

Stroke- Discussion

- About 15 million people suffer from stroke every year worldwide. Of them, 1/3rd is bed ridden or disabled permanently and another 1/3rd die
- SL, prevalence is 9 per 1000 population
- 1 in 6 suffers another stroke within 5 years

Definitions

Stroke: a clinical xn of rapidly developing focal or global cerebral dysfunction, lasting > 24 hours or leading to death, of presumed vascular origin

TIA: a clinical xn of rapidly developing focal cerebral or retinal dysfunction, lasting < 24 hours, of presumed vascular origin ("transient neurological dysfunction caused by focal brain, spinal cord, or retinal ischaemia, without acute infarction": this definition is better but not universally accepted as it requires immediate MRI- brain)

Classification

Pathological:

1. Ischaemic stroke (81%)
2. Spontaneous ICH (15%)
3. Non traumatic SAH (< 5%)

Clinical:

Oxfordshire Community Stroke Project criteria (Appendix A)

1. Total anterior circulation stroke (TACS)
2. Partial anterior circulation stroke (PACS)
3. Lacunar stroke (LACS)
4. Posterior circulation stroke (POCS)

Aetiological: *TOAST Classification*

1. Large artery atherosclerosis
2. Cardiogenic embolism
3. Small artery disease
4. Stroke of other determined aetiology
5. Stroke of undetermined aetiology

Risk factors

Ischaemic stroke	Haemorrhagic stroke
Non modifiable: age, male, PHx of stroke, 1 st degree FHx of stroke	Non modifiable: age, male, amyloid angiopathy (in elderly)
Modifiable: Disease related: HTN, DM, DL, heart- AF, IHD, valvular disease, metabolic xn, carotid artery stenosis Life style: smoking, obesity, diet, physical inactivity, excess alcohol	Modifiable: HTN (main factor) Other- antiplatelet & anticoagulant, alcohol excess, substance abuse (cocaine)

Management

1. Diagnosis

Stroke is a medical emergency. Spot the warning signs and act fast;

Balance: Loss of balance, headache or dizziness

Eyes: blurred vision

Face: one side of face is drooping

Arms: arm or leg weakness

Speech: difficulty in speech

Time: acute onset

- Stroke is a clinical diagnosis. Every patient suspected of acute stroke should under go NCCT brain to exclude ICH (hyper dense). It's cost effective (avoid unnecessary antithrombotic tx) ICH appears almost immediately in NCCT. But ischaemia might take time to appear in NCCT. A normal CT excludes ICH, but doesn't exclude an infarct
- Door to imaging time ≤ 20 mins (at least in 50% of patients who are candidates for thrombolysis)

- Early features of infarct (< 6 hrs) in NCCT:

- ✓ Loss of grey- white matter differentiation
- ✓ Diffuse cerebral swelling with loss of cortical sulci
- ✓ Compression of ventricular system
- ✓ Hyper dense MCA sign (an acute embolus lodged in it)
- ✓ Insular ribbon sign (hypo density & swelling of insular cortex): in MCA territory. This region is very sensitive to ischaemia as it's the furthest from collateral flow. This has to be differentiated from herpes encephalitis

- DW- MRI more useful in diagnosing acute infarct within 12 hours of first symptom. But it's not cost effective -> not routinely done

DW is positive at acute phase & then become brighter up to 7th day

ADC will be of low signal intensity with maximum at 24 hours & then increase signal intensity, finally become bright in chronic stage

T2W doesn't show early infarct. Will show in chronic stage

*Everything bright on DWI isn't dead tissue. When compared to T2W in chronic phase, DWI will show more affected brain volume -> **salvageable brain tissue***

This concept of salvageable brain tissue (penumbra) is the basis of acute management

Penumbra: clinically symptomatic area, but if reperfused, can be reversed. Region of electrically inexcitable, hypoperfused parenchyma surrounding irreversibly damaged core. Area is temporarily supported by leptomeningeal collateral flow

Future: There are new scans (CT perfusion scans or MRI DWI & FLARE, MRI mismatch ratio). So, regardless of time of onset, if there's salvageable tissue in penumbra, thrombolysis will be offered

2. Aim of management

Achieve recanalization & reperfusion of ischaemic penumbra in appropriately selected patients to salvage ischaemic, but viable brain tissue

Ideally managed in a acute stroke units where a stroke specific multi disciplinary team is working