



CANCER AND THE RISK OF BLOOD CLOTS

Cancer and the risk of blood clots

Cancer is a complex disease that may involve different types of treatment including surgery, radiotherapy or systemic anticancer treatments (SACT) such as chemotherapy, immunotherapy or hormones.

Having cancer may increase the possibility of developing blood clots. The medical name for a blood clot is 'thrombo-embolism', and most commonly these occur in the limbs (usually the legs) where they are called deep vein thrombosis (DVT), or in the lungs, where they are known as a pulmonary emboli or PE. Although less common, blood clots can occur in any part of the body.

Why does cancer increase the risk of developing a blood clot?

Having cancer might mean that you have a higher risk of developing a blood clot. Around 15 out of 100 people with cancer develop a blood clot. There are a number of reasons why this is and they include:

The cancer and its treatment

People with cancer usually have sticky blood. This may be because cancer cells produce and release chemicals that stimulate the body to make more clotting factors.

Clotting factors are proteins made naturally by the liver and combine with platelets to form blood clots and stop bleeding. When chemotherapy kills cancer cells the cells can also release substances that cause more blood clotting.

Some chemotherapy drugs may cause this sticky blood more than others. Your doctor will explain if the drugs you are having increase this risk.

Approximately 50% of cancer patients who develop a blood clot will do so within three months of their cancer diagnosis. This is not surprising since this will coincide with when patients are receiving their anticancer treatments.

The hormone drug tamoxifen is also known to increase the risk of blood clots. Doctors are very clear that the benefits of tamoxifen far outweigh the risks for women with breast cancer but you should be aware of the symptoms of a blood clot just in case.

Damage to the blood vessel walls

Surgery and chemotherapy can both damage the walls of blood vessels which stimulates the release of clotting factors.

The type of cancer you have

You are at a higher risk of developing a blood clot if you have cancer of the pancreas, bowel, lung, stomach, ovary, or womb. Also, the risk is greater in cancers which have spread to local lymph nodes of other organs.

Being less active

Sometimes your cancer or treatment can make you feel very ill. You could feel too tired and weak to move around as much. The blood flow in the leg veins depends on the squeezing of the veins by leg muscles when walking. Immobility may reduce the blood flow in the legs and blood may stagnate and become sticky, so moving around helps reduce the risk of clots. As does doing exercises with the calf muscles such as moving the foot up and down.

After surgery you may not be able to move around much at first and your healthcare professionals may give you a pair of elastic stockings to wear. By squeezing the legs these help to prevent blood clots. You need to wear these until you are moving around fully and this may be for a few weeks after your operation.

Long journeys, such as long-haul flights, or long bus, train or car journeys can increase the risk of clots.

Other factors

- Taking the oral contraceptive pill or hormone replacement therapy tablets will increase the risk of developing a blood clot.
- Other medical conditions such as diabetes or heart disease also make blood more sticky and increase the risk

Doctors will also treat any underlying causes which often resolves the problem.

Symptoms

The common symptoms of a blood clot are:

- Pain in the deep muscles of the leg that is unexplained. This is by far the most common symptom
- Occasionally some patients develop redness and swelling in the leg which may be just in the calf or involve the whole leg

If the clot has moved to your lungs (a pulmonary embolism or PE), the symptoms are

- Feeling breathless which may start suddenly or increase gradually
- Having pain in your chest or upper back which is worse on breathing in
- Coughing up blood
- Feeling lightheaded

Dial 999 if you have symptoms of a clot in your lung

The emotional impact of blood clots

Over 50% of blood clots occur within the first three months of being diagnosed with cancer. To experience what is often described as a complication so early may be distressing for some patients.

It is important to understand that blood clots are a normal part of the cancer journey and it is not unusual to feel anxious about experiencing one. However, blood clots are readily treatable and should not interfere with your cancer treatment.

Treating blood clots

Blood clots are usually treated with drugs that reduce the ability of the blood to clot (anticoagulants). They don't break an existing clot but prevent it from growing bigger and others forming. This allows the body to gradually break the clot down and reabsorb it. The most common types of anticoagulants are:

Low molecular weight heparins (these include dalteparin, enoxaparin and tinzaparin)

Low molecular weight heparins are given as injections just under the skin (subcutaneously). You may need regular blood tests. These injections are the best treatment for new blood clots in cancer patients.

Unfractionated Heparin

Heparin works immediately when given intravenously. It is used occasionally when starting treatment for a blood clot, especially if the patient has kidneys that are not working well.

The levels of heparin in the blood will be monitored with blood tests. If you have heparin into your vein as an infusion you will need to stay in hospital for a few days.

Warfarin

Warfarin comes as a tablet and doctors most often prescribe it to people who have atrial fibrillation.

It takes several days to work so you may also have heparin first. You may stay on warfarin for a few weeks or months and will need regular blood tests to check that your blood is at the correct and safe level to reduce the risk of blood clots, or further blood clots, from forming in your body.

The direct oral anticoagulants known as DOACs for short include apixaban, dabigatran & edoxaban, rivaroxaban

These are relatively new anticoagulants that do not require blood monitoring. They are used to prevent stroke in those with atrial fibrillation and also to treat blood clots in those who don't have cancer. They are starting to be used in cancer patients but when compared to low molecular weight heparin in those with VTE and cancer, can have a higher bleeding risk in certain cancers.

Reducing the risk of DVT

The National Institute of Health and Care Excellence (NICE) has produced guidance about reducing the risk of DVT for patients in hospital. This covers people having treatment as day case as well as people who have to stay in.

This guidance says that your doctor should assess your risk of developing blood clots. This includes considering:

- The type of cancer you have
- How mobile you are
- Your type of treatment
- Other factors that might increase your risk such as family history, obesity

Visit the NICE website: www.nice.org.uk

Treatment to reduce your risk

Your doctor will suggest you have preventative treatment to reduce your risk of developing a blood clot if you are at higher risk. You will have small doses of an anticoagulant. You can also help reduce your risk by drinking plenty of water or soft drinks and keeping active.

Before surgery your doctor may advise you to stop taking the combined oral contraceptive pill or hormone replacement tablets.

You will be given fluids so that you don't become dehydrated after your operation. Your nurses and physiotherapists will get you out of bed and moving around as soon as possible.

You may be given anti embolism stockings to wear until you are moving around as usual. These are tight stockings that squeeze your feet and legs, helping the blood to circulate more quickly.

Your nurse will measure your legs first of all to make sure you have the right size.

You cannot usually wear these stockings if you have:

- Fragile skin, eczema or recently had a skin graft
- Narrowing of the blood vessels leading to your legs (peripheral arterial disease)
- Swollen legs
- Recently had a stroke
- Tingling or numbness in your fingers or toes (peripheral neuropathy)

You may be offered treatment with an intermittent pneumatic compression device. This is worn around your legs or feet and it inflates regularly to keep the blood circulating well. You will be encouraged to use this while you are in bed or in a chair.

Your doctor might give you an anticoagulant medication if they think you are at increased risk of developing a blood clot to help prevent them. Depending on the type of surgery you have, you may have this as a daily injection of a low molecular weight heparin or fondaparinux, or after hip and knee replacement a tablet.

Your medical team will tell you if you need to wear your stockings or take anticoagulant at home. They will advise you how long to take your treatment for and who to contact if there are any problems.

If you've had major surgery to your abdomen or pelvis, you will continue taking daily subcutaneous anticoagulants for four weeks after your operation.

Tips for preventing DVT

Remember to:

- Take short walks as often as possible
- Do simple leg exercises like bending and straightening your toes every hour if you can't move around much
- Drink plenty of water
- Report any symptoms to your doctor or nurse straight away

References

Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism

NICE guideline [NG89] Published date: March 2018

Incidence of venous thrombosis in a large cohort of 66,329 cancer patients: results of a record linkage study

Blom and others

J Thromb Haemost. 2006 Mar;**4(3):529-35**

Management of venous thromboembolism in patients with cancer

G Agnelli and M Verso

J Thromb Haemost. 2011 Jul;**9 Suppl 1:316-24**

Venous thromboembolism and prognosis in cancer

AA Khorana

Thromb Res. 2010 Jun;**125(6):490-3**

Cancer associated thrombosis, low molecular weight heparin and the patient experience: a qualitative study

Seaman S, Nelson A, Noble S

Patient Preference and Adherence. 2014 Apr **8;8:43-61**

GLOSSARY OF TERMS



Anticoagulants - are medicines that help prevent blood clots. They are prescribed to reduce the risk of a blood clot and to treat blood clots.

Antithrombin - is a small protein molecule that naturally occurs in the body and inactivates or inhibits clotting in the blood.

Arteries - are the blood vessels that deliver oxygen-rich blood from the heart to the tissues of the body.

CAT - Cancer Associated Thrombosis

Chemotherapy - is a cancer treatment where medication is used to kill cancer cells. There are many different types of chemotherapy medication, but they all work in a similar way.

COCP/OCP - Combined Oral Contraceptive Pill.

Compression stocking / graduated compression stocking - are a specialised hosiery designed to help prevent the occurrence of, and guard against further venous disorders such as thrombosis.

CT scan - a computerised tomography scan uses X-rays and a computer to create detailed images of the inside of the body.

D-dimer test - measures the level of fibrin degradation in the body. It can indicate whether there may have been a significant blood clot (thrombus), but it does not show the location or cause of the blood clot.

DOAC - Direct Oral Anti-Coagulant refers to a group of new anticoagulant medications including apixaban, dabigatran, edoxaban, rivaroxaban.

Doppler ultrasound - is a test that uses high-frequency sound waves to measure the amount of blood flow through your arteries and veins, usually those that supply blood to your arms and legs.

DVT - deep vein thrombosis is a blood clot that develops in a deep vein on the body, most commonly the leg, but it can occur anywhere in the body.

ECG - an electrocardiogram is a simple test that can be used to check your heart's rhythm and electrical activity.

Embolism - is the lodging of an embolus, a blockage-causing piece of material, inside a blood vessel. The embolus may be a blood clot (thrombus), a fat globule (fat embolism), a bubble of air or other gas (gas embolism), or foreign material.

HRT - hormone replacement therapy.

INR - International Normalised Ratio is a standardised measurement of the time it takes for blood to clot. Regular INR monitoring is required to safely and appropriately manage the dosing of warfarin.

Intermittent pneumatic compression - is a therapeutic technique used in medical devices that include an air pump and inflatable auxiliary sleeves, gloves or boots in a system designed to improve venous circulation in the limbs of patients who suffer or are at risk of a DVT or PE.

LMWH - Low Molecular Weight Heparin is a class of anticoagulant used to prevent and treat blood clots. LMWH is usually injected subcutaneously.

Lung V/Q or V/Q SPECT - Ventilation Perfusion Scan. This is a test in which a small amount of radioactivity is used to obtain pictures and information of how your lungs function. These pictures will help your doctor make a diagnosis.

MRI scan - a Magnetic Resonance Imaging scan is a type of scan that uses strong magnetic fields and radio waves to produce detailed images of the inside of the body.

NOAC - novel oral anticoagulant, but now referred to as 'DOAC' medication.

PE - Pulmonary Embolism, this is when a blood clot elsewhere in your body has broken off and travelled in the blood stream to your lungs and causes a blockage that can be extremely dangerous and requires urgent medical attention.

Perfusion scan - another name used to refer to a V/Q scan or lung V/Q or V/Q SPECT.

Radiotherapy - is a cancer treatment that uses high doses of radiation to kill cancer cells and shrink tumors.

SACT - systemic anticancer treatments.

Subcutaneous injection - is an injection administered just under the skin using a short needle to inject a drug into the tissue layer between the skin and the muscle.

Thrombosis - is the formation of a blood clot inside a blood vessel, obstructing the flow of blood through the circulatory system.

UFH - UnFractionated Heparin is a fast-acting anticoagulant that works together with antithrombin, a natural protein in the body, to prevent blood clots from being formed.

US - Ultrasound scan is a medical test that uses high-frequency sound waves to capture live images from the inside of your body. It's also known as sonography.

Veins - are blood vessels that carry blood toward the heart. Most veins carry deoxygenated blood from the tissues back to the heart (exceptions are the pulmonary and umbilical veins, both of which carry oxygenated blood to the heart).

Venogram - is an x-ray test that involves injecting contrast material into a vein to show how blood flows through your veins.

VKA - vitamin K antagonists are substances that reduce blood clotting by reducing the action of vitamin K. They are used as an anticoagulant medication. Warfarin is a commonly used VKA antagonist anticoagulant.

VTE - venous thromboembolism is a condition in which a blood clot forms most often in the deep veins of the leg, groin or arm (known as deep vein thrombosis, DVT) and travels in the circulation, lodging in the lungs (known as pulmonary embolism, PE), a DVT and PE together are known as a VTE.

Warfarin - is a type of medicine known as an anticoagulant. It makes the blood less 'sticky' and slower to clot. This means your blood will be less likely to form dangerous blood clots. Warfarin is used to treat people who have had a blood clot and also prescribed to prevent blood clots if the person is considered to be at risk of a blood clot.

FOR FURTHER INFORMATION OR
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