Spotter Test

Human Anatomy 101

Intercostal muscles

1. External intercostal
    - The most external of the three intercostal muscles, it is from the inferior border of the rib above and then inserts on the superior border of the rib below it. It elevates the ribcage during inhalation. Supplied by intercostal nerves. Runs up and laterally.
2. Internal intercostal
    - Innervated by the intercostal nerve. arises from the ridge on the inner surface of a rib, as well as from the corresponding costal cartilage, and is inserted into the inferior border of the rib above. Fibres run obliquely in a direction opposite to the external intercostal and therefore depress the ribs and are used for exhalation. Runs up and medially.
3. Innermost intercostal.
    - Encloses the intercostal nerves and blood vessels between the internal intercostal.
4. Thoraco-abdominal diaphragm
    - Just below the lungs, above the stomach, liver etc. produces most of the pressure changes of thoracic cavity, drawing air in and pushing air out. Is pierced by aorta, inferior vena cava, oesophagus.
5. Lobes of the lungs
    - The right lung has 3 lobes, a superior lobe, divided from the middle lobe, which is divided from the inferior lobe by the oblique fissure. The left lung is divided into a superior and inferior lobe by an oblique fissure.
6. Visceral and parietal pleurae.
    - Visceral pleura covers the lungs and then the parietal pleura is on the outer. In between there is pleural fluid and space, allowing lungs to expand
7. Root and the hilum of the lung
    - Lung roots are enclosed in a short tubular sheet of pleura that joins the pulmonary and mediastinal parts of pleura. The lung root extends inferiorly as a narrow fold known as the pulmonary ligament. Structures that form the root of the lung enter and exit at the hilum, and allow the root to be connected to the heart and to the trachea. Functionally, this means that the hilum aids the lung roots by anchoring the lungs to the heart, trachea, and surrounding structures.
    - Hilum: In the inner (medial) side of each lung, about two-thirds of the distance from its base to its apex, is the hilum, the point at which the bronchi, pulmonary arteries and veins, lymphatic vessels, and nerves enter the lung. it is the only site of entrance or exit of structures associated with the lungs.
8. Superior and inferior mediastinum, their boundaries and contents
    - The mediastinum is the central compartment of the thoracic cavity, located between the two pleural sacs. It contains most of the thoracic organs, and acts as a conduit for structures traversing the thorax on their way into the abdomen. Anatomically, the mediastinum is divided into two parts by an imaginary line that runs from the sternal angle. Superior mediastinum – extends upwards, terminating at the superior thoracic aperture. Inferior mediastinum – extends downwards, terminating at the diaphragm. It is further subdivided into the anterior mediastinum, middle mediastinum and posterior mediastinum.

- Superior border of the superior mediastinum is the first rib and denotes the thoracic inlet. Laterally bordered by the lungs. Superior contains the SVC, Arch of Aorta, brachiocephalic veins and artery, left common carotid artery, left subclavian artery vagus nerve, phrenic nerve, thymus, trachea.
- The inferior mediastinum contains the vagus and phrenic nerve, thymus, heart, ascending and descending aorta, oesophagus.

9. Structures passing through the hilum of the lung
    - Primary bronchi, pulmonary arteries and veins, lymphatic vessels and nerves
10. Right atrium, fibrous and serous pericardium
    - The right atrium forms the base of the heart (the back/posterior portion of the heart).
    - The outer is a fibrous layer. The inner forms a double serous membrane.
11. Opening of coronary sinus SVC and IVC into the right atrium
    - The coronary sinus is a collection of veins joined together to form a large vessel that collects blood from the heart muscle (myocardium). It delivers deoxygenated blood to the right atrium, as do the superior and inferior vena cava.
12. Fossa ovalis between right and left atria
    - The fossa ovalis is a depression in the right atrium of the heart, at the level of the interatrial septum, the wall between right and left atrium. The fossa ovalis is the remnant of a thin fibrous sheet that covered the foramen ovale during foetal development. It closes over once you are born.
13. Tricuspid valve, mitral valve (atrioventricular valves) and valve cusps and Chorda tendinae
    - Tricuspid valve controls blood flow from the right atria to the right ventricle. The mitral (bicuspid) valve controls blood flow from the left atrium to the left ventricle. The purpose is to prevent back flow and when the heart contracts the blood is forced the right direction instead of backwards.
    - The cusps are the little 'flaps' that form the valve. (bicuspid = two flaps, tricuspid = three flaps).
    - The chordae tendinae, or heart strings, are cord-like tendons that connect the papillary muscles to the tricuspid valve and the mitral valve in the heart. The stringy (tendons) that pull the cusps with action of papillary muscles. Contract of the papillary muscle prevent inversion or prolapse of these valves on systole
14. Aortic semilunar valve
    - The aortic valve and pulmonary valve, which control blood flow out of the ventricles up the ascending aorta and the pulmonary vein. Stops back flow.
15. Pulmonary semilunar valve
    - Prevents back from of blood into the ventricle from the pulmonary artery. The valve is opened by increased blood pressure of the ventricular systole (contraction of the muscular tissue), pushing blood out of the heart and into the artery. It closes when the pressure drops inside the heart.
16. Gall bladder position and function
    - The gall bladders main function is to store and concentrate bile. Distinct green colour, it is located underneath the liver (the right lobe). It releases bile through cystic duct, which joins common hepatic duct. Together they form the common bile duct, which opens in the duodenum to digest fats and lipids.
17. Pancreas, its parts, function

- The exocrine pancreas produces enzymes that help to digest food, particularly protein. The endocrine pancreas makes the hormone insulin, which helps to control blood sugar levels. It spans from the duodenum (its head), to the spleen (its tail). It lies posterior to the stomach.

18. Spleen surfaces and function
    - an abdominal organ involved in the production and removal of blood cells and forming part of the immune system. Located in the right side of abdomen, at the tail of the pancreas. At about 9^{th}-11^{th} rib height in the left hypochondrium. The 2 surfaces of the spleen are the diaphragmatic and visceral. The diaphragmatic surface is smooth and convex, and the visceral surface is irregular and concave and has impressions. The gastric impression is for the fundus of the stomach, which is the largest and most concave impression on the spleen. The renal impression is for the left kidney and lies between the inferior and intermediate borders. The colic impression is for the splenic flexure of the colon. Supplied by splenic artery.
19. Left and right ventricles and papillary muscles
    - The right ventricle is mostly located anteriorly, next to the left ventricle which forms the apex of the heart, the front left pointing corner at the bottom of the heart.
    - The papillary muscles are muscles located in the ventricles of the heart. They attach to the cusps of the atrioventricular valves (also known as the mitral and tricuspid valves) via the chordae tendinae and contract to prevent inversion or prolapse of these valves on systole (or ventricular contraction).
20. Left atrium and Openings of the pulmonary veins
    - The left atrium is located behind the left ventricle, it receives oxygenated blood back from the lungs, and then empties into the left ventricle.
    - There is a total of four pulmonary veins, and all of them connect to the left atrium of the heart. The heart pumps oxygen-depleted blood into the lungs via the pulmonary arteries. Once the blood has been oxygenated, it returns to the heart via the pulmonary veins. Located at the right upper corner of the heart.
21. Kidneys- position, poles, cortex, medulla, pyramids
    - Right kidney is slightly lower than the left. Adrenal gland sits above the kidney.
    - Medulla = the inner part, the cortex = the outer portion, pyramids = the pink triangular medulla shape. Poles = the top
    - Kidneys are retroperitoneal structures that are normally located between the transverse processes of T12-L3 vertebrae, with the left kidney typically somewhat more superior in position than the right. The upper poles are normally oriented more medially and posteriorly than the lower poles.
    - The spleen is located anterior to the upper pole and is connected by the splenorenal (lienorenal) ligaments. Inferiorly to these organs, the colon typically rests anteriorly to the kidneys on both sides. Posteriorly, the diaphragm covers the upper third of each kidney, with the 12th rib most commonly crossing the upper pole.
22. Ureter and urinary bladder
    - Ureter extends from each kidney down to the urinary bladder, about 10 inches long. Has three constricted areas which can be susceptible to kidney stones getting caught. First is at the junction between ureter and kidney, then where ureter crosses over common iliac artery and third at the entrance to the bladder.

- Bladder stores the urine before expulsion. It has an internal sphincter (autonomic control) and external sphincter (somatic control). Bladder gives rise to urethra which carries the urine out of the body.

23. Male and female urethra
    - Male urethra is a lot longer than the female. It carries both the urine and sperm. The vas deferens passes through the prostate gland and turns into the ejaculatory ducts adding to urethra. Urethra has 3 portions, the prostatic a small proximal part, then the longer membranous portion, before the spongy portion in the penis surrounded by the corpus spongiosum
    - Female urethra is a simple short tubular structure, with the sole purpose of conducting urine. From the bladder to urethra opening.
24. Prostrate position and function
    - Prostate sits inferior to bladder. The prostate is a walnut-sized gland located between the bladder and the penis. The prostate is just in front of the rectum. The urethra runs through the centre of the prostate, from the bladder to the penis, letting urine flow out of the body.
    - The prostate secretes fluid that nourishes and protects sperm. During ejaculation, the prostate squeezes this fluid into the urethra, and it's expelled with sperm as semen.
25. Seminal vesicle position and function
    - The vasa deferentia (singular: vas deferens) bring sperm from the testes to the seminal vesicles. The seminal vesicles contribute fluid to semen during ejaculation. This gland is located behind the bladder, above the prostate gland, and in front of the rectum. It is about two inches long.
    - Holds the liquid that mixes with sperm to form semen. Releases fluid rich in sugars (especially fructose), which feeds the sperm. The fluid also has clotting properties that make the semen sticky. This ensures that the semen clings inside the vagina long enough for the sperm to travel to the egg.
26. Vas deferens, ejaculatory ducts and function
    - Vas deferens = duct that transport sperm from the testicles to the urethra.
    - Ejaculatory duct = the tube formed from the union of the vas deferens with the duct of the seminal vesicle. They pass through the prostate and then open into the urethra. Function is a passage for sperm, where the sperms mixes with fluid to form semen and then to transport semen into urethra for ejaculation =.
27. Uterus, its function, parts, position and arterial supply
    - The uterus is broken into fundus the top 1/3, body in the middle and the cervix at the bottom where it opens into vaginal canal. The uterus is a pear-shaped organ located in the female pelvis between the urinary bladder anteriorly and the rectum posteriorly. The average dimensions are approximately 8 cm long, 5 cm across, and 4 cm thick. Blood is provided to the uterus by the ovarian and uterine arteries, the latter of which arise from the anterior divisions of the internal iliac artery. The uterine artery occasionally gives off the vaginal artery (although this is usually a separate branch of the internal iliac around), which supplies the upper vagina, and the arcuate arteries, which surround the uterus. It then further branches into the radial arteries, which penetrate the myometrium to provide blood to all layers, including the endometrium.

- The uterus is a dynamic female reproductive organ that is responsible for several reproductive functions, including menses, implantation, gestation, labour, and delivery.
- Uterus is antroverted – anteriorly tilted at the top (the fundus is more anterior and the cervix is more posterior)

28. Uterine tube, its function, parts, position and arterial supply
    - Aka the fallopian tubes. The main function of the uterine tubes is to assist in the transfer and transport of the ovum from the ovary, to the uterus. They lie in the upper border of the broad ligament, extending laterally from the uterus. The arterial supply to the uterine tubes is via the uterine and ovarian arteries. In the presence of sperm and fertilization, the uterine tubes transport the fertilized egg to the uterus for implantation.
    - Parts – infundibulum (the first quarter that heads upwards), the ampulla (the next two quarters which bends upwards and medially), the isthmus (the medial last quarter which meets the fundus of the uterus).