Personal data

- Age : 37
- Gender : female

Chief complain

- Right leg numbness in recent 1 month

Past history

- No special past history related to this episode of admission

Present illness(1)

- This 34 years old female patient was very health until one month ago. According to the statement of patient, she felt right leg numbness from foot to her buttock , and she came to our OPD for help.

Present illness(2)

- At our OPD, her muscle power was all full. However, parentheses was noticed on her R. limb, especially on pain and thermal sensation. Poor sensation to pin prick and two point discrimination. T-L spine MRI was done and it revealed enhanced lesion, R/O meningioma over T6 level with compressed to spine cord. Under the impression of T6 lesion, R/O meningioma, she was admitted to our ward for laminectomy with tumor removed and pre-op evaluation.

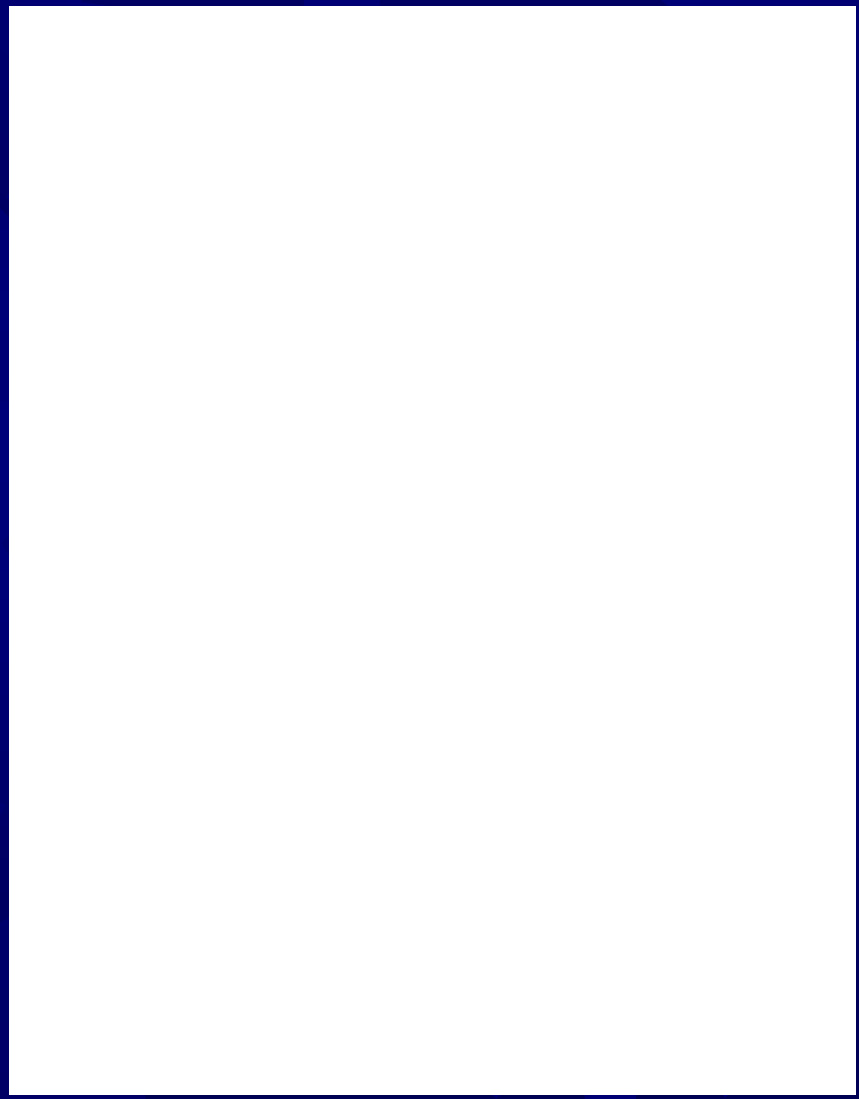
Physical examination

- Vital signs : stable
- No particular finding
- Abdomen : no palpable mass
  no tenderness

Lab data

- Glucose(血)2[80-140 mg/dl] 88
- BUN(血) [7-18 mg/dl] 12
- Creatinine(血)[0.5-1.3 mg/dl] 0.7
- GOT(血) [0-40 IU/L] 17
- GPT(血) [0-40 IU/L] 12
- Na(血)[135-158 meq/L] 142.0
- K(血)[3.5-5.3 meq/L] 3.80
- Ca (血)[8.4-10.2 mg/dl] 9.3

CXR



CXR報告

- No definite active lung lesion, no significant abnormality in heart and diaphragm, normal size of bil. hili, intact bony thoracic cage.

- IMP: Normal chest radiograph in this patient.

Spine MRI focus on T-spine (without C.E.) T2WI

Spine MRI focus on T-spine (without C.E.) T2WI

- An **intra-dural, extramedullary tumor at T6 level** that results in markedly posterior compression to spinal cord is considered first.

intra-dural, extramedullary tumor:

- Nerve sheath tumors and meningiomas account for 80% of intradural extramedullary tumours. Paragangliomas, epidermoid and dermoid cysts, metastases and arachnoid cysts account for the remaining part of space occupying lesions
- 所以以Nerve sheath tumours (例如 schwannomas, neurofibromas and more rarely ganglioneuromas.) 以及meningiomas 最常見，以下我將爲各位比較不同之處。

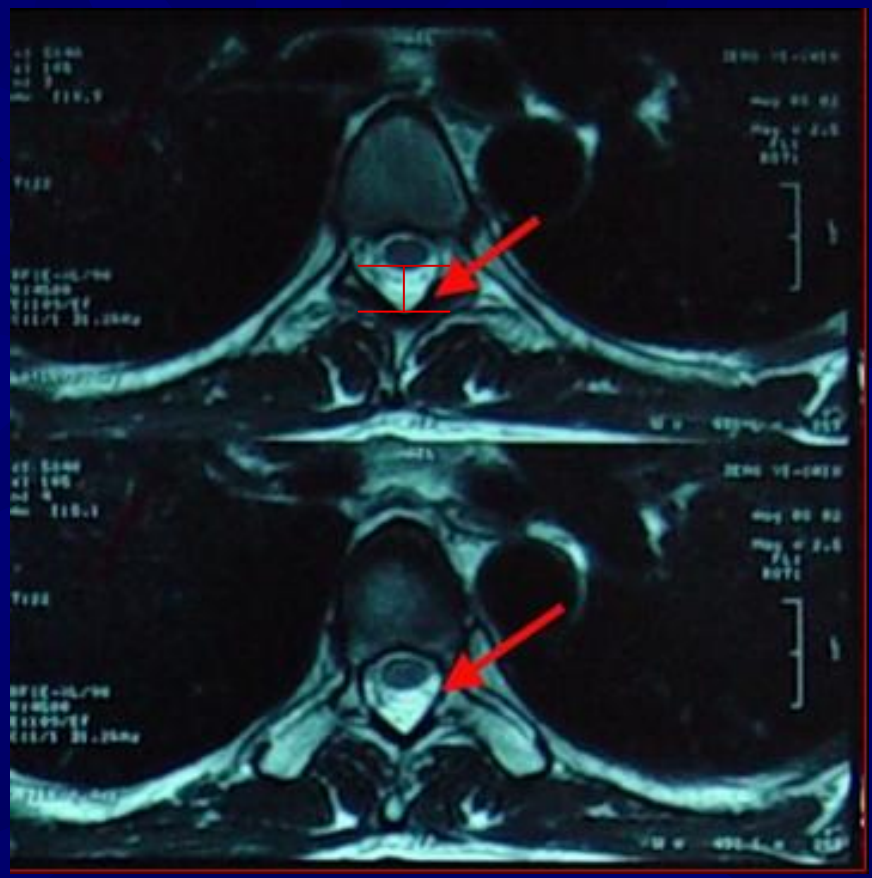
比較一:T2WI(病人)

比較一:T1WI(另一病人neurinoma請注意箭頭所指之sheath)

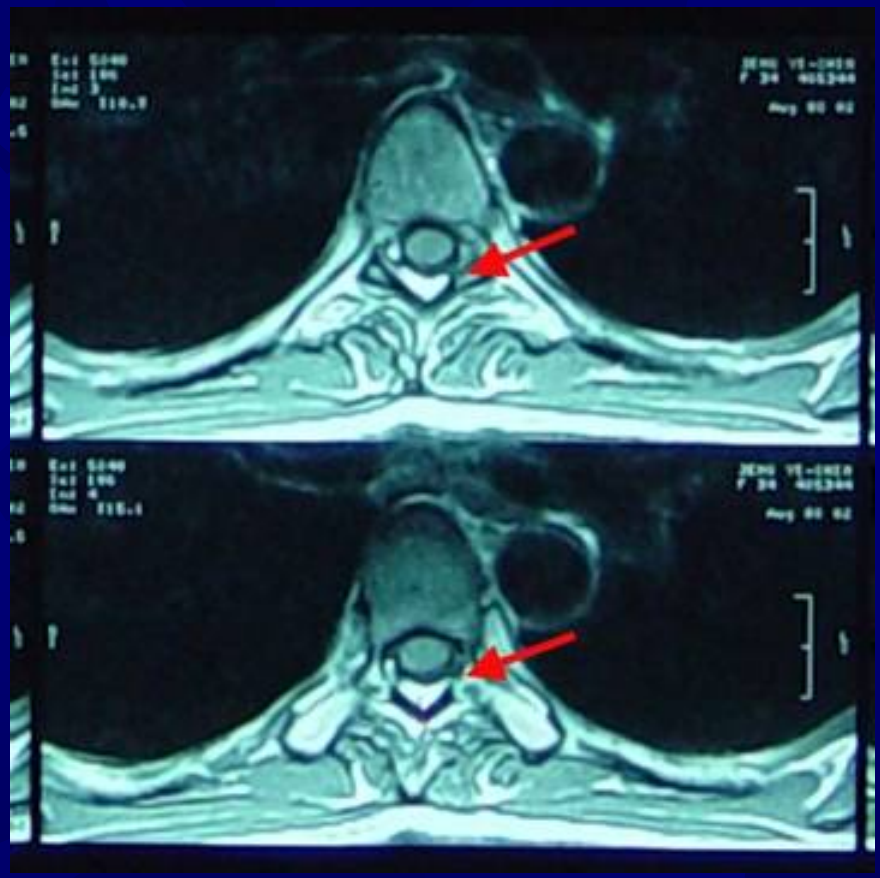
比較一:結論

- nerve sheath tumours are usually encapsulated, fusiform tumours, located intradurally or partially intra- and extradurally along the course of a nerve root. Rarely they are embedded within the spinal cord.
- Meningioma則無capsule的現象
- 所以此片子較有可能爲meningioma

比較二: CSF widening(T2WI)



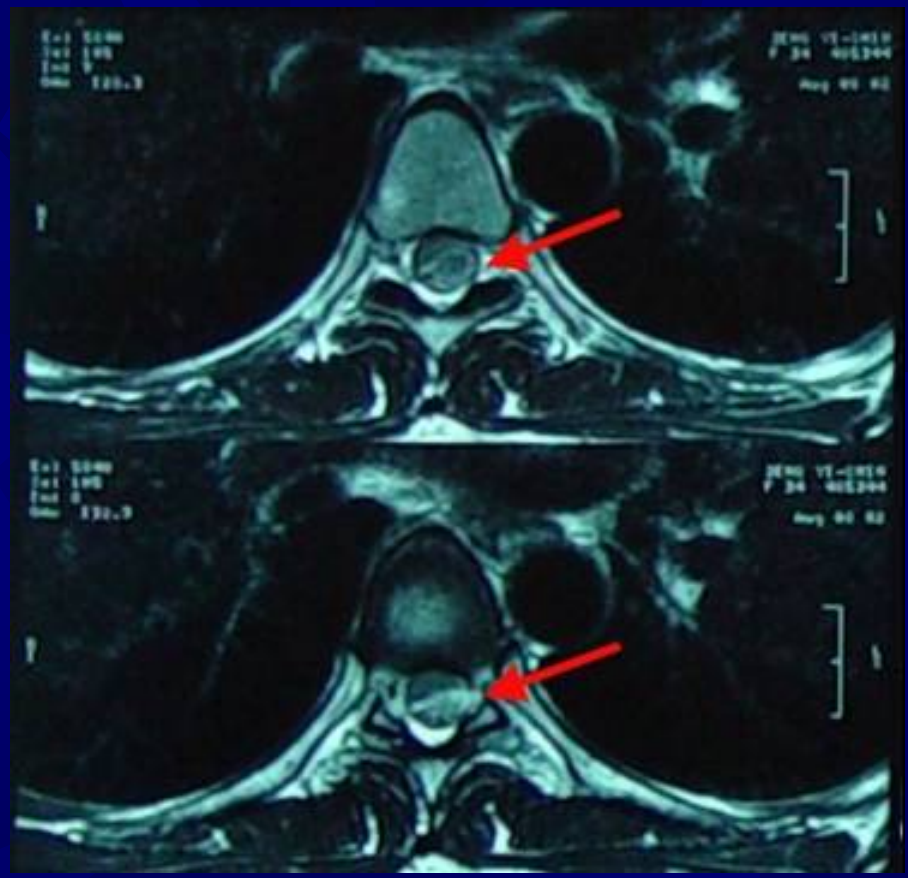
比較二: CSF widening(T1WI)



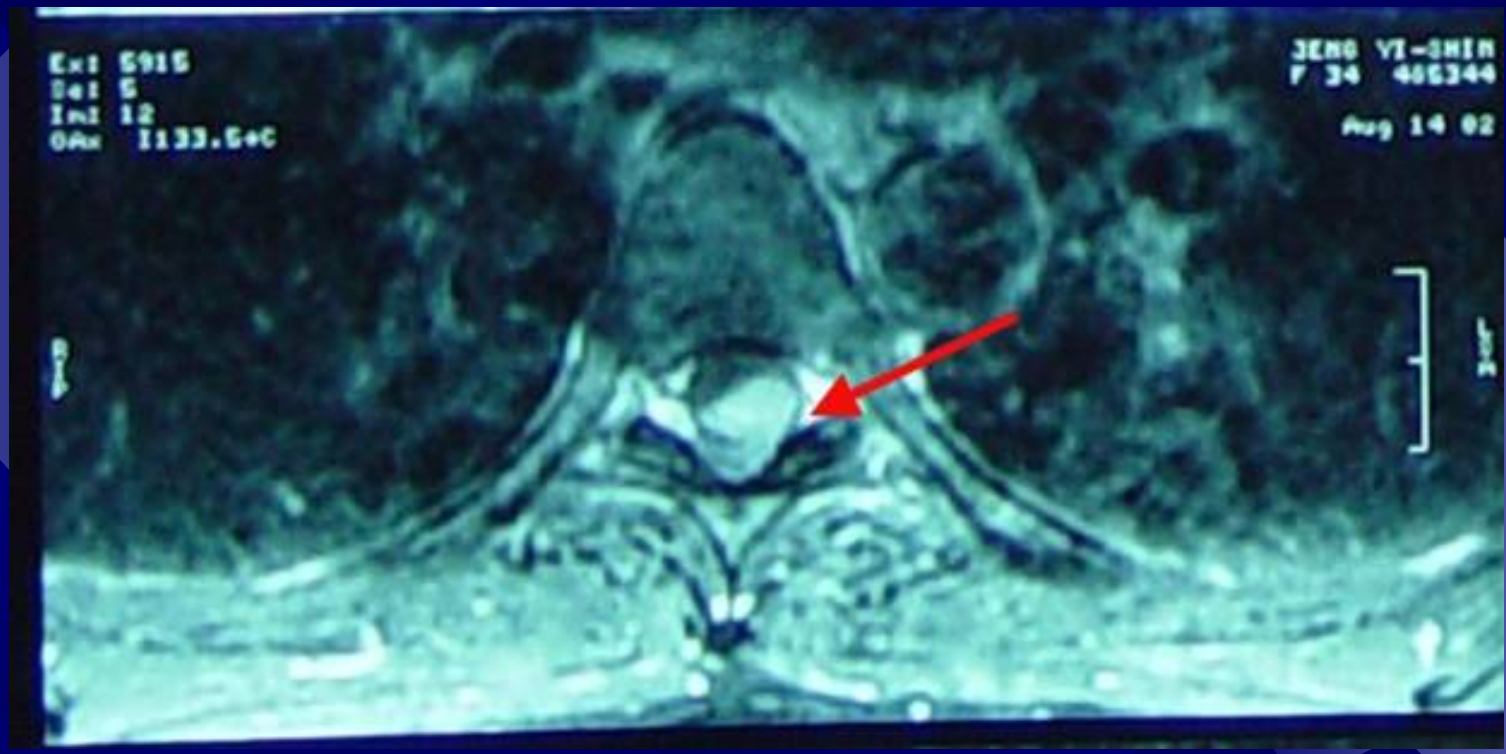
比較二:結論

- 我們可以在片中見到widening of the subarachnoid space on the side of the mass (**CSF widening**)，這是Intradural extramedullary tumour 的一大特徵。
- lesion in thoracic spine(T6), in women, solitary, in posterior-lateral(從後側方) aspect。年紀，以及lesion位置，都是meningioma的機率比較高，nerve sheath tumours 比較不favor。

比較三:precontrast



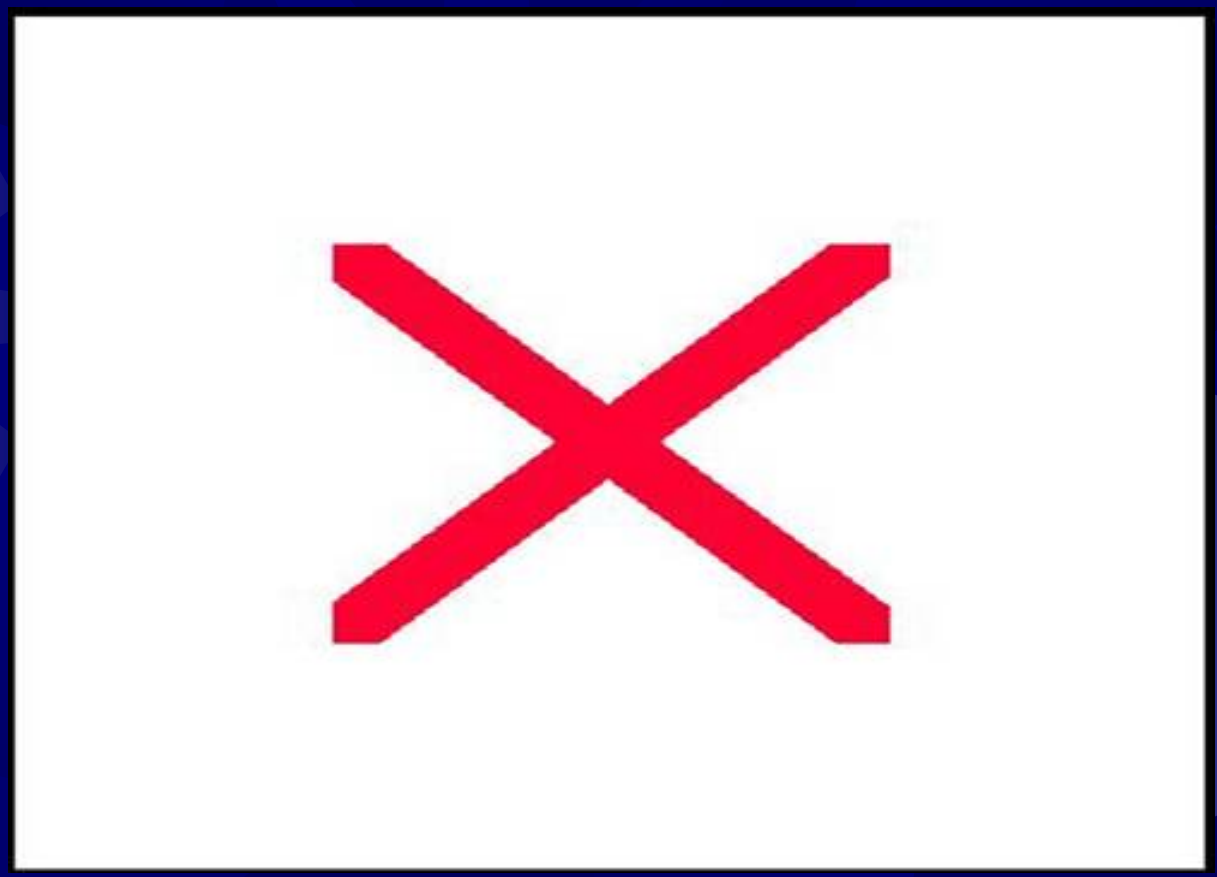
比較三:postcontrast



比較三:結論

- lesion在打入contrast後明顯顯影，可以從剛剛的那兩張圖看得出來，這是Meningioma的特徵之一。

比較四:請注意lesion的density (T1WI)



比較四:請注意lesion的density (T2WI)

比較四:結論

- T1以及T2底下lesion的density相差不算很多，這是meningioma的特徵， neurinomas的signal在T1及T2下相差會相當大。
- The signal from spinal meningiomas is usually similar to that from the spinal cord in both T1- and T2-weighted images, whereas that from neurinomas is usually conspicuously higher on T2-weighted images.

基於以下原因

1. Meningioma則無capsule的現象
2. 年紀，以及lesion位置，都是meningioma的機率比較高
3. lesion在打入contrast後明顯顯影，可以從剛剛的那兩張圖看得出來，這是Meningioma的特徵之一
4. T1以及T2底下lesion的density相差不多，這是meningioma的特徵

所以我的impression…

- An intra-dural, extramedullary meningioma at T6 level that results in markedly posterior compression to spinal cord is considered first.

Discussion: **SPINAL TUMOURS**

接下來爲spinal tumor的介紹

SPINAL TUMOURS

- Spinal tumours occur in extradural, intradural extramedullary, and intramedullary compartments. For each compartment, the pattern of radiological abnormality is usually distinctive.

Differential diagnosis : Extradural lesion

- *Benign*
  Disc prolapse
  Haematoma
  Abscess
  Neurofibroma
  Osteochondroma
  Dermoid/epidermoid
  Vertebral body tumours
    haemangioma
    osteoclastoma
    aneurysmal bone cyst
  Paget's disease

- *Malignant*
  Metastases
  Lymphoma
  Myeloma
  Sarcoma
  Chordoma

Differential diagnosis :
Intradural / extramedullary lesion

- Neurofibroma
  Meningioma
  Dermoid/epidermoid
  Lipoma
  medullary ependymoma
  Metastases in CSF:
    medulloblastoma
    ependymoma
    melanoma
    carcinoma

Differential diagnosis :
Intramedullary lesion

- Tumours:
  - ependymoma
  - astrocytoma
  - glioblastoma
  - developmental tumours
  - haemangioblastoma
- Syringomyelia
- Myelitis
- Abscess/granuloma
- Haematomyelia

EXTRADURAL TUMOURS

- The most common extradural tumours are **metastases**. These usually involve the vertebral bodies and neural arches, but malignant infiltration may spread widely in the epidural space without local bony involvement. Other disseminated malignancies such as myeloma and lymphoma are indistinguishable.

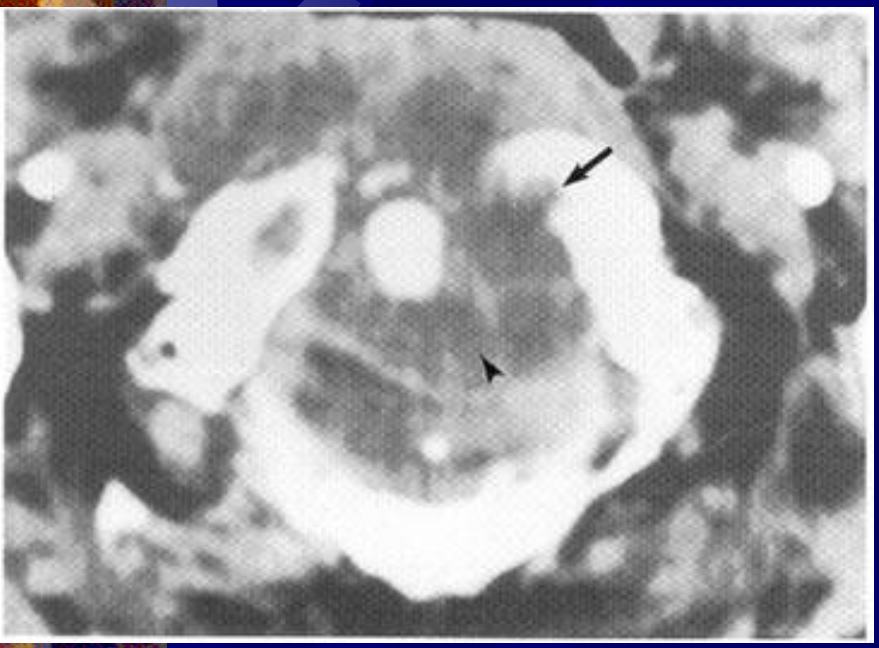
EXTRADURAL TUMOURS

- Primary bone tumours are less common. Those most often responsible for spinal cord compression are **aneurysmal bone cyst, benign osteoblastoma, chordoma** and **giant cell tumour**, the latter occurring mainly in the sacrum, but also in the upper thoracic or upper cervical regions

EXTRADURAL : **Extraspinal wound abscess and infected pseudo-meningocele.**

- Axial T1-weighted image at L4/5 made with fat presaturation and intravenous gadolinium showing a low signal cavity surrounded by a very thick white wall of granulation tissue. Operation revealed a cavity containing fluid infected by *Staphylococcus aureus*. These appearances can be mimicked by sterile postoperative pseudo-meningoceles.

EXTRADURAL : **Chordoma**

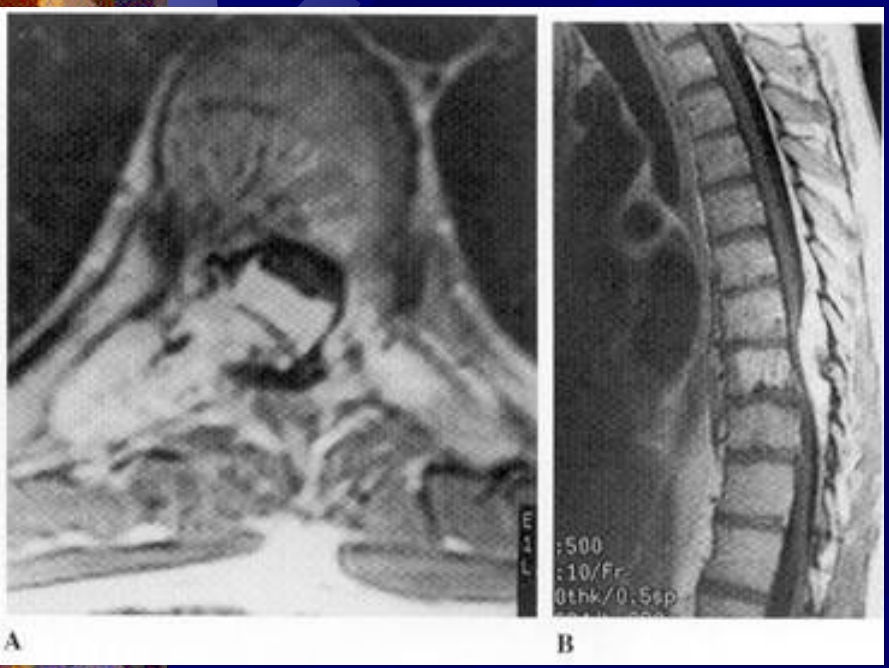


- Axial CT at the atlanto-occipital junction, showing the typical soft-tissue mass (arrowhead) and bone destruction (arrow). At this level the contents of the spinal canal are usually well displayed even without contrast medium.

EXTRADURAL : **Multiple vertebral metastases from carcinoma of the prostate**

- (A) **Multiple vertebral metastases from carcinoma of the prostate.** Sagittal T1-weighted images cropped from a whole spine examination using phased array coils. Spinal cord compression by extraosseous tumour is shown at T6 (black arrow). (B) **Diffuse vertebral metastases** from carcinoma of the prostate, showing almost complete replacement of normal marrow signal; the vertebra are of lower signal than the intervertebral discs on T1-weighted images.

EXTRADURAL : **Capillary angioma**



- **Capillary angioma** of T8 involving vertebral body, transverse process and epidural space. (A) Axial T2-weighted image through T8, (B) sagittal T1-weighted image of the thoracic spine made after intravenous gadolinium.

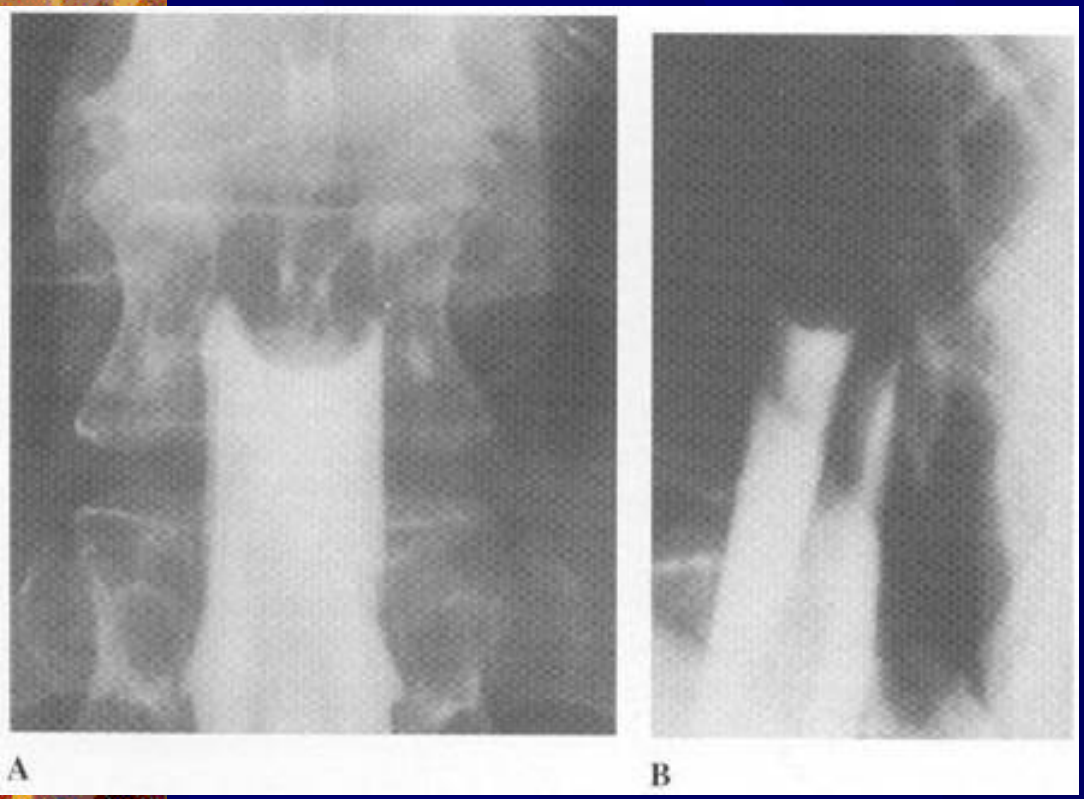
INTRADURAL EXTRAMEDULLARY TUMOURS

- **Neurinomas** and **meningiomas** are by far the commonest lesions in this **intradural extramedullary** location. Significant **extradural** components are present in about 7% of meningiomas and 30% of neurinomas. Over 80% of meningiomas occur in the thoracic region in middle-aged women and are very rare in the lumbar spine, whereas neurinomas occur at any level, at almost any age, and approximately equally in men and women.

INTRADURAL EXTRAMEDULLARY TUMOURS

- Tumoural calcification may occur in both, but marked calcification is uncommon. Meningiomas may be associated with hyperostosis, but this is seldom conspicuous. Sometimes only diffuse thickening of the spinal roots occurs in neurofibromatosis. However, diffuse enlargement of the spinal roots may also occur in non-neoplastic processes, such as some of the hereditary sensory motor neuropathies.

INTRADURAL EXTRAMEDULLARY TUMOURS: **Meningioma**

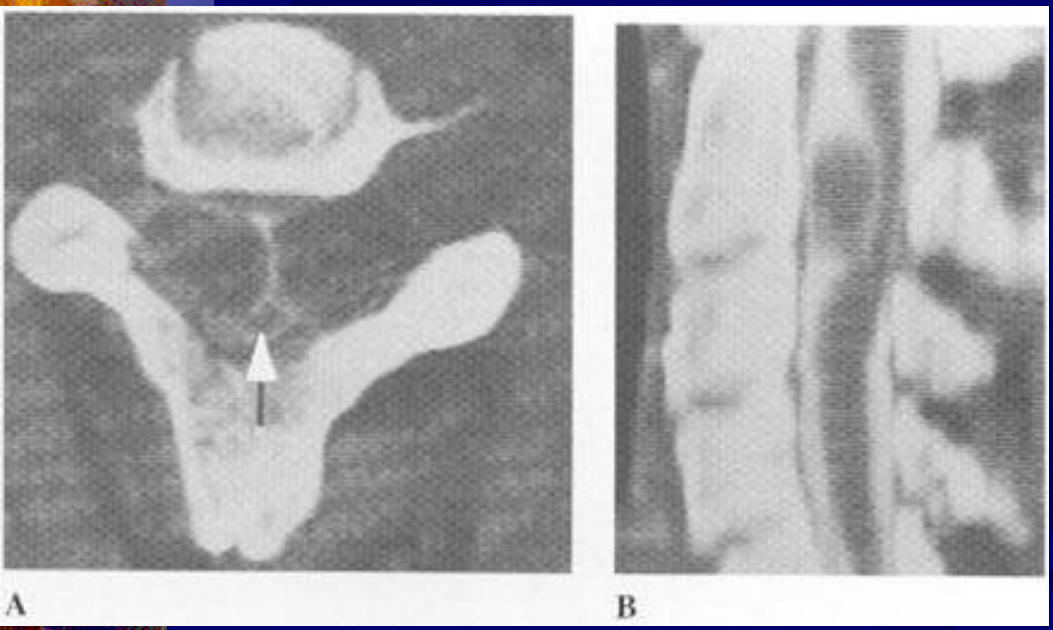


- **Meningioma** in a 52-year-old woman. Anteroposterior (A) and lateral (B) projections of a myelogram showing an intradural lesion causing complete obstruction at T11.

INTRADURAL EXTRAMEDULLARY TUMOURS: **Recurrent spinal meningioma**

- **Recurrent spinal meningioma.** Sagittal T1-weighted MRI of the cervical spine after intravenous injection of gadolinium showing an extensive intradural tumour recurrence (white signal)—black arrows partly surrounding the spinal cord.

INTRADURAL EXTRAMEDULLARY TUMOURS: **Neurofibromatosis**



- **Neurofibromatosis.** CT following myelography: axial (A) and sagittal (B) reformatted images. Two neurofibromas, mainly intradural, distend the thecal envelope, severely compressing the spinal cord (arrow).

INTRAMEDULLARY TUMOURS

- Most of these are **gliomas.** Ependymomas and astrocytomas occur with about equal frequency in the spinal cord, but ependymomas greatly predominate in the filum terminale, especially in children where they are usually of the myxopapillary type . Rarely, ependymomas may arise from the extradural part of the filum terminale and present as a destructive lesion of the sacrum, or a pre-sacral mass, which is prone to metastasize especially to lung.

INTRAMEDULLARY TUMOURS: **Ependymoma of the filum terminate and conus medullaris**

- **Ependymoma of the filum terminate and conus medullaris.** Sagittal T2-weighted (A) and (B) T1-weighted post gadolinium-enhanced MRIs of the lumbar spine showing an expansile enhancing intraspinal mass and central signal change in the spinal cord above.

INTRAMEDULLARY TUMOURS: **Glioblastoma of the spinal cord**

- **Glioblastoma of the spinal cord.** Sagittal T1-weighted images showing marked expansion of the spinal cord by an irregular mixed signal mass containing areas of recent haemorrhage (arrow).

References

- Peter A. , Martin L.wastie Diagnostic imaging, 4th edition
- **Grainger & Allison's Diagnostic Radiology: A Textbook of Medical Imaging, 4th Ed.,**