

health

What Is Pulmonary Embolism?

A 38-year-old woman was referred to me for evaluation of shortness of breath. Her symptoms had begun two days prior from our first meeting and had been progressing in severity. She claimed that her shortness of breath was constant and that she was unable to “catch her breath” during times of minimal activity.

She had recently returned from a long flight from Europe and had increasingly seen changes in her breathing. I found her to have an increased heart rate, rapid breathing, swelling of legs and a decreased blood oxygen level.

Further testing such as an EKG, CAT scan and thorough blood work yielded a diagnosis of a Pulmonary Embolism.

Distinctively, the lungs, heart and blood vessels work jointly in a systemic fashion to circulate blood throughout our bodies. The process begins from the left side of the heart. Red blood cells are pumped from this area to our body via the arterial system. Ultimately, the blood released throughout our bodies is used to perfuse organs allowing them to function properly. Once this process is completed, blood is then returned to the right side of the heart via the venous system. As a result, this area of the heart pumps blood to the lungs where it is cleansed and returned to the left side of the heart, allowing the circulatory system to repeat its cycle.

The arterial system is pulsatile and high in pressure whereas the venous system is passive and sluggish in circulation. The circulation which occurs in our legs is facilitated by the squeezing of leg muscles, which push blood through veins upward towards the heart.

Lack of activity can cause stasis of blood leading to the development of a blood clot. This clot eventually travels upward to the right side of the heart traveling through the pulmonary artery, consequently obstructing a branching vessel. This event decreases the effective amount of blood to be oxygenated. More importantly, the pressure in the arteries of the lungs is increased which puts a significant strain on the heart ultimately leading to a possible hemodynamic collapse. This hemodynamic occurrence causes low blood pressure, fainting and in severe cases, death.

There are many factors that can cause stasis of blood. Modifiable factors which can cause this are inactivity and a sedentary lifestyle. Long trips such as the one taken by my patient discussed earlier can lead to stasis of blood as well. Other factors include prolonged bed rest due to sickness or recovery from being in an operative state. One of the most common un-modifiable factors that can lead to the stasis of blood include genetic predispositions and cancer. Medications

THE HEART BEAT

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such as estrogen hormonal therapy and contraceptive pills have been shown to be a risk factor for the development of a pulmonary embolism.

Acquired diseases such as Heparin Induced Thrombocytopenia, commonly referred to as HIT, can also place an individual at risk for this condition.

Once the diagnosis is suspected to be a pulmonary embolism, typically a CAT scan with a contrast dye injection is performed. This scan gives physicians a visualization of the pulmonary artery and will show evidence of an obstruction.

Another alternate test which can be used is a ventilation/perfusion scan (VQ Scan). This scan uses a nuclear perfusion method, which looks at the lungs ability to accept air and evaluate how well blood circulates within the lungs.

In severe cases where the clot burden

is tremendous and there is an impending hemodynamic collapse, emergent surgery to remove the clot from the pulmonary artery is performed to prevent death.

Evaluating an individual for a pulmonary embolism is vital when a person experiences sudden and persistent events of shortness of breath.

Factors in the patient mentioned earlier included prolonged sitting due to a long return flight, the use of contraceptives and being a smoker for ten years.

She was treated with Coumadin for six months and was placed on a treatment plan to aide her in the cessation of smoking. Fortunately, my patient was able to alter all of these modifiable risk factors and is now enjoying her life with her husband and three beautiful children.

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