Stroke mimics

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James Edwards chats to Dr. Katherine Spira about stroke mimics. A stroke is an acute neurological deficit lasting greater than 24 hours, caused by cerebrovascular pathology. Stroke calls are common. However, there are numerous conditions that may manifest in a similar way. Stroke mimics are non-vascular conditions that can also present with similar neurological deficits. It is important to know of some key stroke mimics. Especially how they may be differentiated from an acute stroke on history and physical examination. For example, Bell's palsy is a stroke mimic.

In this podcast, you will also learn about the dangers of diagnosing a stroke mimic and steps to learning which cases can be de-escalated.

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About Dr. Katherine Spira

Katherine Spira is a neurologist working in private practice and at Prince of Wales Hospital, NSW. Further to this, she has special interests in headache and obstetric neurology. She completed her training in February 2018. Katherine has previously worked as a Junior Medical Officer at Liverpool Hospital, a Basic Physician Trainee in the Prince of Wales Network, and an Advanced Trainee at Blacktown, Prince of Wales and Royal Prince Alfred hospitals. Katherine loves looking after patients, medical education and being a mum to two beautiful baby girls.

Stroke mimics

With Dr Katherine Spira, Neurologist at Prince of Wales Hospital and in private practice, New South Wales, Australia

Introduction

A stroke is an acute neurological deficit lasting greater than 24 hours caused by cerebrovascular pathology. Stroke calls are common however there are numerous conditions that may manifest in a similar way. Stroke mimics are non-vascular conditions that can also present with similar neurological deficits. It is important to know of some key stroke mimics and how they may be differentiated from an acute stroke on history and physical examination.

Case

A 35-year-old female, G3P0 admitted at 25/40 weeks with left-sided weakness and obvious facial droop. At the onset of these symptoms there was a severe stabbing pain in the ear – now resolved. The patient ceased smoking when trying to conceive however has 10-pack

year history prior and her first two pregnancies culminated in miscarriages prior to 12 weeks. Her father died as a result of a stroke at 50 years of age.

1. Concerning elements of this history

- 2 prior miscarriages – concerning for antiphospholipid syndrome, thrombophilia and vasculitidies
- Smoking history
- Pregnant – prothrombotic state and state of increased vascular reactivity
- Stabbing pain in left ear – often occurs prior to onset of Bell's Palsy on affected side
- **SHOULD activate a stroke call – neurologist input is required**

2. Bell's Palsy is a stroke mimic – what features of a presentation would point us towards this diagnosis?

- BMJ Best Practice lists some risk factors for Bell's Palsy. These include:
    - Strong – intranasal influenza vaccination, pregnancy (Bell's palsy is 3x more common in pregnancy, particularly in 3rd trimester and first week postpartum).
    - Weak – upper respiratory tract infection, arid/cold climate, hypertension, family of Bell's palsy, diabetes.
- **Features of history**
    - Pain behind the ear often precedes facial paresis.
    - Paresis develops over a period of hours (rather than suddenly as in stroke) – peaks within 48- 72 hours.
    - Patient often present to ED reporting weakness/numbness or heavy feeling in the face – patient often thinks they have had a stroke and may complain of other weakness on that side – examine carefully.
- **Features on examination:**
        - Bell's Palsy is a clinical diagnosis.
        - Signs consistent with Bell's Palsy:
            - Can the eye close/blink appropriately?
                - Strokes do not usually cause inability to fully close the eye or blink.
            - Corneal reflex
                - Absent corneal reflex on the affected side indicates abnormality of the efferent arm of the corneal reflex (controlled by 7th CN – Facial).
            - Facial nerve power examination

        - Loss of power in frontalis muscle.
    - Taste disturbance in the anterior 2/3 of tongue on affected side.
        - Use saline and sugar solution.
        - Hold tongue between the fingers.
        - Soak gauze in solution and apply to affected side then apply to unaffected side.
        - Total absence of taste on the affected side is a strong indicator of Bell's Palsy.
    - Limb power is normal on UL/LL neurological examination.
    - Assess a potential stroke patient with the NIHSS and activate a stroke call and emergency management but be sure to then return for a full neurological examination.
        - NIHSS is a screen to assess suitability for thrombolysis and thrombectomy and does not pick up subtle neurological deficits.

3. What are some other stroke mimics?

- Migraine sensory aura
    - Vascular occlusion/ Stroke – SUDDEN loss of power/ sensation
    - Sensory aura – develops over 10-15 mins and slowly traces around one hand and traces up the arm
- Seizures with Jacksonian March
- Seizures with postictal paresis (Todd Paresis), aphasia or neglect
- Hemiplegic migraine
    - Junior doctors should not commit to this diagnosis without input from the stroke team.
    - In someone that presents with hemiplegia and has either never had migraines previously OR has not had hemiplegia associated with migraine the primary differential should still be stroke.
    - Neurologists usually only diagnose an individual with hemiplegic migraine when there is a documented history of similar episodes, a negative stroke workup and a clear and typical history.
- Short TIA – indicate propensity to stroke even if asymptomatic on examination.
- Vertigo
- Orthopaedic pathology – present with antalgic gait rather than neurologic gait.
- Delirium – dysphasia vs speech changes in delirium difficult to differentiate.

- Other suggested differentials for acute stroke are summarised in UpToDate. These include:
    - CNS tumour/abscess
    - Cerebral venous thrombosis
    - Hypertensive encephalopathy
    - Head trauma
    - Multiple sclerosis
    - Posterior reversible encephalopathy syndrome (PRES)
    - Toxic/metabolic disturbances e.g. hypoglycaemia, exogenous drug intoxication.
    - Transient global amnesia
    - Viral encephalitis

4. What are the dangers of diagnosing a stroke mimic?

- If a stroke mimic is suspected there is a chance removing a patient from the stroke pathway results in genuine stroke events being missed.
- Excluding a serious diagnosis sometimes leads to a loss of interest in the case – there may be an alternative problem that still needs to be identified and treated.
- Conversely, at times those without a stroke are thrombolysed.
    - Exclusion criteria for thrombolysis usually prevent those with a high bleeding risk from receiving therapy.
    - Normal brain does not bleed as readily as ischaemic brain so the risk of cerebral haemorrhage is lower in these patients.

Take home messages

- Learn from the patient and the specialist team once you have requested their expertise.
- Follow through and take note of which features of the presentation led to the diagnosis so that you may look for these in future.
- With further clinical experience, de-escalation of cases will become a more comfortable phenomenon – until that is the case – seek the assistance of those around you to determine which cases can be safely de-escalated and which need specialist input.
- Even if the event in question is not a stroke – the patient will likely need follow-up to be organised. Always ensure there is appropriate follow-up for your patient.
    - Bell's palsy requires ophthalmology to ensure they are able to close their eye to prevent further damage to eye structures.
    - Other stroke mimics may still require follow up with neurologist in a sub-acute time frame.

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