

LECTURE (4)

ANATOMY OF THE ARTERIAL SUPPLY AND VENOUS DRAINAGE OF THE HEART

Done by : Alanoud AlHoqail & Bayan Al- mugheerah

Reviewed by : Mosa alzahrani

تنويه : هذا العمل لا يعتبر مصدر رئيسي للمذاكرة وإنما هو للمراجعة فقط

If there is any mistake please feel free to contact us:

Anatomyteam32@gmail.com



Objectives:

At the end of the lecture the student should be able to know about;

- The **arterial supply** of the cardiac muscle regarding (origin, course, distribution and branches).
- The **coronary anastmosis**.
- The **arterial supply to the conducting system** of the heart.
- The **venous drainage** of the heart regarding (origin, tributaries and termination).



DONE BY / MANAR AL-EID.

-right atrium - right ventricle.
-most of conducting system
-left ventricle, left atrium and AV septum.

Blood supply to the heart

By two **coronary arteries**, (distributed within the suprapicardium C.T)

Left coronary artery

-arises from left posterior aortic sinus.

- Larger than the right.



Branches

2 branches

Anterior interventricular artery.

-descends to apex
-supplies right and left ventricles and anterior part of ventricular septum.

Circumflex

Left marginal artery;

Supplies the left margin of the left ventricle down to the apex.



Branches

Many

Left diagonal artery

Anterior and posterior ventricular

supply left ventricle.

Atrial branch

-supplies greater part of Left atrium.

Left conus

For pulmonary conus

Right coronary artery

-arises from anterior aortic sinus.

Posterior ventricular branches.

-about 2 branches supply diaphragmatic surface of right ventricle.

-largest branch is **posterior interventricular artery.***

Branches

5 branches

Artery of sinuatrial node *

Supplies SAN & both atria.

Right conus

For right ventricle

Anterior ventricular branches:

-2-3 branches supply the anterior surface of right ventricle.

-largest branch is **marginal artery.**

Atrial branches-supply anterior, lateral and posterior surfaces of right atrium

-one branch supply posterior surface of **both atrium.**

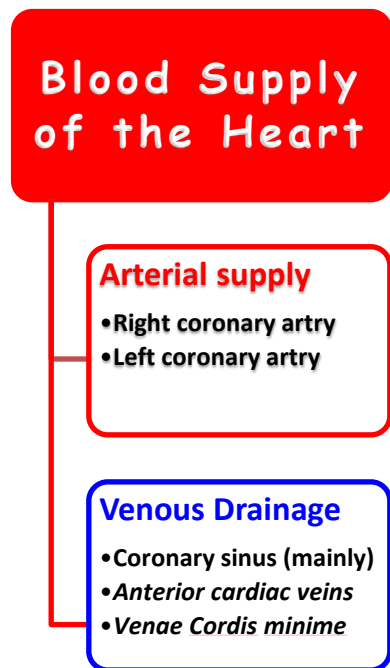
Stars*

* In 35% it arises from the left coronary.

* In (10%) of population, the **Posterior Interventricular artery** arises from the **Circumflex branch** of the **Left Coronary A.**

Coronary anastomosis

In **MOST** of people, the terminal branches of the right and left coronaries anastomose in the posterior part of the **IV groove**. However this anastomoses is not large enough to provide adequate blood supply in case of coronary occlusion, (**Functional End arteries**)



Notes:

-subepicardial space : between the veseral layer of percardium and endocardium.

aortic sinuses:

-**anterior aortic sinus** : origin of right coronary artery

-**left posterior sinus** : left coronary artery

- right posterior sinus: nothings

-right coronary artery has wide distribution

- upper part of right ventricle (infundibulum) is supplied by **right conus**

- left coronary artery largest than right coronary artery

- left coronary artery divides immediately to **2** branches

- 2/3 of population their posterior interventricular artery is a branch of right coronary artery 2/3

- anterior interventricular septum + apex of both ventricle are supplied by **anterior interventricular artery** which is branch of left coronary artery



-**conducting system** depend mainly on right coronary artery



- venous drainage is mainly depend on the **coronary sinus**
- coronary sinus is a continuation of **great cardiac vein**
anterior cardiac vein :open in right atrium *but* outside coronary sinus
- venae cordis minimis** :open on the heart chambers and outside coronary sinus



vidoes:

http://www.youtube.com/watch?v=_nf-lsC3iCo

<http://www.youtube.com/watch?v=Kv-MN-Gv6jw>

<http://www.youtube.com/watch?v=wI5jn540kM>



Background and summary:

-The heart muscle receives its arterial supply from the two coronary arteries which arise from the ascending aorta just above the aortic valve.

-Both coronary arteries are distributed over the surface of the heart lying within the subpericardium to supply the pericardium.

-Both coronary arteries lie in the atrioventricular groove (coronary Sulcus). While their branches lie in the interventricular grooves.

Right Coronary Artery:

It arises from anterior aortic sinus, at the root of ascending aorta it passes forwards between right auricle & pulmonary trunk.

Then it passes downwards and to the right in coronary groove to reach the lower margin of the heart Then it curves backward to runs in the posterior part of the coronary sulcus.

Termination: By anastomosis with the circumflex branch of left coronary. Left coronary artery

Origin: From Left posterior Aortic sinus, (larger than the Rt. Coronary)

Lies between left auricle and root of pulmonary trunk, till the anterior interventricular groove, where it divided into:

1- Circumflex artery. 2- Anterior interventricular a. Branches: 1- Anterior interventricular. 2- Circumflex artery. 3- Diagonal artery. 4- Left marginal branch.



MCQs:

1) The arterial supply of the heart is provided by :

- a) Two coronary arteries
- b) Two coronary veins
- c) Three coronary arteries

2) The Origin of Coronary Arteries, are arise from the initial part of:

- a) Ascending Aorta
- b) Descending Aorta
- c) Both

3) The Right Coronary Artery arise from :

- a) Anterior aortic sinus
- b) Posterior aortic sinus
- c) Lateral aortic sinus

4) Which one of the following the right Coronary Artery Supplies:

- a) All part of Left atrium
- b) Right atrium
- c) None

5) The Right ventricle supplies by:

- a) Left coronary artery
- b) Right coronary artery
- c) Both

6) The Marginal artery is:

- a) Largest branch
- b) Smaller branch
- c) None





7) The Marginal artery runs along:

- a) Lower margin of the sternocostal surface
- b) Upper margin of the sternocostal surface
- c) Lower margin of the posterior surface

8) The right coronary supply:

- a) SA node
- b) AV node
- c) Both

9) The Posterior Interventricular artery lies into:

- a) The anterior interventricular groove
- b) The posterior interventricular groove
- c) The inferior interventricular groove

10) The Left Coronary Artery is:

- a) Smaller than right coronary
- b) Larger than right coronary
- c) None

11) The Left Coronary Artery arises from:

- a) The left anterior aortic sinus
- b) The left posterior aortic sinus
- c) the right posterior aortic sinus

12) The Left Coronary Artery divides into two branches:

- a) Anterior Interventricular & Circumflex
- b) Posterior Interventricular & Circumflex
- c) None



13) The Left conus artery for:

- a) Pulmonary conus
- b) Tricuspid conus
- c) Both

14) Left marginal artery supplies:

- a) Right margin of the left ventricle down to the apex
- b) Left margin of the left ventricle down to the apex
- c) Left margin of the right ventricle down to the apex

15) SAN, AVN & AVB are mostly supplied by:

- a) Left coronary artery
- b) Right coronary artery
- c) Both

NO of Q	Ans
1	a
2	a
3	a
4	b
5	b
6	a
7	a
8	c
9	b
10	b
11	b
12	a
13	a
14	b
15	b