

Exercise walk-through

9.7

## Lesion localisation

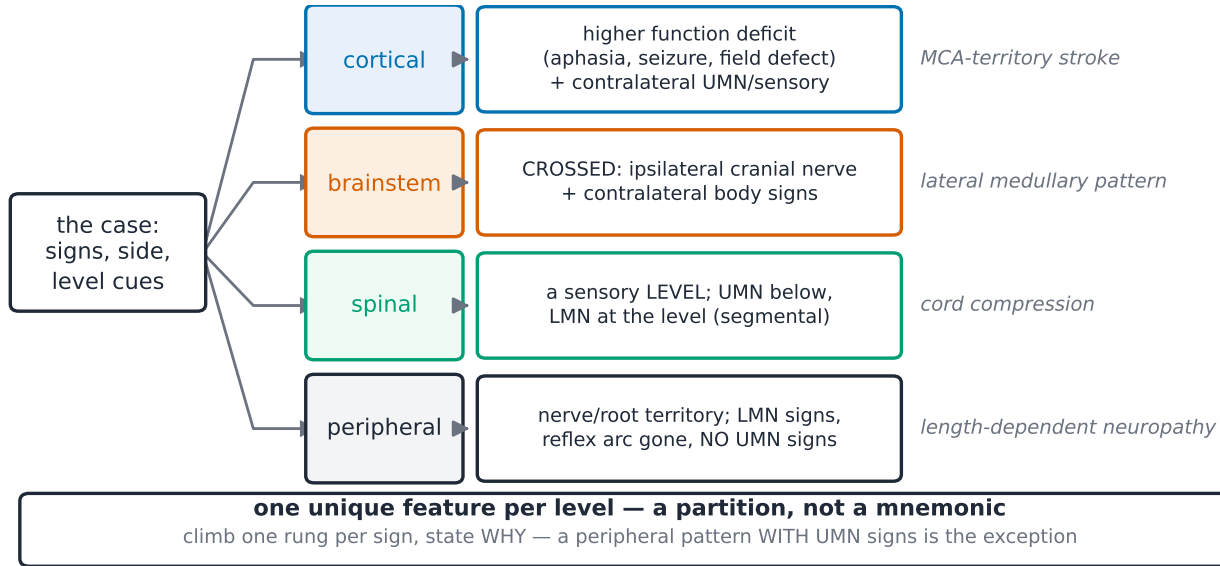
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University Medicine

## Lesion localisation: the map is a partition

- 1 **Cortical** Higher function deficit (aphasia, seizure, field defect) + contralateral UMN/sensory signs.
- 2 **Brainstem** CROSSED: ipsilateral cranial nerve + contralateral body - the single most useful exam clue.
- 3 **Spinal / peripheral** Cord: a sensory LEVEL, UMN below, LMN at the level. Periphery: nerve/root territory, LMN signs, reflex arc gone, no UMN.

# The lesion-localisation decision map



Cortical, brainstem, spinal or peripheral - one unique feature per level.

## Check yourself

- Pain crosses where...? (In the cord, within 1-2 segments.)
- Cord lesion → UMN signs on which side...? (Same side - it crossed at the medulla.)
- Chiasm lesion → which field defect...? (Bitemporal **hemianopia**.)
- Aphasia with fluent speech, intact comprehension, dead repetition...? (Conduction - **arcuate fasciculus**.)

## Exercises 2.1-2.3

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**2.1** Which level owns crossed findings?

[3]

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**2.2** What single feature does the cord contribute that no other level has?

[3]

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**2.3** A peripheral pattern WITH UMN signs – what does the map say?

[3]

## Exercises 2.1-2.3

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**2.1** Which level owns crossed findings? [3]

**2.1**

- The brainstem – tracts cross there, cranial nerves exit ipsilaterally ✓.
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**2.2** What single feature does the cord contribute that no other level has? [3]

**2.2**

- A sensory LEVEL (a segmental boundary on the trunk) ✓.
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**2.3** A peripheral pattern WITH UMN signs – what does the map say? [3]

**2.3**

- The exception that proves the map – motor neuron disease (both UMN and LMN degenerate) ✓.

## Exercise 3.1

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**3.1** A fictional case: right facial weakness sparing the brow, left hemiparesis, non-fluent speech.

Climb stepwise: aphasia  $\rightarrow$  cortex; brow-sparing facial weakness  $\rightarrow$  UMN VII above the nucleus; contralateral hemiparesis  $\rightarrow$  corticospinal above the pyramids; conclude LEFT middle cerebral artery territory ✓. Give the reason at each rung. [8]

## Exercise 3.1

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### 3.1

- Non-fluent speech  $\rightarrow$  language cortex involved, LEFT hemisphere ✓.
- Brow-sparing right facial weakness  $\rightarrow$  UMN VII lesion above the nucleus ✓.
- Left hemiparesis  $\rightarrow$  corticospinal tract above the pyramidal decussation ✓.
- Convergence: left middle cerebral artery territory ✓.

## Exercise 3.2

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**3.2** A fictional case: burning both feet, absent ankle jerks, normal plantar responses, no trunk level.

Assign the pattern (peripheral, length-dependent polyneuropathy) and justify each sign. Contrast the cord-compression pattern (a trunk sensory level with UMN signs below). State the one finding that would break the peripheral pattern (plantars upgoing – motor neuron disease territory) ✓.

## Exercise 3.2

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**3.2** A fictional case: burning both feet, absent ankle jerks, normal plantar responses, no trunk level.

Assign the pattern (peripheral, length-dependent polyneuropathy) and justify each sign. Contrast the cord-compression pattern (a trunk sensory level with UMN signs below). State the one finding that would break the peripheral pattern (plantars upgoing – motor neuron disease territory) ✓. [7]

### 3.2

- Symmetric, distal-first, no level → peripheral (length-dependent polyneuropathy) ✓.
- Absent ankle jerks = LMN/reflex-arc loss; normal plantars = no UMN ✓.
- Cord compression instead shows a trunk sensory LEVEL with UMN signs below ✓.
- Upgoing plantars with LMN signs would break the peripheral pattern (motor neuron disease) ✓.