

Embryology 9 :

Slide 16 :

There is a sulcus between primitive ventricular and bulbus cordis that will disappear gradually and lead to the formation of one chamber which is called bulboventricular chamber .

How this chamber divide into right and left chambers ?

By: 1) formation of interventricular septum.

2) closing of interventricular foramen.

How the interventricular foramen is closed ?

1) An extension of the Fused endocardial cushions (septum intermedium) . (1

(There is two cushions : ventral and dorsal)

2)Proximal bulbar ridges.

(There is two ridges : Rt. and Lt.)

Prox. Bulbar ridges will divide the outer part of bulbus cordis into Rt. infundibulum (which is part of Rt. ventricle) and Lt. aortic vestibule.

Note: There is aortic valve above the Lt. aortic vestibule and pulmonary valve above the Rt. infundibulum .

Extra slide:

The interatrial septum meet the interventricular septum at septum intermedium (it is a fuse endocardial cushion), that separates the single AV canal into 2 RT and Lt.

Notes:

1)Membranous part contribute in the formation of small portion in the septal cusp.

2)interventricular septum do not meet the interatrial septum (they both fuse to the septum intermedium at different levels.

Septum intermedium:-pulled up by interatrial septum
-pulled down by interventricular septum

Slide 17:

Distal bulbar septum divide into Rt.(pulmonary valve) and Lf.(aortic valve).
There is 4 endocardial cushions inside it: ant. ,post. And 2 laterals(which contain 2 ridges) when they fuse with each other the distal bulbar septum will formed.

Notes:

- 1)Cushions are formed from endocardium(C.T+endothelium)
- 2)Every cushion will form a semilunar cusp and there will be a sinus in front of each cusp.

In the embryonic position the Aortic valve contain 2 anterior sinuses and 1 posterior, but due to the rotation of the aorta and the pulmonary trunk the position of the sinuses are reversed (1 ant and 2 post).

Some anatomists prefer to stick to the embryonic position (2 anterior sinuses in the aorta from which the coronary arteries originate).

Slide 18:

Truncus arteriosus divide into ascending aorta and pulmonary trunk.

There is 2 ridges inside it: Rt. and Lf.

It divides into 3 part:

1)Lower: Rt.&Lf. Are near each other, they will form a septum (pulmonary trunk ant. To the ascending aorta)

2)middle:Rt.>>>Ant.

Lt.>>>post.

(pulmonary trunk to the left of the aorta)

3)upper:Ant.>>>Rt.

Post.>>>Lt.

(P.T post. To the ascending aorta)

The septum has a spiral form.

Transposition of great vessels is incompatible with life unless if we mix the atrial and venous blood with each other by a foramen.

The proximal bulbar septum, distal bulbar septum and spiral septum are all connected and are called tunica conal ridge

Slide 23:

Interventricular defects more in the membranous part than the muscular one because it is formed by more than one part so it is more liable to the congenital anomalies.

AV canal doesn't form >>> no septum intermedium >> atrial and ventricular septums defect.

Slide 24:

Tetralogy of fallot :

The baby will have severe cyanosis >>> there is increased amount of reduced Hb, due to decreased amount of blood in the smaller pulmonary trunk, so less amount of blood reach the lung (defective oxygenation).

So The cyanosis is not due to mixing of blood, its caused by the decreased amount of blood in the pulmonary trunk.

Course:

Rt. ventricle >> aorta >> low oxygenation >> high amount of reduced Hb >> severe cyanosis

Slide 25:

Tricuspid atresia >> no lumen (opening is closed)

There will be atrial and ventricular septums defects.

Severe cyanosis bcz there is a little amount of blood in the R.V, decreased output to the P.T and defective oxygenation

Lf. ventricle >> well developed.

Rt. ventricle >> less developed.

Pulmonary atresia also lead to severe cyanosis.

Slide 26:

Preductal coarctation is more dangerous and fatal, lead to severe ischemia in the lower part of the body and death.

The fetus is not affected as the ductus arteriosus is still patent and it carry blood into the descending aorta.

Patent ductus arteriosus:

If the mother was diagnosed with rubella in the first 8 weeks of pregnancy, the fetus may be aborted as it could lead to multiple birth defects.

Dextrocardia:

The heart looped to the left instead to the right.

Mirror image heart

If dextrocardia is associated with Sinus inversus (the liver is on the left), then the pt will be normal.

While Isolated dextrocardia result in other cardiac defects.

Slide 27B:

Anemic Patients usually don't have peripheral cyanosis

Peripheral cyanosis due to decrease in blood amount that reach the peripheral parts of the body.

Heart failure....less cardiac output

Vasomotor changes Slower blood flow as in the case of diabetic foot

The cyanotic group include Fallots tetralogy, tricuspid and pulmonary atresia

Slide 28

If the pulmonary stenosis was severe then it will lead to excessive stretching of the cardiac muscle in the R.V and right heart failure

Atrial septal defect also include patent foramin ovale

In Asd the decrease in the L.V output will lead to left heart failure.

Slide 29

In postductal coarctation of the aorta the blood pressure is high in the upper part of the body due to the high volume of blood and reduced blood flow to the kidneys (renal ischemia) which will lead to the activation of the renin angiotensin system.

So the radial pulse is strong and the femoral pulse is weak.

The post stenotic dilation is due to the blood that reached the the aorta from the anastomosis.

In patent ductus arteriosis te blood will flow from the aorta to the pulmonary trunk in systole and diastole , then from the PT to the lungs to the Pulmonary veins to the L.A to the L.V, which will lead to **left ventricle hypertrophy**.

In Big ventricular septal defect the blood will flow from the left ventricle to the right only in systole, so the L.V has to pump blood to two pathways: the aorta and the R.V, thus it **enlarges**.

Also the R.V now receive blood from 2 sources: the R.A and the L.V, and it also **enlarges**.

The net result: both ventricle enlarge in large VSD.

If the power to do hard work is not a skill, it's the best possible substitute for it.

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