

Stroke

Stroke is a leading cause of disability and mortality in Australia. Each year an estimated 27,000 people experience their first stroke, which is one every 19 minutes. In 2019 stroke accounted for 5% of all deaths in Australia. It kills more women than breast cancer and more men than prostate cancer. Lifetime risk of stroke and mortality due to stroke is higher in women than men. Two-thirds of people die within a decade of acute stroke. Stroke recurrence is common, with over 40% of people who have a stroke have another one within 10 years. More than 80% of strokes can be prevented.

Classification

Stroke is called a cerebrovascular accident (CVA) or “brain attack”. A stroke occurs when a blood vessel supplying blood to the brain either suddenly becomes blocked (known as an ischaemic stroke) or ruptures and begins to bleed (known as a haemorrhagic stroke). Ischaemic stroke is most common - about 85% of strokes are ischaemic, and 10% are haemorrhagic. Subarachnoid haemorrhage occurs in about 5% of cases.

A transient ischaemic attack (TIA) is a temporary blockage of blood flow to the brain. In more than 90% of people it lasts less than one hour with an average duration of about 10 minutes.

Signs and symptoms

Signs and symptoms of stroke include:

- Numbness
- Weakness or lack of movement on one side of the body
- Slurred speech
- Difficulty finding words or understanding speech
- Problems with vision
- Confusion

The FAST test is an easy way to recognise and remember the signs of stroke. The FAST test involves asking these simple questions:

- FACE – check the face. Has their mouth drooped?
- ARMS – Can they lift both arms?
- SPEECH – Is their speech slurred?
- TIME – Time is critical. Call 000 straight away

TIAs typically present as a transient episode of neurological dysfunction with the following signs:

- Language dysfunction
- Vision loss
- Hemiparesis
- Vertigo or loss of balance or coordination

Stroke often causes paralysis of parts of the body normally controlled by the area of the brain affected by the stroke, or speech problems and other symptoms, such as difficulties with swallowing, vision and thinking.

Risk factors

Many risk factors for stroke are modifiable:

- High blood pressure (chronic uncontrolled hypertension)
- High lipid levels
- Physical inactivity
- Excessive alcohol consumption
- Overweight and obesity
- Tobacco smoking

Hypertension is the single most important risk factor for both ischaemic and haemorrhagic stroke. Treating hypertension in people aged over 60 years reduces the risk of first stroke by up to 40%.

Smoking is associated with a 2- to 4-fold increased risk of ischemic stroke and intracranial bleeds. After 2-4 years of cessation, the excess risk is reduced. It is never too late to stop smoking.

Atrial fibrillation is also a major risk factor for cardioembolic stroke.

Death from stroke

Early mortality following stroke has declined in recent decades. This is mainly due risk factor reduction including hypertension control, reduction in smoking and better management of other vascular risk factors. The decline is also due increasing effectiveness of early stroke care and interventions including thrombolysis and antithrombotics.

In Australia only a third of patients survive 10 years after a stroke. Prognosis is worse after a haemorrhagic stroke.

Acute management

The longer a stroke remains untreated, the greater the chance of stroke-related brain damage. All patients with suspected transient ischaemic attack should have urgent clinical assessment.

Acute treatment of an ischaemic stroke involves intravenous alteplase. It needs to be administered within 4½ hours of onset of symptoms of acute ischaemic stroke. Raised blood pressure is treated before starting thrombolysis with glyceryl trinitrate or labetalol.

Prevention

Aspirin is no longer recommended for primary prevention of stroke in healthy older people or those with intermediate risk of cardiovascular disease.

Secondary prevention strategies should be considered for all people with stroke or TIA who are not receiving palliative care. Long-term management of modifiable risk factors is important.

Long-term blood pressure management is required. BP is the strongest risk factor for both ischemic stroke and intracerebral haemorrhage. Lowering blood pressure reduces risk of recurrent stroke by about 25%. Angiotensin-converting enzyme (ACE) inhibitor, angiotensin II receptor antagonists (ARB), calcium channel blockers (CCB), thiazide diuretics are first-line therapy for lowering blood pressure to a target of less than 140/90mmHg. Beta-blockers not first-line unless the person has ischaemic heart disease.

Statins slightly reduce the risk of recurrent stroke and significantly reduce the risk of major coronary events. High potency statins such as rosuvastatin and atorvastatin are recommended regardless of baseline lipid levels. Cholesterol lowering therapy should target LDL cholesterol < 1.8 mmol/L for secondary prevention of stroke. There is no evidence of a reduction in mortality or sudden death.

Antiplatelet medications (low-dose aspirin, clopidogrel) are used to prevent further thrombotic strokes. They are contraindicated with history of haemorrhagic stroke. Aspirin plus clopidogrel should be commenced within 24 hours of a stroke and used in the short term (first three weeks) in patients with minor ischaemic stroke or high-risk TIA to prevent stroke recurrence. The combination of aspirin plus clopidogrel should not be used for the long-term secondary prevention of cerebrovascular disease in people who do not have acute coronary disease or recent coronary stent.

Atrial fibrillation

People with atrial fibrillation (AF) and previous stroke and TIA are at high risk of recurrent stroke. AF associated with 2- to 5-fold increased risk of stroke. Oral anticoagulants reduce the annual risk of stroke from around 12% to 4%.

Oral anticoagulants (OACs) are only indicated in the presence of atrial fibrillation. Antiplatelet agents should not be used for secondary prevention of stroke in people with atrial fibrillation. Oral anticoagulants are more effective in preventing recurrent stroke than antiplatelet drugs and have a similar risk of bleeding.

Direct oral anticoagulants (DOACs) should be initiated in preference to warfarin for patients with non-valvular atrial fibrillation and adequate renal function. DOACs have similar bleeding rates to warfarin and a lower risk of intracranial haemorrhage.

Lifestyle factors

All patients with stroke or TIA should be supported to follow a Mediterranean or similar style diet (high intake of plant-based foods such as fruit, vegetables, whole grain cereals, legumes and nuts, moderate intake of low fat dairy products, and low intake of processed and red meat and sugary foods, as well as olive oil as the main added dietary fat) to reduce the risk of recurrent stroke.

References

Stroke 2022;53:2538–2548.
Stroke Living Guidelines.

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