Fall 2014

DVT and Economy Class Syndrome

Troy Perkins
Otterbein University, troy.perkins@otterbein.edu

Follow this and additional works at: https://digitalcommons.otterbein.edu/stu_msn

Part of the Cardiovascular Diseases Commons, Medical Pathology Commons, and the Nursing Commons

Recommended Citation
Perkins, Troy, "DVT and Economy Class Syndrome" (2014). Nursing Student Class Projects (Formerly MSN). 58.
https://digitalcommons.otterbein.edu/stu_msn/58

This Project is brought to you for free and open access by the Student Research & Creative Work at Digital Commons @ Otterbein. It has been accepted for inclusion in Nursing Student Class Projects (Formerly MSN) by an authorized administrator of Digital Commons @ Otterbein. For more information, please contact digitalcommons07@otterbein.edu.
DVT and Economy Class Syndrome
Troy Perkins, RN, BSN
Otterbein University, Westerville, Ohio

Introduction
Traveling long distances can be very stressful on the body. Deep vein thrombosis (DVT) has often been linked to air flights or long distance travel in a vehicle. A DVT is a blood clot usually formed in the leg. Economy Class Syndrome (ECS) has been referred to as the formation of a DVT occurring during a long flight or after a long airplane flight, especially in economy class where there is limited leg space allotted per passenger and one’s legs especially tend to be immobilized for lack of leg room (MedicNet, 2012). Developing a DVT during long distance travel can lead to various life-threatening illnesses such as venous thromboembolism, pulmonary embolism, or myocardial infarction. There are many destinations in the world that require many hours of travel. The flights required to get there could account for eight or more hours in an airplane. Prolonged travel with inactivity of greater than 3 hours can lead to DVT formation (Coden-Luk, 2014). It is not uncommon in one’s medical career to cross paths with a patient who has developed a DVT during long distance travel. It is important for an advanced practitioner along with colleagues to identify patients who may have an increased risk for DVT especially when they embark on long distance travel or are experiencing symptoms after a long flight.

Pathophysiologic Processes
DVT formation can be formed under many circumstances. Long distance travel is one of the conditions that provide an environment for increased risk of clot formation. During flights a passenger may have a window seat and not use the toilet for 5 to 8 hours and move as little as possible. The patient might choose to sit on the toilet during the flight, limiting the passenger’s choice to get up and move around. If the flight attendant serves food and beverages, thereby blocking the aisle one could limit the opportunities for a passenger to get up or move around. Poor circulation due to lack of accessibility to fluids may increase blood viscosity and hypercoagulability. All these situations lead to an extended period of time and continue to show that venous stasis, vessel wall injury, and hypercoagulability are the causal factors for thrombus formation (Morris, 2011). Venous stasis during travel can result in increased viscosity of the blood and the formation of microthrombi, which are not washed out by fluid movement; the thrombus that forms may then grow and propagate (Holmes, 2014). Platelet aggregation can often grow large enough to plug the leg causing impaired circulation and blood flow to the extremity. In certain scenarios one to all of the factors may be present during travel. These 3 factors in the triad play an important role in understanding the pathophysiology behind clot formation.

Underlying Pathophysiologic Leading to DVT formation
• Venous stasis – decreased seat space
• Hypercoagulability – decreased seat space
• Vessel wall injury – hypercoagulability

Signs and Symptoms
• Pain or tenderness in one or both legs that may occur only while standing or walking
• Tugging or heaviness in the affected leg when walking
• Leg fatigue
• Increase swelling of the affected extremity
• Increased warmth in the skin of the affected leg
• Vein distortion in the affected leg

Figure 1. A passenger traveling with limited leg room. Clearly an ideal position for adequate circulation leading to venous stasis (Photo adapted from www.shutterstock.com)

DVT formation can be formed under many circumstances. Long distance travel is one of the conditions that provide an environment for increased risk of clot formation. During flights a passenger may have a window seat and not use the toilet for 5 to 8 hours and move as little as possible. The patient might choose to sit on the toilet during the flight, limiting the passenger’s choice to get up and move around. If the flight attendant serves food and beverages, thereby blocking the aisle one could limit the opportunities for a passenger to get up or move around. Poor circulation due to lack of accessibility to fluids may increase blood viscosity and hypercoagulability. All these situations lead to an extended period of time and continue to show that venous stasis, vessel wall injury, and hypercoagulability are the causal factors for thrombus formation (Morris, 2011). Venous stasis during travel can result in increased viscosity of the blood and the formation of microthrombi, which are not washed out by fluid movement; the thrombus that forms may then grow and propagate (Holmes, 2014). Platelet aggregation can often grow large enough to plug the leg causing impaired circulation and blood flow to the extremity. In certain scenarios one to all of the factors may be present during travel. These 3 factors in the triad play an important role in understanding the pathophysiology behind clot formation.

Underlying Pathophysiologic Leading to DVT formation
• Venous stasis – decreased seat space
• Hypercoagulability – decreased seat space
• Vessel wall injury – hypercoagulability

Signs and Symptoms
• Pain or tenderness in one or both legs that may occur only while standing or walking
• Tugging or heaviness in the affected leg when walking
• Leg fatigue
• Increase swelling of the affected extremity
• Increased warmth in the skin of the affected leg
• Vein distortion in the affected leg

Figure 2. Virchow’s Triad: Thrombus formation occurs in one of the three aspects of the triad. (Photo adapted from www.shutterstock.com)


COMPLICATIONS OF DVT
DVT formation can be lethal threatening. A DVT can be loose and travel which is then called a venous thromboembolism (VTE). When the VTE travels to the lungs, a pulmonary embolism occurs. A PE is a major complication of DVT holding a mortality rate of 20%-40% and although preventative treatments are available, 180-200 mortality rate of 40%.

Significance of Pathophysiologic
DVT formation can be life threatening. A DVT can be loose and travel which is then called a venous thromboembolism (VTE). When the VTE travels to the lungs, a pulmonary embolism occurs. A PE is a major complication of DVT holding a mortality rate of 20%-40% and although preventative treatments are available, 180-200.

Conclusion
Having an awareness of ECS and risk factors for DVT is imperative for the advanced practitioner in order to prevent development of DVT. All nurses should be aware of the risk factors for DVT and be able to identify patients or individuals who may be at a high risk for DVT. Educating patients on how to prevent DVT formation when traveling long distance on a flight or in any vehicle is important. ECS is preventable and should be brought to the attention of anyone undertaking long distance travel. It is particularly important those having risk factors. ECS is a syndrome that people may not be aware of but through simple education by the APA, it can help others with a safer and healthier travel experience.