pregnancy.

**References:**


**Clinical consideration – Pelvic relaxation; Hemorrhoids.**

**Clinical anatomy:** injury to the pelvic floor, prenatal “relaxation” training for participatory childbirth, rectal examination, resection of the rectum, disruption of the perineal body, episiotomy, rupture of the urethra in males and extravasation of urine, starvation and rectal prolapse, the pectinate line – a clinically important landmark, anal fissures and perianal abscesses, hemorrhoids, anorectal incontinence.

**References:**


Clinical consideration – Varicocele; Benign prostatic hyperplasia (BPH).

Clinical anatomy: hypertrophy of the prostate, distension of the scrotum, palpation of testes, hypospadias, phimosis, paraphimosis, circumcision, male sterilization, abscesses in the seminal vesicles, cryptorchidism (undescended testes), epididymitis, orchitis, spermatocele, epididymal cyst, varicocele, cancer of the testis and scrotum, cremasteric reflex, vestigial remnants of embryonic genital ducts.

References:


Female internal genital organs: vagina, uterus, uterine tubes, ovaries. Female perineum: mons pubis, labia majora and minora, clitoris, vestibule of vagina, bulbs of vestibule. Adult male and female structures derived from each precursor of the indifferent embryo.
Sacral and coccygeal plexuses of nerves. Pelvic autonomic nerves. Internal iliac arteries and their branches, internal iliac veins and their tributaries, pelvic lymph nodes.
Clinical consideration – Endometriosis.

Clinical anatomy: distension of the vagina, examination of the vagina, vaginal fistulae, culdoscopy, laparoscopy, culdocentesis, anesthesia for childbirth, cervical cancer, PAP smear,
examination of the uterus, lifetime changes in the normal anatomy of the uterus, disposition of
the uterus and uterine prolapse, hysterectomy, infections of the female genital tract, patency
of the uterine tubes, ligation of the uterine tubes, ectopic tubal pregnancy, remnants of the
embryonic ducts, laparoscopic examination of pelvic viscera, perineal injuries during
childbirth, female circumcision, vulvar trauma, infection of greater vestibular gland,
administration of pudendal and ilioinguinal blocks, Kegel exercises for increased
development of female perineal muscles, vaginismus, injury to pelvic nerves, internal iliac
ligation, female and male pseudo-intersexuality, 5-alpha-reductase 2 deficiency.

References:

LAB SESSION 32. Urinary organs. Urinary bladder: topography, blood and nerve
supply. Female urethra vs. male urethra. Vascular and nervous
system of pelvis: common , external and internal iliac arteries and
veins. Somatic and autonomic nerves.

Surface anatomy of the Pelvis. Quiz 27.

Urinary organs: ureters, urinary bladder and urethra (male and female).
Surface anatomy of the pelvis.

Clinical anatomy: iatrogenic injury to the ureters, iatrogenic compromise to the ureteric blood
supply, ureteric calculi, cystocele, suprapubic cystotomy, cystoscopy, rupture of the bladder,
clinically significant differences between male and female urethrae, rupture of the urethra in
males, urethral catheterization.

References:
418, 425-426.
p. 248, 249.
LECTURE 12. Partial Pelvis

LAB SESSION 33. Seminar for Pelvis Partial Exam.

LAB SESSION 34. Review of materials. Strategies for Semester Test.

LECTURE 13/LAB SESSION 35. SEMESTER TEST