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DEPARTMENT: ANATOMY

MATRIC NUMBER: 18/MHS03/006

COURSE CODE: ANA 202

COURSE TITLE: GROSS ANATOMY OF THORAX AND ABDOMEN

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

THE HEART

The heart is a muscle about the size of a fist and it lies behind and to the left of the breastbone or sternum. The purpose of the heart is to pump blood to all parts of the body through blood vessels, arteries and veins. The internal part of the heart is divided into four chambers, the top two ones are called the atria and are collection chambers for blood and the bottom two are called the ventricles and they receive the blood from the atria and pump it to the lungs and body. The chambers are separated by valves which control the direction of blood flow. There are four (4) valves; tricuspid, pulmonic, mitral and aortic valves. Circulation begins at the right side of the heart where blood from the body comes to the right atrium and passes to the right ventricle where it is pumped to the lungs to receive oxygen. Once it receives oxygen, it flows to the left atrium and then to 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 and ventricle allowing blood to enter the ventricle but not flow backwards to the atrium. Blood flows through the pulmonic valve to go to the lungs. On the left side, the mitral valve separates the left atrium and ventricle. Blood flows from the left ventricle to the aorta through the aortic valve and to the rest of the body. Arteries carry blood with oxygen and other nutrients throughout the body and veins take the blood back to the heart which pumps it to the lungs to be oxygenated. The arch and coronary arteries provide oxygen and nutrients to the heart muscle. The right coronary supplies blood to the bottom and the back of the heart and the left splits into two (2) vessels, one branch supplies blood to the front of the heart while the other delivers blood to the left side of the heart.

An electric system transmits signals throughout the heart to control its pumping. The electrical signal starts in the sinoatrial (SA) node which is located in the upper portion of the right atrium and is known as the natural pacemaker of the heart. The electrical signal passes down to the lower chambers of the heart through the atrioventricular (AV) node which controls the signal so the atria can contract before the ventricles. In the ventricles, pathways carries the signals throughout the muscle so they contract simultaneously to pump blood to the lungs and to the body.

CONGENITAL ANOMALIES OF THE HEART

There are several congenital anomalies of the heart

1. Dextrocardia: This is the most frequent positional defect of the heart. In dextrocardia with situs inversus that is, the transposition of the abdominal viscera, the incidence of accompanying cardiac defects is low. In isolated dextrocardia, the abnormal position of the heart is not accompanied by displacement of other viscera. It is usually complicated by severe cardiac defects.
2. Ectopia Cordis: In this condition, the heart is in an abnormal location. In the thoracic form of ectopia cordis, the heart is partly or completely exposed on the thoracic wall. Ectopia cordis is usually associated with widely separated halves of the sternum and an open pericardial sac. Death occurs in most cases during the first few days after birth usually from infection, cardiac failure, or hypoxemia. If there are no severe cardiac defects, surgical therapy usually consists of covering the heart with skin. In some cases, the heart protrudes through the diaphragm into the abdomen.
3. Tetralogy of fallot: This is a classic group of four cardiac defects consisting of:

* Pulmonary artery stenosis (obstruction of right ventricular outflow)
* Ventricular septal defect
* Dextroposition of the aorta (overriding or straddling the aorta)
* Right ventricular hypertrophy

In these defects, the pulmonary trunk is usually small and there may be various degrees of pulmonary artery stenosis. Cyanosis is an obvious sign of the tetralogy, but it is not usually present at birth. The tetralogy results when division of truncus arteriosus is unequal and the pulmonary trunk is stenotic. Pulmonary atresia with VSD is an extreme form of tetralogy of Fallot; the entire right ventricular output is through the aorta. Pulmonary blood flow is dependent on a patent ductus arteriosus or bronchial collateral vessels.

1. Aorticopulmonary septal defect: It is a rare condition in which there is an opening between the aorta and pulmonary trunk near the aortic valve. This defect results from a localised defect in the formation of the aorticopulmonary septum. The presence of pulmonary and aortic valves and an intact interventricular septum distinguishes this defect from the persistent truncus arteriosus defect.
2. Atrial septal defect: An ASD is a hole in the wall between the upper chambers, or the right and left atria, of your heart. A hole here lets blood from the left atrium mix with blood in the right atrium. Some ASDs close on their own. Your doctor may need to repair a medium or large ASD with open-heart surgery or another procedure.