



Deep Vein Thrombosis in Adults-A Review

Monali Walke^{1*} and Savita Pohekar¹

¹Department of Medical Surgical Nursing, Shreemati Radhikabai Meghe Memorial College of Nursing, Datta Meghe Institute of Medical Sciences (Deemed to be University), Sawangi (Meghe) Wardha- 442001, Maharashtra, India.

Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i42A32393

Editor(s):

(1) Dr. Giuseppe Murdaca, University of Genoa, Italy.

Reviewers:

(1) Siniša Franjić, Croatia.

(2) Periadurachi Kumar, Abhilashi College of Nursing, India.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/71738>

Review Article

Received 22 May 2021
Accepted 28 July 2021
Published 27 August 2021

ABSTRACT

DVT is a type of blood clot that occurs in the deep veins of the leg or pelvis. An embolus occurs when a thrombus, or blood clot, breaks off. Emboli can go to the lungs and cause a PE. DVT is the most found reason for maternal death in developing country, according to a 2017 analysis. In children, DVT is relatively uncommon. According to a 2016 report, DVT affects 0.30 out of every 100,000 children under the age of nine and 0.64 out of every 100,000 children between the ages of ten and nineteen. Throughout high-income nations, roughly 1.5 out of 1000 adults will get VTE for the first time each year, 5–11 percent of persons will have VTE their lifetime. As people get older, VTE becomes significantly more common. DVT has several risk factors, some of which are listed here. An injury to your veins, such as a bone fracture, Being overweight puts extra pressure on your legs and pelvis veins. Having a DVT family history, A catheter is put into a vein, Female who is taking hormonal treatment or pills of birth control. A common sign is edema in your foot, ankle, or leg, mostly one side. Cramping pain in the affected leg that usually starts in the calf Area of skin that is noticeably warmer than the rest of the body. Diagnosis of DVT includes Ultrasound, Venogram, d-dimer test. Medical Management of DVT pharmacological therapy i.e. unfractional heparin, low molecular heparin, anticoagulant, thrombolytic therapy used.

Conclusion : Awareness and understanding its signs and symptoms are more effective and less expensive than the secondary prevention. Encouragement and education for the self-reporting and self-assessment help to the early detection and prevention of DVT.

*Corresponding author: E-mail: monaliwalke9764@gmail.com;

Keywords: Deep vein thrombosis; adults; awareness; prevention.

1. INTRODUCTION

Deep vein thrombosis is a blood clot (thrombus) forms in deep vein in the legs, mostly occur in the calf and thigh (DVT). A thrombus is a hardened clot of blood. Deep venous blood clots most usually occur in the thigh or lower leg, however they can also occur anywhere else in the body [1].

In the United States, it's 3rd leading reason of death, also it is a leading source of morbidity and mortality in developing countries. DVT is a condition in which one or more blood clots form in a deep vein, generally in the thigh or pelvis. Deep vein thrombosis (DVT) and pulmonary embolism (PE) are medically referred to as venous thromboembolism (VTE) [2].

Venous thrombo embolism (VTE) is a type of vascular illness that remains a serious global health concern. The global yearly incidence of the first deep vein thrombosis (DVT) in adults is 1-2 instances per 1000 patient years, with a clinically diagnosable case occurring in about 1 out of every 1000 adult patients [3].

It's linked to bed immobility or rest. It affects both hospitalised and non-hospitalized patients and those with medical surgical disorders. Deep vein thrombosis (DVT) affects up to 12 percent of surgical hospital patients in Malaysia, 9.6 percent in Sudan, and 2.9 percent in Nigeria.

In India reported deep vein thrombosis (DVT) incidence rate ranging from 8% to 20%. In Maharashtra have reported incidence rate of DVT of lower limb observed age of the patients with deep vein thrombosis ranged from 16 years to 75 years [4].

2. DEFINITION OF DEEP VEIN THROMBOSIS

A blood clot forms in a deep vein, generally in the legs or pelvis, causing deep vein thrombosis [5].

3. EPIDEMIOLOGY

VTE affects babies seldom, but when it occurs, it usually affects babies in hospitals. VTE concentrations in children in North America and the Netherlands ranged from 0.07 to 0.49 per

10,000 children per year. VTE affects around 1% of people aged 85 and up each year.

VTE happens 60% of the time in conjunction with hospitalisation or nursing home stay, Active malignancy accounts for 20% of time, while a central venous catheter or trans venous pacemaker contributes 9% of the time.

Deep vein thrombosis (DVT) affects 10% to 20% of normal medical patients, 20% to 50% of stroke patients, 80% of critically ill patients. Long-term post-thrombotic problems are predicted to affect up to 30% of DVT patients who are admitted to the hospital [6].

4. RISK FACTORS

- Being obese , puts additional pressure on the veins in legs and pelvis
- Person who having family history of DVT
- Women who taking birth control pills or receiving hormone therapy
- Smoking (particularly heavily)
- Person seat for an extended duration in a car or in plane [7].

5. DVT CAUSES

- **Injury:** When the wall of a blood artery is injured, blood flow is restricted or blocked. A blood clot can be formed.
- **Surgery:** During surgery, blood vessels get injured, causing a blood clot to form Bed rest due to no activity after surgery can enhance the risk of a blood clot.
- **Reduced mobility or inactivity:** If person sit for long time, blood can pool in the legs, particularly in the lower portions. People are unable for movement for an extended period of time, blood flow in the legs may reduced. As a result, a clot may form [8].

6. DVT SYMPTOMS

- Edema in one side of your foot, ankle or leg.
- Cramping pain in the affected leg, commonly starts in the calf
- Severe and unexplained foot and ankle pain
- Patch of skin i.e. warmer than skin around it.

- Skin becomes pale, reddish, or bluish in colour across the affected area [9].

7. DIAGNOSIS OF DVT

1. Duplex ultrasonography is used. It is kind of imaging technique that can use sound waves for explaining the blood flow of veins.
2. A d-dimer test shows chemical in blood that is released when a clot breaks apart.
3. Contrast venography is x-ray in which contrast material (dye) is injected in a major vein in foot or ankle so that physician can examine deep veins in the leg, hip etc.
4. Magnetic resonance imaging (MRI) investigations, which use radio waves and a magnetic field to produce body images, and computed tomography (CT) scans, are imaging tests that help for physician to understand the condition and also help for plan of treatment.
5. A risk stratification score and clinical judgment to measure the pre-test chance for deep venous thrombosis are the clinically validated Well's criteria for deep venous thrombosis (DVT). It may be meant for suspicious patients to be paired with non-invasive medical tests. (e.g. Ultrasound or d-dimer) [10].

8. COMPLICATION

1. Bleeding. The most common side effect of anticoagulant medication is bleeding.
2. Thrombocytopenia: Heparin-induced thrombocytopenia, rapid reduction in platelet count 30% of baseline is a possible side effect of heparin medication.
3. Drug interactions: Due to oral anticoagulants drug can be contacted with a variety of different drugs like herbal supplements, and nutritional supplements, the patient's medication schedule must be closely monitored [11].

9. PHARMCOLOGICAL THERAPY

Deep vein thrombosis patients should take steps to avoid or reduce blood clotting in their vascular system.

1. **Unfractionated heparin:** To prevent DVT, unfractionated heparin is given subcutaneously, or as an intermittent or continuous IV infusion given for 5 days for

the preventing the thrombus expansion and the formation of new thrombus.

2. **Low-molecular-weight heparin (LMWHs):** Subcutaneous LMWHs, like dalteparin and enoxaparin, therapies for DVT in some circumstances because they limit thrombus expansion and the formation of new thrombus.
3. **Oral anticoagulants:** Warfarin is a vitamin K antagonist used for long-term anticoagulant treatment.
4. **Factor Xa inhibitor:** Factor Xa is specifically inhibited by fondaparinux.
5. **Thrombolytic therapy:** Catheter-directed thrombolytic treatment, unlike heparins, lyses and dissolves thrombi in more than half of patients [10].

10. NURSING MANAGEMENT

10.1 Nursing Assessment

Assessing the patient for DVT include:

1. Presenting signs and symptoms:

Patient has symptoms of DVT, conduct complete medical history and physical examination to rule out alternative possibilities.

2. Well's diagnostic algorithm

Due to clinical features are unreliable, Well's diagnostic algorithm has been validated, categorises patients as have a high, intermediate, low risk of develop DVT.

10.2 Nursing Diagnosis

6. Ineffective tissue perfusion related to interruption of venous blood flow.
7. Impaired comfort related to vascular inflammation and irritation.
8. Risk for impaired physical mobility related to discomfort and safety precautions [12].

10.3 Discharge and Home Care Guidelines

Preventive health practices, awareness of this disease and understanding its signs and symptoms are more effective and less expensive than the secondary prevention. Encouragement and education for the self-reporting and self-assessment help to the early detection and prevention of DVT in hospitalized patient. Guidelines regarding the prevention of DVT are

useful for developing awareness in patient and also reducing the incidence [13].

10.4 Prognosis

DVT is a condition which primarily affecting elderly people and developing in settings Nursing homes, hospitals, and cancer patients are just a few examples. It's connected to a 6% 30-day mortality rate, with PE being leading cause of death. Distal DVT, is rarely if ever linked to PE, proximal DVT is frequently linked to PE. Despite the fact that a chest CT is not required only due to DVT diagnosis, approximately 56% of patients with proximal DVT also have PE. If proximal DVT is not treated, roughly half of patients will develop symptomatic PE in the next three months.

Post-thrombotic syndrome is the most prevalent chronic consequence of proximal DVT. Pain, itching, swelling, paresthesia, heaviness, and, in severe situations, leg ulcers are all symptoms that might occur. An estimated 20–50 percent of patients acquire the syndrome after proximal DVT, with 5–10 percent reporting severe symptoms. Distal DVT can also result in post-thrombotic syndrome, however to a lesser extent than proximal DVT [14].

11. CONCLUSION

It is very important to make people aware about sign and symptoms of DVT. Thus it can definitely help for early detection are more effective and less expensive than secondary prevention. Encouragement and education for the self-reporting and self-assessment help to the detection and prevention of DVT [15].

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Deep vein thrombosis - Symptoms and causes [Internet]. Mayo Clinic. [Cited 2021 Aug 5]. Available: <https://www.mayoclinic.org/diseases-conditions/deep-vein-thrombosis/symptoms-causes/syc-20352557>
2. Waheed SM, Kudravalli P, Hotwagner DT. Deep Vein Thrombosis. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021. [Cited 2021 Aug 5]. Available: <http://www.ncbi.nlm.nih.gov/books/NBK507708/>
3. World Thrombosis Day | Venous Thromboembolism (VTE) [Internet]. [Cited 2021 Aug 5]. Available: <https://www.worldthrombosisday.org/issue/vte/>
4. Arrive: A retrospective registry of Indian patients with venous thromboembolism [Internet]. [Cited 2021 Aug 5]. Available: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4810892/>
5. Deep vein thrombosis - Diagnosis and treatment - Mayo Clinic [Internet]. [Cited 2021 Aug 5]. Available: <https://www.mayoclinic.org/diseases-conditions/deep-vein-thrombosis/diagnosis-treatment/drc-20352563>
6. Deep vein thrombosis. In: Wikipedia [Internet]; 2021. [Cited 2021 Aug 5]. Available: https://en.wikipedia.org/w/index.php?title=Deep_vein_thrombosis&oldid=1037059977
7. Deep Vein Thrombosis (DVT): Symptoms, Treatments, and Prevention [Internet]. [Cited 2021 Aug 5]. Available: <https://www.healthline.com/health/deep-venous-thrombosis>
8. Pulmonary Embolism | Cedars-Sinai [Internet]. [Cited 2021 Aug 5]. Available: <https://www.cedars-sinai.org/health-library/diseases-and-conditions/p/pulmonary-embolism.html>
9. Edema: Causes, Symptoms & Treatment [Internet]. [Cited 2021 Aug 5].

- Available: <https://my.clevelandclinic.org/health/diseases/12564-edema>
10. CDC. Diagnosis and Treatment of Venous Thromboembolism | CDC [Internet]. Centers for Disease Control and Prevention; 2018. [Cited 2021 Aug 5]. Available: <https://www.cdc.gov/ncbddd/dvt/diagnosis-treatment.html>
11. Complications of Deep Vein Thrombosis | Saint Luke's Health System [Internet]. [Cited 2021 Aug 5]. Available: <https://www.saintlukeskc.org/health-library/complications-deep-vein-thrombosis>
12. Wanyang. 5 Deep Vein Thrombosis Nursing Care Plans [Internet]. Nurseslabs; 2017. [Cited 2021 Aug 5].
13. Discharge Instructions for Deep Vein Thrombosis | Saint Luke's Health System [Internet]. [Cited 2021 Aug 5]. Available: <https://www.saintlukeskc.org/health-library/discharge-instructions-deep-vein-thrombosis>
14. Deep Vein Thrombosis: Prognosis & Management | Study.com [Internet]. [Cited 2021 Aug 5]. Available: <https://study.com/academy/lesson/deep-vein-thrombosis-prognosis-management-cure.html>
15. Kesieme E, Kesieme C, Jebbin N, Irekpita E, Dongo A. Deep vein thrombosis: A clinical review. J Blood Med. 2011;2:59–69.

© 2021 Walke and Pohekar; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<https://www.sdiarticle4.com/review-history/71738>