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What is thrombosis?

Thrombosis is actually a blood clot. Whenever there is an injury, blood flows and then it clots or the blood stops flowing. It is a normal and healthy function of the human body. However an excess clot formation is abnormal and is called thrombosis. Excessive clotting that occurs within blood vessels results in serious injury, and may cause long-term problems. However, thrombosis and resultant embolism is rare in children, but is often seen in children with complex medical problems.

What is thrombophilia?

Thrombophilia refers to a group of conditions where the blood has an increased tendency to form excessive and dangerous clots. The natural clotting process is altered in thrombophilia. A clotting factor may be in excess, or an anti-clotting substance may be in very little amount. Every person with thrombophilia does not develop a blood clot, but people with thrombophilia have a higher risk than normal of having clots.

What are the different types of thrombophilia?

There are two types of thrombophilia:

- Inherited – can be passed on from parent to child, and is caused by certain genetic conditions
- Acquired – is caused by lifestyle factors or certain medical conditions

What are the symptoms of thrombosis?

The symptoms of thrombosis depend on the size and location of the blood clot. A thrombus may occur anywhere in a child's body, but most are in the calf (deep vein thrombosis or DVT) or lungs (pulmonary embolism, which is a life-threatening emergency) or in the brain or other organs.

How is thrombosis diagnosed?

Thrombosis can be diagnosed by blood tests and by imaging studies:

Blood tests

After every thrombotic event the body starts breaking down the clot to re-establish normal blood flow by fibrinolysis. Thus, markers of clot breakdown such as D-dimers can be elevated and are useful at diagnosis. There are other tests to look for an imbalance in the clotting system.

Imaging studies

The most common investigation is the colour doppler, ultrasound, followed by MRI techniques, both conventional and angiography, computed tomography (CT) scan, and echocardiography.

What are the specialised blood tests that can help to determine the CAUSE of the thrombosis?

Tests done for inherited thrombophilia include:

- Antithrombin
- Protein C
- Protein S
- Factor V Leiden
- Prothrombin Poort (G20210A)
- Homocysteine level
- Lipoprotein(a)
- Lupus anticoagulant
- Anticardiolipin antibodies
- Factor VIII
- Fibrinogen
- Studies for rare causes

There may be some other tests that need to be carried out as well.

What is the treatment for thrombosis?

The aim of treating a thrombotic event is complete recanalization of the blocked vessel and halting the thrombotic process.

Heparin resolves most cases of thrombosis. In some difficult situations, e.g. extensive thrombosis or threatened organ function, interventions such as thrombolytic therapy or surgical embolectomy have to be undertaken.

Oral or injectable blood thinners may also be prescribed. They lower the risk of new blood clots and prevent the propagation of older clots. However, the risk still remains. Please consult a doctor immediately if new symptoms develop or the symptoms worsen.

What are the risk factors for developing a clot in children?

- Type of thrombophilia (some are more high-risk for blood clot than others)
- Age (neonates also can have clots)
- Weight, lifestyle of the child
- Past history of a blood clot
- Family history - whether any close relatives have had a blood clot
- Other medical conditions e.g. cancer, central lines, treatment for cancer, dehydration, use of oral contraceptives etc

Thrombosis

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What are the precautions to be taken while on anticoagulants or blood thinners?

Blood thinners (oral or injectable) may at times cause excessive bleeding:

- Bleeding or persistent oozing from small cuts on the skin
- Oozing at the site of the injection
- Frequent bleeding from nose
- Easy bruising
- Heavy bleeding during periods in teenage girls
- Any bleeding irrespective of the site
- If the child becomes pale or is tired

Precautions to be taken while on blood thinners:

- Avoid activities that are high-risk for injury, especially head injury
- Avoid high-impact and contact sports like basketball, football, handball, hockey, karate
- Insist on seat belts in cars
- The child should wear protective gear e.g. helmets on bicycles
- Always accompany the child and supervise activities

What lifestyle changes are advised to the family members of children with genetic thrombophilia?

Precautions to lower the risk of developing blood clots include:

- Stay active and exercise regularly
- Avoid smoking
- Eat a healthy, well balanced diet
- Maintain ideal body weight for your sex and height
- Drink plenty of fluids
- Avoid long periods of immobility
- Always provide an accurate history to any doctor that you may visit, either the obstetrician or surgeon, even if it does not seem to be related
- Women should avoid taking combined oral contraceptive pill or hormone replacement therapy without discussing with an appropriate doctor