Pulmonary Embolism Causes

Pulmonary embolism is a blockage of the main artery of the lung or one of its branches by a substance that has travelled from elsewhere in the body through the bloodstream. Though most causes are due to deep vein thrombosis, a minority of cases occur because of fat emboli, air, bacteria, amniotic fluid and tumors.

PLAY PICMONIC

Causes

FAT BAT Mnemonic
FAT-BAT-guy
The mnemonic FAT BAT is useful to help recall the common causes of pulmonary embolism. These emboli sources are fat, air, thrombus, bacteria, amniotic fluid, and tumor.

Fat
Fat
Fat embolism occurs when fat globules enter the bloodstream and obstruct small blood vessels, particularly in the lungs, brain, and skin. It is most commonly associated with bone fractures, orthopedic surgeries, and certain medical conditions. When fat embolism leads to systemic symptoms, it is called Fat Embolism Syndrome (FES). There are two main theories explaining the pathogenesis of fat embolism. First mechanical theory is when fat from the bone marrow is released into the venous circulation. The second mechanical theory is that trauma causes the release of free fatty acids from triglycerides due to lipolysis.

Air
Air
Air can travel through the circulatory system and, when in an artery, may directly stop blood flow to an area fed by the artery. Common causes of air emboli include surgery, trauma, scuba diving, and being on a ventilator.

Deep Vein Thrombosis (DVT)
Trombone
Pulmonary embolism most commonly occurs from thrombus formation, which embolizes. A classic example of this is a DVT of the leg embolizing into the pulmonary arteries.

Bacteria
Bacteria-guy
A cause of bacterial embolism is when an area of the body becomes infected with bacteria, resulting in pus forming. These may become dangerous if dislodged from their original location. Like other emboli, a septic embolism may be fatal.

Amniotic Fluid
Onion Fluid
Amniotic Fluid Embolism (AFE) is a rare but life-threatening obstetric emergency that occurs when amniotic fluid, fetal cells, or other debris enter the maternal circulation, triggering a severe immune response. This leads to cardiopulmonary collapse and disseminated intravascular coagulation (DIC). AFE is believed to occur in two phases: 1. Pulmonary and cardiac collapse, 2. Disseminated intravascular Coagulation (DIC). Certain risk factors increase susceptibility: Obstetric Procedures, maternal Factors, Fetal factors.

Tumor
Tumor-guy
Embolism can also occur from tumors that have broken off and made their way into the bloodstream.

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Risk Factors

Hypercoagulable

Hiker-clogs

Hypercoagulable patients are at increased risk for thrombus formation, which can then embolize into the pulmonary flow.

Central Venous Lines

C-center Vine into vein

Central venous lines can increase risk of pulmonary embolism. This is because as the line is changed (to prevent infection), clots may be released and can embolize from the catheter into the pulmonary vasculature.

Immobilized

Immobilized

Immobile patients are at risk for thrombus formation and DVT. This can then embolize into the lungs.

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