

Katie was 26 years old and had just delivered her first baby four days ago. She was exhausted, emotional, and sore. Her vaginal area was throbbing, her abdomen was cramping, and her breasts were tender. Not only that, but her left leg was killing her. It was swollen, heavy and tender to the touch, especially behind her knee. She figured it was because of all the fluids she had during her delivery or the position she was in during her 2 hours of pushing. She called her friend, who told her, “My legs were really swollen after my baby too” and recommended she keep them elevated. Katie thought about going to her doctor, but she didn’t want to bother her. Besides, it was such an ordeal to get out of the house with the baby nowadays.

Jennifer, a 32-year-old female, was a healthy and active fitness instructor who had started on a new birth control pill last month. Her right calf had been sore for three days now. She probably overdid it at the gym last week. She did find it odd that it was so red. She never had a muscle soreness quite like this before. Her morning run this morning was near-impossible. Her husband suggested she go to the doctor, but she brushed it off saying she was “fine.” It was nothing that ibuprofen and massage couldn’t fix.

Less than a week later, Katie was found unconscious and later died of a pulmonary embolism, a blood clot to the lung. Jennifer eventually ended up in the emergency department when the pain was unbearable. She was diagnosed with a deep venous thrombosis, or DVT, in her leg. She was treated, but a year later, still suffers from chronic leg pain. She is worried she might never run again.

Each woman had early signs of a developing blood clot in the leg, called a deep venous thrombosis or DVT. Left untreated, the DVT can enlarge and cause major problems. As the blood clot in the leg grows, it can start to block other veins, causing worsening pain or even permanent injury. Even worse, pieces of it can break off. Those pieces then travel through the bloodstream to the lung. If the clot is lodged there, it can prevent oxygen delivery, resulting difficulty breathing and potentially death.

According to the Centers for Disease Control (CDC), 60,000-100,000 Americans die every year of a deep venous thrombosis/pulmonary embolism.<sup>1</sup>

Pregnant women have a four to five-fold risk of blood clots compared to non-pregnant women.<sup>2</sup> Pregnancy causes many changes to the body, predisposing women to forming blood clots. Pregnancy increases the level of clotting proteins in the blood and the enlarging uterus can place pressure on veins in the body, decreasing blood flow and promoting clotting. Women on oral contraceptives are also at higher risk as these medications can increase clotting factors. It is estimated that oral contraceptives cause a 2 to 3-fold increase in the development of a blood clot.<sup>3</sup>

**What Causes a Venous Thrombosis?**

A clot is usually caused by a decrease in blood flow, an increase in blood clotting proteins, or an injury to the blood vessel itself; or a combination.<sup>4</sup> As mentioned, a large pregnant uterus can decrease blood flow, but so can bedrest or prolonged sitting. If you are not moving, your blood

is not moving through the veins as effectively. An increase in clotting proteins can occur with pregnancy as well as birth control pills. Finally, direct injury from a trauma such as a surgery or accident/injury can lead to a blood clot.

Who is at Risk for a Venous Thrombosis?<sup>5</sup>

Anyone who has decreased blood flow, an increase in clotting proteins, or a blood vessel injury is at risk.

- Pregnant and postpartum women
- Women on birth control pills or hormone replacement
- Surgical patients
- Patients with a recent broken bone or severe muscle injury
- Immobile or bedridden patients
- Cancer patients
- Smokers and obese patients
- Patients with irregular heartbeats, heart failure, or a recent heart attack
- Patients with pneumonia or chronic obstructive pulmonary disease
- Patients with inflammatory bowel disease
- Individuals with a clotting disorder or family history of blood clots

What are the Signs and Symptoms of a Blood Clot in the Leg?

- Swelling in one leg
- Warmth in one leg
- Leg pain that is often worse with standing or walking
- Change in leg skin color

What are the Signs and Symptoms of a Blood Clot in the Lung?

- Chest pain or shortness of breath
- Rapid breathing
- Fast heart rate or heart palpitations
- Coughing up blood

Can I do Anything to Prevent a Blood Clot?

While some cases may be unavoidable, there are measures people can take to decrease their risk of developing a blood clot.

- Stay active. Move around as much as possible after surgery. Walk frequently during pregnancy.<sup>5</sup>
- Exercise your legs periodically when traveling long distances.<sup>5</sup>
  - Get up and walk every 2-3 hours if possible. If confined to a seat, such as in a plane, tighten and release your leg muscles and perform calf raises while in the seat.
- Tell your doctor about any medical problems that might increase your risk of clot before starting a birth control pill or becoming pregnant.<sup>6</sup> Notify your doctor if you have any of the following:

- Current smoking
- Migraine headaches with aura
- History of prior blood clot or stroke
- High blood pressure
- Recent major surgery
- Diabetes
- Heart disease
- Liver or gallbladder disease
- Breast cancer or uterine cancer
- Lupus

#### What Do I Do If I think I have a Clot?

Please see your physician immediately or report to the nearest emergency room. A blood clot can not only cause permanent damage to the vessels in the leg, but can travel to the lung, leading to difficulty breathing and death.

Once at the hospital, the physician or health care provider will likely perform blood tests as well as a leg ultrasound called a Doppler study. The ultrasound will look closely at the veins in the leg to determine if a clot is present. If your heart rate is high or your oxygen level as low, a CT scan of the chest will likely be ordered. This will look for blood clots already present in the veins near the lung.

If a clot is found, the treatment typically consists of blood thinners.<sup>7</sup> Initial treatment is subcutaneous (a needle injection just below the skin) or intravenous (a needle directly into the vein). Depending on other medical issues and the size of the clot, you may be admitted to the hospital. Sometimes, patients are managed as an outpatient. If you are pregnant, blood thinners are continued during the pregnancy and for at least six weeks after the pregnancy. While non-pregnant individuals can be switched to a pill after a few days, pregnant women are kept on injections for the duration of the pregnancy. Occasionally, a surgical procedure may be needed to remove the clot.

#### Disability and Death are Often Preventable

With proper education and understanding of risk factors, many blood clots can be prevented. Patients need to be upfront with their doctors about their medical history and remain aware of the potential for a clot during periods of high risk, such as during pregnancy, after surgery, or during travel. As not all are preventable; however, people need to be aware of the signs and symptoms. Blood clots, if recognized early, are easily treated. Have a high index of suspicion and you might just save your leg... or your life.

## References

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