INTRODUCTION:

Magnetic resonance imaging (MRI) is used in the evaluation, diagnosis and management of spine related conditions, e.g., degenerative disc disease, cauda equine compression, radiculopathy, infections, or cancer in the lumbar spine. MRI provides high quality multiplanar images of organs and structures within the body without the use of x-rays or radiation. In the lumbar area where gonadal exposure may occur, MRI’s lack of radiation is an advantage.

INDICATIONS FOR LUMBAR SPINE MRI:

For evaluation of neurologic deficits:
- With any of the following new neurological deficits: lower extremity weakness; asymmetric reflexes; evidence of Cauda Equina Syndrome; bowel or bladder dysfunction; new foot drop.

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

For evaluation of new onset of back pain:
- With radiculopathy and failure of conservative treatment 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.
- With progression or worsening of symptoms during the course of conservative treatment.
- With an abnormal electromyography (EMG) or nerve conduction study.

For evaluation of known tumor, cancer or evidence of metastasis:
- For 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.
• With an abnormal electromyography (EMG) or nerve conduction study.
• 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.

For evaluation of known or suspected infection, abscess, or inflammatory disease:
• Paraspinal abscess as evidenced by lumbar back pain associated with abdominal pain, laboratory or x-ray findings.
• Osteomyelitis as evidenced by laboratory or x-ray findings.
• Meningitis as evidenced by positive physical findings.
• Septic arthritis or discitis as evidenced by laboratory or x-ray findings.

For evaluation of immune system suppression, e.g., HIV, chemotherapy, leukemia, or lymphoma:
• Presents with back pain as a symptom of documented clinical findings of immune system suppression.

For preoperative evaluation (if surgery scheduled within the next thirty (30) days):
• Known tumor and meets one of the tumor guideline criteria above.
• Known infection and meets one of the infection guideline criteria above.
• Known radiculopathy and failure of conservative treatment for at least six (6) weeks and when ordered by a neurosurgeon, orthopedist or surgeon.
• With an abnormal electromyography (EMG) or nerve conduction study.

For follow-up evaluation of surgery or fracture occurring within past six (6) months.
• Changing radiculopathy and failure of conservative treatment for at least six (6) weeks when ordered by a neurospecialist, orthopedist or surgeon.
• With an abnormal electromyography (EMG) or nerve conduction study,
• Physical or laboratory findings of a surgical infection,
• Physical or plain film findings of delayed or failed healing.

Other indications for a Lumbar Spine MRI:
• Lumbar back pain associated with abdominal pain, e.g., pain related to aneurysm
• Tethered cord or known/suspected spinal dysraphism.
• Ankylosing Spondylitis- For diagnosis when suspected as a cause of back or sacroiliac pain and completion of the following initial evaluation:
  o History of back pain associated with morning stiffness
  o Sedimentation rate and/or C-reactive protein
  o HLA B27
  o Non-diagnostic or indeterminate x-ray
COMBINATION OF STUDIES WITH LUMBAR 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 metastasis.

ADDITIONAL INFORMATION RELATED TO LUMBAR SPINE MRI:

Request for a follow-up study - 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.

MRI imaging – Metal devices or foreign body fragments within the body, such as indwelling pacemakers and intracranial aneurysm surgical clips that are not compatible with the use of MRI, may be contraindicated. Other implanted metal devices in the patient as well as external devices such as portable O₂ tanks may also be contraindicated.

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 and Back Pain – MRI is the initial imaging modality of choice in the evaluation of complicated low back pain. Contrast administration may be used to evaluate suspected inflammatory disorders, e.g., discitis, and it is useful in evaluating suspected malignancy. Radiculopathy, disease of the nerve roots, is the most common indication for MRI of patients with low back pain. The nerve roots become irritated and inflamed, due to direct pressure from
Degenerative changes in the lumbar spine, creating pain and numbness. Symptoms of radiculopathy also include muscle weakness. MRI is indicated for this condition if the symptoms do not improve after conservative treatment over six weeks. MRI is also performed to evaluate Cauda equina syndrome, severe spinal compression.

**Tethered spinal cord syndrome** - a neurological disorder caused by tissue attachments that limit the movement of the spinal cord with the spinal column. Although this condition is rare, it can continue undiagnosed into adulthood. The primary cause is myelomeningocele and lipomyelomeningocele; the following are other causes that vary in severity of symptoms and treatment.

- Dermal sinus tract (a rare congenital deformity)
- Diastemstomelia (split spinal cord)
- Lipoma
- Tumor
- Thickened/tight filum terminale (a delicate filament near the tailbone)
- History of spine trauma/surgery

Magnetic resonance imaging (MRI) can display the low level of the spinal cord and a thickened filum terminale, the thread-like extension of the spinal cord in the lower back. Treatment depends upon the underlying cause of the tethering. If the only abnormality is a thickened, shortened filum then limited surgical treatment may suffice.
REFERENCES:


