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**DEPARTMENT:** PHARMACOLOGY

**MATRIC NUMBER:** 18/MHS07/042

**COURSE CODE:** ANA 202

**QUESTION:**

1. You will be provided with a video, watch it and use it to describe the heart and its functions.
2. Write on 5 congenital anomalies of the heart.

**The heart and its functions**

The heart is a muscle about the size of your fist and lies behind and to the left of the breast bone or the sternum. The purpose of the heart is to pump blood through blood vessels, arteries and veins to all part of the body.

The heart is divided into four chambers. Two top chambers called atria which are the collection chambers for blood. While the two bottom chambers called the ventricles and receive the blood from the atria and pump it to the lungs and to the body.

The chambers are separated by valves which control the direction of blood flow. There are four valves; tricuspid valve, bicuspid valve, aortic valve and pulmonic valve.

Circulation begins at the right side of the heart where blood from the body comes into the right atrium the blood then passes into the right ventricle and is then pump into the lung where it is oxygenated. Once the blood is oxygenated, it flows into the left atrium and then into the left ventricle where it is pumped to the aorta and the rest of the body.

On the right side of the heart, the tricuspid valve separates the right atrium from the right ventricle. Allowing blood to enter the ventricle and not flow back to the atrium. Blood flows through the pulmonary artery to go to the lung.

On the left side of the heart, the bicuspid valve separates the atrium and the ventricle. Blood flows from the left ventricle to the aorta through the aortic valve and to the rest of the body.

Arteries carry oxygenated blood with nutrients to the rest of the body. Veins take blood back to the heart then it is pumped to the lungs where it is oxygenated. The hearts arteries, coronary arteries provide oxygen and nutrients to the heart muscles. The right coronary artery supplies blood to the bottom and back of the heart. The left coronary artery splits into two, one branch supplies blood to the front of the heart and the other delivers blood to the left side of the heart.

The electric system transmits signals throughout the heart to control its pumping. The electrical signal starts in the SA node which is in the upper portion of the right atrium and it is known as the natural pace maker of the heart. The electric signals passes down to the lower chambers of the heart via the AV node which controls the signals so the atria contract before the ventricles. In the ventricles, pathways carry the signals throughout the muscles so they contract at the same time to pump blood to the lung and the body.

Congenital anomalies of the heart

1. Aortic valve stenosis: in aortic valve stenosis, the aortic valve that controls the flow of blood out of the main pumping chamber of the heart to the body’s main artery is narrowed. This affects the flow of oxygenated blood away from the heart towards the rest of the body and may result in the left ventricle muscle thickening because the pump has to work harder.
2. Coarctation of the aorta: this is where the main artery has a narrowing, which means that less blood can flow through it. CoA can occur by itself or with a combination with other types of heart defects. The narrowing can be severe and will require treatment immediately after birth.
3. Ebstein’s anomaly: it is a rare form or congenital heart disease, where the valve on the right side of the heart (tricuspid valve), which separate the right ventricle and right atrium doesn’t develop properly. This means blood can flow the wrong way within the heart and the right ventricle may be smaller and less effective than normal. It often occurs with an atrial septal defect.
4. Pulmonary valve stenosis: it is a defect where the pulmonary valve, which controls the flow of blood out of the right heart pumping chamber to the lungs, is narrower and smaller than usual. This means the right heart pump has to work harder to push blood through the narrowed valve to get to the lungs.
5. Patent ductus arteriosus: as a baby develops in the womb, a blood vessel called ductus arteriosus connects the pulmonary artery directly to the aorta. The ductus arteriosus diverts blood away from the lung to the aorta. A patent ductus arteriosus is where this connection doesn’t close after birth and it is supposed to. This means that extra blood is pumped into the lungs, forcing the heart and lungs to work harder.