Deep vein thrombosis
Summary

- A deep vein thrombosis (DVT) is a blood clot that forms in the veins of the leg.
- Complications include pulmonary embolism (PE), which can be fatal, phlebitis (inflammation) and leg ulcers.
- Medication is usually prescribed to prevent further clotting.

A thrombus is a blood clot. Thrombosis is the formation of a blood clot in any part of the circulatory system. The clot may block a blood vessel, causing potentially serious health effects.

A deep vein thrombosis (DVT) is a blood clot that forms in the deep veins of the leg. A deep vein thrombosis in the thigh carries a risk of pulmonary embolism (PE). This occurs when the clot loses its attachment to the inside of the vein, leaves the leg and lodges in the pulmonary artery, the main blood vessel to the lungs. If the clot is large enough, it can completely block that artery and cause death.

Blood flow through the leg veins generally requires some mechanical help, since it 'flows' up instead of down. Working calf muscles act as a pump. The contracting muscles compress the veins and force the blood in these veins upwards to the heart. This process is aided by valves in the veins, which direct the flow of blood and counteract the effects of gravity.

Anything that slows the flow of blood through the deep veins can cause DVT. This includes injury, surgery or long periods of sitting or lying.

There is debate over whether or not the confinement of long-distance international flights may contribute to the risk of DVT. This condition is known as 'economy-class syndrome'.

Blood clotting and DVT

Blood contains platelets and compounds called clotting agents. Platelets are sticky and form the basis of the blood’s ability to thicken (coagulate).

If a blood vessel is cut, platelets collect at the site of the injury. Together with clotting agents, the platelets produce a web or mesh, which traps platelets and creates a plug to seal off the wound.

The ability of the blood to clot is essential for survival, but it can also lead to the formation of a thrombus.

Risk factors for DVT

Some of the risk factors that may contribute to the formation of a thrombus include:

- coronary heart disease
- being overweight or obese
- cigarette smoking
- pregnancy
- a high-dose combined oral contraceptive pill
- a susceptibility to 'stickier' blood and a family history of DVT
- blood clotting disorders
- sitting still for long periods of time
- recent surgery or injury
- some types of cancer
- chronic heart failure
- previous thrombosis
- hormone therapy
- infections
- older age.

Long distance travel and DVT

Long distance travel by air, road or rail for longer than 8–10 hours is associated with an increased risk of DVT in susceptible people. The following may be helpful to reduce the risk of DVT while undertaking long distance travel:

- Wear loose clothes.
- Avoid cigarettes and alcohol.
- Drink plenty of fluids (avoid alcohol).
- Move about whenever possible before, during, and after travelling.
- Don't sit with your legs crossed.
Perform leg and foot stretches and exercises while seated.
Consult with your doctor before travelling.

Symptoms of DVT

The symptoms of a DVT may include:

- pain and tenderness in the leg
- pain on extending the foot
- swelling of the lower leg, ankle and foot
- skin that is red and warm.

Complications of DVT

If the DVT remains in the leg vein, it can cause a number of complications, including inflammation (phlebitis) and leg ulcers. However, the real danger occurs if the clot leaves the vein and travels through the circulatory system. A pulmonary embolism means the clot has blocked off the main artery to the lungs or one of its major branches.

It is estimated that around one third of people who experience a major pulmonary embolism will die. Life-saving treatment of pulmonary embolism includes thrombolytic (clot-busting) and anticoagulation (blood thinner) medications that dissolve the clot and restore blood flow.

Diagnosis of DVT

A deep vein thrombosis can easily be mistaken for other disorders, including lymphoedema and chronic venous disease. DVT is diagnosed using a number of tests, such as:

- venous ultrasound – a type of scan
- contrast venography – a dye is injected into the foot and x-rays are taken of the leg veins
- blood test – known as a D-dimer test
- other imaging tests – such as MRI and CT scans.

Treatment for DVT

Treatment for DVT can include:

- treatment with anticoagulant (blood thinning) medicines, to prevent further clotting
- blood tests to monitor the 'stickiness' of the blood
- reducing risk factors such as quitting cigarettes or losing excess body fat.

Prevention of DVT

In hospital, graduated compression stockings to increase internal pressure have been found to decrease the risk of post-surgery DVT. The use of preventative anticoagulants in people considered to be at moderate to high-risk of DVT is also recommended.

If taking anticoagulant medication, check with your doctor or pharmacist before you take any other medication (including over-the-counter medicine).

Other methods to reduce the risk of DVT include treatment for coronary heart disease, reducing excess body fat, quitting cigarettes, exercising regularly and switching to a high-fibre, low-fat diet.

Where to get help

- Your doctor

References

- Cardiovascular Therapeutic Guidelines, 2018, eTG Complete, Therapeutic Guidelines Ltd, Australia.
More information

Blood and blood vessels

The following content is displayed as Tabs. Once you have activated a link navigate to the end of the list to view its associated content. The activated link is defined as Active Tab

- Blood and blood vessels explained
- Cholesterol
- Iron anaemia and blood disorders
- Blood clotting and infections
- Blood pressure
- Blood vessel and bone marrow conditions
- Blood donation and transfusion
Blood and blood vessels explained

- Blood count
  The full blood count (FBC) test looks for abnormalities in the blood, such as unusually high or low numbers of blood cells...

- Blood groups
  A person's blood group is determined by a pair of genes, one each inherited from their mother and father...

- Bone marrow
  Bone marrow is the spongy tissue in the hollow centres of a person's long bones and is the blood cell 'factory'...

- Circulatory system
  The heart, blood and blood vessels work together to service the cells of the body...

- Heart explained
  The heart is about the size of a clenched fist and lies in the middle of your chest, behind and slightly to the left of your breastbone...

- Lipoedema
  Lipoedema is a painful, chronic, symmetrical swelling in the legs, thighs, buttocks and sometimes arms due to the accumulation of fat in the subcutaneous tissues. The onset often occurs during puberty...

- Lymphatic system
  The lymphatic manages fluid levels in the body, filters out bacteria and houses types of white blood cells...

Cholesterol

- Cholesterol
  Your body needs cholesterol, but it can make its own. You don't need cholesterol in your diet...

- Cholesterol - healthy eating tips
  Replacing foods that contain saturated fats with foods that contain polyunsaturated and monounsaturated fats will help to lower your cholesterol...

- Genetic factors and cholesterol
  Familial hypercholesterolaemia is an inherited condition characterised by higher than normal levels of blood cholesterol...

- Triglycerides
  If a person habitually eats more kilojoules than they burn, they will have raised triglyceride levels in the blood...

Iron anaemia and blood disorders

- Anaemia
  When a person is anaemic, the red blood cells have to work harder to get oxygen around the body...

- Haemochromatosis
  Haemochromatosis (iron overload disorder) tends to be under-diagnosed, partly because its symptoms are similar to those caused by a range of other illnesses...

- Hughes syndrome
  Hughes syndrome is thickening of the blood caused by abnormal immune system cells...

- Iron
  Iron is important for transporting oxygen in the blood...

- Iron deficiency - adults
  Don't take iron supplements unless advised by your doctor...

- Iron deficiency - children
  Keep iron supplements away from children - as little as one to three grams can kill a child under six years...

- Porphyria
  Porphyria can affect the skin, nervous system, gastrointestinal system or all of these, depending on the specific type...

- Thalassaemia
Thalassaemia is an inherited blood disorder that can cause anaemia or death if not treated.

Bleeding clotting and infections

- **Bleeding**
  
  Bleeding may be minor or it may be a life-threatening medical emergency.

- **Deep vein thrombosis**
  
  Long international flights are suspected of contributing to deep vein thrombosis in susceptible people.

- **Haemophilia**
  
  All children with severe haemophilia are given preventative treatment with infusions of blood products before they have a bleed.

- **Needlestick injury**
  
  A needlestick injury means the skin is accidentally punctured by a used needle. Diseases that could be transmitted by a needle or needlestick injury include human immunodeficiency virus (HIV).

- **Nosebleeds**
  
  Bleeding from the nose is common in children and is usually not severe or serious.

- **Septicaemia**
  
  Bacteria in the bowels, urinary tract, mouth and skin can cause disease if they get into the bloodstream.

- **Subarachnoid haemorrhage**
  
  A subarachnoid haemorrhage is any bleed located underneath one of the protective layers of the brain known as the arachnoid layer.

- **Subdural haematoma**
  
  Subdural haematoma are blood clots formed underneath one of the protective layers of the brain.

- **Travel tips for seniors**
  
  All travellers should plan carefully, but older people have a few extra concerns when travelling.

- **Von Willebrand disease**
  
  A person with von Willebrand disease may have frequent nosebleeds, heavy menstruation or excessive bleeding from the mouth.

Blood pressure

- **Blood pressure**
  
  Healthy eating and lifestyle changes can help to manage high blood pressure.

- **Blood pressure - keep your blood pressure down (video)**
  
  Heart Foundation of Australia warns of the risk of high blood pressure and tells you what you can do to keep your blood pressure down.

- **Blood pressure (low) - hypotension**
  
  Low blood pressure is only a problem if it has a negative impact on the body.

- **Dizziness - orthostatic hypotension**
  
  Postural hypotension is the lightheaded feeling you may get if you leap out of bed very quickly.

- **Fainting**
  
  Common causes of fainting include heat, pain, distress, the sight of blood, anxiety and hyperventilating.

- **Pulmonary hypertension**
  
  Pulmonary hypertension is high blood pressure on the lungs.

- **Shock**
  
  Shock is when there is not enough blood circulating in the body. It is a life-threatening medical emergency.

- **Stroke explained**
  
  A stroke interrupts blood flow to an area of the brain and is a medical emergency.

Blood vessel and bone marrow conditions
• Amyloidosis
  A person with amyloidosis produces aggregates of insoluble protein that cannot be eliminated from the body.

• Aneurysm
  An aneurysm may have no symptoms until it is either very large or it ruptures.

• Granulomatosis with polyangiitis
  Granulomatosis with polyangiitis (GPA), formerly known as Wegener granulomatosis, is a rare condition that targets the arteries, veins and capillaries of the kidneys and the respiratory system.

• Henoch-Schonlein purpura
  Henoch-Schonlein purpura causes a purple spotted skin rash which lasts around one to four weeks, and is often marked by relapses.

• Leukaemia
  Most children and many adults with acute leukaemia can expect to be cured, while chronic leukaemia can be successfully managed.

• Peripheral vascular disease
  Peripheral vascular disease is the reduced circulation of blood to a body part (other than the brain or heart).

• Polycythaemia vera
  Polycythaemia vera is characterised by the production of too many red blood cells, caused by abnormal function of the bone marrow.

• Raynaud's phenomenon
  Raynaud's phenomenon can be a sign of a more serious underlying condition, so see your doctor if you experience it.

• Thalassaemia
  Thalassaemia is an inherited blood disorder that can cause anaemia or death if not treated.

• Varicose veins and spider veins
  Smaller varicose veins are usually treated by sclerotherapy — the injection of irritant chemicals into the affected vein.

Blood-donation-and-transfusion

• Blood donation
  Donated blood is used to help people who are sick or injured, or for medical research.

• Blood transfusion
  Donated blood is screened for blood-borne diseases such as hepatitis, syphilis and HIV.

• Organ and tissue donation
  Discover the facts about organ and tissue donation, decide about becoming a donor and discuss your decision with the people close to you.

Related Information

• Bird flu (avian influenza)
  The symptoms of bird flu in humans are similar to those of regular influenza.

• Flu (influenza) – immunisation
  Influenza immunisation is recommended for people in known high risk groups.

• Blood and blood vessels
  Bleeding, blood pressure, conditions, risks and blood products.

• Septicaemia
  Bacteria in the bowels, urinary tract, mouth and skin can cause disease if they get into the bloodstream.

• Haemophilia
  All children with severe haemophilia are given preventative treatment with infusions of blood products before they have a bleed.

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