Stroke mimics and chameleons

Tips on diagnosis for the budding stroke specialist

Guide to survival in A&E or the stroke/TIA clinic

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• Some very basic revision
• A few tips
• Some cases
Stroke = “brain attack”:  

• Abrupt onset of malfunction of part of the brain – focal neurological symptoms and signs  

• Due to interruption of the blood supply to part of the brain – blood vessel occlusion or rupture  

• A clinical syndrome caused by a range of different underlying vascular pathologies  

Symptoms for < 24 hours  
Almost always cerebral ischaemia rather than haemorrhage  
Most > 1 min and < 1 hour  
**Transient ischaemic attacks**  

Symptoms for > 24 hours  
About 4 in 5 due to cerebral ischaemia  
About 1 in 5 due to cerebral haemorrhage  
**Strokes**
Different types and subtypes of stroke

- 5% - subarachnoid haemorrhage
- 15% - intracerebral haemorrhage
- 80% - ischaemic stroke
5% - subarachnoid haemorrhage

15% - intracerebral haemorrhage

80% - ischaemic stroke
5% - subarachnoid haemorrhage

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80% - ischaemic stroke
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80% - ischaemic stroke
Getting the diagnosis right

• 30-50% of patients referred to UK TIA clinics with suspected TIA or minor stroke turn out to have something else.

• About 20% of patients with “suspected acute stroke” in A&E have a final diagnosis of something other than stroke.

• The differential diagnosis is fairly broad…

• Most of it is in the history…
  …a bit in the examination…..
  …and investigations have to be chosen, timed and interpreted appropriately.
Getting the diagnosis right matters

The right treatment for the right patient improves the chances of good recovery and reduces risk of future stroke and MI

Acute reperfusion for those who present very early

“Take this handful of pills every day for the rest of your life….”

“How about we get a surgeon to cut open your neck?….”

These treatments are not risk free
Making a diagnosis of stroke/TIA has implications for insurance, driving, anxiety etc
Stroke mimics in A&E

- Seizure: 20%
- Syncope: 15%
- Sepsis: 12%
- Functional: 9%
- Primary headache disorder: 9%
- Brain tumour: 7%
- Metabolic: 6%
- Neuropathy: 4%
- Peripheral vestibular disorder: 4%
- Extra- or subdural hemorrhage: 3%
- Drugs and alcohol: 2%
- Transient global amnesia: 2%
- Other diagnosis: 6%
Chameleons – a few examples

Strokes that look a bit or a lot like something else:

• Dizziness – ‘labyrinthitis’, BPPV, or posterior circulation stroke?…distinguishing central versus peripheral causes of vertigo can be tricky…consider age, associated neurological features, nature of any nystagmus, MRI may help…

• Monoparesis (of face, arm or leg) due to a focal cortical stroke – can appear like a peripheral nerve lesion, radiculopathy or spinal cord trouble

• Acute confusion can be due to focal cortical stroke (dysphasia, ‘parietal’ confusion)

• Acute memory disturbance can be due to bilateral thalamic strokes

• Limb shaking TIAs, classically due to carotid low flow – can appear like focal seizures

• Bilateral leg weakness - spinal stroke rare but does occur. Classically, but not always, after vascular surgery e.g. AAA repair
Assessing referrals: a few tips

• History, history, history….
  • Think demographics and probability (especially age)
  • Recheck out the story and fill in the gaps
  • What does ‘sudden onset’ mean? (“What were you doing when..?”)
  • Don’t simply accept a history of previous stroke – find out more
  • Beware referrals based on the imaging results
    • ‘This patient has a stroke on their scan’ (But is it relevant?) or
    • ‘But the scan report says no acute stroke lesion’ (So…?)

• ‘Clever’ examination
  • Get them out of bed / off the trolley – usually no-one else will have done!
  • Check for sensory and visual inattention – often not looked for
  • Check for functional ‘give way’ type weakness & Hoover’s sign
Case 1

58 year old right-handed woman referred by GP for investigation & management of TIA's

Background: long history of brittle manic depression

In past year, 4 episodes of sudden speech disturbance. Suddenly stops speaking and makes monosyllabic noises for 30 mins. She and husband don’t think she loses awareness during these.

Previous diagnosis of stroke (CT-proven)
Case 1 (continued)

More delving into the history……

• Episodes of speech disturbance – recurrent and stereotyped

• Also had 3 episodes of collapse with loss of consciousness in last three years:
  
  • First two unwitnessed. Found self on floor, got up, orientated and back to normal within minutes
  
  • Third episode one year previously, during a period of mania. Husband returned from work to find her lying on sofa, grunting and unresponsive. Ambulance to hospital. On arrival, conscious but confused. Fracture/dislocation of right shoulder. Back to normal (manic) self by next day.

• CT brain “temporal lobe infarction”. Told she had had a small stroke and started on aspirin. Discharged after 3 days.
Case 1 (continued)

Meds: lithium, chlopromazine, temazepam, aspirin
Gave up smoking 7 years ago
Non-driver

Examination:
  Looked well
  P 84 reg, BP 118/62, normal heart sounds and peripheral pulses, no arterial bruits
  Mildly parkinsonian, consistent with antipsychotic medication, but no other neurological signs
Previous CT

“Left temporal lobe infarction”
Case 1 - investigations and management

- Routine blood tests normal
- EEG - excess slow wave activity L temporal region
- MRI brain - posterior left temporal lobe abnormality, well-demarcated, no oedema, non-enhancing, very slowly growing since, probable low grade glioma.
Case 1-
investigations and management

- Routine blood tests normal
- EEG - excess slow wave activity L temporal region
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- Stopped aspirin. Started carbamazepine for seizures.
- Well over several years of follow-up – no further seizures, no further manic-depressive episodes
Learning points

• Watch out for recurrent, stereotyped episodes…could be focal seizures
• Never take a past history of stroke or TIA at face value
• Always worth finding the old scans if you can
Case 2

35 year old left-handed man referred by GP - ? amaurosis fugax

1 week ago while driving noticed he couldn’t see properly out of right eye - definitely monocular and affecting left field of vision. Otherwise well.

Ex drug user (not for 18 months) – alcohol, cocaine, amphetamines, ecstasy, nil iv.

Smokes 25/day

Medications: aspirin from GP last few days

Examination: field deficit on left side, right eye only, macular sparing. Fundi appeared normal (pupils not dilated). Otherwise NAD.
Diagnosis?

Uncertain

Concerned about something infiltrative or inflammatory affecting optic nerve…MRI brain scan

Discussed with ophthalmology colleague – unlikely to be anything worrying but arranged to see
Seen by ophthalmologist

- Competent slit lamp examination
- Temporal retinal detachment secondary to retinal tear
- Remembers being assaulted and thumped in his eye about a year ago
- Scheduled for surgery the next day
Learning points

• Odd monocular visual field deficit in a young person
• Examination of the fundi – if uncertain, ask an expert
Case 3

- 75 year old right-handed woman
- GP phoned to re-refer – recurrent TIAs since seen in TIA clinic a few weeks ago
- Reviewed recent clinic letter
  - 2 episodes of tingling left side last few months, similar episode several years previously.
  - Background of hypertension and hypercholesterolaemia.
  - Diagnosis TIAs. Recommended antiplatelet treatment, statin and antihypertensives
Case 3 continued

• Phoned patient and retook history
• Last nine years, several episodes, all very similar:
  • Tingling spreading over several minutes from left foot up leg, then from fingers up arm, then left face
  • Total duration about 10 mins
  • Tired afterwards, but no headache
  • Previous episodic pounding headaches with nausea and photophobia as young adult
  • Family history of migraine
• Revised diagnosis…episodes of migrainous aura
• Reduced secondary prevention treatments
Learning points

• Don’t diagnose TIA just because it’s the stroke/TIA service

• Migraines can occur in older people
Case 4

• 70 year old woman
• Episode of right leg weakness of abrupt onset, prompting admission to hospital
• Past medical history of rheumatoid arthritis only
• Examination revealed weakness of the right leg
• CT brain normal
• Provisional diagnosis by referring team: spinal cord or peripheral nerve lesion
Learning points

• Monoparesis can be due to stroke

• Don’t be put off by normal imaging - brain imaging can be normal after a stroke
Case 5

- 64 year old right handed man
- Fit and active. Non smoker, modest alcohol intake, healthy diet.
- No regular medications
- Only past history: acute episode of diplopia several years ago – seen by ophthalmologists, diagnosis ‘6th nerve palsy’, resolved spontaneously after a few weeks
- Sudden double vision again – came on while watching TV, definitely binocular
- Bit off balance – attributed to double vision
- Very busy in A&E – patient been waiting on trolley overnight
- Referring A&E docs – ‘isolated diplopia’. Third nerve palsy. Can we send him home?
- CT brain and CT angio normal. ECG sinus rhythm. Bloods – cholesterol 6.3, otherwise normal
Case 5 continued

- History as described

- Examination
  - Wearing eye patch
  - Pupil sparing right third nerve palsy - eye ‘down and out’, binocular diplopia, partial ptosis
  - With eye patch on….subtle but definite left upper limb ‘cerebellar’ signs – past pointing and dysdiadochokinesis
  - Off the trolley – mildly but definitely ataxic…veering to both sides, couldn’t heel-toe…definitely can’t go home!
Midbrain ischaemic stroke on MR scan
• Take time to examine some neurological features carefully

• Get the patient off the trolley

• Don’t be put off by normal imaging - brain imaging can be normal after a stroke, especially CT in posterior circulation ischaemic stroke
Thanks