



كلية الرشيد الجامعة/ قسم التمريض

مادة التشريح للمرحلة الاولى

المحاضرة الخامسة

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Human anatomy

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Cardiovascular system

Is the transport system of the body, which transport foods, oxygen and water to the tissue cells and transport cells waste products to excretory organs.

It consists of 3 parts;

- 1- The blood
- 2- The heart
- 3- The blood vessels

The blood;

Is the viscous fluid that varies in color from bright to dark red.

The volume of blood accounts for about 8% of the total body weight.

Function of blood

1- Transportation

- a- Transport O₂ from the lung to tissues of the body and CO₂ from the tissues to the lung
- b- Transports food to the cells
- c- Transports waste products from the cells to the sites from which they released
- d- Transport hormones from there sites of origin to the target organs that they effect

2- Regulation

- a- Regulate the PH of the body fluids at about 7.4
- b- Regulate the amount of fluid in the tissues
- c- Regulate body temperature

3- Protection

- a- Defenders against pathogens(antibodies)

b- Protect against blood loss by clotting

Composition of blood

The blood composed of 2 elements;

- 1- Liquid element called plasma
- 2- Formed elements called corpuscles

1-blood plasma

The plasma itself is 90% water and 10% different dissolved substances

2-the formed elements (blood cells)

Are of 3 types: a- erythrocytes b- leukocytes c- platelets

A- Erythrocytes

The red cells, are tiny, disk shaped bodies with a central area that thinner than the edge. They are different from other cells in that:

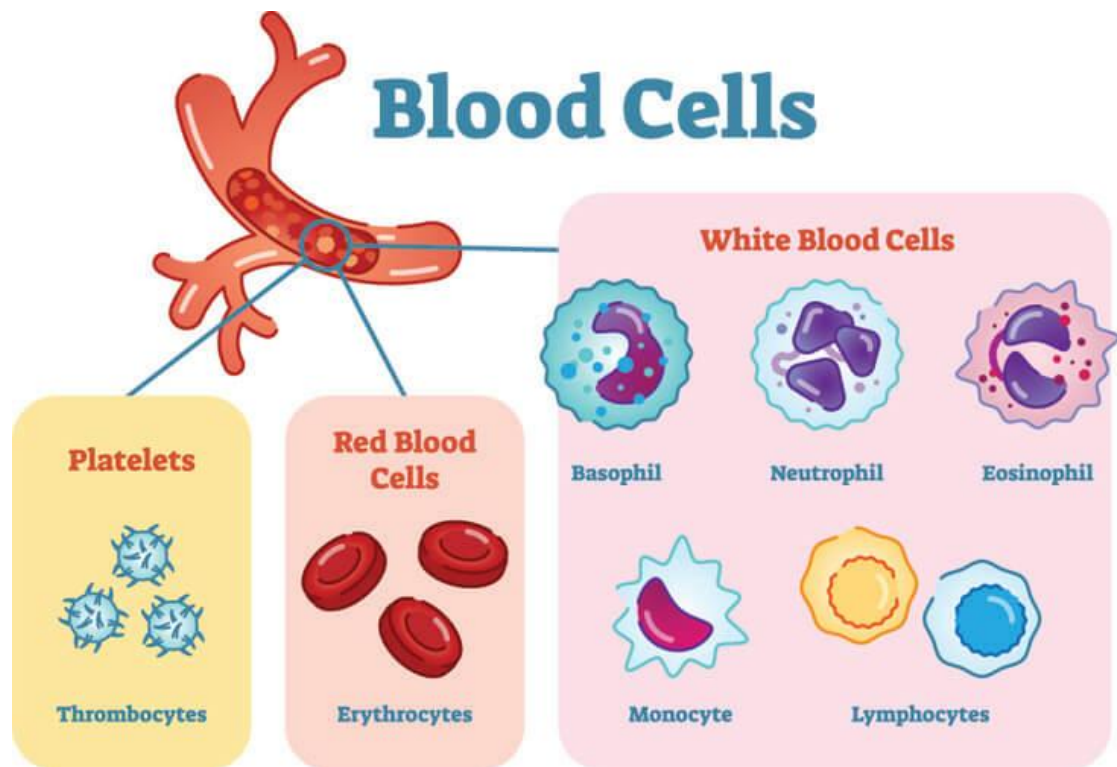
- 1- The mature form does not have a nucleus
- 2- Live a much shorter time about 120 days
- 3- It contains hemoglobin, which is a protein that contains iron combined with oxygen and CO₂

B- Leukocytes

White blood cell contains nuclei of varying shapes and size. They are divided into:

- 1- Granulocytes: a- neutrophils b- eosinophils c- basophils
- 2- Agranulocytes a- lymphocytes b- monocytes

c- Platelets (thrombocytes): The smallest cells in blood, they shaped like plates in their non active form, nucleus absent, play a major role in blood clotting.



3- The heart

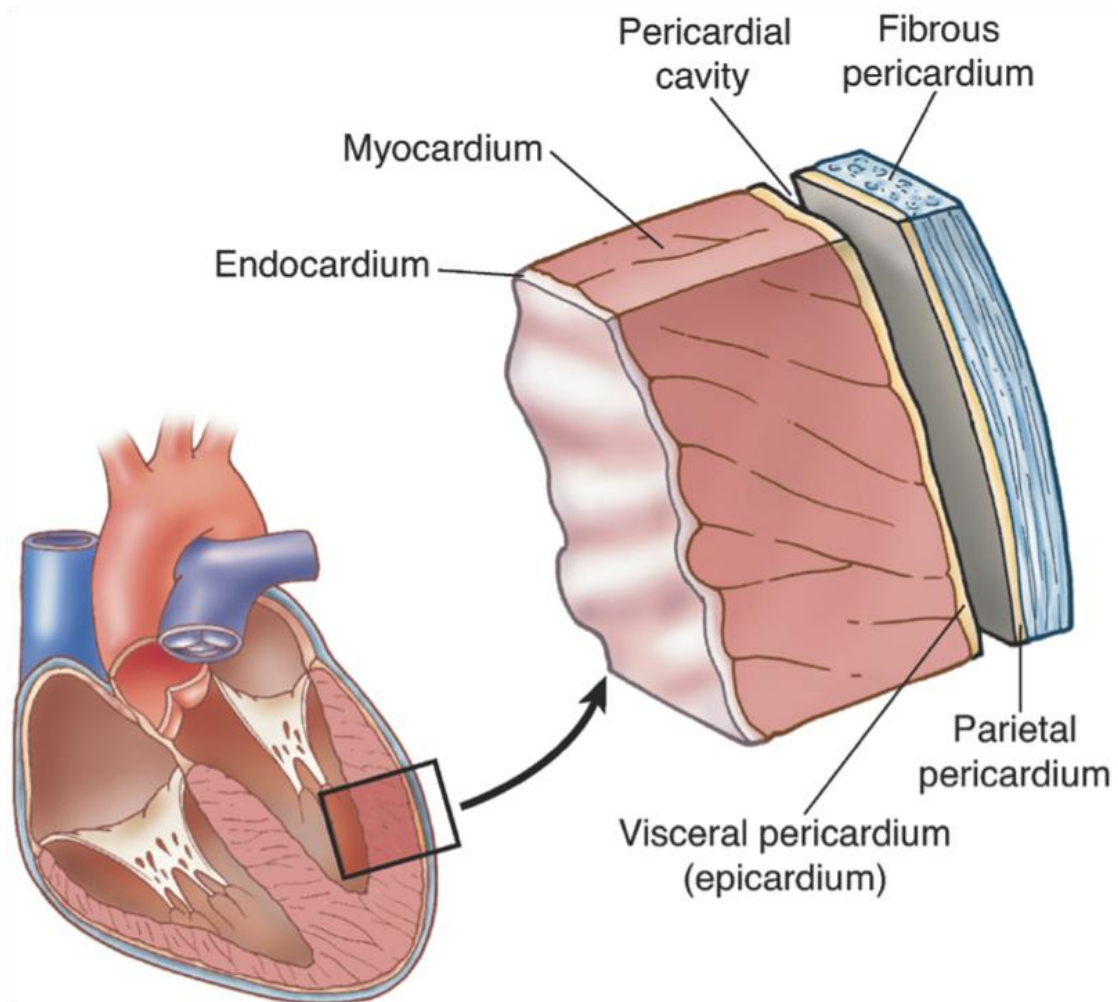
Is a muscular pump that drives the blood through the blood vessels. This organ is located between the lung in the center and a bit to the left on the midline of the body. Consist of four chambers, 2 in either side of the heart, one a receiving chamber (antrum) and the other a pumping chamber (ventricle)

Structures of the heart

The heart is a hallow organ, the walls of which are formed of three different layers

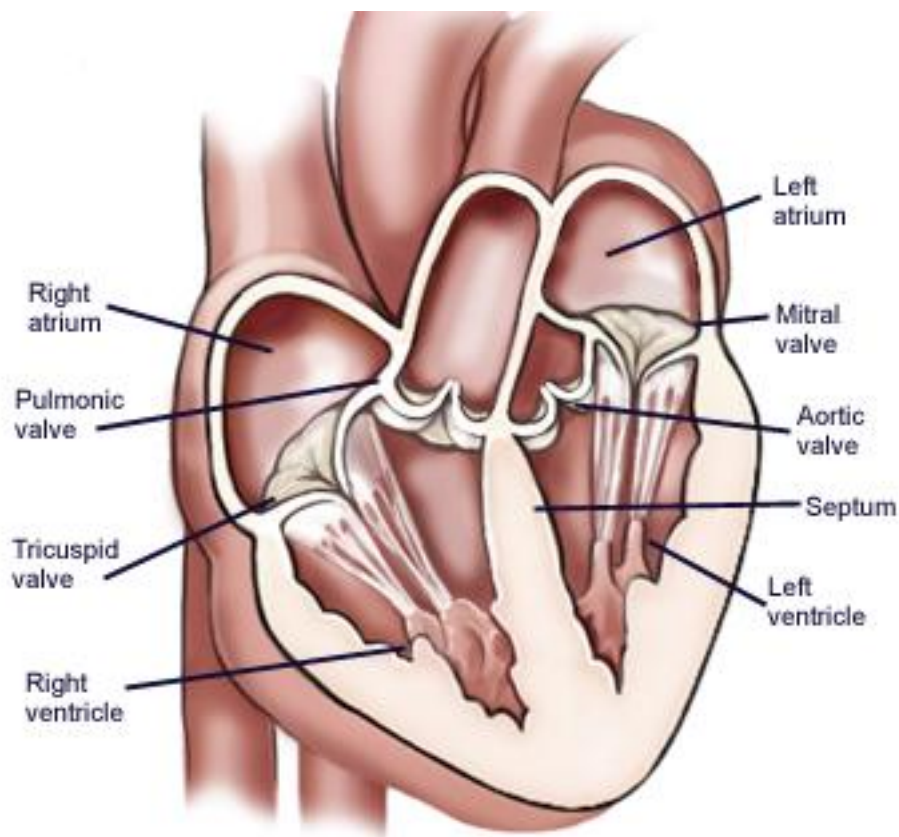
- 1- The endocardium; is a very thin smooth layer of cells that lines the interior of the heart
- 2- The myocardium; the muscle of the heart, is the thick layer

3- The pericardium; which forms the thin outermost layer of the heart



The heart valves:

- 1- The tricuspid valve; regulates blood flow between the right atrium and right ventricle
- 2- The mitral valve; lets oxygen-rich blood from the lungs and pass from the left atrium in to the left ventricle
- 3- The pulmonary valve; controls blood flow from the right ventricles into the pulmonary arteries which carry blood to the lung
- 4- The aortic valve; opens the way for oxygen rich blood to pass from the left ventricle into the aorta, the body's largest artery, where it is delivered to the rest of the body

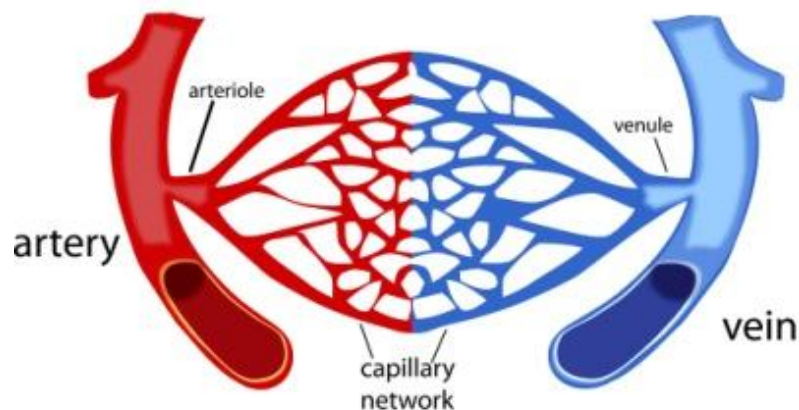


Blood vessels; is the tube through which the blood circulates in the body. Blood vessels include a network of arteries, arterioles, capillaries, venules and veins

The arteries carry oxygenated blood away from the heart to the cells, tissues and organs.

The arteries branch into arterioles, smaller arteries that carry blood to the capillaries, which are minute vessels that permeate tissue. Blood is then carried to the venules (small veins), which join together to form veins (many of them possess valves), which return blood to the heart.

Sinusoids: are type of capillary vessel but they have irregular cross diameter and are wider, they found in the bone marrow, spleen, liver, and some endocrine gland.

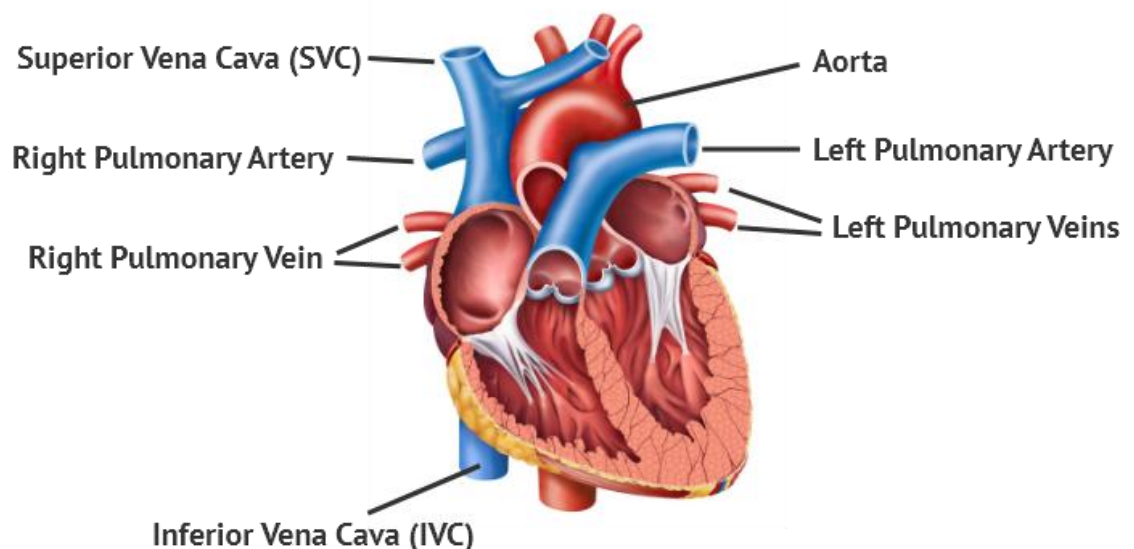


Major blood vessels arise from the heart:

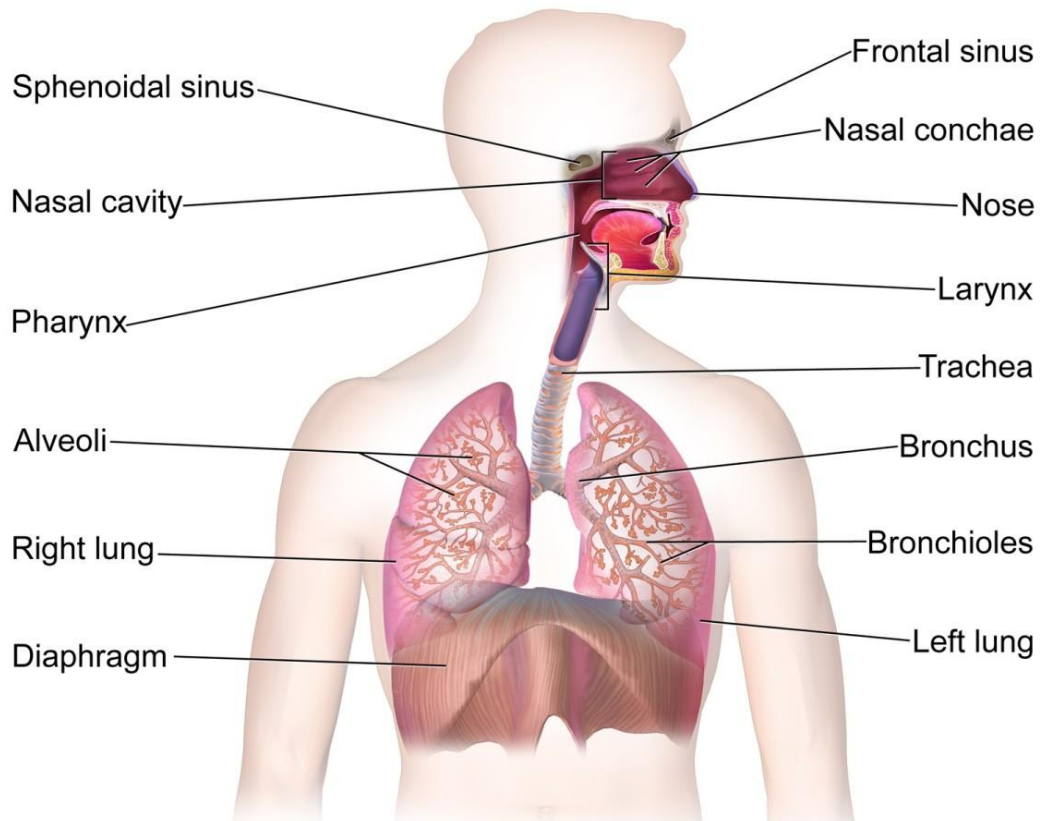
- 1- Pulmonary arteries (left and right);** arises from pulmonary trunk, carries deoxygenated blood from the right ventricle to the lung
- 2- Vena cava (superior and inferior);** connected to the right atrium, transport deoxygenated blood from various regions of the heart
- 3- The aorta;** is the largest artery in the body, arises from the left ventricle of the heart, forms an arch, then extends down to the abdomen, where it branches off into two smaller arteries, aorta carries and distributes oxygen rich blood to all arteries.

Aorta divided into 3 parts:

- *Ascending aorta
- *Arch of aorta
- *Descending aorta



The respiratory system



The Respiratory System

The respiratory system consists of;

Nose, mouth, pharynx, larynx, bronchi and lungs

The upper respiratory tract includes;

Nose, nasal cavity, ethmoidal sinus, frontal sinuses, maxillary sinus, larynx and trachea

Larynx; commonly called the voice box is an organ in the neck involve in breathing, sound production and protect the trachea against food aspiration.

Trachea; is cartilaginous and membranous tube, extending from the lower part of the larynx on a level with the sixth

cervical vertebra to the upper border of the fifth thoracic vertebra, where it divides into two bronchi, one for each lung. The trachea being flattened posteriorly it measures about 13 cm in length.

The lower respiratory tract includes;

Bronchi, bronchioles and lungs

The lungs; are a pair of cone shaped organs made up of spongy, pinkish gray tissue. They take up most of the space in the chest, or the thoracic (the part of the body between the root of the neck and the diaphragm)

The lungs are enveloped in a membrane called the pleura.

The pleura; is a serous membrane consist of two layers. The thin space between the two pleural layers called the pleural cavity; it normally contains a small amount of pleural fluid. The outer pleura (parital pleura) are attached to the chest wall. The inner pleura (visceral pleura) cover the lungs.

The lungs are separated from each other by mediastinum. The right lung has 3 sections called lobes. The left has 2 lobes

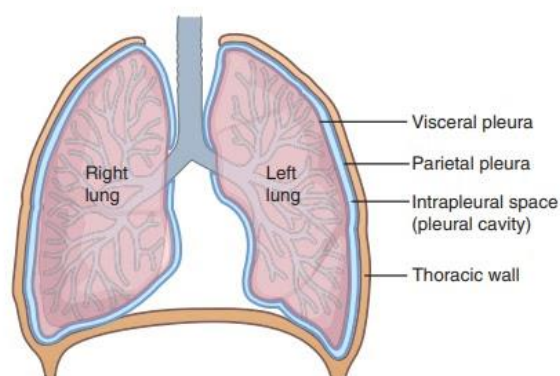


FIGURE 21-7 The lungs reside in the pleural cavities, subdivisions of the thoracic cavity. They are lined with a serous membrane called the pleura. The intrapleural space is located between the visceral and parietal pleura.