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Review Article

Unveiling Deep Vein Thrombosis: Hidden Risks and Health Implications

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Abstract

Deep vein thrombosis (DVT) is a medical condition that frequently goes unrecognized, and hides under the surface of our comprehension. Deep vein thrombosis (DVT) is a vascular disease characterized by the formation of blood clots in deep veins, often in the lower limbs. DVT tends to be particularly sneaky because it frequently presents with mild symptoms that are either ignored or continue to be symptomatic. This sneaky inclination can cause serious problems, the deadliest of which is pulmonary embolism. This review provides an overview of the extensive study on DVT titled "Deep down Vein Thrombosis: An in-depth Look at a Silent Threat," which aims to raise awareness of this often-ignored but significant medical issue. We examined the epidemiology, intricate pathophysiology, and plethora of risk factors that predispose certain individuals to it. We also clarified the clinical signs, significance of early diagnosis, and diagnostic instruments that are easily available for identifying DVT even in cases where it is hidden. We stress the need to view DVT as a distinct threat as we have wrapped up our review. By increasing awareness and prompt assessment, we could limit possible catastrophic consequences. We also highlight ongoing studies and planned advancements in the field that should lead to better understanding and treatment of this often-misdiagnosed illness.

1. Introduction:

The significance of diagnosing deep vein thrombosis (DVT) is a misleading concern, as it is difficult to disregard certain ailments that arise from a broad range of conditions, including health disorders. They present with distinct symptoms, are recognized by most individuals, and have immediate and evident repercussions. Conversely, there are those who live within the limits of our health knowledge and discreetly hide from us **(Strijkers et al., 2011)**. Deep vein thrombosis (DVT) is a disease that usually acts covertly and without any early warning signals. It is a silent health problem that needs to be constantly considered, understood, and monitored. Although DVT is a concealed vascular condition, it has a significant negative impact on public health. The presence of blood clots or thrombi in the deep veins, usually in the lower limbs, can be used to diagnose this condition. Owing to their ability to conceal the arteries and veins they come into contact with, these obstructions prevent us from perceiving the movement they produce. **(Nordström et al., 1992).**

Therefore, DVT symptoms are typically mild when they appear. The inclination towards silent progression is characteristic of DVT and warrants further examination. The term "silent threat" is apt given that DVT encapsulates the essence of the disease. Rather than being totally absent, the phrase "silent" describes the intricacy of its symptoms and the gradual, imperceptible march of its progression **(Hirsh et al., 2002)**. Because of the way DVT operates, it may elude our prompt attention by appearing as a minor ache or inflammation and being mistaken for a minor irritation. However, beneath this veneer of goodness, disastrous things can still emerge. Pulmonary embolism (PE) is a potentially lethal illness with a terrifying spectrum **(Kearon, et al., 1998)**. It is possible that an element of coagulated blood that breaks loose from a very deep vein and persists in the blood vessels of the lungs will cause an unexpected breakdown of essential life-sustaining processes. PE refers to what happens when a minor threat becomes much more noticeable and dangerous. The gradual onset of DVT and the potential for loud PE are the two factors that motivated us to spread awareness of this illness. However, it is imperative to be aware of the broad range of implications of DVT before delving into the condition. DVT is not a mysterious, rare illness that exists only at the edge of medical knowledge. Instead, it should not be treated lightly because it is a significant medical issue with an increasing occurrence **(Tan et al., 2009)**. Epidemiological data indicate that a sizable proportion of the general population suffers from DVT. It is a global condition that affects people of various ages and socioeconomic backgrounds, although its precise frequency varies between societies. DVT is rare but occurs in the elderly and those with particular risk factors. However, the specific cause of DVT remains unclear. What conditions result in the formation of asymptomatic blood clots? To properly understand the nature of the potential risks associated with DVT, satisfactory responses to this fundamental question are necessary. The intricate web of genetic and environmental variables interacting to produce a perfect environment for clot formation holds the key to these answers. Through this comprehensive examination, we began to unravel the mysteries surrounding DVT and offer a rationale for its enigmatic beginnings. Risk factors, the underlying mechanisms that cause clot formation, the physiological and anatomical features of deep blood arteries, and clinical presentation are just a few of the many issues that our inquiry will cover **(Kearon et al., 2016)**. We will investigate diagnostic techniques, discuss potential adverse effects, and evaluate prophylactic and curative actions. We will also examine the ongoing research conducted in this area and possible future paths for it, providing hope for better comprehension and treatment of this small but important health concern **(Flinterman et al., 2008).**

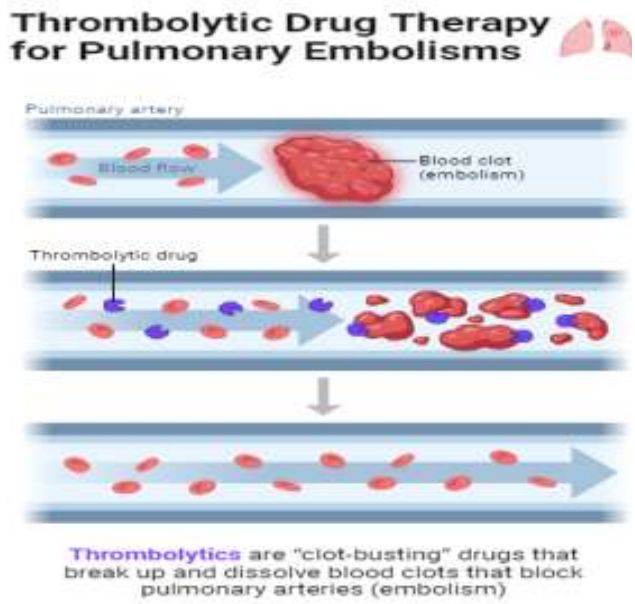

Figure: 1. Thrombolytic drug therapy for pulmonary embolism.

- **Exploring the epidemiological aspects of Deep Vein Thrombosis:** Understanding the true extent of DVT's hazard to public health requires an understanding of its epidemiology, since data often provide a clear picture of the disease's incidence. Deep vein thrombosis is not an unusual or puzzling condition. Instead, they must be treated as significant and unappreciated medical problems **(Stubbs et al., 2018)**.

- **Incidence and prevalence rates:** a significant portion of the global population. The overall burden of this condition is also increased by the fact that its severity and prevalence vary depending on the location and population. Understanding these educational articles may help recognize the actual risk of DVT **(Cogo et al., 1998).**

- **Worldwide Occurrence:** As reporting guidelines and diagnostic techniques vary, estimating the global incidence of DVT is challenging. However, it is a common disease that affects people worldwide. It is estimated that–1-2 instances per person worldwide will occur each year **(Wells et al., 1997).**

- **Regional Inequalities:** The incidence of DVT varies by region. Inherited and lifestyle factors may contribute significantly to the higher prevalence of DVT observed in Western countries. However, several Asian populations have lower prevalence rates **(Yamashita et al. 2017).**

- **Age Group and Sex:** Age is a significant predictor of DVT incidence, which increases noticeably with age. The risk of DVT is significantly higher in individuals over 60 years of age. Sex disparities were also present, with men having a higher risk of developing DVT than women, particularly during adolescence. However, as one ages, the differences between men and women become less noticeable **(Smolicz et al.).**

2. Risk Elements and Genetics

To determine who is most vulnerable to this type of quiet pressure, it is vital to understand the probability of DVT. While some people are genetically predisposed to a higher risk of DVT, there are specific circumstances and scenarios in which the risk can be much higher **(Wells et al., 2003)**.

- **Medical admission and surgical intervention:** People admitted to the hospital for various physiological issues have a higher risk of developing DVT. Immobility, an irregular circulatory system, and other dangers associated with medicine, especially risky muscle and tendon surgical procedures, all increase the risk after surgery **(Bates et al., 2012).**

- **Tumor:** When malignancies are confirmed, the possibility of DVT is often raised. In addition to radiation therapy for cancer, which may involve therapy and intravascular angioplasty, the carcinogenic condition itself may also result in a prothrombotic state **(Righini et al., 2014)**.

- **Genetic and Lifestyle-Related Conditions:** Genetic predisposition has been linked to an increased risk of DVT. Prothrombin, factor V

Leiden conversion, and anticoagulant agent deficiency mutations are well-known genetic variables that increase an individual's susceptibility to infection. Obesity, smoking, and the utilization of hormone-containing contraceptives or hormone replacement therapy as a form of birth control are a few instances of cumulative features **(Carrier et al., 2008)**.

- **Gestation and Postpartum Duration:** Pregnancy increases the risk of DVT, with the postpartum period being the time when women are most likely to be affected. Pregnancy-related physiological changes, such as increased blood coagulation, increase this risk **(White R). H. et al., 2003)**.

- **Long-term outcomes:** While the immediate danger of deep vein thrombosis (DVT) is a serious concern, understanding its long-term effects is equally crucial. One possible consequence of DVT is post-thrombotic syndrome (PTS), which is characterized by persistent limb pain, edema, and skin texture abnormalities. It considerably lowers the quality of life of many DVT survivors **(Silverstein et al., 1998).**

3. Pathogenic Processes in Deep Vein Thrombosis

Deep vein thrombosis is caused by Virchow's triad, which consists of modifications to the blood artery wall, variations in blood flow, and an elevated propensity for blood clotting. The risk of thrombosis increases dramatically when these three factors are combined **(Scarvelis et al., 2006).**

- **Blood flow stagnation:** The main cause of deep vein thrombosis (DVT) is the halting or slowing of blood flow due to prolonged immobility. This may be a consequence of prolonged immobility following surgery, prolonged bed rest, or extensive travel **(Fedullo et al., 2001).** Stasis increases the likelihood of clot formation because it permits certain components of blood, such as platelets, to build up inside blood vessels.

- **Endothelial injury:** One of the most important functions of endothelial cells lining the inside of blood vessels is to prevent the formation of blood clots. As a result of these alterations, the vasculature loses its antithrombotic properties. Endothelial cell injury can be caused by multiple factors, including trauma, surgery, inflammatory diseases, and cardiovascular problems **(Pengo et al., 2004).**

- **Increased coagulability:** Increased blood coagulability is another important factor in the pathophysiology of DVT. An imbalance exists in the components that control blood coagulation. Genetic predisposition, certain medications (e.g., oral contraceptives), pregnancy, cancer, and inflammatory disorders can increase coagulability **(Kahn et al., 2004).**

4. Commencement of Thrombosis

Usually, the development of a small clot or clots inside a deep vein causes DVT. A range of factors impact work, including

- **Coagulation cascade activation:** When endothelial cells are damaged, the underlying tissue and tissue factor become visible, which triggers a chain reaction that coagulates blood vessels. This sequence of events is caused by several enzyme reactions that convert fibrinogen into fibrin, a component of blood clots **(Finazzi et al., 2005).**

- **Adhesion of Platelets:** In response to endothelial damage, platelets attach to damaged collagen and tissue factors. Platelet attachment initiates the formation of a platelet plug at the site of injury, which is a crucial step in thrombus formation **(Van Dongen et al., 2005).**

- **Formation of Fibrin:** Fibrin threads grow and join the platelet block as the blood coagulation cascade progresses, strengthening the thrombus' shape and increasing the risk that the developing

thromboembolism would constrict the vein and cause blood flow to slow, sluggish, or stall behind the clot **(Kearon et al. ., 2003).**

5. Vascular Blockage and Transmission:

Once the first blood vessels are visible, they may proliferate and extend into the veins. Another possibility for hemorrhage is embolized bleeding, which occurs when a piece of the clot breaks off and travels through the bloodstream. This is a particularly significant aspect of DVT because emboli have the potential to enter the pulmonary system and result in a potentially fatal lung embolism **(E. et al., 2001).**

Risk factors include lifestyle, genetic, and health-related variables.

- **Factors that affect genetics include:**

Leiden Mutation in Factor V: This recognized genetic risk factor for DVT inherited from parents. Individuals who carry the Factor V mitochondrial polymorphism, often known as Factor V Leiden, have an increased risk of developing DVT. This chromosomal variation increases the difficulty of blood coagulation and the risk of blood clot formation in the deep veins **(Greer I. et al., 2005).**

Mutation in the Prothrombin Gene: An polymorphism in the prothrombin gene, commonly referred to as the G20210A change, is an independent biological risk factor for DVT. This increases the risk of blood clot formation by increasing the role of prothrombin in the ability of the bloodstream to aggregate amino acids **(Barba et al., 2005).**

Protein C, protein S, and antithrombin deficiencies: These extremely rare genetic disorders alter certain proteins involved in the regulation of blood coagulation. Uncontrolled clotting is more likely when there are abnormalities in anticoagulant hormones, protein S, or amino acid C **(Wilson et al., 2001).**

- **Lifestyle-related factors:**

Prolonged Immobility: Lengthy trips, bed rest, and immobility following surgery are examples of situations in which prolonged immobility may reduce blood flow to the deep veins and increase the risk of clot formation. In addition to people recovering from surgery, this is especially important for those flying or driving across the nation **(Nardin et al., 2023).**

Obesity: An individual's risk of DVT is elevated when they are overweight or obese. Being overweight can cause chronic inflammation and reduced blood volume, both of which can lead to the formation of blood clots.

Smoking is a known risk factor for DVT. Smokers are particularly vulnerable to clot formation because of its detrimental effects on the coagulation process and coronary arteries **(Akash et al., 2023).**

Oral Contraceptives and Hormone Replacement Therapy (HRT): Women with additional risk factors may be more susceptible to DVT as a result of contraceptive medications and hormone replacement therapy. These prescription drugs affect the components that lead to blood coagulation.

- **Medical Factors:**

Surgery: Significant surgical operations, especially those involving the pelvis and abdomen, may increase the risk of deep vein thrombosis (DVT) due to immobility, tissue strain, and altered blood flow. Therefore, protocols are often used in surgical settings **(Zhang et al., 2023).**

Cancer: An elevated risk of DVT has been linked to specific cancer cell types and treatments. The bleeding cascade can be initiated by cancer, and treatments such as radiation and chemotherapy can damage the arteries of the body, thereby increasing the risk of clot development **(Liu et al., 2023).**

Pregnancy and Postpartum Period: Changes in blood coagulation factors and pelvic vein stenosis during pregnancy increase the risk of DVT. In particular, DVT is most common in the postpartum phase.

Inflammatory Conditions: Both autoimmune conditions, including rheumatoid arthritis and inflammatory bowel disease (IBD), which may increase the risk of DVT, have been linked to chronic inflammation **(Tang et al., 2023).**

6. Clinical Presentation and Diagnosis

In fact, we examined the symptoms and diagnosis of deep vascular thrombosis (DVT) in the retrospective paper "Deep Vein Thromboembolism: A Closer Look at a Silent Threat." When dealing with this hidden threat, it is imperative to recognize the distinctive symptoms and signs of DVT and use suitable diagnostic instruments **(Mwansa et al., 2023).**

- **Clinical Presentation:**

Although DVT can cause a wide range of symptoms, its tendency to go unnoticed or manifest as vague and moderately severe symptoms makes it particularly dangerous. While each person experiences symptoms differently, the following typical manifestations are common.

Leg Pain: The afflicted limb's pain or discomfort is what sets DVT apart. It is common to describe this sensation as cramping or hurting, and standing or walking may worsen the pain.

Swelling: Swelling of the affected leg, particularly the thigh or calf, is a common symptom. The leg may feel heavy and restricted because of this edema **(Al-Eidan et al., 2023).**

Redness and Warmth of the Skin: The skin surrounding the affected area may feel warm to the touch and appear crimson. Venous inflammatory diseases can cause these symptoms.

Visible Veins: Upon an increase in blood flow via collateral arteries and veins, superficial veins may become more noticeable **(Tajeriet al., 2023).**

Calf discomfort: DVT is characterized by inflammation of the calves, particularly when compression is used. This symptom may indicate DVT.

Low-Grade Fever: The following response can cause DVT to occasionally develop a low-grade fever. As not every patient with DVT may experience these symptoms, understanding them is crucial. Most DVT occurrences remain undetected, particularly in the early stages. Pulmonary embolism (PE) is a serious condition that can arise from DVT because it can progress despite obvious symptoms and indicators **(Wauthier,et al.).**

7. Diagnosis:

As DVT symptoms vary and are quiet, it is critical to diagnose it as soon as possible. Several diagnostic methods have been employed to confirm or rule out the emergence of DVT.

Doppler ultrasound: This imaging method is most frequently used to diagnose DVT. It works well and is noninvasive. Vascular flow and the presence of clots in the deep veins can be observed using ultrasonography, which is considered the gold standard **(van Maanen i,et al., 2023).**

D-Dimer Test: The substance known as D-dimer, which is released when a blood clot breaks apart, was searched for in this blood analysis. A clot may be evident if the D-dimer level is elevated. Fortunately, there is nothing special about this test for DVT, and it can be heightened for several reasons, most notably discomfort **(Roy,et al., 2023).**

Venography: Using the previously mentioned contrast imaging method, a deep vein is dyed with contrast material before being observed on X-rays. Venography is more invasive and accurate than ultrasonography **(Li, X, et al., 2023).**

CT or MRI venography: Computed tomography (CT) or magnetic resonance imaging (MRI) may be used in specific circumstances to evaluate deep vein thrombosis. When ultrasonography results are unclear or there is a possibility of deep vein thrombosis (DVT) in the pelvis or abdomen, one of these two methods can be used to create detailed images of the blood arteries **(Galanaud et al., 2023).**

Clinical Forecasting criteria:

Based on the clinical features of DVT, several diagnostic criteria have been employed to estimate the likelihood of the condition, including the Wells Criteria. The choice of imaging studies was guided by these criteria. Complications and risks **(Murguia et al., 2023)**.

8. Complications of Deep Vein Thrombosis (DVT):

It is crucial to be aware of the following possible outcomes of DVT, which can result in a variety of dangerous complications if left untreated or misdiagnosed.

Pulmonary Embolism (PE): One of the most frequent side effects of DVT. When a DVT clot breaks off and enters the bloodstream and travels to the lungs, it may cause a pulmonary embolism. Symptoms of PE include sudden dyspnea, chest pain, rapid heartbeat, and blood in the swallowing reflex. Medical interventions must be initiated as soon as PE is identified **(Moss et al., 2023).**

Post-Thrombotic Dysfunction (PTS): Some individuals with a history of DVTs may develop PTS, a chronic illness. The limb may have persistent symptoms, such as pain, edema, discoloration, and skin abnormalities. A person's quality of life may be significantly affected by the chronic aspects of PTS **(Morris et al., 2023).**

9. Risk Assessment:

Assessing the risk of deep vein thrombosis (DVT) is essential for early detection and prophylactic treatment. Various risk assessment techniques and health markers have been employed to predict the likelihood of developing DVT. Among them are the following

Wells Criteria: An indicator used in medical forecasting to assess the probability of DVT occurrence is the Nicely Criteria. In addition to risk factors and other potential diagnoses, it examines medical features such as the existence of DVT symptoms **(de Jong et al., 2023).**

Caprini Hazard Evaluation Model: Another extensive tool that considers a wide range of risk factors is the Caprini Risk Analysis Model. These include surgery, medical history, and lifestyle choices. A cumulative risk score was used to determine the risk of DVT **(Oh et al., 2023).**

Personal and family history: DVT is particularly crucial. An increased risk may result from a family history of DVT or clotting issues.

Medical Conditions: The risk of DVT is significantly increased by cancer, inflammatory conditions, and inherited clotting issues.

Hospitalization and Surgery: Patients undergoing surgery, especially orthopedic or major surgeries, are more susceptible to immobility and factors associated with the procedure. Risk assessments can aid in determining who can benefit from preventive interventions. Factors contributing to DVT include smoking, obesity, and the use of hormonal contraceptives or hormone replacement therapy **(Alsulami et al., 2023).**

10. Prevention and Management

- **Prevention of Deep Vein Thrombosis (DVT):**

One of the most important management strategies for DVT is prevention, particularly in high-risk patients. The successful preventative strategies are as follows:

Early Ambulation: It critical to encourage patients to exercise as soon as possible after surgery to avoid prolonged bed rest. Early morning walks help keep the legs stagnant and improve circulation **(Li et al., 2023).**

Compression Stockings: The volume of blood in the legs can be increased by wearing progressively constricting socks or stockings. The aforementioned stockings are designed to help stop the formation of DVT by applying the most tension at the boots and progressively reducing the pressure on the legs **(Artac, et al., 2023).**

Anticoagulant Medications: Patients undergoing surgery and those with certain risk factors are typically administered anticoagulant medications, such as heparin or heparin with a reduced molecular weight (LMWH). These drugs help prevent the formation of blood clots.

Intermittent Pneumatic Compression (IPC): IPC equipment is used by ambulatory patients. Through the imitation of muscle movements, these gadgets aid in preventing lethargy.

Hydration: To maintain blood volume and lower the chance of clot formation, it is imperative to remain hydrated. Long-distance travellers should pay special attention to this

Smoking Elimination: The risk of blood clots and other cardiovascular diseases is increased by smoking; thus, encouraging smokers to quit is essential preventive care.

Weight Management: In obese individuals, the risk of DVT can be decreased by establishing a healthy weight through diet and exercise.

Thromboprophylaxis: Prophylactic anticoagulation may be recommended to prevent DVT in high-risk situations, such as major surgery, trauma, or cancer. Certain risk factors and treatment recommendations **(Clapham et al., 2023).**

- **Management of Deep Vein Thrombosis (DVT):**

Effective care is crucial for patients who have already developed DVT to avoid problems and encourage recovery. The DVT control consisted of the following:

Anticoagulant medicine: Anticoagulant medicine is the mainstay of care for deep vein thrombosis. This reduces the risk of pulmonary embolism and aids in the prevention of clot formation. Common anticoagulants include low-molecular-weight heparin (LMWH), heparin, warfarin, and direct oral anticoagulants (DOACs).

Compression Therapy: Bandages or compression stockings can be applied to relieve discomfort and minimize swelling in the afflicted limb.

Elevation: Swelling and pain can be reduced by elevating the injured limb.

Pain management: Pain management medications may be used to reduce discomfort caused by DVT.

Thrombolytic Therapy: Thrombolytic therapy, which breaks up the blockage, may be necessary in severe cases or if there is a high risk of limb loss. Usually, this is saved in exceptional situations **(Puzovic et al., 2023).**

Inferior Vena Cava (IVC) Filter: In rare instances where anticoagulant medication is advised, an IVC filter may be placed to catch clots before they enter the respiratory system.

Long-term Management: Long-term prophylaxis may be necessary for some patients with DVT to prevent recurrence, especially if they have aggravating related risk factors **(Lecumberri R, et al., 2023).**

Collaboration among medical professionals, patients, and family members is essential for managing and preventing DVT. Adherence to treatment regimens, early detection, and appropriate preventive actions are crucial for managing this silent menace. In the following sections, we examine current research initiatives, potential treatment strategies for deep vein thrombosis, and the pressing need for public education and awareness of this serious health concern.

11. Research and Future Directions

- **Ongoing Research Efforts**

Genetic and Molecular Research: Investigations into the genetic and molecular factors influencing DVT risk are ongoing. Customized risk assessments and focused therapies may result from the identification of specific genetic markers and the understanding of their interactions.

Novel Anticoagulants: The development of innovative anticoagulant medications with enhanced efficacy and safety is the main focus of current research in this field. These drugs are intended to provide patients with more convenient options, especially those with a history of DVT.

Blood Biomarkers for Risk Assessment: Researchers are studying blood indicators that can predict the risk of DVT. Identifying accurate biomarkers would help with risk assessment and may even result in early interventions.

Imaging and Diagnostic technologies: The accuracy and speed at which DVT is identified are being further enhanced by recent advancements in imaging and testing technology. Technological advancements in ultrasonic devices and the application of intelligent machines for picture interpretation present fascinating research avenues.

Preventive Strategies: Attempts have been made to offer more specialized and efficient preventive methods. This entails creating preventive plans tailored to each patient, learning more about risk factors, and enhancing coagulation prevention **(Rinde et al., 2023).**

Optimization of Treatment Regimes: The goal of the current study was to improve DVT treatment plans. This involves modifying the length and type of anticoagulant medication to lower the chance of recurrence without overboarding **(Dentali et al., 2023).**

- **Future Directions:**

Personalized Medicine: The treatment of DVT is anticipated to change in the future owing to personalized healthcare. An increasing number of people will tailor their preventive and therapeutic efforts to each patient's unique level of risk, leading to safer and more effective methods **(Liu, L, et al., 2023).**

Genetic Testing: Gene testing for DVT risk may become more common, enabling medical practitioners to determine which patients are genetically predisposed. This enables more precise preventative actions **(Parks et al., 2023).**

Telemedicine and Remote Monitoring: DVT management can be improved by utilizing research and technology related to telemedicine and remote monitoring. Patients can receive ongoing care and assistance, which helps them achieve their treatment objectives **(Dong et al., 2023).**

Patient Education: Prioritizing healthcare knowledge and awareness will be the key focus of future initiatives. To lessen the threat of silence, it is crucial to educate individuals about the dangers, symptoms, and preventative measures related to DVT **(Sinvani et al., 2023).**

Advanced Risk Prediction Models: Advanced risk-predicting models, possibly with the help of artificial intelligence, will be developed to provide accurate risk assessments for DVT. Both consumers and healthcare providers will find these models useful for decision-making processes **(Jørgensen et al., 2023).**

Minimally Invasive methods: More research will be conducted on minimally invasive methods for preventing DVT. The goals of these medical procedures are to lessen issues, remove clots, and restore venous flow **(Wang et al., 2023).**

Multidisciplinary Collaboration: To provide comprehensive care for DVT, cooperation across many medical specialties, including surgery, hematology, and vascular medicine, is necessary **(Rinde et al., 2023).**There are possible directions for further studies and advancements in the treatment and prevention of DVT **(Vrotniakaite-Bajerciene et al., 2023).**

Conclusion:

Finally, "Deep Vein Thrombosis: A Closer Look at a Silent Threat" clarifies a condition that often functions below the radar of our medical understanding but nevertheless poses a serious risk to people worldwide. The disorder known as Deep vein thrombosis (DVT) is defined as the accumulation of blood clots in the deep veins, commonly found in the lower limbs. Its subtle nature, often presenting with little or no symptoms, makes it a silent threat, requiring awareness, compassion, and proactive measures. We assessed the epidemiology, pathophysiology, risk factors, clinical symptoms, diagnosis, challenges, risk evaluation, prophylactic measures, and treatment of DVT. In this study, we clarified the importance of treating DVT with appropriate awareness and care. We also highlight future plans and current research initiatives in the field, which show promise for better methods and results in the battle against this unseen menace. It is critical that we comprehend the need for early diagnosis, effective preventive measures, and individualized therapy as we traverse the complex world of DVT. To address this issue, coordination between healthcare practitioners, research participants, and the general public is crucial. By determining the risk factors, diagnosing the symptoms, and implementing preventive measures, we may decrease the hidden threat posed by DVT and its potentially devastating consequences.

We believe that customized risk assessment, enhanced diagnostics, and targeted therapies will dominate the medical landscape in the future. Patient education, telemedicine, and genetic testing are all part of DVT care. Knowledge and care in this profession will continue to be pushed beyond the present boundaries through ongoing research and coordination with other medical specialties. The threat of DVT should not remain undetected. We may find a solution to this healthcare problem and strive towards a time when DVT is no longer hidden but is instead acknowledged, understood, and appropriately cared for the good of all people with growing awareness, continued study, and dedication to everyone is health.

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Authors Contributions

All authors made immense efforts in the concept and design, acquisition of data, or analysis and interpretation of data.

Ravi Kumar, Ajeet singh, Nikhil kumar and Shubrat Maheswari – Conceptualization, Supervision, Revision, Finalizing, Proof reading

Uma Yadav, Rajesh kumar, Prakash Singh Patel – Data curation, Creative writing, meta-analytical approach

Vijay Yadav, Keerti – Writing, Initial data screening, Data curation

Conflict of Interest

The authors declare no conflicts of interest in this study.

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Data Availability

The authors declare that the data supporting this report are available within the paper. The authors will provide any raw data files that are required in any format upon appropriate request.

Ethical Approvals

This study did not involve experiments on animals or human subjects.

Financial Interests

The authors declare that they have no financial conflicts of interest.

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