Study Guide Blood vessels and Circulation

1. Fig 21.1 – pay attention to structure of arteries, capillaries and veins.
2. Both arteries and veins are formed of 3 concentric layers – Endothelium, Tunica Media and Tunica Externa. Endothelium has epithelium and connective tissue. Tunica media is formed of smooth muscle fibers and Tunica externa is formed of connective tissue. For an artery and vein of similar size arteries have thicker walls than veins.
3. Elastic arteries → Muscular arteries → Arterioles → Capillaries → Venules → medium sized vein → Large Veins
4. Arterioles lack tunica externa and have only endothelium and smooth muscle fibers (tunica media).
5. Capillaries have only endothelium.
6. Hypertension: is abnormally high blood pressure. The walls of arteries lose elasticity with age = Arteriosclerosis. Low Density Lipoproteins = LDL’s deposit inside arteries as Plaque. (Atherosclerosis) and can partially or completely block it. This deposition also increases the inelasticity of arteries and an increase in blood pressure. Mostly obese persons have higher level of Cholesterol and higher deposition of LDL’s.
7. Heart attack: is the main cause of death in America. When one of the coronary arteries get blocked a part of heart muscles die. It is called heart attack. Obese persons are more prone to heart attacks.
8. Venous Flow – Veins have valves in them to check backflow of blood. Working skeletal muscles act like pumps and press veins to push blood towards heart.
9. Arteries = 120mm, Arterioles = 60mm, Capillaries = 25mm, Veins = 0 – 10mm
10. In arteries, Systolic pressure is 120mm/Hg and diastolic pressure is 80mm/Hg. Pulse pressure is = 120 – 80 = 40mm/Hg
11. Capillary Pressure is 35mm but Osmotic pressure in capillaries is 25mm. Therefore, water and solutes filter out from capillaries with 10mm pressure (35 – 25 = 10mm). 24L of blood filters out per day. 20.4L is reabsorbed in venules with lower blood pressure (18mm). 3.6L of filtrate is returned to blood by Lymphatic system.
12. Major arteries In Fig 21.2 – Learn about the organs supplied by these arteries.
13. aorta → left and right coronary artery
14. aortic arch → 1. brachiocephalic 2. left common carotid 3. left subclavian
15. Brachiocephalic →1. right subclavian 2. right common carotid
16. Thoracic aorta → esophagus, inter costal muscles and diaphragm
17. Abdominal aorta → 1. celiac trunk, 2. superior and inferior mesenteric arteries, 3. suprarenals 4. gonadial
18. Abdominal aorta divides into 2 common iliacs that supply blood to pelvis and leg of its side.
19. Main veins – fig 21.6 – External jugular from head and neck, axillary from the arm, both join to form subclavian veins.
20. Subclavians open into Brachiocephalic veins that also receive vertebral and internal jugular veins.
21. 2 brachiocephalic veins form Superior Vena cava that receives Azygos system – collects blood from chest. Superior vena cava opens into right atrium.
22. Femoral and other veins of leg form Common Iliac vein on each side.
23. Common Iliac veins join to form Inferior vena cava.
24. Inferior vena cava receives blood from 4 veins. 1. suprarenal veins – adrenal gland 2. gonadal from ovary or testis 3. renal veins from kidney on each side 4. hepatic veins from liver.
26. Inferior vena cava opens into right atrium.