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DEPARTMENT: PHARMACOLOGY

MATRIC NUMBER: 18/ MHS07/ 017

COURSE: ANA 202- GROSS ANATOMY OF THE THORAX, ABDOMEN, PELVIC, AND PERINIUM.

ASSIGNMENT: MEDIASTINUM AND ITS CONTENT:

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

The heart is a muscle about the size of a fist, it lies into the left of your breast bone or sternum. The purpose of the heart is to pump blood from blood vessels, arteries, and veins to all part of your body. The inside of the heart is divide into 4 chambers. The top 2 chambers are called the atria, the bottom two chambers are called the ventricles, they receive the blood from the atria, pump into the lungs and the body. The chambers are separated by valves which control the direction of blood flow. There are 4 valves, tricuspid, pulmonic, mitral and aortic valves. Circulation begins at the right side of the heart where blood from the body goes to the right atrium, this blood passes through the right ventricle where its 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 then to the rest of the body. On the right side, the tricuspid valve bridges the right atrium and right ventricle allowing blood to enter the ventricle and not flow back to the atrium Blood flows to the pulmonic valve to go to the lungs. On the left side of the heart the mitral valve separates the atrium from the ventricle, blood flows from the ventricle to the aorta through the aortic valve and to the rest of the body. Arteries carry blood with oxygen throughout the body. Veins take blood back to the heart which pump into the blood to be oxygenated. The heart arteries, coronary arteries provide oxygen and nutrients in the heart muscle. The right coronary arteries pass blood to the back of the heart. The left coronary arteries splits into 2 vessels, one branch supplies blood to the front heart and the other one deliver blood to the side of the heart. An electric system transmits signals throughout the heart to maintain pumping, the electrical signal transmits throughout the heart to control pumping, the electrical signal starts in the sinal atrium or SA node which is located in the upper part of the portion of the right atrium and its known as the natural peace maker of the heart. The electrical signal passes down to the lower chambers of the heart by the atrial ventricular or AV node which controls the signal so the atrium contract before the ventricles. In the ventricles, pathways carry the signals throughout the muscle so they contract at the same to pump blood to the lungs and to the body.

WRITE ON 5 DIFFERENT COGENITAL ANOMALITIES OF THE HEART

**Aortic valve stenosis**

Aortic valve stenosis is a serious type of congenital heart defect. In aortic valve stenosis, the aortic valve that controls the flow of blood out of the main pumping chamber of the heart (the left ventricle) to the body's main artery (the aorta) is narrowed. This affects the flow of oxygen-rich 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.

 The urgency for treatment depends on how narrow the valve is. Treatment may be needed immediately, or it could be delayed until the development of symptoms. If treatment is required, a procedure called a balloon valvuloplasty is often the recommended treatment option in children and younger people. During the procedure, a small tube (catheter) is passed through the blood vessels to the site of the narrowed valve. A balloon attached to the catheter is inflated, which helps to stretch or widen the valve and relieve any blockage in blood flow. If balloon valvuloplasty is ineffective or unsuitable, it's usually necessary to remove and replace the valve using open heart surgery. This is where the surgeon makes a cut in the chest to access the heart. There are several options for replacing aortic valves, including valves made from animal or human tissue, or your own pulmonary valve. If the pulmonary valve is used, it will be replaced at the same time with a donor pulmonary valve. This type of specialised surgery is known as the Ross procedure. In older children or adults, it's more likely that metal valves will be used. Some people also develop a leak of the aortic valve which will require monitoring. If the leak starts to cause problems with the heart, the aortic valve will need to be replaced.

**Coarctation of the aorta:** Coarctation of the aorta (CoA) is where the main artery (the aorta) has a narrowing, which means that less blood can flow through it. CoA can occur by itself or in combination with other types of heart defects – such as a ventricular septal defect or a type of defect known as a patent ductus arteriosus. The narrowing can be severe and will often require treatment shortly after birth.

If your child has the more serious form of coarctation of the aorta that develops shortly after birth, surgery to restore the flow of blood through the aorta is usually recommended in the first few days of life. Several surgical techniques can be used, including:

* removing the narrowed section of the aorta and reconnecting the 2 remaining ends
* inserting a catheter into the aorta and widening it with a balloon or metal tube (stent)
* removing sections of blood vessels from other parts of your child's body and using them to create an aorta in the region of the coarctation or bypass around the site of the blockage (this is similar to a [coronary artery bypass graft](https://www.nhs.uk/conditions/coronary-artery-bypass-graft-cabg/), which is used to treat heart disease)

Sometimes, older children and adults can develop a newly diagnosed coarctation or partial recurrence of the previous blockage. The main goal of treatment will be to control high blood pressure using a combination of diet, exercise and medication. Some people will need to have the narrowed section of the aorta widened with a balloon and stent.

**Ebstein's anomaly:** Ebstein's anomaly is a rare form of congenital heart disease, where the valve on the right side of the heart (the tricuspid valve), which separates the right atrium and right ventricle, 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. Ebstein's anomaly can occur on its own, but it often occurs with an atrial septal defect.

In many cases, Ebstein's anomaly is mild and doesn't require treatment. However, some people may need medicines to help control their heart rate and rhythm. Surgery to repair the abnormal tricuspid valve is usually recommended if the valve is very leaky. If valve repair surgery is ineffective or unsuitable, a replacement valve may be implanted. If Ebstein's anomaly occurs along with an atrial septal defect, the hole will be closed at the same time.

**Patent ductus arteriosus :** As a baby develops in the womb, a blood vessel called the ductus arteriosus connects the pulmonary artery directly to the aorta. The ductus arteriosus diverts blood away from the lung (which isn't working normally before birth) to the aorta. A patent ductus arteriosus is where this connection doesn't close after birth as it's supposed to. This means that extra blood is pumped into the lungs, forcing the heart and lungs to work harder.

Some cases of PDA can be treated with medication shortly after birth. There are 2 types of medication to effectively stimulate the closure of the duct responsible for PDA. These are indomethacin and a special form of ibuprofen. If the PDA doesn't close with medication, the duct may be sealed with a coil or plug. These can be implanted using a catheter (keyhole surgery). Sometimes the duct may need to be tied shut to close it. This is done using open heart surgery.

**Pulmonary valve stenosis**

Pulmonary valve stenosis is a defect where the pulmonary valve, which controls the flow of blood out of the right heart pumping chamber (the right ventricle) to the lungs, is narrower than normal. This means the right heart pump has to work harder to push blood through the narrowed valve to get to the lungs.

Mild pulmonary valve stenosis doesn't require treatment, because it doesn't cause any symptoms or problems. More severe cases of pulmonary valve stenosis usually require treatment, even if they cause few or no symptoms. This is because there's a high risk of [heart failure](https://www.nhs.uk/conditions/heart-failure/) in later life if it's not treated. As with aortic valve stenosis, the main treatment for pulmonary valve stenosis is a balloon to the pulmonary valve (valvuloplasty). However, if this is ineffective or the valve isn't suitable for this treatment, surgery may be needed to open the valve (valvotomy) or replace the valve with an animal or human valve. Some patients develop leaking of the pulmonary valve after treatment of pulmonary valve stenosis. This will require ongoing monitoring and if the leak starts to cause a problem with the heart then the valve will need to be replaced. This can be performed with open heart surgery or, increasingly, using catheter intervention which is a much less invasive procedure.

PREVENTION

As so little is known about the causes of congenital heart disease, there's no guaranteed way of avoiding having a baby with the condition. However, if you're pregnant, the following advice can help reduce the risk:

* Ensure you are vaccinated against [rubella](https://www.nhs.uk/conditions/rubella/prevention/) and [flu (Influenza)](https://www.nhs.uk/conditions/vaccinations/flu-influenza-vaccine/).
* Avoid drinking alcohol or taking medication.
* Take 400 micrograms of folic acid supplement a day during the first trimester (first 12 weeks) of your pregnancy – this lowers your risk of giving birth to a child with congenital heart disease, as well as several other types of birth defect.
* Check with your GP or pharmacist before you take any medication during pregnancy, including herbal remedies and medication that's available over the counter.
* Avoid contact with people who are known to have an infection.
* If you have [diabetes](https://www.nhs.uk/conditions/diabetes/), make sure it's controlled.
* Avoid exposure to organic solvents, such as those used in dry cleaning, paint thinners and nail polish remover.