

Non-Traumatic Myelopathy and Cauda Equina Syndrome Protocol

Signs / Sx suggestive

Bilateral LE Weakness
Non-radicular or multiple root sensory alterations
Peroneal numbness
Sphincter dysfunction (e.g. retention, incontinence, decrease rectal tone)
Reflex abnormalities (upper OR lower motor neuron signs)
Autonomic dysfunction

Stat MRI (*non-contrast* screening examination)

(if MRI absolutely contraindicated, STAT non-contrasted CT and then consider CT myelogram if negative)

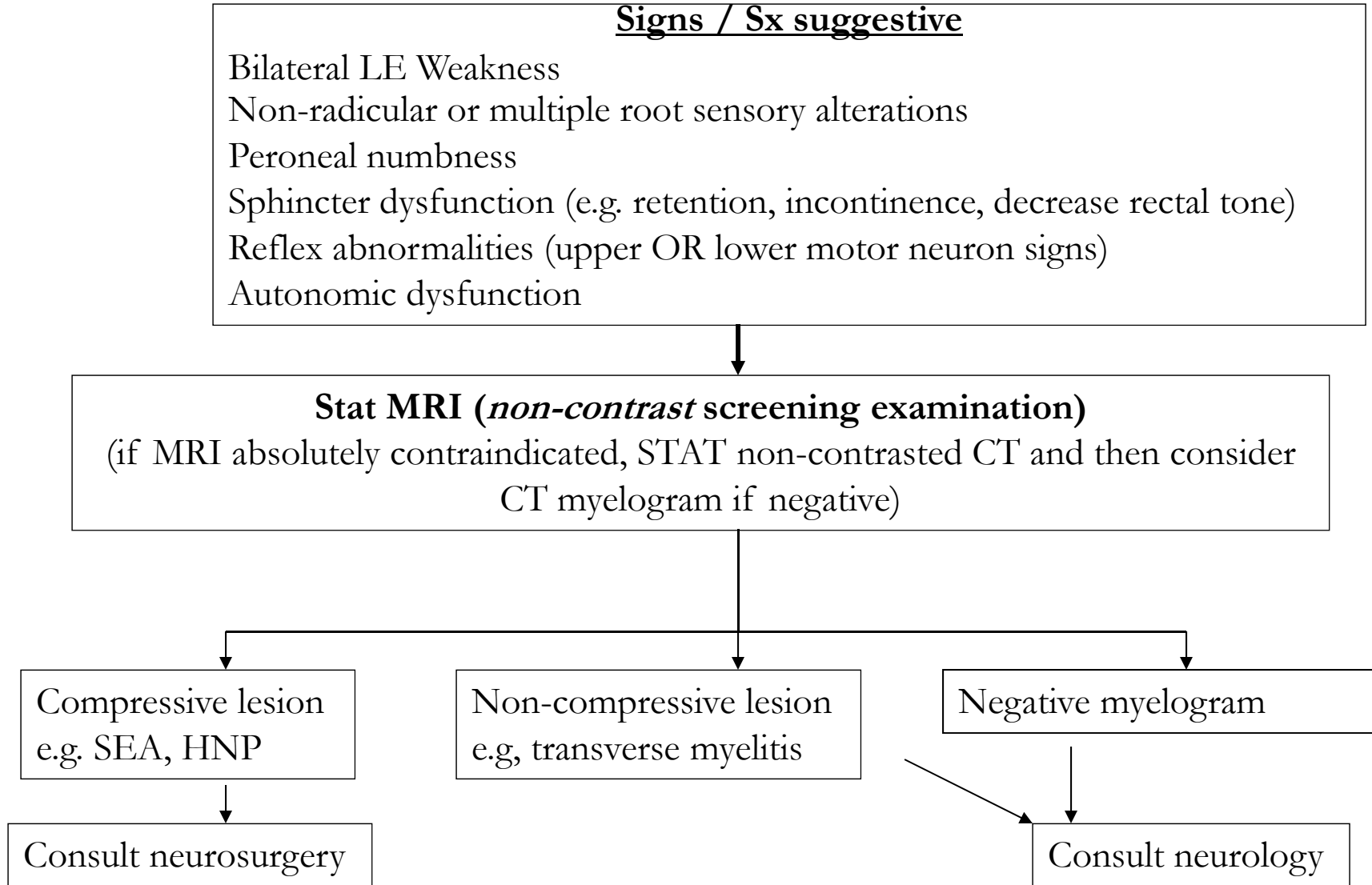
Compressive lesion
e.g. SEA, HNP

Consult neurosurgery

Non-compressive lesion
e.g. transverse myelitis

Negative myelogram

Consult neurology



Indications for Emergent Spinal MRI

- Acute onset non-traumatic myelopathy
- Traumatic myelopathy after negative CT
- Cauda equina syndrome
- Spinal epidural abscess
- Acute radiculopathy with functional deficit

MRI *without* gadolinium will identify the vast majority of pathology and should be the initial screening examination. Gadolinium may be necessary when specifically looking for:

- Primary spinal / intradural tumors
- Drop metastases

MRI contraindications:

- Implantable pacemaker
- Implantable neural stimulator
- Ocular metal FB

All attempts should be made to localize the level of neurologic dysfunction for MRI. If the level can not be reliably established by neurologic examination, then a “large field of view survey” can be performed by MRI to attempt localization.

This guideline was ratified by the emergency department faculty at Maine Medical Center in January 2012. It reflects our expert opinion and is not necessarily applicable to all institutions. It is intended to be a reference for clinicians caring for patients and is not intended to replace providers' clinical judgment.
Produced by: Andrew Perron, M.D.

References

Wagner R, Jagoda A: Spinal cord syndromes. *Emerg Med Clin North Am* 15:699, 1997.

Ruckdeschel JC: Early detection and treatment of spinal cord compression. *Oncology* 19:81, 2005.

McKinley W, et al: Incidence and outcomes of spinal cord injury clinical syndromes. *J Spinal Cord Med* 30:215, 2007.

Schiff D: Spinal cord compression. *Neurol Clin* 21:67, 2003.

Hosaka AI, Nakamagoe K, Watanabem M, et al: Magnetic resonance images of herpes zoster myelitis presenting with Brown-Sequard syndrome. *Arch Neurol* 67(4):506, 2010.

Noseworthy JH, et al: Multiple sclerosis. *N Engl J Med* 343:938, 2000.

Nielson JM, et al: The role of spinal cord imaging in the diagnosis of multiple sclerosis. *Clin Prac Neurol* 2:283, 2006.

Frohman EM, Wingerchuk DM: Transverse myelitis. *NEJM* 363:564, 2010.

Hammerstedt HS, Edlow JA, Cusicj S: Emergency department presentations of transverse myelitis: Two case reports. *Ann Emerg Med* 46:256, 2005.

Canellas AR, et al: Idiopathic inflammatory-demyelinating diseases of the central nervous system. *Neuroradiology* 49:393, 2007.

Krishnan C, et al: Demyelinating disorders: Update on transverse myelitis. *Curr Neurol Neurosci Rep* 6:236, 2006.

Kreppel D, Antoniadis G, Seeling W: Spinal hematoma: A literature survey with meta-analysis of 613 patients. *Neurosurg Rev* 26:1, 2003.

Portegies P, et al: Guidelines for the diagnosis and management of neurologic complications of HIV infection. *Eur J Neurol* 11:297, 2004.

Salvador de la Barrera S, Barca-Buyo A, Montoto-Marques A: Spinal cord infarction: Prognosis and recovery in a series of 36 patients. *Spinal Cord* 39:520, 2001.

Hejazi N, Thaper PY, Hassler W: Nine cases of nontraumatic spinal epidural hematoma. *Neurol Med Chir* 38:718, 1998.

References Continued

- Adam M, Leblebici B, Akman MN: Spontaneous spinal epidural hematoma related to warfarin therapy: A case report. *J Back Musc Rehab* 20:11, 2007.
- Wysowski DK, et al: Spinal and epidural hematoma and low-molecular-weight heparin. *N Engl J Med* 338:1774, 1998.
- Darouiche RO: Spinal epidural abscess. *N Engl J Med* 355:2012, 2006.
- Darouiche RO: Spinal epidural abscess. *N Engl J Med* 355:2012, 2006.
- Rigamonti D, Liem L, Sampath P: Spinal epidural abscess: Contemporary trends in etiology, evaluation, and treatment. *Surg Neurol* 52:189, 1999.
- Sampath P, Rigamonti D: Spinal epidural abscess: A review of epidemiology, diagnosis, and treatment. *J Spinal Disord* 12:89, 1999.
- Joshi SM, et al: Spinal epidural abscess: A diagnostic challenge. *Br J Neurosurg* 17:160, 2003.
- Sendi P, Bregenzer T, Zimmerli W: Spinal epidural abscess in clinical practice. *Q J Med* 101:1, 2008.
- Bluman EM, Palumbo MA, Lucas PR: Spinal epidural abscess in adults. *J Am Acad Orthop Surg* 12:155, 2004.
- Maiuri F, Laconetta G, Gallicchio B: Spondylodiscitis. Clinical and magnetic resonance diagnosis. *Spine* 22:1741, 1997.
- Traul DE, Shaffrey ME, Schiff D: Spinal cord intradural neoplasms. *Lancet Oncol* 8:35, 2007.
- Schiff D, O'Neill BP, Suman VJ: Spinal epidural metastasis as the initial manifestation of malignancy: Clinical features and diagnostic approach. *Neurology* 49:452, 1997.
- Abdu WA, Provencher M: Primary bone and metastatic tumors of the cervical spine. *Spine* 23:2767, 1998.
- Husband DJ, Grant KA, Romaniuk CS: MRI in the diagnosis and treatment of suspected malignant spinal cord compression. *Br J Radiol* 74:15, 2001.