Physiology Team 431

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Coronary circulation

Is Blood go to myocardium of the heart.

- **If myocardium does not receive blood supply by pump action of heart → MI**

Aorta has 3 cusp

- **coronary artery raise from anterior cusp of right coronary artery**
- **left coronary artery raise from left posterior cusp**
- **right posterior has nothing**

5% CO go through coronary artery in one minute at rest

- **200 ml of blood pass through coronary artery per minute**

***the flow can be increased**

RCA has blood flow 50% individual (great flow)
LCA had blood flow 20%
Equal distribution is 30%

Edyes currant : when ventricle ejection take place the blood come in sinus, the sinus cannot close amount of coronary artery , coronary artery become open

- **If no currant , valve will close the coronary artery**

Left coronary artery = is stem coronary and main left atery

- **Before division is one inch , after division take place this known stem**
- **Right coronary artery giving branch supply SA , AV node then circumflex branch , marginal branch , posterior descending artery**
- **Circumflex : go around anterior descending artery**

	Branches	Structures Supplied
Right coronary artery	SA nodal artery Conus branch Right marginal artery AV nodal artery Terminal branches Posterior interventricular artery Septal branches	SA node Right atrium Right ventricle Diaphragmatic surface of the left ventricle AV node Posterior third of the interventricular septum
Left main coronary artery	**Left circumflex artery** Anterior marginal artery Obtuse marginal artery Atrial branches Posterior marginal artery **Intermediate ramus** **Anterior interventricular artery (left anterior descending)** Anterior diagonal artery Septal branches	Left atrium Majority of the left ventricle Right and left bundle branches of the bundle of His Anterior two-thirds of the interventricular septum

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Open coronary artery

After origin , coronary give branch

Before make capillary , it give branch which open ventricle after that , pre- capillary -----capillary filter ----circular muscle fibers

- **Venus side open**

  2 major in right atrium

  1) Coronary sinus : receive from left ventricle

  2) anterior cardiac vein : supply right ventricle

Oxygenated blood come to coronary artery -------- tissue --------form capillary----------venule combine and form anterior cardiac vein and coronary sinus

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- **if there RC obstruction , there are communication and anastomoses between R and L but not very functional .**
- **RC obstruction = right side damage**
- **LC obstruction = left side damage**

- **Collateral not show who got collateral and who not got collateral and it take long time**

Anterior surface of heart : anterior descending in group between left and right ventricle in intraventricular septum there are depression

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- **If there is block stem ,is really fetal**
- **Anterior descending supply 2/3 septum**
- **Posterior descending supply 1/3 septum**
- **If right coronary artery affected, cause arrhythmia**
- **If there is block of LBB ,is fetal**
- **If there is block of RBB , is survive**

Factor affect coronary circulation :-

1- **Mechanical**
2- **Chemical**
3- **Nerves**

Mechanical

- **If heart rate increase, will decrease blood flow ,so do not ask patient to do exercise**

Systole : blood flow less because contraction of muscle and coronary artery in muscle will compress and decrease

Diastole : blood flow increase

- **Auto-regulation:**

50-120 blood pressure

- **If reduce to 50 , normal coronary circulation**

- If reduce below than 50 , reduce coronary circulation
- If increase than 120 (to 150) coronary artery do not change
- Below 50 dilated coronary artery (myognic theory)
  Right coronary artery in diastole or systole is same
  Left increase in diastole
- If constrict ,measure blood flow and BP and suddenly release

Then 10 times blood flow increase

Chemical

Hypoxia , coronary artery dilated increase

Nerves

Sympathetic : alpha ,beta (vasodilatation)

ACH: vasodilatation

Heart rate increase , contraction and metabolic increase thus, cause dilation