

TO WHAT EXTENT IS ACUTE PULMONARY EDEMA A RESULT OF CARDIAC ABNORMALITIES?

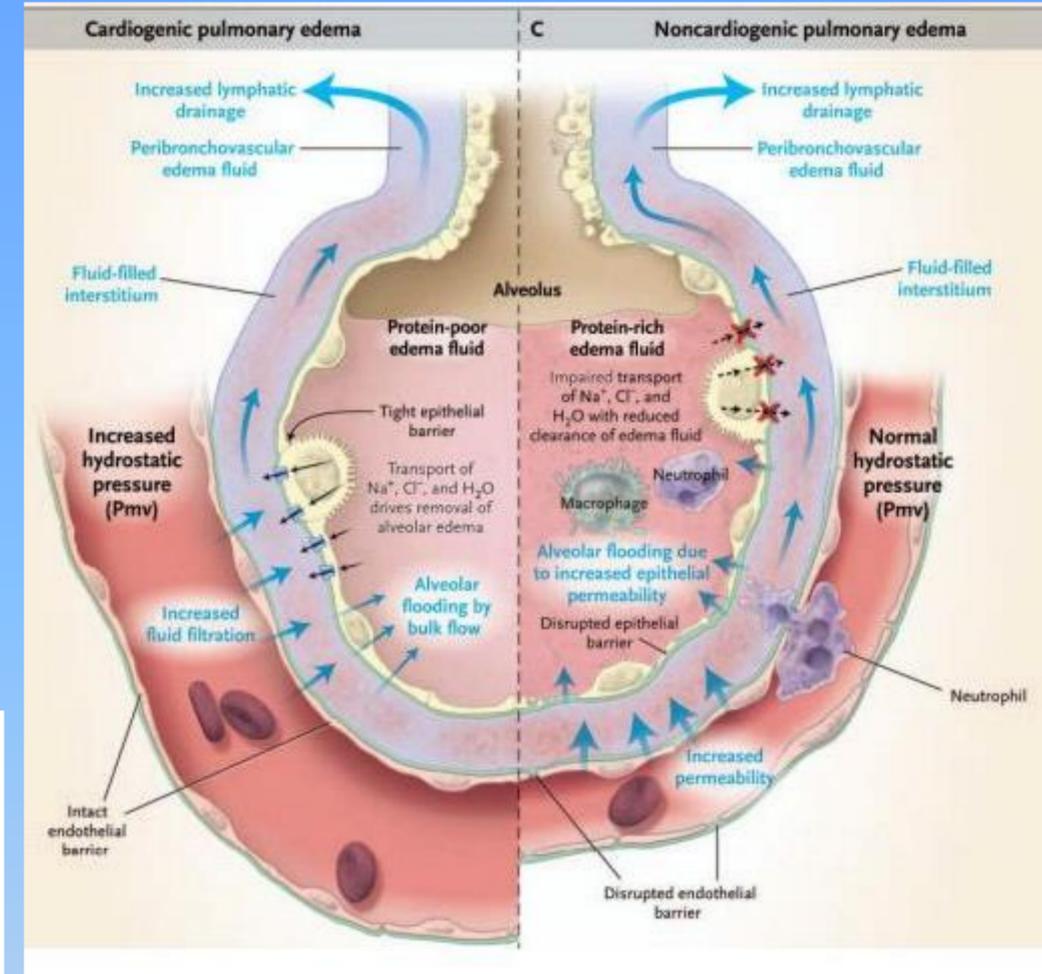
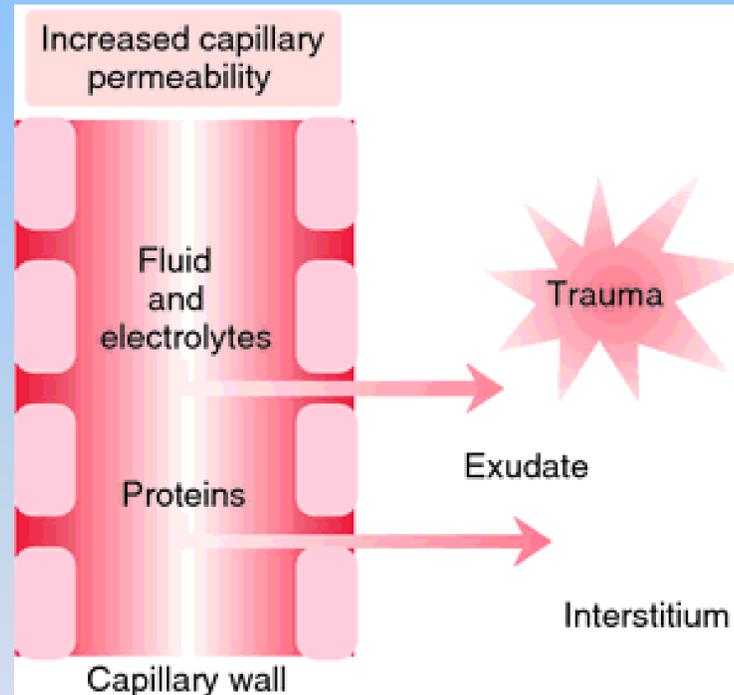
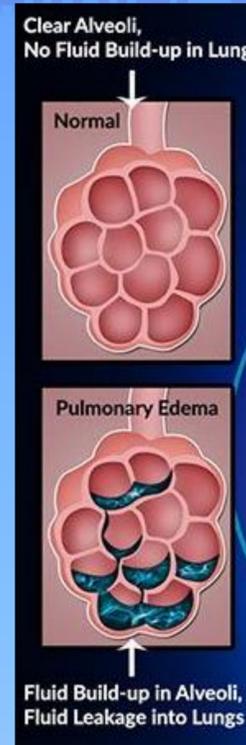
The cause of Pulmonary Edema

Pulmonary edema is a condition caused by excess fluid in the lungs. This fluid collects in the numerous air sacs in the lungs, which makes it difficult to breathe. This build up of fluid develops as a result of either alteration in the hydrostatic and oncotic pressure gradients across the pulmonary circulation and the lung interstitium, or due to increased lung permeability. To avoid this alveolar fluid clearance takes place which is important in keeping the airspaces free of fluid. The clearance process is carried out via the alveolar epithelial using active transport of Na^+ across the alveolo-capillary barrier mostly by Na^+ channels and Na-K-ATPases .

How is Cardiogenic Pulmonary Edema caused?

Cardiogenic Pulmonary edema is caused by the failure of the heart's main chamber- the left ventricle which weakens and does not function properly. Here the ventricle does not completely eject its contents, causing blood to back up and results in a drop in the cardiac output. This causes body to respond by increasing blood pressure and fluid volume in order to compensate for the reduced cardiac output. Consequently, increasing the force against which the ventricle must expel blood. However in the pulmonary blood vessels the blood backs up and forms a pool causing fluid to leak into the spaces between the tissues of the lungs and begins to accumulate. This process makes it more difficult for the lungs to expand during ventilation and hinders the exchange of air (gases) between the lungs and blood moving through pulmonary blood vessels.

In majority cases of pulmonary edema they are caused by the reasoning on the right side. However it can be brought on by an acute heart attack, severe ischemia (inadequate blood supply to cardiac muscles), exceeded volume of the heart's left ventricle, and mitral stenosis (narrowing of the mitral valve which builds up pressure behind the valve and restricts blood flow). Non-heart related pulmonary edema (Non-Cardiogenic Pulmonary Edema) is caused by lung problems like pneumonia, an excess of intravenous fluids due to reasons explained above, due to kidney problems, liver disease, nutritional problems, and Hodgkin's disease. Which in turn cause cardiac problems and the cycle repeats



The reverse affect on the Heart

The lungs and heart are interconnected no matter what. Hence even when a Non-Cardiogenic pulmonary edema is acquired, the presence of fluid decreases cardiac output which in turn increases blood pressure. This increases the risk of damage to the heart, especially the valves – eventually leading to heart abnormalities.

Consequently Pulmonary Edema and Heart diseases are in a vicious cycle and are affected by various factors – despite this they are intertwined and can cause both ways even though there is a lower probability from heart to lung connection.