Multiple Sclerosis – Spinal Cord

- Spinal cord involvement in 5-24%
- 60% of lesions in cervical cord
- Peripherally based lesions – usually lateral or dorsal columns
- Do not respect grey-white interface
- Do not involve entire cord in section

Clinical Issues

- Peak onset: 20-40 years
  - Adult females more susceptible than males (1.7:1)
- Relapsing remitting (RR)
- Secondary progressive (SP)
- Primary progressive (PP)
- Progressive relapsing (PR)

Multiple Sclerosis – Spinal Cord

- May extend over two to three segments, however, if > 3 segments, MS is unlikely
- Isointense to cord on T1W
- Hypointense on T2W
- Over 50% of lesions demonstrate enhancement

Prognosis

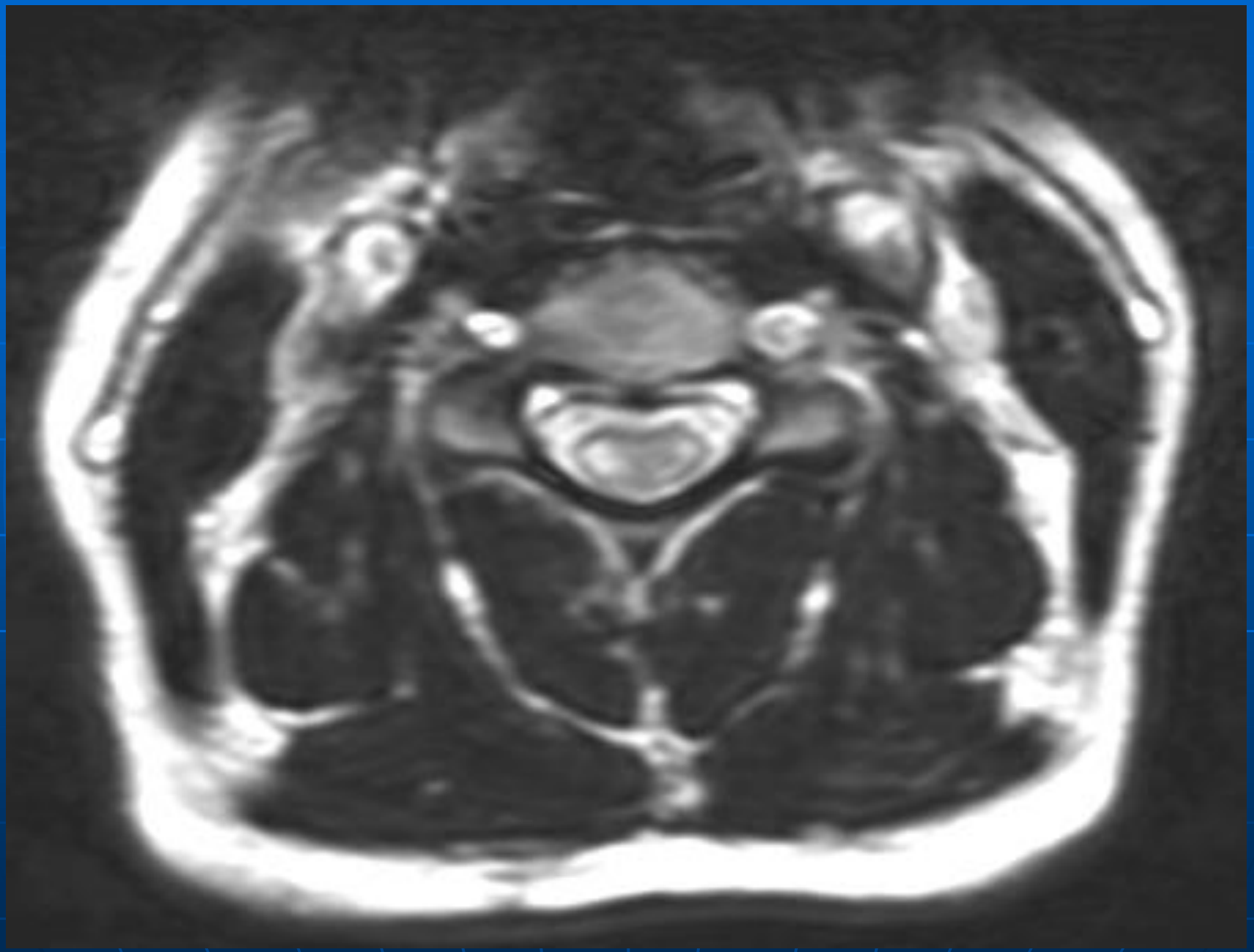
- Benign (20%)
  - Complete recovery after 1-2 attacks
  - Some may experience progressive MS after 10-15 years
- Relapsing remitting (RR) (25%)
  - Distinct periods of new or worsening symptoms alternating with complete or partial recovery
  - 90% will evolve into progressive MS after 25 years
- Secondary progressive (SP) (40%)
  - From relapsing-remitting MS
  - Worsening deficits & disabilities
  - Incomplete & infrequent remission
- Primary progressive (PP) (12%)
  - Steady progression of symptoms
    - Motor dysfunction common
    - Primary cord involvement
    - No distinct attacks
- Progressive relapsing (PR) (3%)
  - Similar to primary progressive MS
  - Includes distinct periods of exacerbation but without recovery
  - High mortality rate

Sagittal T2WI MR of the cervical spinal cord demonstrates multiple T2 hyperintense foci (white solid arrow), some well defined and others ill defined. The multiplicity of lesions & lack of edema or significant cord expansion is typical for demyelinating disease.

Multiple sclerosis

DDX:

- Spinal cord tumors
  - (primary or metastasis)
- Infection
  - (particularly viral, eg, HIV, cytomegalovirus, herpes)
- Id transverse myelitis
  - (history of recent viral infection or vaccination)
- Acute spinal cord infarction
  - (acute presentation)
- Sarcoidosis
- Systemic lupus erythematosus
- Radiation myelitis
- ADEM
- Vasculitis
- Transverse myelitis
- Venous hypertension due to vascular malformation



DDx:

- Spinal cord tumors
  - (primary or metastasis)
- Infection
  - (particularly viral, eg, HIV, cytomegalovirus, herpes)
- Idiopathic transverse myelitis
  - History of recent viral infection or vaccination)
  - Lesion centrally located
  - 3-4 segments in length
  - Involving > 2/3 of cord cross-sectional area
  - Variable enhancement
  - No associated intracranial lesions
  - Diagnosis of exclusion
- Acute spinal cord infarction
  - Acute presentation
  - Posterior columns typically spared in anterior spinal infarct
- Sarcoidosis
- Systemic lupus erythematosus
- Radiation myelitis
- ADEM
- Vasculitis
- Venous hypertension due to vascular malformation