

University of Basrah
College of Nursing
Department of Basic science
Pathophysiology
Ass.prof Wsfi Dhahir Abid Ali

Hemodynamic disorders

Thrombosis and Embolism

Thrombosis

Is the formation of a blood clot inside a blood vessel, obstructing the flow of blood through the circulatory system. When a blood vessel (a vein or an artery) is injured, the body uses platelets (thrombocytes) and fibrin to form a blood clot to prevent blood loss. Even when a blood vessel is not injured, blood clots may form in the body under certain conditions. A clot, or a piece of the clot, that breaks free and begins to travel around the body is known as an embolus.

Thrombosis occurs when blood clots block your blood vessels. There are 2 main types of **thrombosis**: Venous **thrombosis** is when the blood clot blocks a vein. Veins carry blood from the body back into the heart. Arterial **thrombosis** is when the blood clot blocks an artery.

Venous thrombosis is thrombosis in a vein, caused by a thrombus (blood clot). A common form of venous thrombosis is deep vein thrombosis (DVT), when a blood clot forms in the deep veins. If a

thrombus breaks off (embolizes) and flows towards the lungs, it can become a pulmonary embolism (PE), a blood clot in the lungs. The conditions of DVT only, DVT with PE, and PE only are captured by the term **venous thromboembolism**

Arterial thrombosis

Arterial thrombosis is the formation of a thrombus within an artery. In most cases, arterial thrombosis follows rupture of atheroma (a fat-rich deposit in the blood vessel wall), and is therefore referred to as atherothrombosis. Arterial embolism occurs when clots then migrate downstream, and can affect any organ.

arterial occlusion occurs as a consequence of embolism of blood clots originating from the heart ("cardiogenic" emboli). The most common cause is atrial fibrillation, which causes a blood stasis within the atria with easy thrombus formation, but blood clots can develop inside the heart for other reasons too.

Causes

Thrombosis prevention is initiated with assessing the risk for its development. Some people have a higher risk of developing thrombosis and its possible development into thromboembolism .Some of these risk factors are related to **inflammation**. ,**stasis of blood, vessel wall injury, and altered blood coagulation** ,Major causes of coagulation disorders resulting in too much clotting include: **Factor V Leiden**. In this genetic disorder, **a blood clotting protein called factor V Leiden** overreacts

causing the blood to clot too often or too much. **Antithrombin III (ATIII) deficiency..**

Treatment

The treatment for thrombosis depends on whether it is in a vein or an artery, the impact on the person, and the risk of complications from treatment.

Anticoagulation

Anticoagulant like Warfarin and vitamin K antagonists are anticoagulants that can be taken orally to reduce thromboembolic occurrence. Where a more effective response is required, heparin can be given (by injection) concomitantly. As a side effect of any anticoagulant, the risk of bleeding is increased, so the international normalized ratio of blood is monitored. Other medications such as direct thrombin inhibitors.

Thrombolysis

Thrombolysis is the pharmacological destruction of blood clots by administering thrombolytic drugs including recombinant tissue plasminogen activator, which enhances the normal destruction of blood clots by the body's enzymes. This carries an increased risk of bleeding so is generally only used for specific situations (such as severe stroke or a massive pulmonary embolism).

Surgery

Arterial thrombosis may require surgery if it causes acute limb ischemia

Endovascular treatment

Mechanical clot retrieval and catheter-guided thrombolysis are used in certain situations

Antiplatelet agents

Embolism

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.

An embolism is the lodging of an embolus, a blockage-causing piece of material, inside a blood vessel. **The embolus may be a blood clot (thrombus), a fat globule (fat embolism), a bubble of air or other gas (gas embolism), amniotic fluid (amniotic fluid embolism), or foreign material.** An embolism can cause partial or total blockage of blood flow in the affected vessel. Such a blockage (a vascular occlusion) may affect a part of the body distant from the origin of the embolus. An embolism in which the embolus is a piece of thrombus is called a thromboembolism.

An embolism is usually a pathological event, i.e., accompanying illness or injury. Sometimes it is created intentionally for a therapeutic reason, such as to stop bleeding or to kill a cancerous tumor by stopping its blood supply. Such therapy is called embolization.

Thrombosis and embolism share many similarities, but they are unique conditions. Thrombosis occurs when a thrombus, or blood clot, develops in a blood vessel and reduces the flow of blood through the vessel.

Embolism occurs when a piece of a blood clot, foreign object, or other bodily substance becomes stuck in a blood vessel and largely obstructs the flow of blood

Acute myocardial infarction is the medical name for a heart attack. A heart attack is a life-threatening condition that occurs when blood flow to the heart muscle is abruptly cut off, causing tissue damage. This is usually the result of a blockage in one or more of the coronary arteries

A stroke is a medical condition in which poor blood flow to the brain causes cell death. There are two main types of stroke: ischemic, due to lack of blood flow, and hemorrhagic, due to bleeding. Thrombus and embolus cause parts of the brain to stop functioning properly