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Pharmacology

ANA202

1. THE HEART

The **heart** is a muscular organ in the human body, which pumps blood through the blood vessels of the circulatory system. Blood provides the body with oxygen and nutrients, as well as assisting in the removal of metabolic wastes. In humans, the **heart** is located between the lungs, behind the sternum above the diaphragm.

The heart is the most important muscle in the body.

The heart is divided into 2 sides : the left and right side

The right side receives blood from the body and pumps it into the lungs

The left side receives blood from the lungs and pumps it around the body.

The heart is about the same size as your fist.

The main purpose of the heart is to pump blood through blood vessels the veins and arteries to all parts of the body.

The inside of the heart is divided into 4 chambers

The left and right atria at the top chamber of the heart

And the left and right ventricle at the bottom chamber which collects blood from the atria and pumps to the body and lungs. These chambers are separated by valves which controls the direction of the blood flow.

There are 4 valves:

Tricuspid valve: regulates blood flows between the right atrium and right ventricle

Pulmonary valve: controls blood flow from the right ventricle into the pulmonary arteries

Mitral valve: lets oxygen rich blood from the lungs pass from left atrium to right ventricle

Aortic valve: lets oxygen rich blood pass from the left ventricle into the aorta then into the body.

An electrical signal flows through the heart to control the pumping and these signals starts in the sinoatrial node (SA node) known as the natural pacemaker of the heart. The atrioventricular node (AV node) consists impulse to the ventricles.

2) **Congenital anomalies of the heart**

Hole in the Heart (Septal

Defect)

This means you're born with a hole in the wall, or septum, that separates the left and right sides of your heart. The hole lets bloods from the two sides mix.

Atrial Septal Defect (ASD)

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.

He might seal the hole with a minimally invasive catheter procedure. He inserts a small tube, or catheter, in your blood vessel all the way to your heart. Then he can cover the hole with a variety of devices.

Ventricular Septal Defect (VSD)

A VSD is a hole in the part of your septum that separates your heart's lower chambers, or ventricles. If you have a VSD, blood gets pumped back to your lungs instead of to your body.

A small VSD may also close on its own.

But if yours is larger, you may need surgery to repair it.

Complete Atrioventricular Canal Defect (CAVC)

This is the most serious septal defect. It's when you have a hole in your heart that affects all four chambers.

A CAVC prevents oxygen-rich blood from going to the right places in your body. Your doctor can repair it with patches. But some people need more than one surgery to treat it.

Valve Defects

Valves control the flow of blood through your heart's ventricles and arteries. And some minor heart defects can involve the valves, including:

Stenosis. When your valves become narrow or stiff, and won't open or allow blood to pass easily.

Regurgitation. Your valves don't close tightly, which lets your blood leak backward through them.

Atresia. This happens when your valve isn't formed right or has no opening to let your blood pass through. It causes more complicated heart problems.

Ebstein's anomaly. This is a defect in

another heart valve, the tricuspid valve, which may keep it from closing tightly. Babies who have Ebstein's also often have an atrial septal defect (ASD). Pulmonary valve stenosis. This is the most common valve defect in newborns. Babies with severe cases often have strained right ventricles. Your doctor can usually treat it with a catheter procedure. She will use a catheter, or thin tube, with a balloon on the end to inflate and stretch open the strained valve.

Tetralogy of Fallot

Sometimes, if you have holes in your heart, or septal defects, you might also have other congenital heart problems. One is called the tetralogy of fallot, which is a combination of four defects, including:

- A large ventricular septal defect (VSD)
- Thickened wall around your right ventricle, or lower chamber
- Your aorta is located above the hole in your ventricular wall
- Stiff pulmonary valve that prevents blood from flowing easily from the

heart to the lungs

A baby born with tetralogy of Fallot may need to have open heart surgery soon after birth to fix the problems. If the pulmonary valve issue isn't too serious, the doctor might talk to you about waiting until your child is a little older.