Acute Ischemic Stroke (AIS)

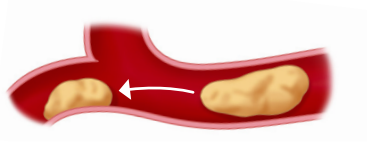
What Is Stroke?

The brain depends on a constant supply of blood for the oxygen and nutrients it needs to survive. Pipe-like vessels called arteries carry oxygenated blood from the heart and lungs to all parts of the brain. A stroke can occur when blood flow through one of these arteries is blocked. When blood flow through an artery within a certain section of the brain is blocked, cells in that area cannot get oxygen and begin to die. Restoring blood flow within the first hours of symptom onset is crucial to achieving positive patient outcomes.

Ischemic Stroke Treatment

Swift medical treatment is needed to quickly restore blood flow to the brain. This may include medicine and medical procedures. The clot-busting drugs, tissue plasminogen activator (tPA) or tenecteplase (TNK), are often used to help dissolve the clot. These thrombolytics are infused into a vein in the arm and need to be used as quickly as possible, typically within up to 4.5 hours of symptom onset.

Due to the short treatment window, mechanical thrombectomy may be the only option available for a significant segment of the AIS patient population. Other factors that often preclude tPA or TNK use include contraindications, such as blood thinners and pre-existing conditions, and/or large vessel occlusions (LVOs) for which thrombolysis has limited efficacy.

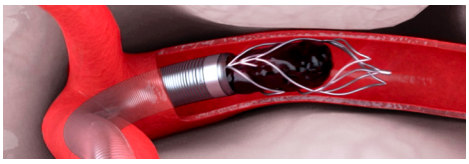


Large vessel occlusion

What Is Mechanical Thrombectomy?

Mechanical thrombectomy is an endovascular procedure that uses a thin tube-like device called a catheter to clear blocked arteries and restore blood flow. The catheter is most commonly inserted into a small hole in the femoral artery or radial artery and slowly threaded through the body up to the blocked vessel in the brain. The catheter uses suction or a stent retriever is deployed to remove the clot. Sometimes both approaches are used during a single procedure.

Mechanical thrombectomy using aspiration



Mechanical thrombectomy using aspiration and a stent retriever

How a Stroke May Affect the Brain

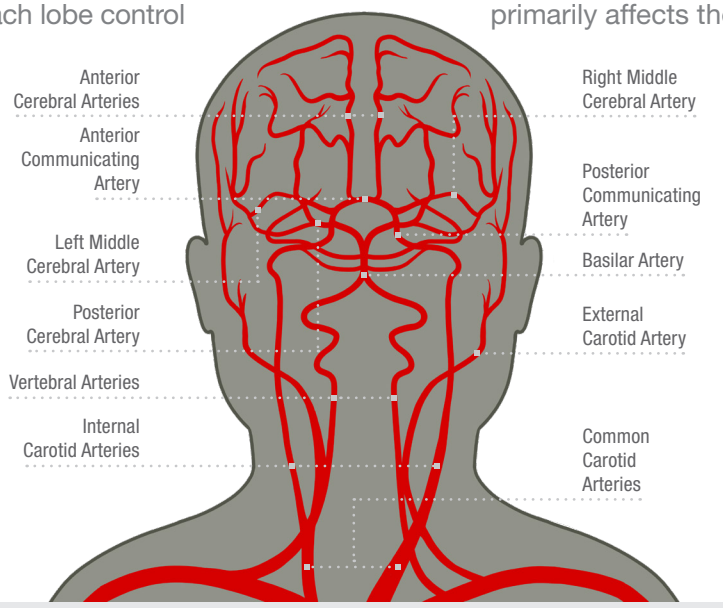
The brain is divided into two nearly identical halves called hemispheres (left and right), with each hemisphere consisting of four lobes (frontal, temporal, parietal, and occipital). Areas within each lobe control different mental and/or physical functions. Damage to the left side of the brain primarily affects the right side of the body, while damage on the right side of the brain primarily affects the left side of the body.

LEFT BRAIN FUNCTIONS

- Control of right side of the body
- Problem solving, knowledge, facts
- Numbers and letters
- Understanding words

EFFECTS OF STROKE

- Weakness on right side of the body
- Problems seeing objects to the right
- Communication problems
- Slow, cautious behavior
- Memory loss
- Behavior changes



RIGHT BRAIN FUNCTIONS

- Control of left side of the body
- Creativity, imagination, intuition
- Shapes and symbols
- Recognizing emotions

EFFECTS OF STROKE

- Weakness on left side of the body
- Problems seeing objects to the left
- Problems with depth perception
- Difficulty with concentration
- Impulsive behavior and poor judgment

Sources: Centers for Disease Control and Prevention, National Institutes of Health

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