



Year 2 Peer Based Learning 2019

Musculoskeletal System

Please note – this learning resource has been produced by the GUMS Academic Team. It is possible that there are some minor errors in the questions/answers, and other possible answers that are not included below. Make sure to check with other resources.

Key elements of the answers are bolded. Everything else is important but not the focus of BMB.

A 65 year old gentleman presents to ED with his wife at 7pm following new onset weakness in his face and arm on the right side of his body.

What do you immediately do?

Call a code stroke. **Start wheeling the patient to the CT scanner whilst doing a brief history and examination.** Cannulate the patient. Give aspirin.

Take a brief history of the patient and his wife. State what you would examine. Based on this information, state the most likely affected artery.

Key elements of the history = **time course; sudden onset weakness. Location of weakness and ask some specifics e.g. speech, limbs, eyes etc.** Check if allergy to contrast for CT and briefly if any contraindications to thrombolysis, **especially medications.**

MCA!

The examination done is based on the 'NIHSS score'. Briefly look this up to see what examinations are done.

SP instructions:

Patient has sudden onset weakness on right side of body whilst walking his dog with his wife. His wife was immediately worried and drove him to ED.

Limbs: Right arm affected, not leg. Both motor (weakness) and sensory (deficit in all sensations)

Face: Wife notices that the right side of his mouth is drooping

Speech: His wife says he is frustrated because he 'just can't get his words out'



Eyes: Has right gaze preference (is looking to the right)

Past Medical hx: CT angiogram for his heart in the past with no complications i.e. no allergy.

Medications: No contraindications to thrombolysis e.g. no anticoagulants. Only on perindopril for hypertension.

What is the specific scan you NEXT order and what is the SINGLE most important reason for this scan?

CT plain brain. This is to rule out haemorrhage - absolute contraindication to thrombolysis

Comment on the findings in the CT and state what you would look for in the plain CT.





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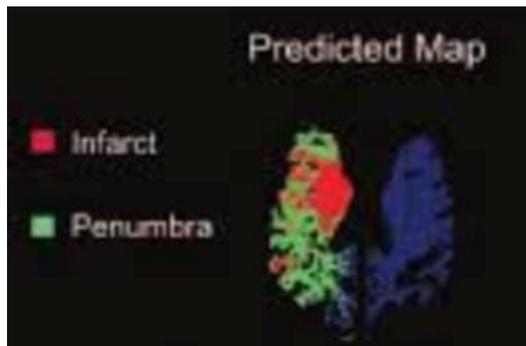
Normal! Look for ischaemia (hypodensity = dark), hyperdense (white coloured) signs, loss of grey white differentiation e.g. in the insula ribbon, previous infarcts. Make sure there is no haemorrhage!

The next part is for interest - it always happens as part of the work up for stroke, but would unlikely be tested in BMB papers:

Do a CT angiogram and a perfusion scan (summarise - you do 3 scans - plain, angiogram, perfusion).

Looking for a filling defect in angiogram [The CT angiogram shows a left sided filling defect in the MCA.](#)

The CT perfusion scan is shown below. Its purpose is to differentiate the penumbra (salvageable ischaemic tissue) from the core (necrotic tissue). Here is an example (not important to interpret, just the purpose and that you have to order it):



[The patient's CT perfusion scan shows a small core with a large penumbra](#)

If the patient's scan had evidence of mostly necrosed tissue, would you lyse them?

If it's all 'core' then why lyse them - that will only cause more harm!

[Thrombolysis is done, but the intern who did it was from UQ and accidentally gave them heparin instead. They infarct.](#)

[To summarise, their signs are:](#)

- [Paralysis of right face and arm but not leg](#)
- [Can't look right \(look towards the side of the lesion i.e. can only look left, but not right\)](#)



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- Can't get words out

Name the precise MCA branch involved.

MCA superior division

What structures have been lesioned? What else does the examiner have to look for (although given that he has aphasia, he can't tell you this sign!)

Motor and sensory cortices, frontal eye field, Broca's area

Have to look for a visual field defect! Could be quadrantanopia or hemianopia.

If it was an inferior division infarct, what structures and signs could have been involved/seen? How about M1 infarct?

Wernicke's area - receptive aphasia. Meyer's loop - superior quadrantanopia.

M1 = leg also involved, because it affects the IC.

State the main difference in M1 from M3 infarcts (5-10 words)

M1 is a sub-cortical infarct, M3 is purely cortical!

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What if the patient had evidence of swelling and ipsilateral mydriasis? What other signs could they develop if this was not treated?

Likely they have an **uncal herniation**: stroke → inflammation → swelling → increased supra-tentorial pressure → brain herniates down because of the Monro-Kellicott hypothesis → the part that herniates is the uncus, because it is closest to the tentorium → compresses the **ipsilateral oculomotor nerve** → causes mydriasis. If prolonged, will also have down and out gaze and complete ptosis (late signs in compressive CNIII palsy)

What if the patient developed chronic cognition impairment down the track? What DDx to think of?

Vascular dementia - secondary to stroke!



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Contrast the following diseases:

These are the three most common causes of dementia:

	Alzheimer's	Vascular dementia	Lewy body dementia
Natural history	Steady, chronic decline	Stepwise decline - abrupt drops in cognition	Steady, chronic decline; may be abrupt
Major clinical features	Classic dementia features - impaired memory, cognition, speech	alzheimer's , plus findings from cerebrovascular events	Alzheimer's, plus visual hallucinations and parkinsonism
Radiographic findings	Diffuse cortical atrophy	Evidence of prior ischaemia e.g. periventricular hypodensities	No noteworthy findings
Pathology	Neuritic plaques composed of amyloid beta and neurofibrillary tangles composed of tau protein	Necrotic brain tissue	Lewy bodies consisting of alpha-synuclein

What are the three key differentials for an elderly patient presenting with cognitive impairment?

Depression, dementia, delirium! So high yield

What if the patient had urinary incontinence and ataxia, as well as the cognitive impairment?

Normal pressure hydrocephalus - **most common reversible cause of dementia. 'Wet, wacky and wobbly'**



Griffith University
Medicine Society
Gold Coast, Australia

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What if the patient was a chronic drinker and had pain during eye movements, had confusion and ataxia? What complication could arise if this was untreated?

This patient has **Wernicke encephalopathy**. If untreated this would lead to **Korsakoff syndrome**: the main features are **confabulation (unconscious production of fabricated memories to fill in real ones they forgot)** with **amnesia (long term memory usually preserved)**

The former is reversible, the latter is not!