Post Course Notes: Spinal Cord Compression

Cauda equina lesions produce mainly sacral nerve root signs whereas spinal cord compression is dominated by long tract signs (e.g., upper motor neurone signs). The commonest cause of both these syndromes is external compression due to metastatic disease, so the list of tumours that most commonly spread to bone is helpful:

- Breast
- Bronchus
- Kidney
- Thyroid
- Prostate

Spinal cord compression
The clinical picture depends on the rate of onset and whether the lesion is an intrinsic cord tumour or is compressing the cord from outside. It also depends on whether only half of the cord is affected (Brown Sequard syndrome) or there is complete damage to both sides. But in general the clinical picture is dominated by motor pathway damage, with early signs of a mild spastic paraparesis,

Early motor symptoms: patients typically complain of

- Heaviness in the legs
- Stumbling
- Legs “jumping” at night (due to the increased tone of an upper motor neurone lesion)

Sensory signs and bladder involvement typically occur late and usually imply that irreversible damage has occurred.

Brown Sequard syndrome
On the side of the lesion:
Nerve root (dermatomal) loss of all sensation at the level of the lesion - complete anaesthesia - totally “numb”.
Loss of dorsal column function (joint position sense) below the level of the lesion often associated with a sensation like a tight band round that leg.
UMN signs (pyramidal pattern of weakness, increased reflexes and extensor plantar)

On the opposite side
Loss of pain sensation with a “sensory level” just below the level of the lesion.
This is due to the fact that fibres carrying pain enter the cord from the dorsal root and usually ascend (in Lissauer’s tract) for one or two segments before crossing the midline to join the contralateral spinothalamic tract. So, for example, a lesion compressing the spine at T8 would typically give a sensory level at the umbilicus (T10) on the opposite side as the T10 fibres have only just crossed the midline at the T8 level.

Mnemonic for the ipsilateral features of Brown Sequard syndrome
P Pyramidal signs (weakness and increased reflexes)
R Root anaesthesia (at the level of lesion - variable)
I Ipsilateral
D Dorsal column loss (joint position sense)
E Extensor plantar response
Partial Brown Sequard syndrome
Frequently, there is bilateral damage to the pyramidal system, which is very sensitive to compression due to its vulnerable blood supply, so upper motor neurone signs may be found in both legs. In addition the ipsilateral dermatomal loss at the level of the lesion may be absent due to overlap of nerve root supply. For these reasons, the term "partial Brown Sequard syndrome" is often used. The main features may be summarised as: ipsilateral upper motor neurone signs with a contralateral sensory level.

Cauda equina lesions
The term cauda equina refers to the long lumbar and sacral nerve roots as they leave the spinal cord and descend within the vertebral canal. There appearance is similar to a horse's tail (cauda equina means the end or tail of the horse). With a high or lateral cauda equina lesion, there may be a mixed picture with nerve root signs and compression of the spinal cord, causing long tract signs. However, the spinal cord terminates at the level of the first lumbar vertebra and lesions below this level typically cause a clinical picture dominated by bilateral sacral nerve root symptoms and signs. Any motor involvement would therefore present with a lower motor neurone pattern.

Sometimes patients complain of rectal or genital pain, erectile impotence, painless retention of urine (due to loss of both bladder sensation and detrusor power), plus weakness of eversion of the foot (S1) and plantar flexion (S1) together with loss of the ankle jerk. Often loss of the ankle jerks is the only definite motor finding.

It is particularly important to test for perianal sensation in anyone with low back pain as “saddle anaesthesia” is often present in a cauda equina syndrome. Unless the lesion is above the L1 vertebra, there will be no long tract signs, so the plantars would typically be flexor. In summary, the clinical picture is dominated by painless retention of urine and loss of saddle sensation associated with loss of ankle jerks.

Mnemonic
P Painless retention
E Eversion of foot weak
N No ankle jerk
I Impotence
S Saddle anaesthesia

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