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What is **Stroke?**

What is Stroke?

A stroke is a medical condition that occurs when there is a sudden disruption in the blood supply to a part of the brain. A common cause of stroke is a blood clot that forms in a brain blood vessel (artery). Immediate treatment may include a clot-busting medicine to dissolve the blood clot. Other treatments include, medication to reduce risk factors for further strokes. Rehabilitation is a major part of treatment. Disability following a stroke depends on factors such as the part of the brain affected, how quickly treatment was given and the extent of damage to the brain.

Stroke symptoms

The function of different parts of the body are controlled by various parts of the brain. So, the symptoms vary depending on which part of the brain is affected and on the size of the damaged area. Symptoms develop suddenly and usually include one or more of the following:

- Weakness of an arm, leg, or both. This may range from total paralysis of one side of the body to mild clumsiness of one hand.
- Weakness and twisting of one side of the face. This may cause drooling of saliva, or slurred speech.
- Problems with balance, co-ordination, vision, speech, communication or swallowing.
- Dizziness or unsteadiness.
- Numbness in a part of the body.
- Headache.

- Confusion.
- Loss of consciousness (occurs in severe cases).

F = Face Drooping – Does one side of the face droop or is it numb? Ask the person to smile. Is the person's smile uneven?

A = Arm Weakness – Is one arm weak or numb? Ask the person to raise both arms. Does one arm drift downward?

S = Speech Difficulty – Is speech slurred?

T = Time to call nearest hospital – Stroke is an emergency. Every minute counts. Call your nearest hospital immediately. Note the time when any of the symptoms first appear.

What causes Stroke?

A Stroke means that the blood supply to a part of the brain is suddenly cut off. The brain cells need a constant supply of oxygen from the blood. Soon after the blood supply is cut off, the cells in the affected area of brain become damaged or die. A stroke is sometimes called a brain attack.

The blood supply to the brain comes mainly from four blood vessels (arteries) - the right and left carotid arteries and the right and left vertebrobasilar arteries. These branch into many smaller arteries which supply blood to all areas of the brain. The area of brain affected and the extent of damage depends on which blood vessel is affected.

There are two main types of strokes - ischaemic and haemorrhagic.

Ischaemic stroke - caused by a blood clot

Ischaemic means reduced blood and oxygen supply to a part of the body. It is usually caused by blood clot in an artery, which blocks the flow of blood. This occurs in about 8 in 10 cases.

- The blood clot often forms within the artery itself. This commonly occurs over a patch of fatty material called atheroma. Atheroma is often called furring or hardening of the arteries. Small patches of atheroma form on the inside of arteries in most older people. If a patch of atheroma becomes thick, it can trigger the blood to clot.

Haemorrhagic stroke - caused by

About 2-3 out of 20 strokes are caused by a bleed in the brain. A damaged or weakened artery may burst and bleed:

- An intracerebral haemorrhage occurs when the blood vessel bursts inside the brain. The blood then spills into the nearby brain tissue. This can cause the affected brain cells to lose their oxygen supply. They become damaged or die. This happens in about 1 in 10 strokes.
- A subarachnoid haemorrhage occurs when a blood vessel bursts in the subarachnoid space. This is the narrow space between the brain and the skull. This space is normally filled with a fluid called the cerebrospinal fluid. About 1 in 20 stroke is due to a subarachnoid haemorrhage.

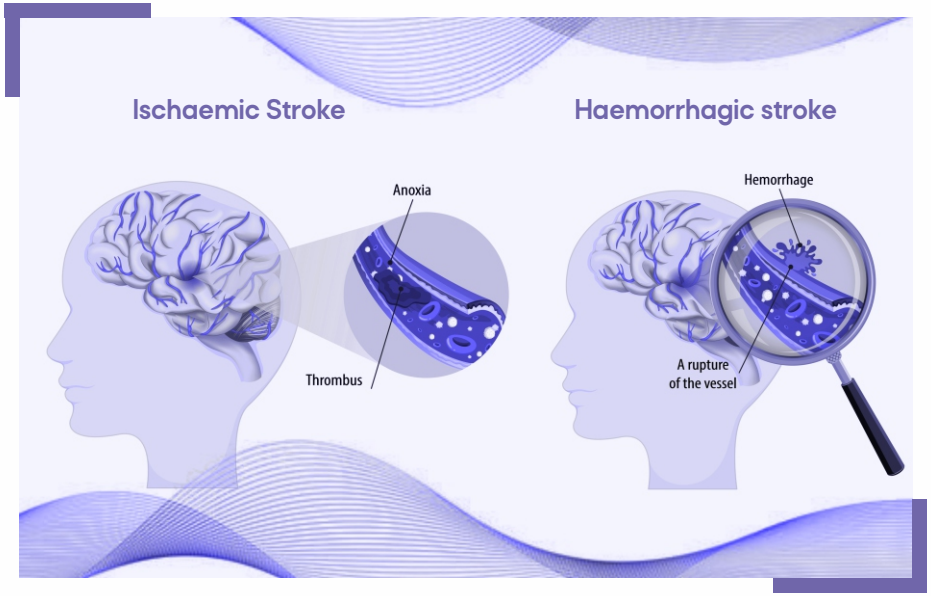
What is a transient ischaemic attack?

A transient ischemic attack (TIA) causes symptoms similar to a stroke but the symptoms last for less than 24 hours. It is due to a temporary lack of blood to a part of the brain. In most cases, a TIA is caused by a tiny blood clot that becomes stuck in a small blood vessel (artery) in the brain. This blocks the blood flow and a part of the brain is starved of oxygen. The affected part of the brain is without oxygen for just a few minutes and soon recovers. This is because the blood clot either breaks up quickly or nearby blood vessels are able to compensate.

After effects of a stroke

The type and extent of disability caused by a stroke can vary greatly. It depends on the extent of the damage to the brain.

A large stroke can cause death. A small stroke may cause minor problems, which may disappear completely over time. In many cases the effects are somewhere in between these two extremes.



Possible issues that may arise include one or more of the following:

- **Weakness of one side of the body:** This can lead to difficulties in walking if a leg is impacted or there is a challenge in utilising an arm or hand effectively.
- **Problems with balance** and co-ordination.
- **Swallowing problems are common:** In some cases, this can be dangerous, as food may go down the windpipe instead of the gullet when the patient eats.
- **Speech and communication difficulties:** This may range from a difficulty in finding the correct words to say in the middle of a sentence to being completely unable to speak. Also, understanding speech, reading or writing may be affected.
- **Difficulty with vision:** If a part of the brain that deals with vision is affected then problems may arise.
- **Difficulties with mental processes:** For example, difficulty in learning, concentrating, remembering, etc.
- **Inappropriate emotions:** For example, following a stroke, some people cry or laugh at times for no apparent reason.
- **Tiredness:** For example, low energy level or feeling exhausted most of the time.

The above are just some examples of what may occur following a stroke. Every stroke is different and the problems and difficulties have to be assessed for each affected person.

In the first few weeks after a stroke, the swelling and inflammation around the damaged brain tissue settles down. Some symptoms may then improve. In time, sometimes other parts of the brain can compensate for the damaged part of the brain. With rehabilitation and appropriate therapy, there may be a gradual improvement.

Are any tests needed?

- A doctor can usually diagnose a stroke by the typical symptoms and signs which develop suddenly. Tests which are commonly done include:
- A brain scan (CT scan or MRI scan).
- Chest X-ray and a heart tracing (electrocardiogram, or ECG)
- Ultrasound scan of the carotid blood vessels (arteries)

Stroke Treatment

Immediate care

Ideally, the patient will be assessed quickly by a doctor. Commonly, a scan of the brain is organised as soon as possible. The aim of the scan is to confirm the diagnosis and to ascertain whether the stroke is ischaemic or haemorrhagic stroke. This is very important to know, as the initial treatment of the two is very different.

Thrombolysis (clot-busting)

If an ischaemic stroke is diagnosed and it has been less than four and half hours since symptoms started, the patient will usually be given a medicine, called alteplase, directly into a vein. This is a clot-busting medicine which aims to dissolve the blood clot. The medical word for this is thrombolysis. If the blood clot that caused the stroke can be dissolved shortly after symptoms begin, it can improve the eventual outcome. This is because brain cells that would have died are able to survive.

Clot Removal

Sometimes an ischaemic stroke affects the front part of the brain (called the proximal anterior circulation). If the patient has a severe stroke affecting this region and it has been less than six hours since symptoms started, the patient may be offered thrombectomy - a surgical procedure to remove the clot. This is given alongside thrombolysis. The sooner this treatment is given, the more successful it is likely to be. In some circumstances, clot removal may be offered if the stroke symptoms started 6-24 hours ago, if the patient was well before the stroke. This will only be considered if the scans show there is a chance of the brain tissue affecting recovery.

Rehabilitation

The aim of rehabilitation is to maximise activity and quality of life following a stroke. Hospitals which deal with stroke patients have various specialists who help in rehabilitation. These include physiotherapists, occupational therapists, speech therapists, dieticians, psychologists, specialist nurses and doctors.

Stroke Prevention

As described above, a common reason why a blood clot forms is because it develops over a patch of atheroma on the lining of a blood vessel (artery). Certain risk factors increase the chance of atheroma formation - which increase the risk of having a stroke (and heart attack). One can reduce the risk of having a stroke (or a further stroke) if the risk factors are reduced.

- Smoking
- High blood pressure
- Overweight
- High cholesterol level
- Inactivity
- Diet
- Alcohol
- Diabetes