

Neurology

Chapter : Spinal degenerative diseases

Learning object 1 : Spinal degenerative diseases

objectives



At the end of this learning object student will be able to:

- Define spinal degenerative diseases.
- Compare between sensory symptoms, motor symptoms, and reflex signs.
- Compare between cervical radiculopathy, myelopathy in cervical spondylosis and in case of myelopathy.
- Explain the neurological system in general.

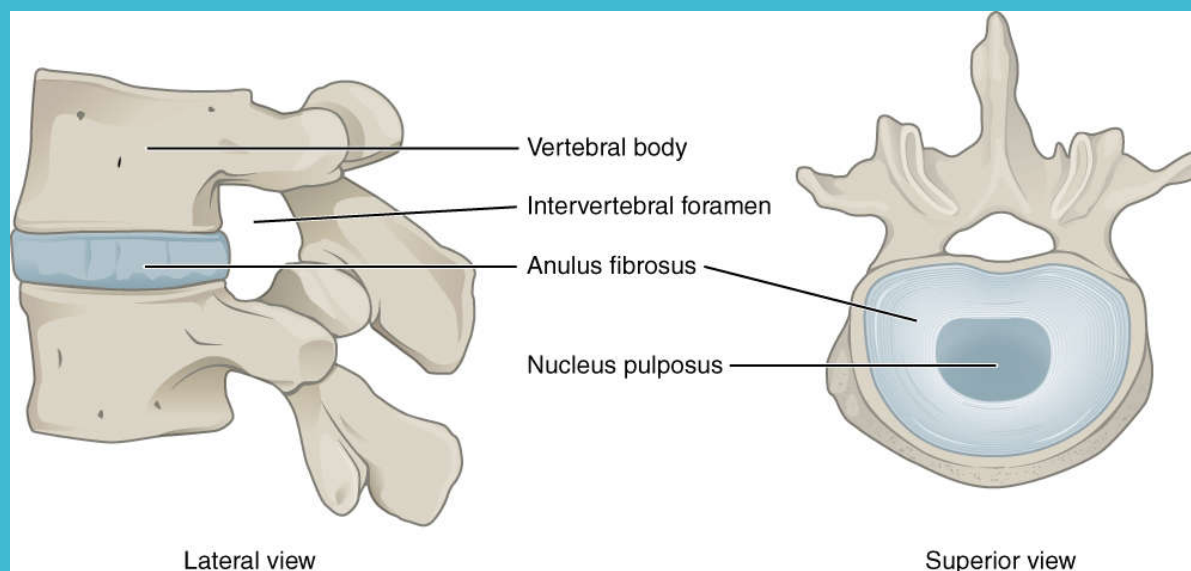
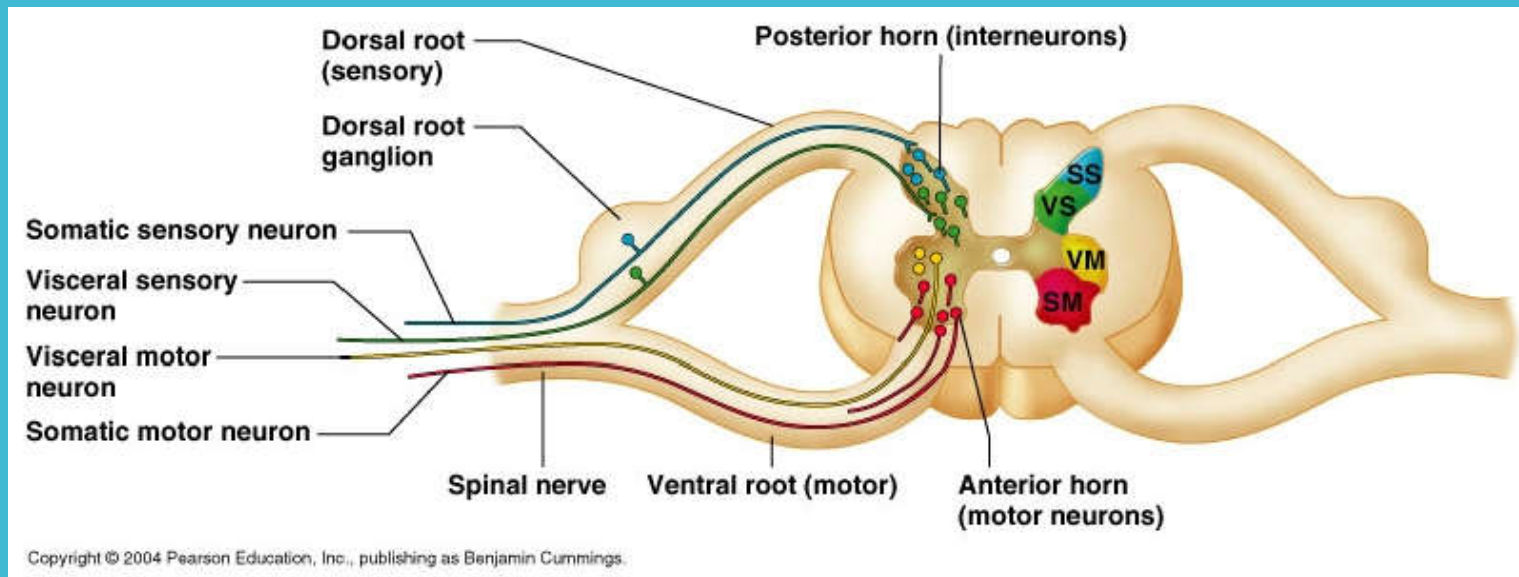
Slide 1 : Spinal degenerative diseases

Spinal degenerative diseases:

NB. Some anatomical considerations:

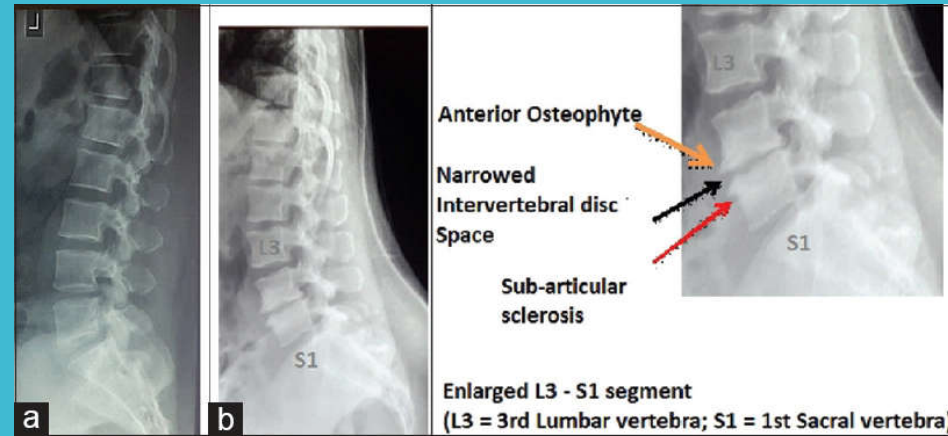
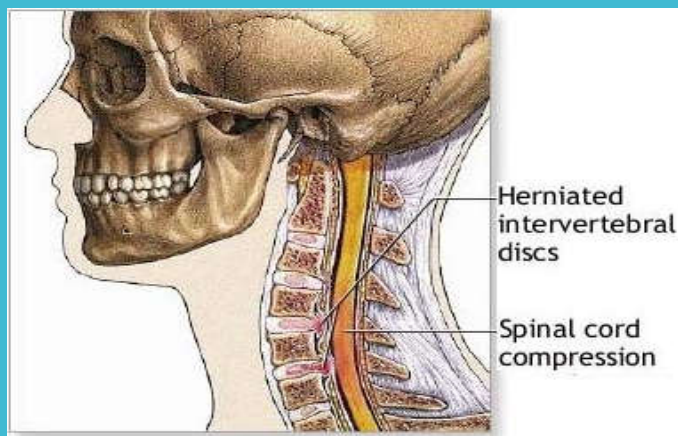
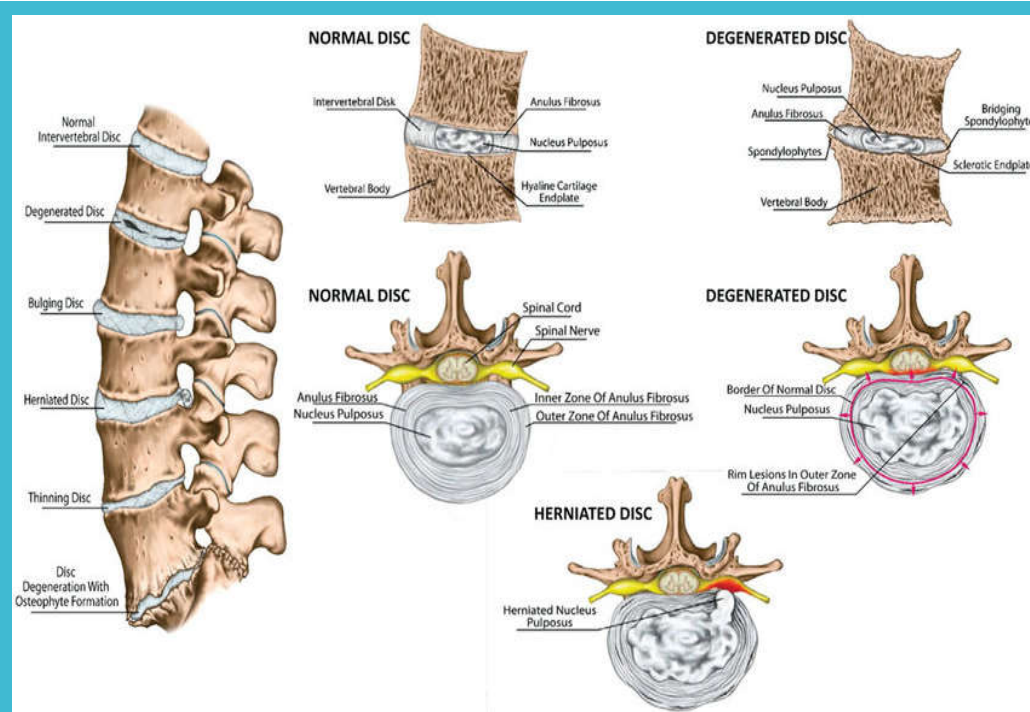
Each spinal nerve is composed of dorsal root "sensory" and ventral root "motor" the two roots unit → to form the spinal nerves which travel through the intervertebral foramen.

The intervertebral disc consists of central semifluid portion "*nucleus pulposus*" which is surrounded by strong fibro cartilaginous band "*annulus fibrosus*". On degenerative spinal diseases with age, trauma, the annular fibrosis will become weak and the central nuclear pulposis will herniate through the weak point and compress either the central spinal canal causing spinal canal stenosis, or the cord, roots, or both.



Slide 1 : Spinal degenerative diseases

Spinal degenerative diseases: with advanced age ,frequent trauma,some occupations(porters), sporters ,the frequent spinal movements will degenerate the vertebrae with new bone formations called osteophytes "spondylosis" these osteophytes may cause narrowing of the intervertebral foramen causing radiculopathy or compress the cord causing spondylotic myelopathy. Cervical & lumbar spines are the commonest sites of spinal degenerative diseases due to their higher mobility.



Slide 2 : Clinical picture of radiculopathy in general

Clinical picture of radiculopathy in general:

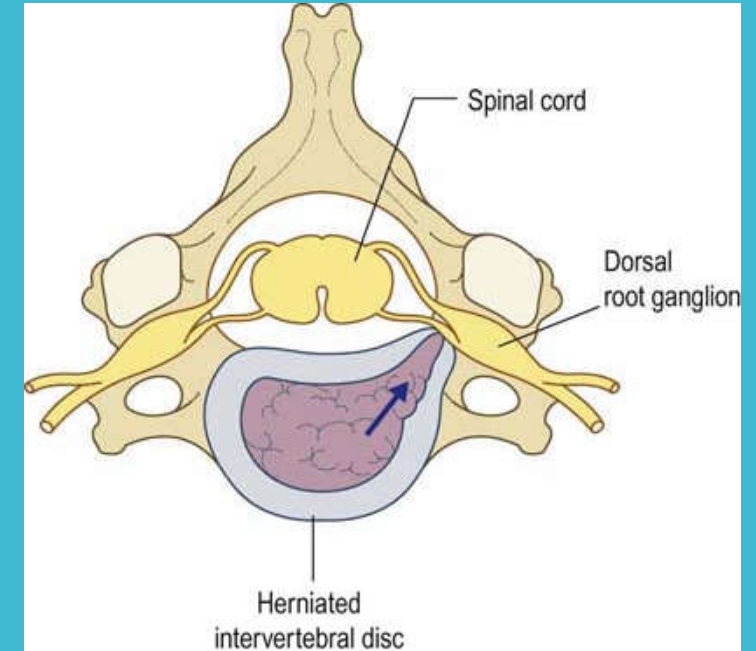
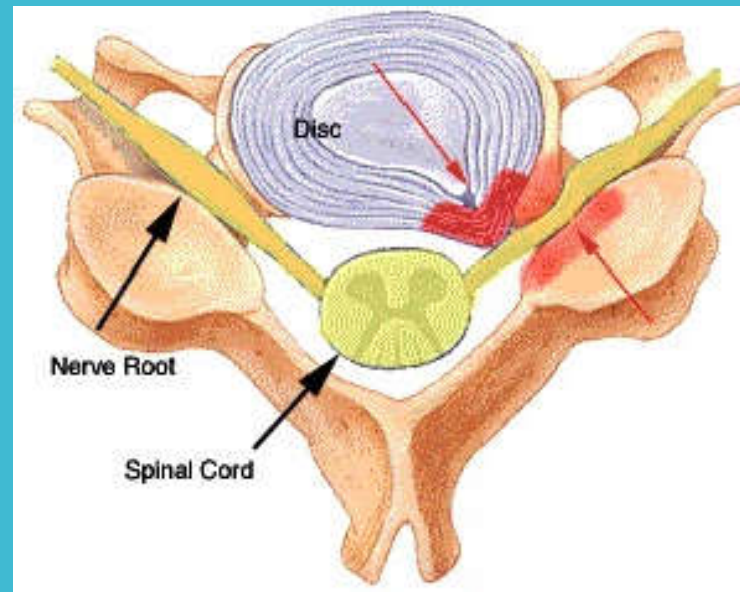
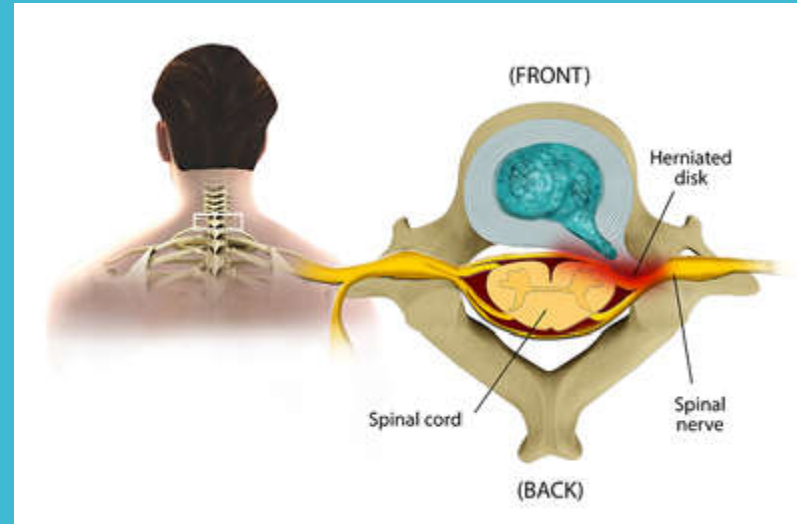
In radiculopathy due to disc lesions, spondylosis or due to other spinal diseases, there are three main clinical corners to be discussed.

1) Sensory symptoms : lesions of the dorsal root will cause radicular or root pain which has the following characters:

- Lancinating , electric , burning.
- Abrupt, sharp , well localized. ↑at night
- Referred to a specific dermatome .
- Precipitated or ↑ by ; coughing, sneezing, straining.spine movement

2) Motor symptoms & signs: Due to ventral root lesions , there is weakness & wasting of the muscles supplied by the affected root, fasciculations may be present in the affected muscle.

3) Reflex signs: lesions of the dorsal or ventral roots may interrupt the afferent or efferents, causing diminished or lost reflexes of the muscles supplied by the same root.

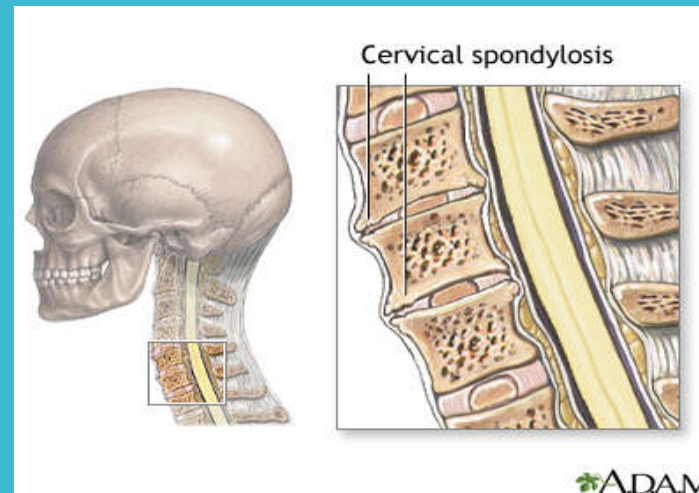
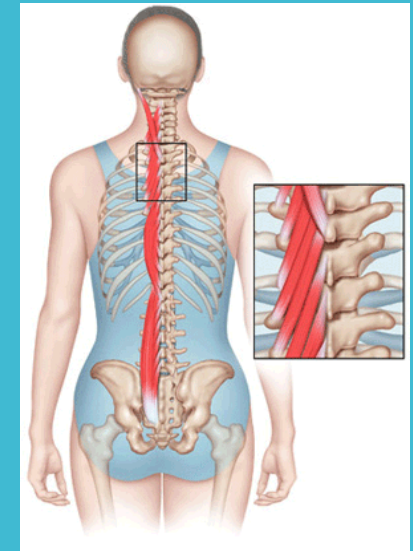


Slide 3 : Cervical radiculopathy & myelopathy

Cervical radiculopathy & myelopathy: In cervical spondylosis

Usually the symptoms are subacute or insidious with radicular pain in the neck, radiated to the dermatome supplied by the affected segment, with the different characters of radicular pain as mentioned above.

-There may be localized area of tenderness in the corresponding paraspinal muscle.

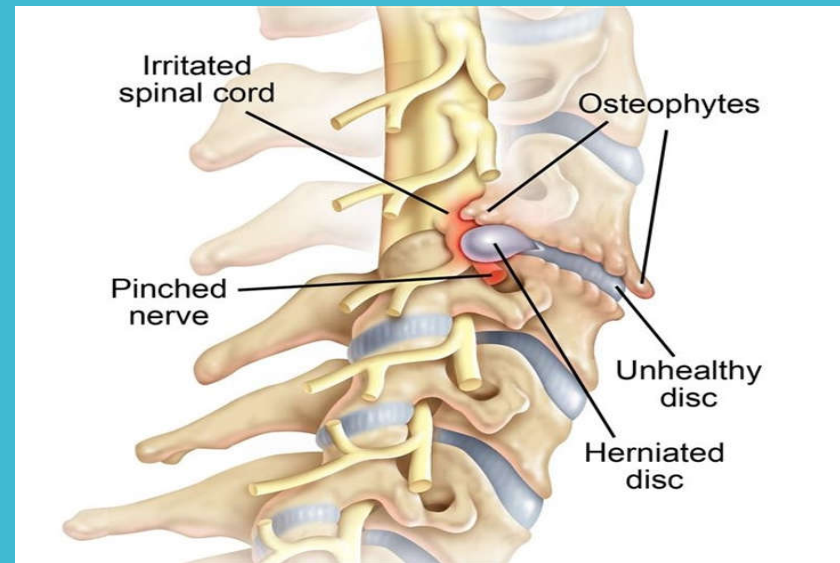
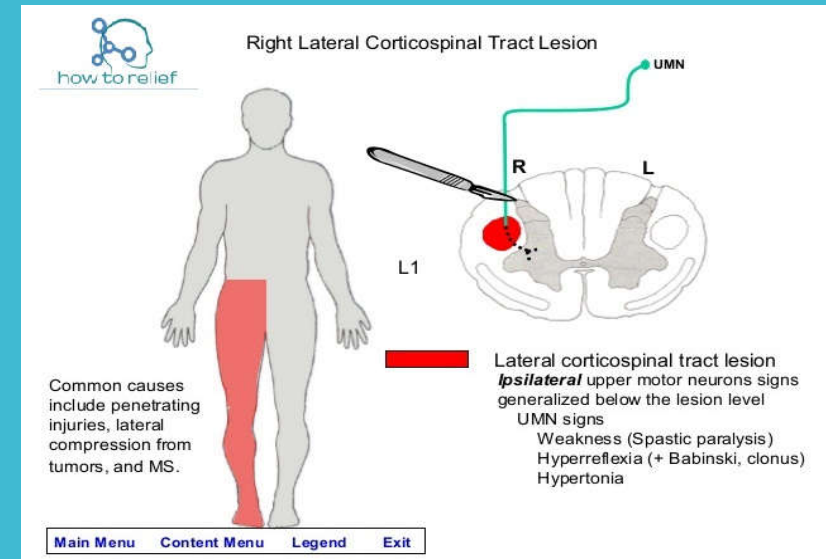


Slide 4 : Cervical radiculopathy & myelopathy

-In case of myelopathy

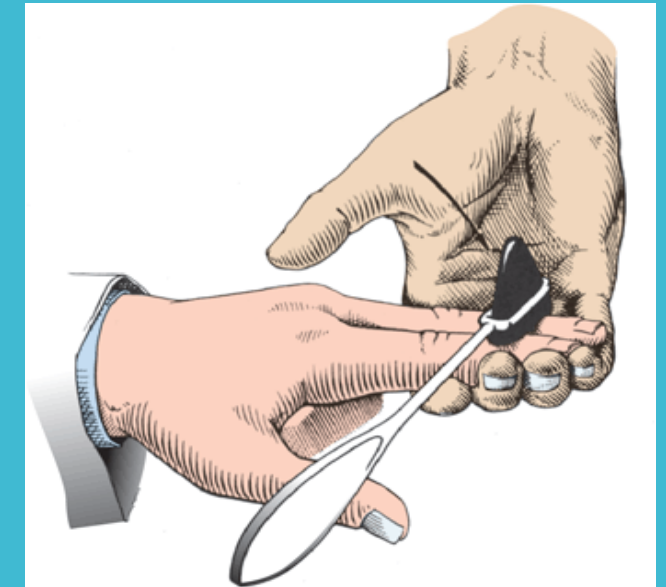
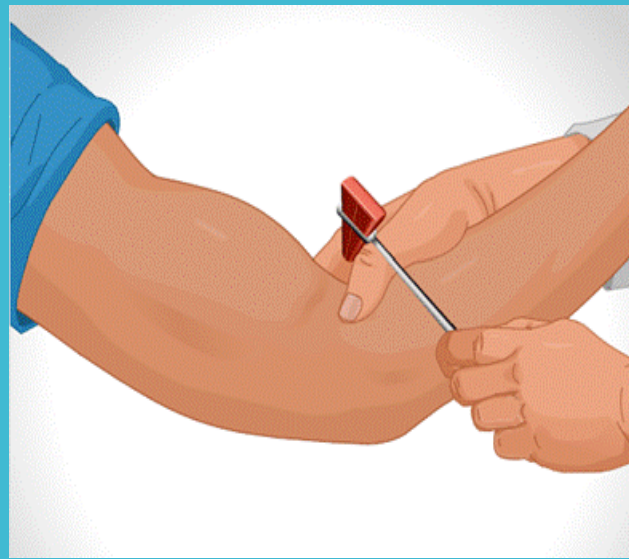
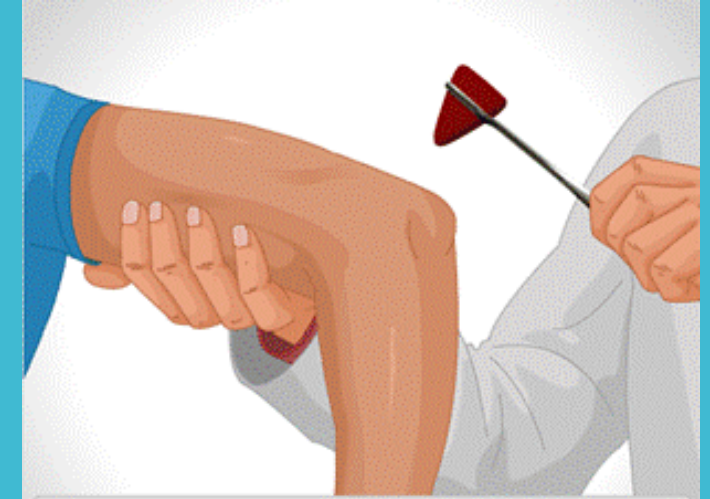
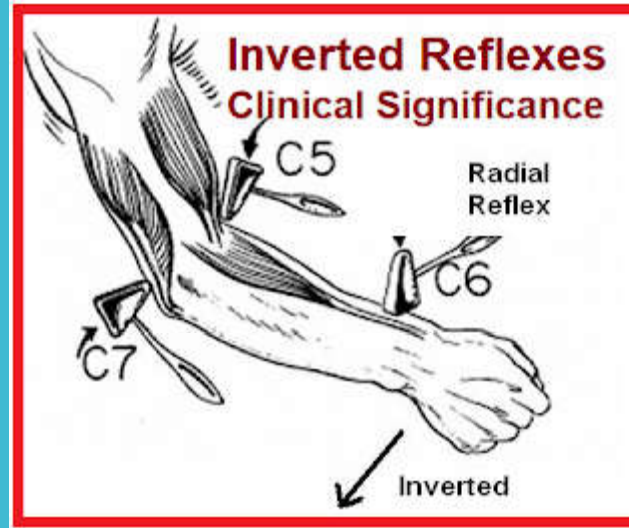
There may be inverted biceps or triceps reflexes according to the level of the affected segment with features of bilateral pyramidal tract lesions in both lower limbs which are usually asymmetrical and with certain course of spread of lesion which are usually affect the lower limb on the same side of the affected previous upper limb, then the other lower limb.

-In radiculopathy ,the symptoms may be mainly sensory on lesions of the dorsal root or mainly motor on lesions of ventral root or both.



N.B:

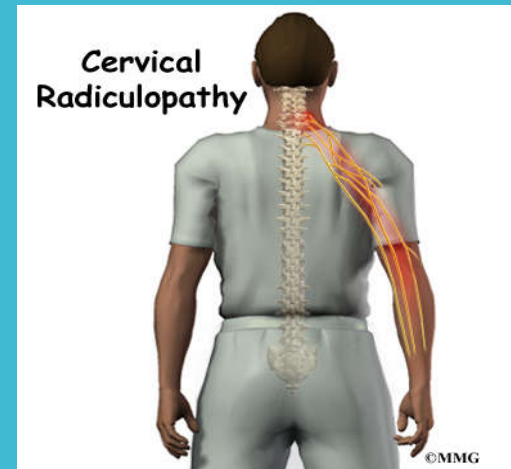
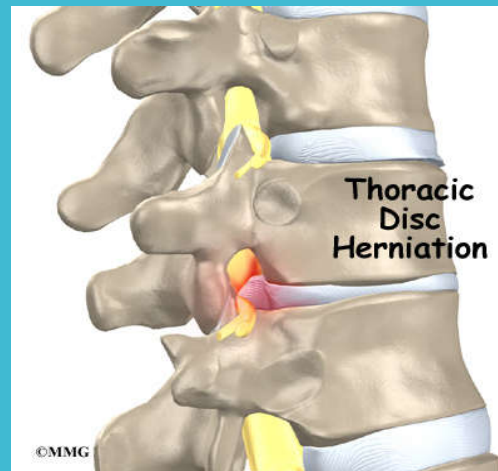
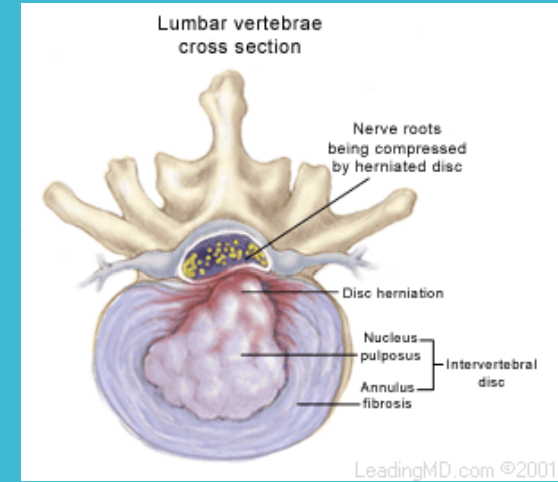
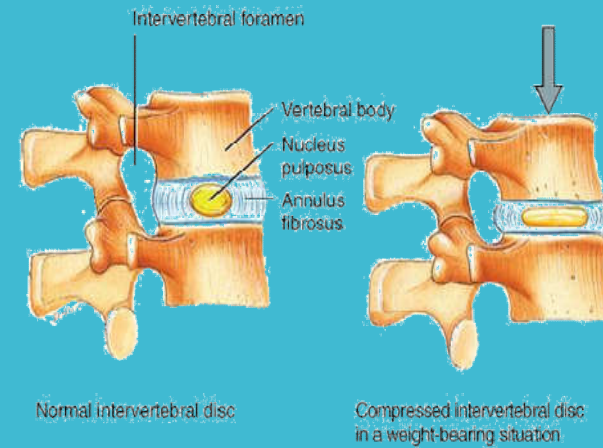
The inverted reflexes mean that ,at the level of the lesions ,the reflexes mediated by the affected segment will be lost or diminished , and due to the cord lesions "myelopathy" , the segments below the level of the lesion will be hyperexcitable with UMN features. and where the stimulus carried by the afferent spread little to the segments below the desired one ,therefore the reflexes mediated by the segments below will appear e.g- at the lesions of C₅,the biceps reflex will be lost but with exaggerated triceps or finger flexor jerk.



Slide 6 : Compression by intervertebral disc prolapse

Compression by intervertebral disc prolapse:

This is the most common in the cervical region, and if centrally located, can result in acute or subacute cord compression. Much more commonly, cervical disc prolapses occur laterally and result in upper limb pain and signs of a cervical radiculopathy. Thoracic disc protrusions, although less common, are a well recognized cause of subacute or chronic cord syndromes, with paraparesis or a Brown-Sequard syndrome when the compression is asymmetrical. A clear-cut sensory level is usual. Sometimes, the neurological symptoms fluctuate over time. MRI readily demonstrates cord compression due to disc prolapse. Occasionally, marked cord compression may be found radiologically in the absence of clinical deficits. Acute central disc protrusion of a cervical intervertebral disc should be treated immediately by immobilizing the neck in a plastic collar, if cord compression is severe and is resulting in a significant clinical deficit, surgical decompression may be needed.



summary

In this learning object we presented spinal degenerative diseases, we discussed some anatomical considerations, then we presented clinical picture of radiculopathy that include sensory symptoms, motor symptoms and reflex signs. We presented also cervical radiculopathy myelopathy in cervical spondylosis and in case of myelopathy.