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DEPARTMENT; PHARMACOLOGY

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**QUESTION;**

1. You will be provided with a video, watch it and use it to describe the heart and its functions

2. Write on five (5) different congenital anomalies of the heart

ANSWERS;

**THE HEART**

* The heart is a muscle about the same size of your fist.
* It lays behind or to the left of your breast bone or sternum.
* The human heart is an organ that pumps blood throughout the body via the circulatory system, supplying oxygen and nutrients to the tissues and removing carbon dioxide and other wastes.
* The inside of the heart is divided into four chambers; the top 2 chamber are called the atria and are collection chambers for blood and the bottom two chambers are called the ventricles they receive the blood from the atria and pump it to the lungs and the body.
* An electric system transmits signals around the heart to control its pumping.
* The heart consist of 4 vavles which are;
* **The mitral valve** and **tricuspid valve**, which control blood flow from the atria to the ventricles.
* **The aortic valve** and **pulmonary valve**, which control blood flow out of the ventricles.

The coronary arteries run along the surface of the heart and provide oxygen-rich blood to the heart muscle.

* A web of nerve tissue also runs through the heart, conducting the complex signals that govern contraction and relaxation.
* Surrounding the heart is a sac called the pericardium.

FUNCTION OF THE HEART IS TO;

1. Take the blood from vena-cava(both superior and inferior)
2. Pump it through the pulmonary artery to the lungs
3. After the lungs oxygenate the received blood, blood is sent to the heart through the pulmonary vein
4. The heart then pumps the oxygenated blood for the whole body through the aorta
5. The heart transports nutrients, oxygen, and hormones to cells throughout the body and removal of metabolic wastes (carbon dioxide, nitrogenous wastes).
6. Protection of the body by white blood cells, antibodies, and complement proteins that circulate in the blood and defend the body against foreign microbes and toxins. Clotting mechanisms are also present that protect the body from blood loss after injuries.
7. Regulation of body temperature, fluid pH, and water content of cells.

**CONGENITAL ANOMALIES OF THE HEART**

Congenital anomalies are also known as birth defects, congenital disorders or congenital malformations. Congenital anomalies can be defined as structural or functional anomalies (for example, metabolic disorders) that occur during intrauterine life and can be identified prenatally, at birth, or sometimes may only be detected later in infancy, such as hearing defects.

* Atrial Septal Defect.
* Atrioventricular Septal Defect.
* Coarctation of the Aorta.
* Double-outlet Right Ventricle.
* d-Transposition of the Great Arteries.

**An atrial septal defect;** Is a birth defect of the heart in which there is a hole in the wall (septum) that divides the upper chambers (atria) of the heart. A hole can vary in size and may close on its own or may require surgery. An atrial septal defect is one type of congenital heart defect. Congenital means present at birth. As a baby’s heart develops during pregnancy, there are normally several openings in the wall dividing the upper chambers of the heart (atria). These usually close during pregnancy or shortly after birth. If one of these openings does not close, a hole is left, and it is called an atrial septal defect.

**An atrioventricular septal defect (AVSD)**; Is a heart defect in which there are holes between the chambers of the right and left sides of the heart, and the valves that control the flow of blood between these chambers may not be formed correctly. This condition is also called atrioventricular canal (AV canal) defect or endocardial cushion defect. In AVSD, blood flows where it normally should not go. The blood may also have a lower than normal amount of oxygen, and extra blood can flow to the lungs. This extra blood being pumped into the lungs forces the heart and lungs to work hard and may lead to congestive heart failure.

**Coarctation of the aorta** ; Also called aortic narrowing, is a congenital condition whereby the aorta is narrow, usually in the area where the ductus arteriosus (ligamentum arteriosum after regression) inserts. The word coarctation means "pressing or drawing together; narrowing". Coarctations are most common in the aortic arch. The arch may be small in babies with coarctations. Other heart defects may also occur when coarctation is present, typically occurring on the left side of the heart. When a patient has a coarctation, the left ventricle has to work harder. Since the aorta is narrowed, the left ventricle must generate a much higher pressure than normal in order to force enough blood through the aorta to deliver blood to the lower part of the body. If the narrowing is severe enough, the left ventricle may not be strong enough to push blood through the coarctation, thus resulting in lack of blood to the lower half of the body.

**Double outlet right ventricle (DORV);** Is a rare congenital heart defect, meaning it’s a condition a baby is born with. In DORV, the pulmonary artery and the aorta — the heart’s two major arteries — both connect to the right ventricle. In a normal heart, the pulmonary artery connects to the right ventricle, and the aorta connects to the left ventricle. DORV creates a problem because the right ventricle carries oxygen-poor blood, which then gets circulated in the body.

**D-Transposition of the great vessels (d-TGA)**; Is a congenital heart defect where the aorta and pulmonary artery are switched from their normal positions. In the normal heart, the right ventricle pumps out to the pulmonary artery (to the lungs) and the left ventricle pumps out to the aorta (to the body). Instead, in d-TGA, the aorta comes off of the right ventricle and the pulmonary artery comes off the left ventricle. The ventricles are the pumping chambers for the heart; the left ventricle was created to handle high pressure (out to the body) and the right ventricle was created to handle lower pressure (out to the lungs). In d-TGA, the blue (low-oxygen) blood returning from the body goes right back to the body instead of going to the lungs to get oxygen (to become red blood). The red (with oxygen) blood returns from the lungs and goes right back to the lungs, instead of to the body to give the tissues oxygen.