

Ischaemic Stroke



Ischaemic Stroke: Reduction in blood supply to an area of brain tissue resulting in tissue hypoperfusion.

Causes: Large artery atherosclerosis in the brain, thrombotic occlusion of small arteries in the brain, atrial fibrillation, diabetes mellitus, hypertension, smoking, chronic kidney disease, atrial sickle cell anaemia.

Pathophysiology:

- Decreased blood supply in specific brain area due to blood vessel obstruction → hypoperfusion, tissue hypoxia, infarction
- Decreased blood flow → lack of oxygen + glucose in brain → reduced ATP production and cell death
- Simultaneously, sodium accumulates in the brain, water follows sodium → cell swelling and cell death

Presentation

- **Anterior cerebral artery lesion:** contralateral hemiparesis (leg + face), sensory deficit, inability to understand + produce speech (left hemisphere), impaired judgement and incontinence.
- **Middle cerebral artery lesion:** Contralateral paresis (face + arms), sensory deficit, inability to understand + produce speech (left hemisphere), hemispatial neglect (right hemisphere), homonymous hemianopsia + deviation of eye to affected side.
- **Posterior cerebellar artery lesion:** Homonymous hemianopsia, cortical blindness, dizziness, nystagmus, dysarthria, dysphagia.



- **Treadmill with or without body weight support**
- Consider **ankle-foot orthoses** for people who have difficulty with swing-phase foot clearance
- Prevent shoulder subluxation: use appropriate positioning
- Functional electrical stimulation for foot drop
- Set **SMART** rehabilitation **goals**
- **Assessment:** Perform a full assessment of the patient's cognition (attention, memory, spatial awareness, apraxia, perception), vision, hearing, tone, strength, sensation and balance.

Medical: Thrombolytic enzymes (alteplase) given within 4.5 hours of diagnosis, antiplatelet therapy (aspirin) within 48 hours, hypertension treatment and cerebral oedema management

Want to learn more?

With AcePhysio the learning journey doesn't stop here! Take a look at our further reading recommendations below to become an expert in ischaemic stroke:

1. <https://www.nice.org.uk/guidance/cg162/chapter/1-Recommendations>
2. da Silva, E.S.M., Santos, G.L., Catai, A.M., Borstad, A., Furtado, N.P.D., Aniceto, I.A.V. and Russo, T.L., 2019. Effect of aerobic exercise prior to modified constraint-induced movement therapy outcomes in individuals with chronic hemiparesis: a study protocol for a randomized clinical trial. BMC neurology, 19(1), p.196.
3. Sorinola, I.O., Powis, I., and White, C.M. 'Does Additional Exercise Improve Trunk Function Recovery in Stroke Patients? A Meta-analysis'. 1 Jan. 2014 : 205 – 213.

Diagnosis

- Non-contrast CT scan: Loss of differentiation between white and grey matter of brain
- MRI scan of head
- Neurological symptoms changes scoring based on National Institute of Health Stroke scale (NIHSS)

Management

Physiotherapy:

- Progressive strength training through **increasing repetitions** of body weight activities (for example, sit-to-stand repetitions), weights (for example, progressive resistance exercise), or resistance exercise on machines such as stationary cycles.
- **Repetitive task training:** range of tasks for upper limb weakness (such as reaching, grasping, pointing, moving and manipulating objects in functional tasks) and lower limb weakness (such as sit-to-stand transfers, walking and using stairs)