UNIVERSITY MEDICINE • EXERCISE SHEET

3.8 Back and vertebral column

Name: _____ Class: _____ Date: _____ **Total: 23 marks**

KEY WORDS cauda equina

Objective

Read spinal levels from the dermatome ladder and distinguish cord from cauda equina lesions.

1 Key knowledge and worked examples

■ **The stack**

33 vertebrae, 24 movable; cord ends at L1–2; below is cauda equina. Bony level ≠ neural level; discs hit the next root down.

■ **Worked example: the ladder**

Thumb C6, nipple T4, umbilicus T10, big toe L5, perianal S2–4 ✓ – five rungs turn a sensory exam into a level read.

2 Practice

2.1 Where does the adult spinal cord end? [3]

2.2 Which dermatome is the umbilicus? [3]

2.3 Why is lumbar puncture performed at L3/4? [3]

3 Exam-style questions

3.1 After a T10 vertebral fracture, sensation is lost below the umbilicus.

State the dermatomal level and the likely cord segment (two-level rule). Explain the rule from development. State what imaging level to request and why. [7]

3.2 Back pain with saddle numbness and urinary retention (fictional).

Name the syndrome and the structure compressed. Explain why bladder signs appear early (S2–4 roots). State the urgency and its reason. [7]

Solutions

2.1

- Conus medullaris at L1–2.

2.2

- T10 ✓.

2.3

- Below the conus the canal holds only roots (cauda equina), which move aside from a needle – the cord is safe.

3.1

- Sensory level T10 dermatome; bony T10 ≈ cord L1–2 segment (rule of two).
- The vertebral column outgrows the cord: roots elongate downward, so bony and neural levels diverge.
- Image the fracture site (T10) but expect the lesion at the lower cord/conus segment.

3.2

- Cauda equina syndrome: roots of the lumbar cistern compressed (e.g. L4/5 disc).
- S2–4 roots carry bladder and perineal fibres – among the first caught.
- Urgency: hours – decompression before permanent sphincter loss.