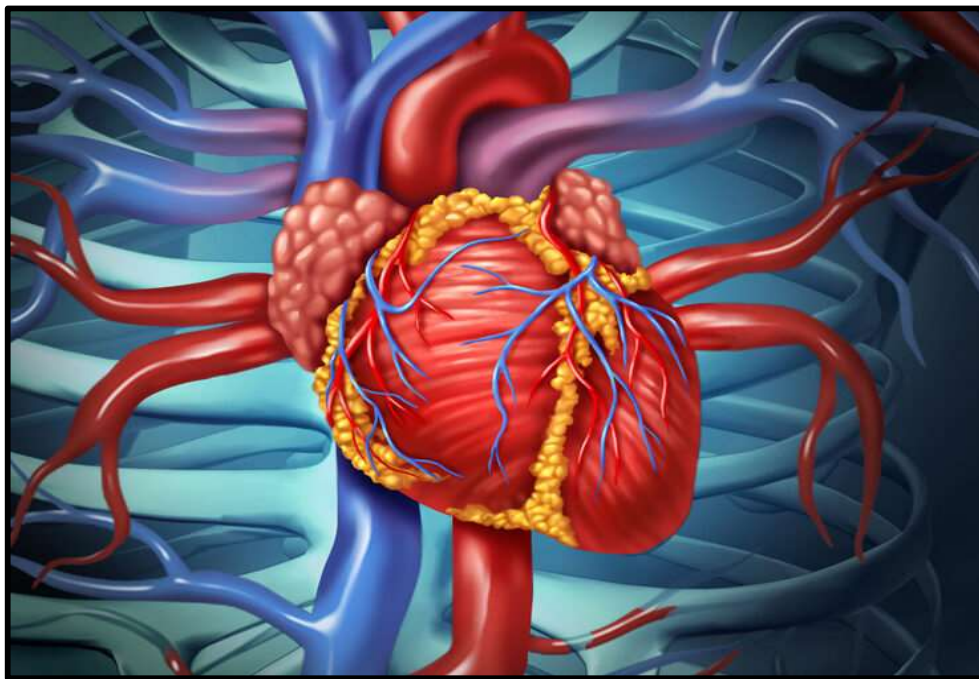




AL-Mustaqbal University College
Pharmacy Department
Third stage
Practical Pathophysiology
(Disorders of Cardiovascular System)

Lab 7



Lecturer: Noor Muhsen Jawad

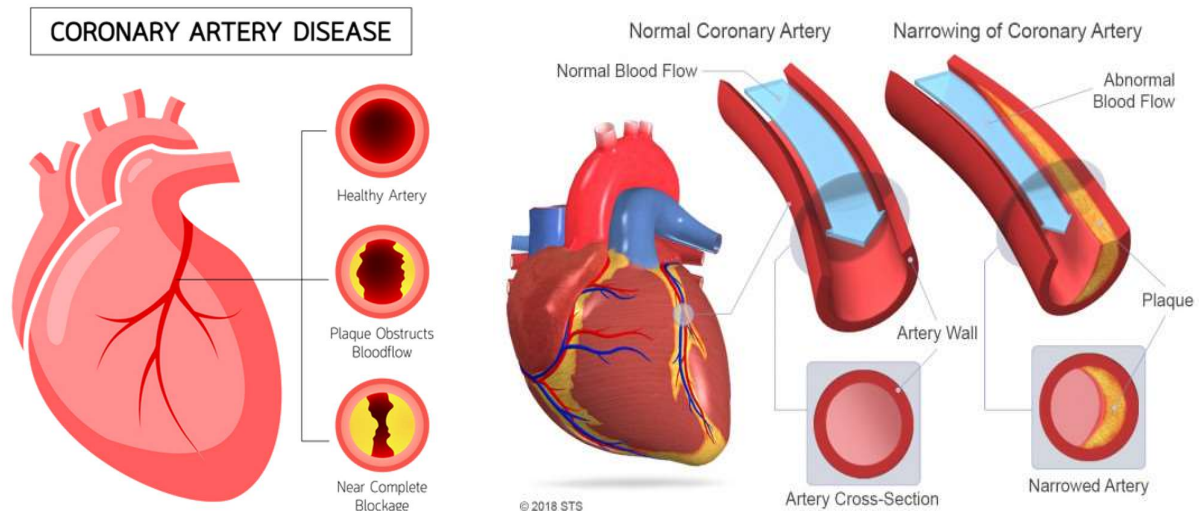
Disorders of Cardiovascular system

The cardiovascular system includes the heart, blood vessels and circulating blood and is often referred to as the circulatory system we will focus upon diseases affecting the heart and blood vessels (the arteries and veins).

Diseases of the heart: The diseases and conditions affecting the heart are collectively known as heart disease.

Coronary heart disease: A disease of the heart itself caused by the accumulation of atheromatous plaques within the walls of the arteries that supply the myocardium.

Coronary artery disease (CAD): These are diseases of the arteries that supply the heart muscle with blood. CAD is one of the most common forms of heart disease and the leading cause of heart attacks.



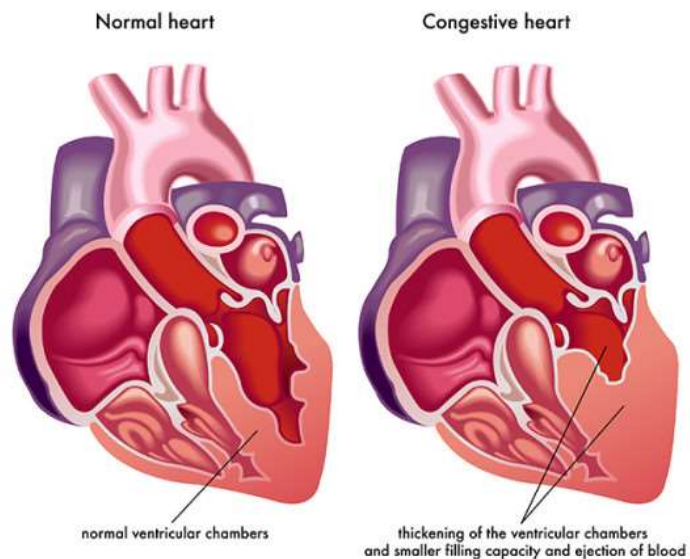
It generally means that blood flow through the coronary arteries has become obstructed. The most common cause of such obstructions is a condition called atherosclerosis, a largely preventable type of vascular disease. Coronary artery disease can lead to other heart problems, such as chest pain (angina) and heart attack (myocardial infarction)

Ischemic heart disease: another disease of the heart itself, characterized by reduced blood supply to the organ.

Cardiovascular disease: A sub-umbrella term for a number of diseases that affect the heart itself and/or the blood vessel system, especially the veins and arteries leading to and from the heart. Causes of cardiovascular disease include **diabetes mellitus, hypertension and hypercholesterolemia.**

Heart failure: Often called **congestive heart failure**, is a condition in which the heart can't pump enough blood to the body's organs and tissues. It doesn't mean the heart has failed and can't pump blood at all. With this less effective pumping, vital organs don't get enough blood, causing such signs and symptoms as shortness of breath, fluid retention and fatigue.

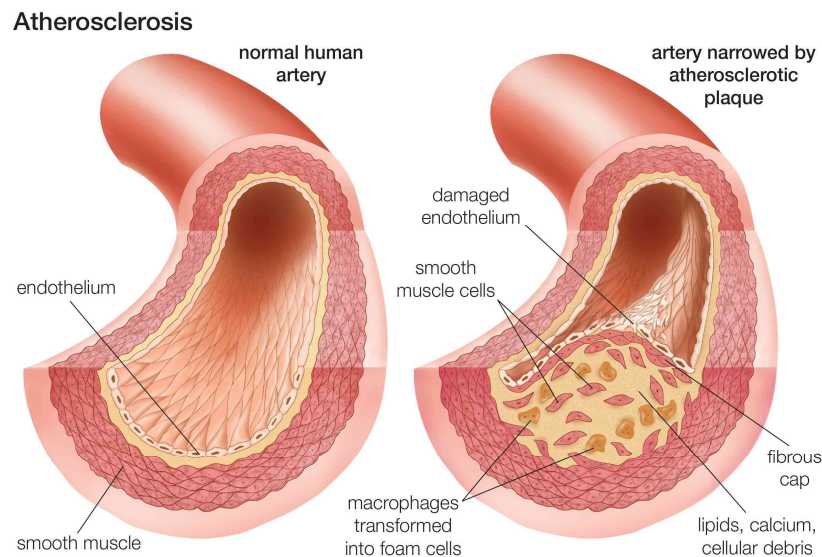
Congestive heart failure is technically reserved for situations in which heart failure has led to fluid buildup in the body. Not all heart failure is congestive, but the terms are often used interchangeably. Heart failure may develop suddenly or over many years. It may occur as a result of other cardiovascular conditions that have damaged or weakened the heart, such as coronary artery disease or cardiomyopathy.



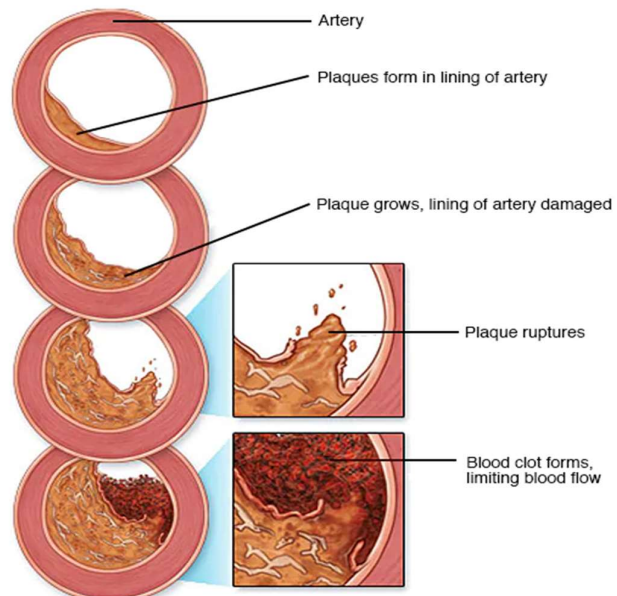
Diseases of the blood vessels

Some types of blood vessel disorders:

Arteriosclerosis and atherosclerosis: are conditions in which the walls of the arteries become thick and stiff. This can sometimes restrict blood flow to the organs and tissues. The process of this thickening and stiffening is arteriosclerosis.



Atherosclerosis is the most common form of arteriosclerosis. Although the two terms are often used interchangeably, **atherosclerosis** refers to hardening of the arteries caused by accumulation of fatty deposits (plaques) and other substances. The heart is one of the organs commonly affected by atherosclerosis. When the arteries of the heart (coronary arteries) narrow – may experience chest pain or a heart attack.

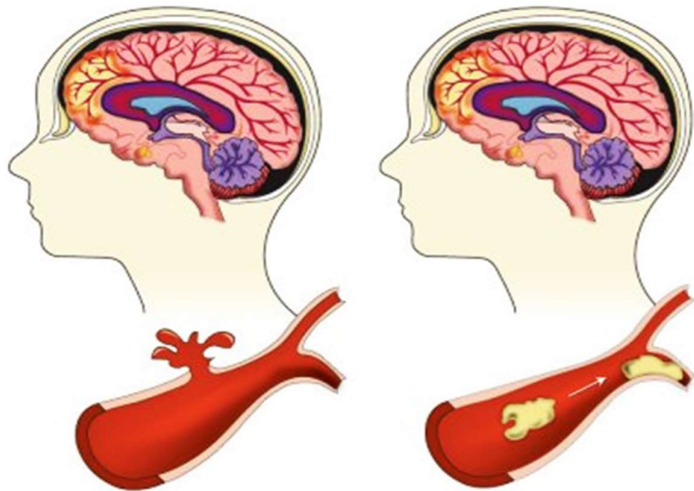


An embolism is a blocked artery caused by a foreign body, such as a blood clot or an air bubble. The body's tissues and organs need oxygen, which is transported around the body in the bloodstream. Two of the most serious conditions caused by an embolism are:

- **Stroke** – where the blood supply to the brain is cut off
- **Pulmonary embolism** – where a foreign body blocks the artery that carries blood from the heart to the lungs (the pulmonary artery)

Stroke: is a sudden loss of brain function. It occurs when blood flow to the brain is interrupted (ischemic stroke) or when blood vessels in the brain rupture (hemorrhagic stroke).

These, in turn, cause the death of brain cells in the affected areas. Stroke is often thought of as a neurological disorder because of the many complications it causes.

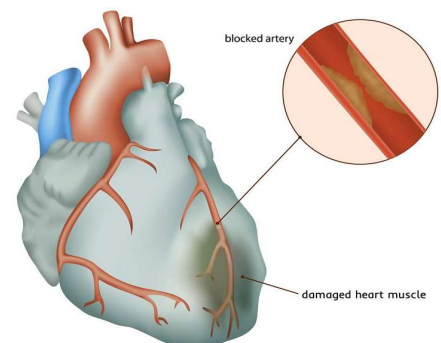


A hemorrhagic stroke occurs when a blood vessel bursts within the brain.

An ischemic stroke occurs when a blood clot blocks the blood flow in an artery within the brain.

Infarction: Death of tissue resulting from a failure of blood supply, commonly due to obstruction of a blood vessel by a blood clot or narrowing of the blood-vessel channel. The dead tissue is called an infarct. **Myocardial infarction** (heart attack)—death of a section of heart muscle—results from obstruction of a coronary artery; the condition often accompanies coronary thrombosis.

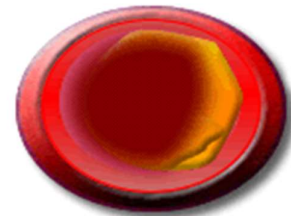
Myocardial infarction



Aneurysm: Is a bulge or weakness in the wall of an artery or vein. Aneurysms usually enlarge over time. Because of that, they have the potential to rupture and cause life-threatening bleeding. Aneurysms can occur in arteries in any location in the body. The most common sites include the abdominal aorta and the arteries at the base of the brain.



Normal Blood Vessel



Fatty Deposit Causing Damage to the Vessel Wall

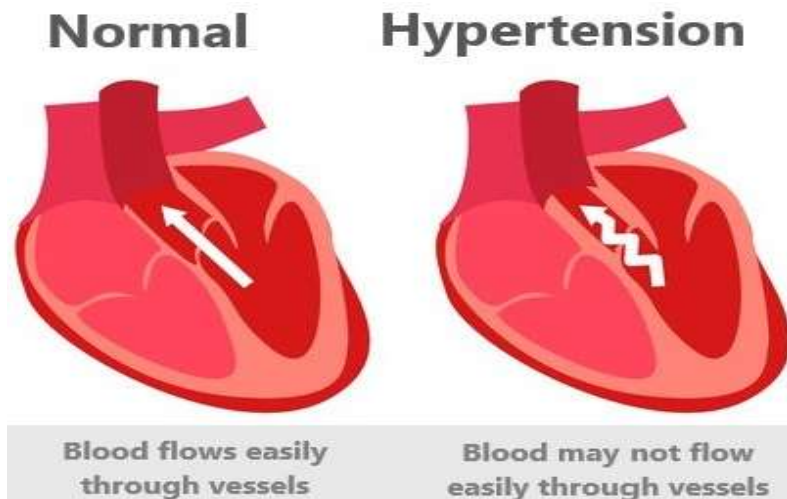


Thinning of the Vessel Wall with Aneurysm Formation

Varicose veins: This is a condition in which the veins become twisted and enlarged. The veins are usually located on the backs of the calves or on the inside of the legs, from the groin to the ankle. When valves in the veins don't function properly, blood can accumulate in the legs, causing the veins to bulge and twist. The veins appear blue because they contain less oxygen.

Hypertension

Hypertension is defined as a sustained elevation of systemic arterial blood pressure. Hypertension is caused by increases in cardiac output, total peripheral resistance, or both.



Classification of hypertension

- **Primary hypertension** (essential or idiopathic hypertension): most cases of combined systolic and diastolic hypertension have no known cause and are diagnosed as primary hypertension. This type affects 90% to 95% of hypertensive individuals.
- **Secondary hypertension:** It is caused by altered hemodynamics associated with a primary disease, such as renal disease. (5%to 8% of cases).

Classification of hypertension

- **Isolated systolic hypertension:** It is elevated SBP accompanied by normal DBP. This type is a manifestation of increased cardiac output or rigidity of the aorta or both.
- **Malignant hypertension** (rapidly progressive hypertension in which diastolic pressure is usually above 140 mmHg) can cause encephalopathy, cerebral edema.

Hyperemia is an increased amount of blood in the vessels of an organ or tissue in the body.

It can affect many different organs, including the: liver, heart, skin, eyes and brain

Types of hyperemia

There are two types of hyperemia:

- **Active hyperemia** happens when there's an increase in the blood supply to an organ. This is usually in response to a greater demand for blood — for example, if you're exercising.
- **Passive hyperemia** is when blood can't properly exit an organ, so it builds up in the blood vessels. This type of hyperemia is also known as congestion.