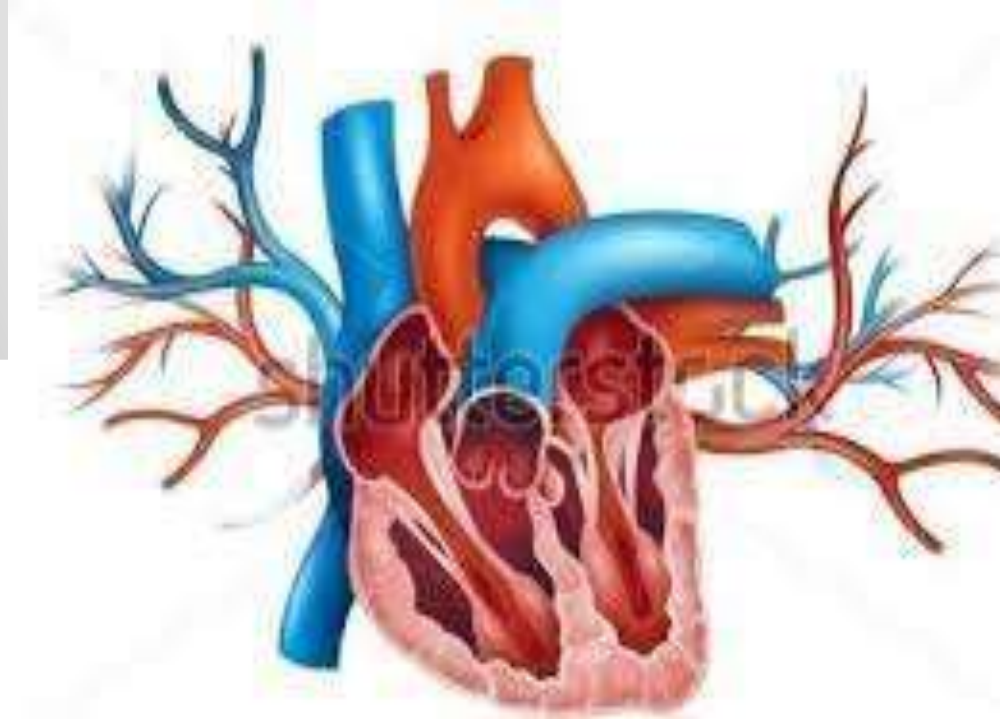


CORONARY CIRCULATION



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INTRODUCTION:

Cardiovascular system includes heart and blood vessels. Heart pumps blood into the blood vessels, blood vessels circulate the blood throughout the body. Blood transports nutrients and oxygen to the tissues and removes carbon dioxide and waste product from the tissues.

TYPES OF **CIRCULATION**

- i) Systemic circulation**
- ii) Pulmonary circulation**

Pulmonary (lesser) circulation:

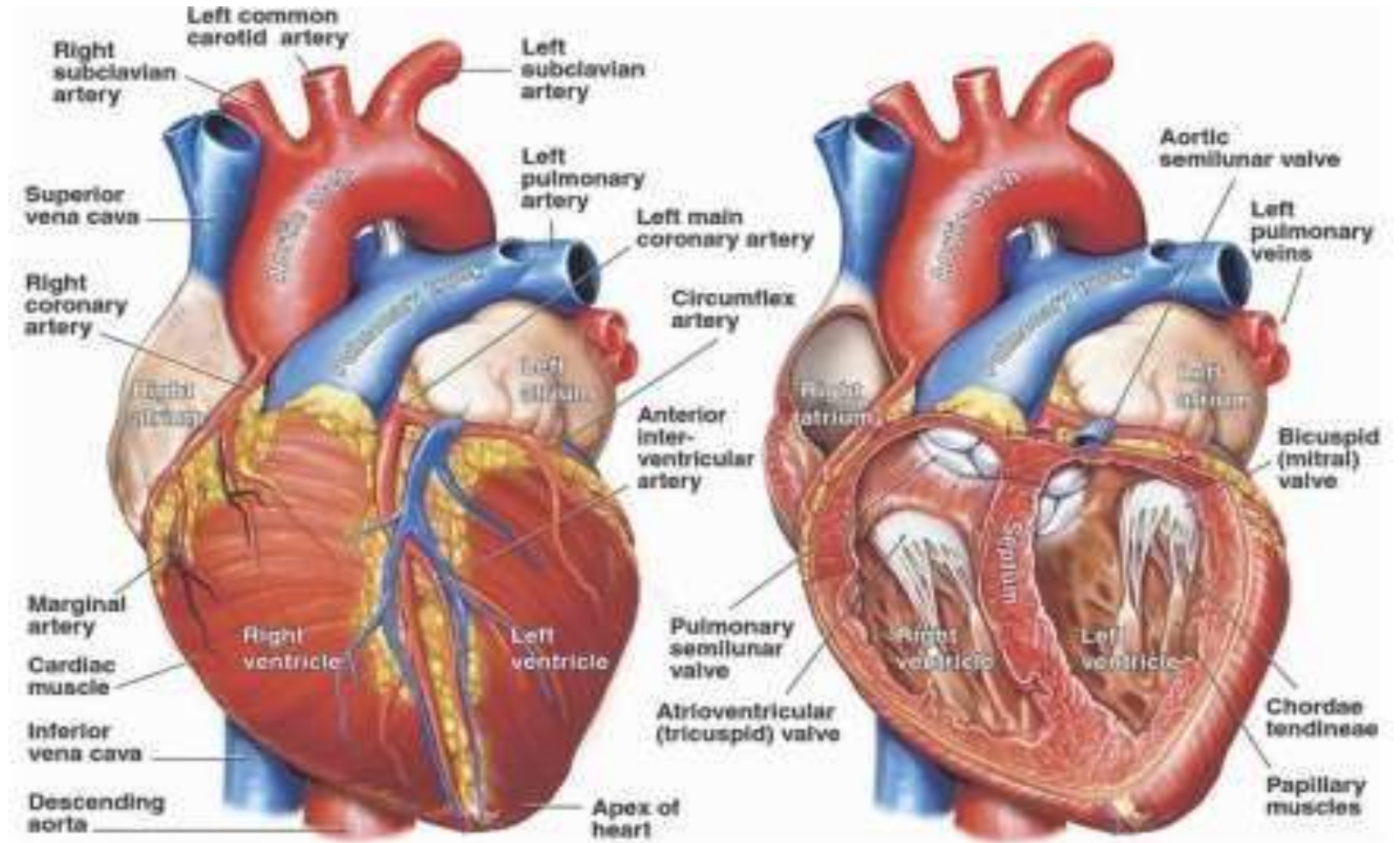
The blood flows from the right ventricle, through the lungs, to the left atrium, i.e. from the right to the left side of the heart. This circulation is responsible for oxygenation of blood. In pulmonary circulation, the blood passes through the lungs where Carbon dioxide is eliminated and Oxygen is added to blood. In this way, the pulmonary circulation makes sure that systemic circulation remains effective.

CORONARY CIRCULATION

- * Coronary circulation is apart of systemic circulation.
- *Coronary circulation is the circulation of blood in the blood vessels of the heart
- *The resting coronary blood flow is about 225 ml/gm ., Which is about 0.7-0.8 ml/gm of heart muscle or 4-5% of total cardiac output

Coronary circulation consists

- * Arterial drainage
- * venous drainage
- * lymphatic drainage

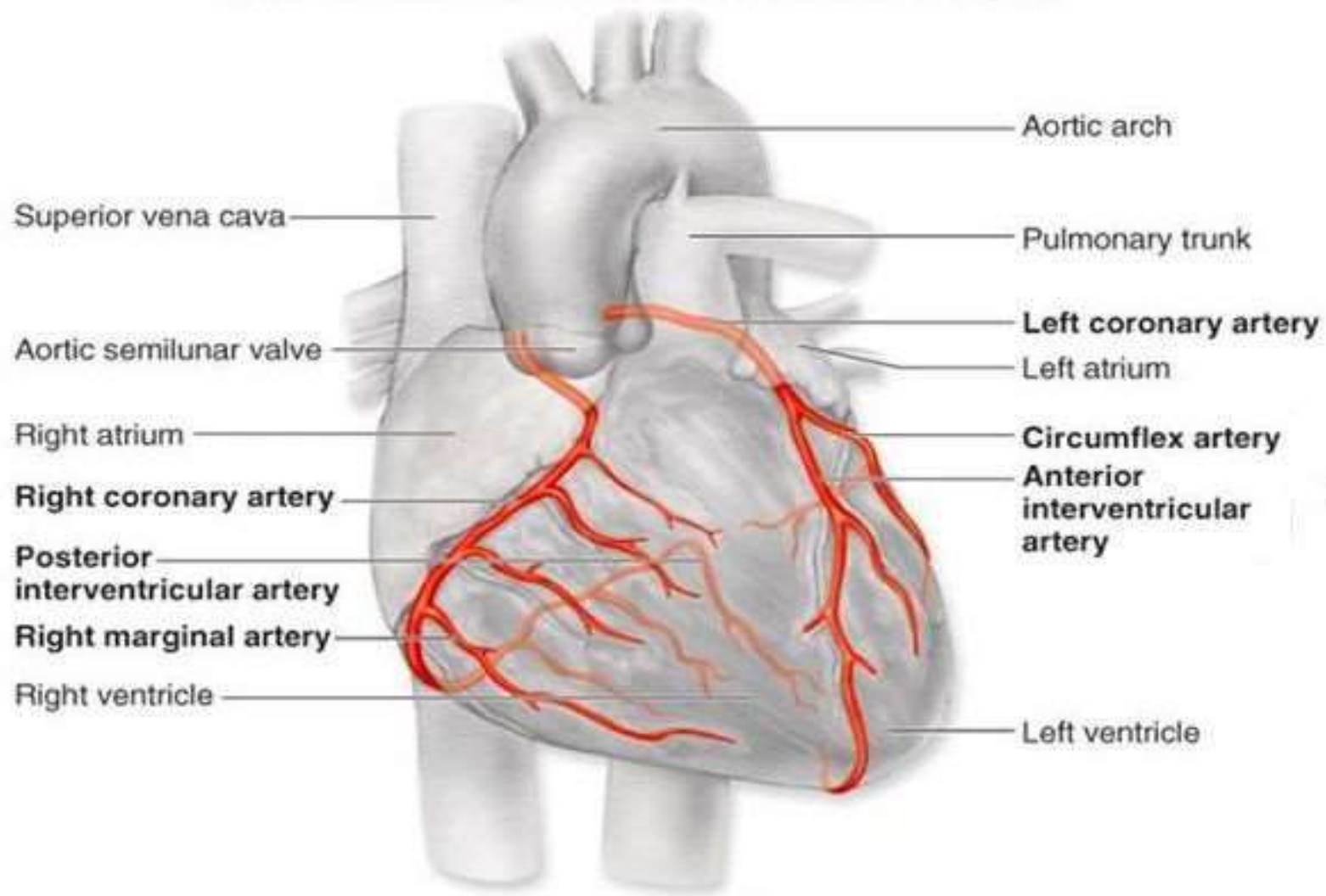


ARTERIAL SUPPLY

The cardiac muscles are supplied by the two coronary arteries ;

- i) The right coronary arteries
- ii) The left coronary arteries

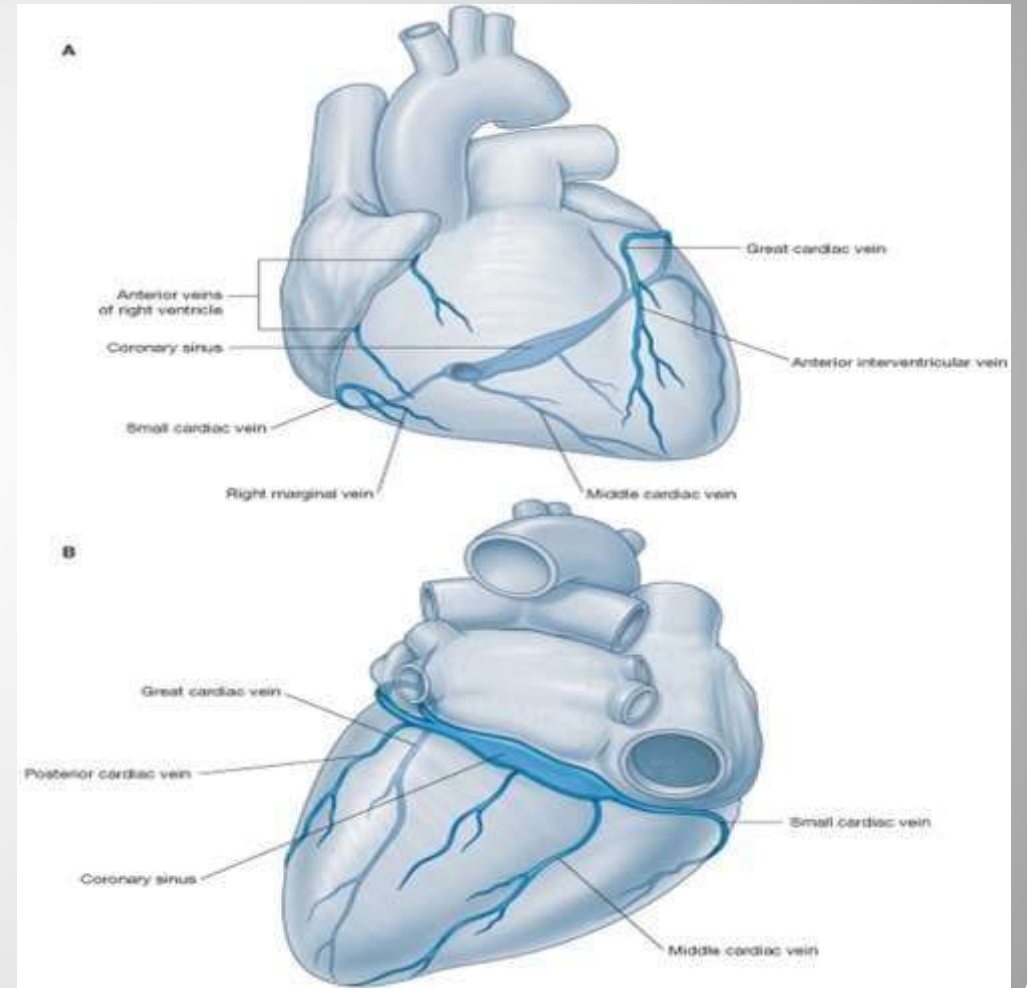
Both the arteries arise from the sinuses behind the cusps of the aortic valves at the root of aorta



VENOUS DRAINAGE

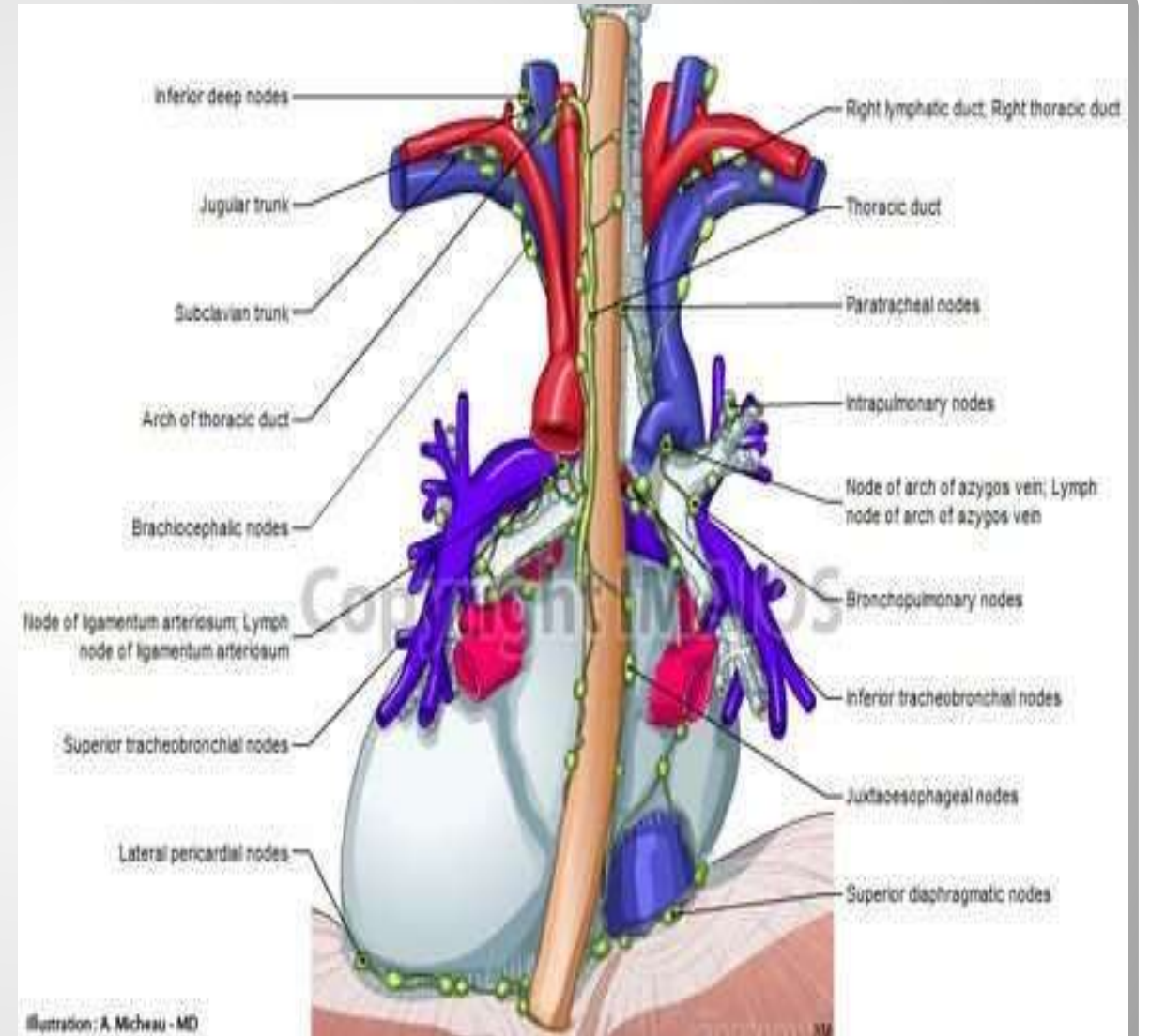
The venous drainage consists

- i) coronary sinus
- ii) anterior cardiac veins
- iii) venae cordis minimae



LYMPHATIC DRAINAGE

- Lymphatics of the heart accompany the coronary arteries and form two trunks
- The right trunk ends in brachiocephalic nodes and the left trunk into the tracheobronchial lymph nodes at the bifurcation of the trachea



PHASIC CHANGES IN CORONARY BLOOD FLOW

Blood flow through coronary arteries is not constant it decreases during systole and increases during diastole intramural vessels or final arteries supplying myocardium are perpendicular to cardiac muscles . so, during systole, the intramural vessels are compressed and blood flow is reduced. during diastole the compression is released and the blood vessels are distended .so, the blood flow increases

- * Phasic change in left ventricle
- * Phasic change in right ventricle

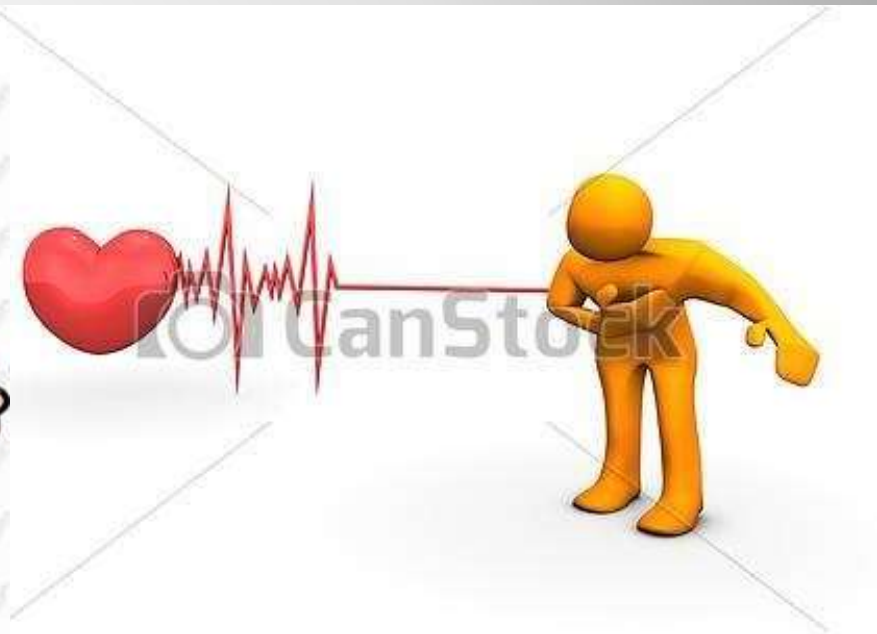
PECULIARITIES OF CORONARY CIRCULATION

- * Blood flow during systole
- * End arteries
- * High capillary density
- * High oxygen extraction
- * Regulation is mainly by metabolites
- * Anatomical anastomosis

FACTORS REGULATING CORONARY BLOOD FLOW

- * Physical - Aortic blood pressure, Heart rate, Cardiac output
- * Chemical - Metabolic factors , Drugs
- * Neural - Direct effect, Indirect effect
- * Hormonal - Thyroxin , Vasopressin
- * Reflex - Anrep's reflex, Gastro-coronary reflex

APPLIED ASPECTS



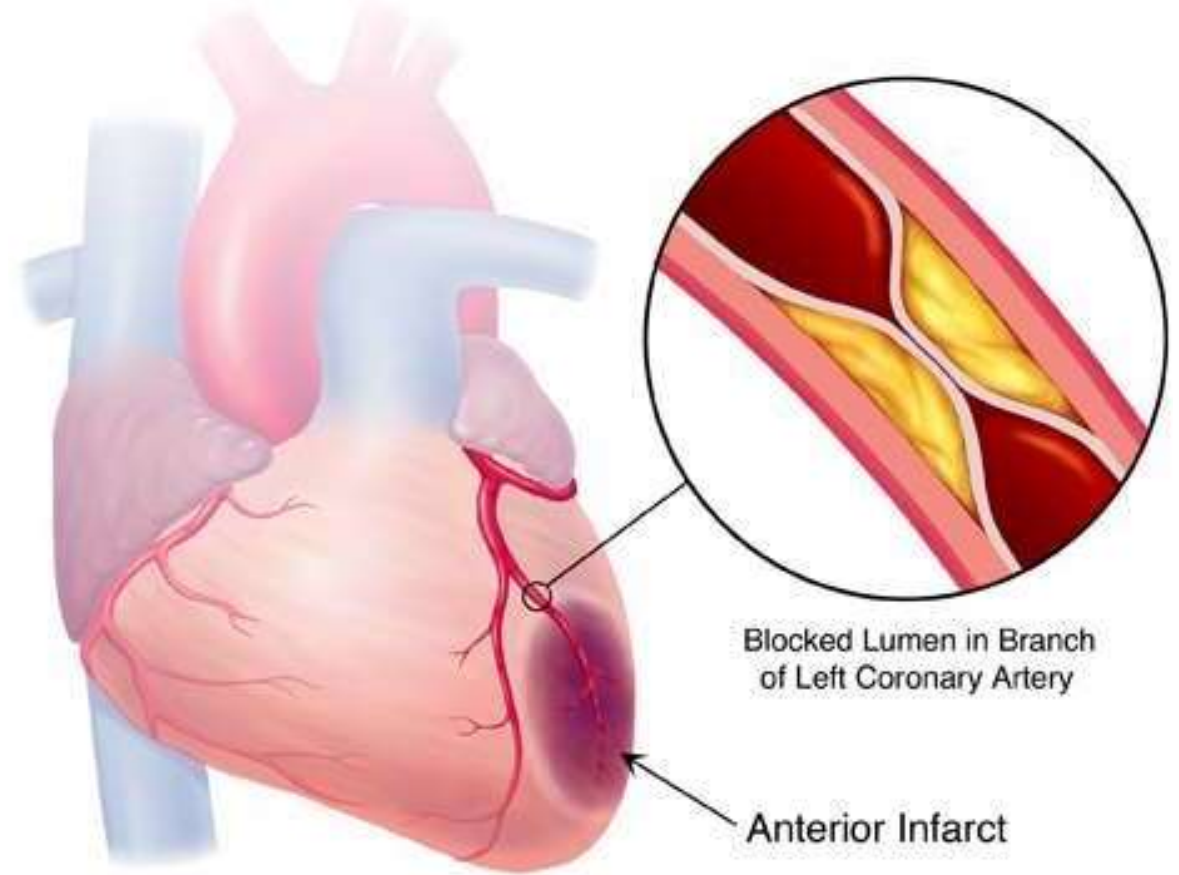
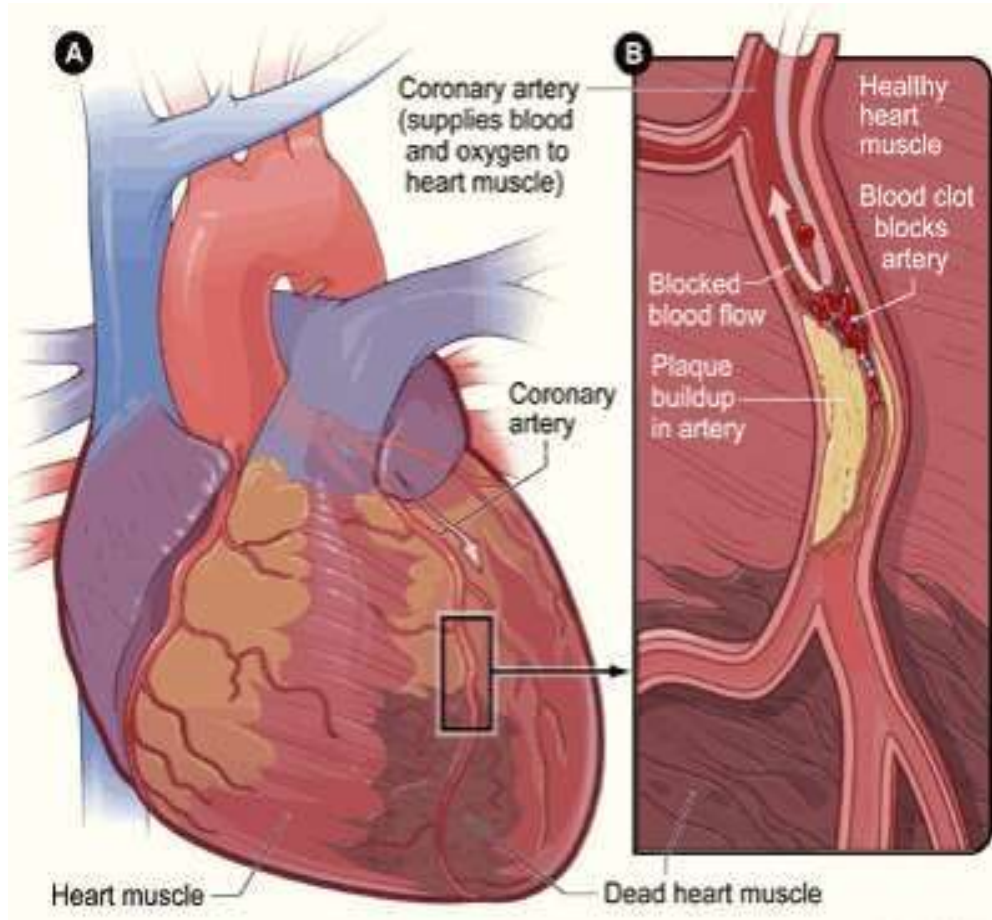
- Coronary occlusion
- Myocardial ischemia
- Myocardial infarction
- Angina pectoris



Coronary occlusion – Coronary occlusion is the partial or complete obstruction of coronary artery. coronary occlusion is caused by atherosclerosis, a condition associated with deposition of cholesterol on the walls of the artery .

Myocardial ischemia – Myocardial ischemia is the reaction of a part of myocardium in response to hypoxia. hypoxia develops when blood flow to part of myocardium decreases severely due to occlusion of coronary artery

CORONARY OCCLUSION

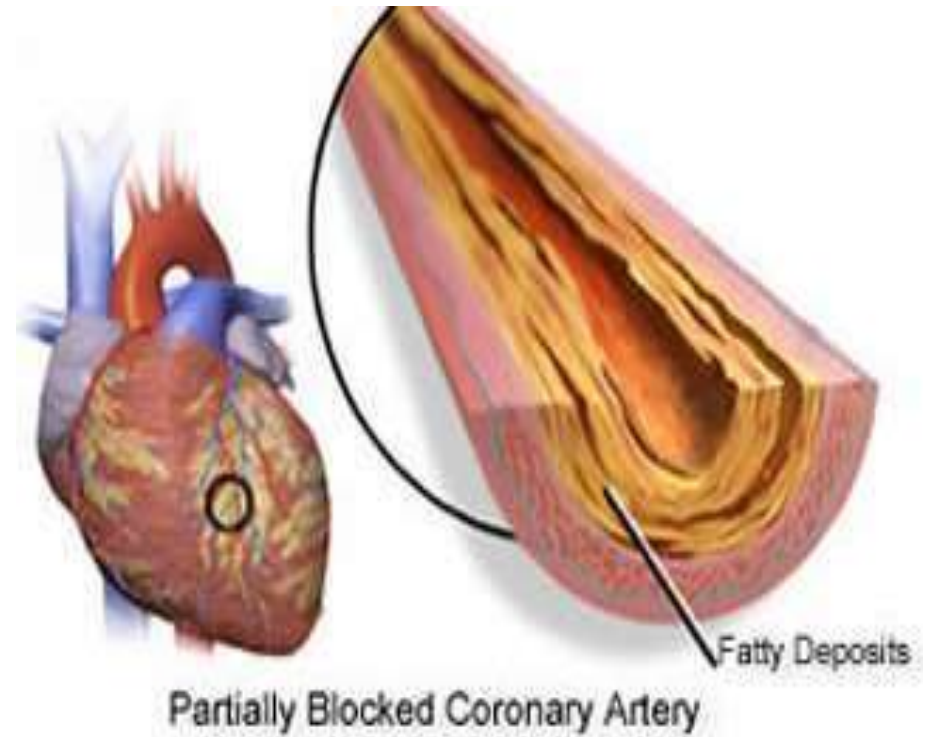
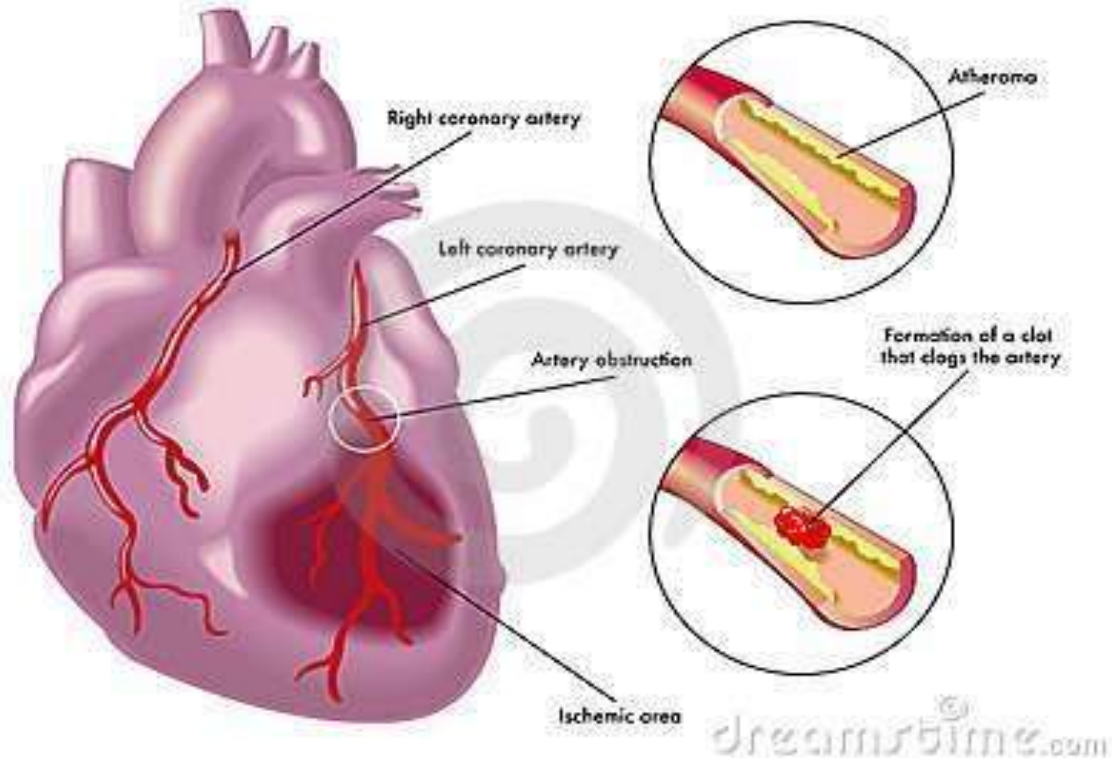


MYOCARDIAL ISCHEMIA

Myocardial infarction – Myocardial infarction is the necrosis of myocardium caused by insufficient blood flow due to embolus, thrombus, or vascular spasm. It is also called heart attack. In myocardial infarction, death occurs rapidly due to ventricular fibrillation.

Angina pectoris- Cardiac pain is the chest pain that is caused by myocardial ischemia. It is also called angina pectoris. It is a common manifestation of coronary diseases. Pain starts beneath the sternum and radiates to surfaces of left arm and left shoulder .

MYOCARDIAL INFARCTION



ANGINA PECTORIS

REFERENCE

- ESSENTIALS OF MEDICAL PHYSIOLOGY
- GUYTON & HALL TEXTBOOK OF MEDICAL PHYSIOLOGY

Thank You!



Live
Longer



Live
Well