INTRODUCTION:

Magnetic resonance imaging (MRI) produces high quality multiplanar images of organs and structures within the body without radiation. It is the preferred modality for evaluating the internal structure of the spinal cord, providing assessment of conditions such as degenerative disc pathology, osteomyelitis and discitis.

INDICATIONS FOR CERVICAL SPINE MRI:

For evaluation of known or suspected multiple sclerosis (MS):
- Evidence of MS on recent baseline Brain MRI.
- Follow up to known MS with changing signs or symptoms.
- Follow up to the initiation or change in medication for patient with known Multiple Sclerosis.

For evaluation of neurologic deficits:
- With any of the following new neurological deficits: extremity weakness; asymmetric reflexes.

For evaluation of chronic or degenerative changes, e.g., osteoarthritis, degenerative disc disease:
- With an abnormal electromyography (EMG) or nerve conduction study.
- With exacerbation of chronic neck pain, muscle weakness, asymmetric reflexes, new extremity numbness or tingling and unresponsive to trial of conservative treatment*, including physical therapy or physician supervised home exercise plan (HEP)**, for at least six (6) weeks.

For evaluation of new onset of neck pain:
- Failure of conservative treatment*, including physical therapy or physician supervised home exercise plan (HEP)**, for at least six (6) weeks.
- With progression or worsening of symptoms during the course of conservative treatment*.
- With an abnormal electromyography (EMG) or nerve conduction study.

For evaluation of trauma or acute injury within past 72 hours:
- Presents with radiculopathy (muscle weakness, abnormal reflexes, and/or sensory changes along a particular dermatome (nerve distribution).
- With progression or worsening of symptoms during the course of conservative treatment*.
For evaluation of known tumor, cancer, or evidence of metastasis:

- Staging of known tumor.
- For follow-up evaluation of patient undergoing active treatment.
- Presents with new signs (e.g., laboratory and/or imaging findings) of new tumor or change in tumor.
- Presents with radiculopathy (muscle weakness, abnormal reflexes, and/or sensory changes along a particular dermatome (nerve distribution)).
- With an abnormal electromyography (EMG) or nerve conduction.
- With evidence of metastasis on bone scan or previous imaging study.
- With no imaging/restaging within the past ten (10) months.

For evaluation of suspected tumor:

- Prior abnormal or indeterminate imaging that requires further clarification.

Indication for combination studies for the initial pre-therapy staging of cancer, OR ongoing tumor/cancer surveillance OR evaluation of suspected metastases:

- ≤ 5 studies to include CT or MRI of any of the following areas as appropriate depending on the cancer: Neck, Abdomen, Pelvis, Chest, Brain, Cervical Spine, Thoracic Spine or Lumbar Spine.

For evaluation of known or suspected infection, abscess, or inflammatory disease:

- As evidenced by signs/symptoms, laboratory or prior imaging findings.

For evaluation of immune system suppression, e.g., HIV, chemotherapy, leukemia, lymphoma:

- As evidenced by signs/symptoms, laboratory or prior imaging findings.

For post-operative / procedural evaluation for surgery or fracture occurring within the past six (6) months:

- A follow-up study may be needed to help evaluate a patient’s progress after treatment, procedure, intervention or surgery. Documentation requires a medical reason that clearly indicates why additional imaging is needed for the type and area(s) requested.
- Changing neurologic status post-operatively.
- With an abnormal electromyography (EMG) or nerve conduction study.
- Surgical infection as evidence by signs/symptoms, laboratory or prior imaging findings.
- Delayed or non-healing as evidence by signs/symptoms, laboratory or prior imaging findings.
- Continuing or recurring symptoms of any of the following neurological deficits: Lower extremity weakness, lower extremity asymmetric reflexes.

Other indications for a Cervical Spine MRI:

- For preoperative evaluation.
- Suspected cord compression with any of the following neurological deficits: extremity weakness; abnormal gait; asymmetric reflexes.
- Known Arnold-Chiari Syndrome.
- Syrinx or syringomyelia.

**COMBINATION OF STUDIES WITH CERVICAL SPINE MRI:**

- **Cervical/Thoracic/Lumbar MRIs** – any combination of these for scoliosis survey in infant/child
- **Cervical/Thoracic/Lumbar MRIs**– any combination of these for spinal survey in patient with metastases
- **Cervical MRI/CT** – for unstable craniocervical junction.
- **Brain MRI/Cervical MRI** –
  - For evaluation of Arnold Chiari Malformation when ordered by Neurosurgeon or Neurologist or primary care provider on behalf of specialist who has seen the patient.
  - For follow-up of known Multiple Sclerosis (MS).

**ADDITIONAL INFORMATION RELATED TO CERVICAL SPINE MRI:**

*Intravascular administration of contrast material may* be contraindicated in patients who have a documented allergy from prior contrast administration or a history of atopy. Intravascular contrast agents may be contraindicated in patients who have impaired renal function.

**Conservative Therapy:** (musculoskeletal) includes a combination of modalities, such as rest, ice, heat, modified activities, medical devices, (such as crutches, immobilizer, metal braces, orthotics, rigid stabilizer or splints, etc and not to include neoprene sleeves), medications, injections (epidural, facet, bursal, and/or joint, not including trigger point, diathermy, chiropractic treatments, physician supervised home exercise program. Part of this combination may include the physician instructing patient to rest the area or stay off the injured part. **NOTE** - conservative therapy can be expanded to require *active* therapy components (physical therapy and/or physician supervised home exercise) as noted in some elements of the guideline.

**Home Exercise Program** - (HEP) – the following two elements are required to meet guidelines for completion of conservative therapy:

- Information provided on exercise prescription/plan AND
- Follow up with member with information provided regarding completion of HEP (after suitable 4-6 week period), or inability to complete HEP due to physical reason- i.e. increased pain, inability to physically perform exercises. (Patient inconvenience or noncompliance without explanation does not constitute “inability to complete” HEP).
MRI for Evaluation of Discitis – Discitis is a known complication of cervical discography. Postoperative discitis in the cervical spine does not occur frequently but result from accidental inoculation of bacteria into the disc space intra-operatively by a contaminated spinal needle being used as a radiological marker. There may be other causes for postoperative discitis, e.g., esophageal perforation, hematogenous spread, inoculation of bacteria during surgery. Patients with an alteration in the nature of their symptoms after cervical discectomy and fusion may have discitis. Symptoms may include complaints of mild paresthesia in extremities and neck pain. MRI may be performed to reveal feature of discitis with associated abscesses and may help to confirm the diagnosis and decide on the further management.

MRI for Cervical Radiculopathy – MRI is a useful test to evaluate the spine because it can show abnormal areas of the soft tissues around the spine; it addition to the bones, it can also show pictures of the nerves and discs and is used to find tumors, herniated discs or other soft-tissue disorders. MRI has a role both in the pre-operative screening and post-operative assessment of radicular symptoms due to either disc or osteophyte.

MRI and Multiple Sclerosis (MS) – MRI is a sensitive method of detecting the white matter lesions of MS. These plaques on MRI generally appear as multiple, well demarcated, homogenous, small ovoid lesions which lack mass effect and are oriented perpendicular to the long axis of the lateral ventricles. Sometimes they present as large, space occupying lesions that may be misinterpreted as tumors, abscesses or infarcts.

MRI and Neck Pain – Neck pain is common in the general population and usually relates to musculoskeletal causes but it may also be caused by spinal cord tumors. When neck pain is accompanied by extremity weakness, abnormal gait or asymmetric reflexes, spinal MRI may be performed to evaluate the cause of the pain. MRI may reveal areas of cystic expansion within the spinal cord. Enhancement with gadolinium contrast may suggest that the lesion is neoplastic.
REFERENCES:


