

2011 Imaging Criteria

Computed Tomography (CT), Cervical Spine

ICD-9-CM: 88.38

CPT: 72125, 72126, 72127

I/O Setting: Outpatient

INDICATION(S)

- 100 Suspected cervical spine fracture
- 200 Preoperative evaluation of osteomyelitis
- 300 Suspected bone metastasis
- 400 Follow-up bone metastasis after Rx

- 100 Suspected cervical spine fracture **[One]**⁽¹⁾
 - 110 Neurologic deficit at/distal to injury and MRI not feasible^(2, 3)
 - 120 Possible unstable fracture by x-ray⁽⁴⁾
 - 130 X-ray nondiagnostic/equivocal for fracture and Hx of trauma⁽⁵⁾
- 200 Preoperative evaluation of osteomyelitis^(6, 7)
- 300 Suspected bone metastasis **[All]**⁽⁸⁾
 - 310 MRI not feasible⁽⁹⁾
 - 320 Cancer by Hx
 - 330 No neurologic Sx/findings^(10*RIN)
 - 340 Cervical spine Sx/findings **[One]**
 - 341 Pain by Hx
 - 342 Bone lesion by bone scan/x-ray
 - 350 Bone scan **[One]**⁽¹¹⁾
 - 351 Negative/nondiagnostic for bone metastasis⁽¹²⁾
 - 352 Positive site in cervical spine
- 400 Follow-up bone metastasis after Rx **[All]**
 - 410 No neurologic Sx/findings^(10*RIN)
 - 420 Initial cervical spine CT positive
 - 430 Chemotherapy/radiation Rx completed⁽¹³⁾

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Notes

- (1)
The choice of imaging studies for patients who have sustained trauma depends upon the presence or absence of neurologic symptoms. If the patient does not have a neurologic deficit on PE, plain films can be obtained.
- (2)
If neurologic abnormalities are identified by PE, MRI is indicated to exclude cord compression by a hematoma, bone, or disc fragments (Takhtani and Melhem, *Clin Sports Med* 2002; 21(1): 49-75, vi).
- (3)
MRI is not feasible if it is not readily available or if the patient cannot tolerate the MRI study.
- (4)
Suspicious unstable fractures on plain films should be further evaluated by CT.
- (5)
CT scanning may be appropriate in cases of trauma when the x-ray is ambiguous for fracture. False-negative x-ray findings may result in delayed or missed diagnosis of spine fracture, leading to possible partial or full paralysis (Grogan et al., *J Am Coll Surg* 2005; 200(2): 160-165; Diaz et al., *J Trauma* 2003; 55(4): 658-663; discussion 663-664).
- (6)
Although relatively uncommon, vertebral osteomyelitis can occur in patients with recent spine surgery, or in those with DM, immunosuppression, IV drug use, or alcohol dependence. Early diagnosis and treatment can prevent serious complications that may include vertebral instability or collapse, or the development of an epidural abscess (Patel, *J Neurol Neurosurg Psychiatry* 2002; 73 Suppl 1: i42-48; Tay et al., *J Am Acad Orthop Surg* 2002; 10(3): 188-197).
- (7)
CT and MRI can both be used to image osteomyelitis. CT is used to reveal the location and amount of bone destruction, but it is less sensitive for detecting early marrow changes not associated with cortical bone abnormalities (Tay et al., *J Am Acad Orthop Surg* 2002; 10(3): 188-197). MRI is superior for assessment of bone marrow involvement, vertebral end plate destruction, and the spread of infection into the spinal canal, nerve roots, and soft tissue (Nikkanen et al., *J Emerg Med* 2002; 22(3): 279-283; Stabler and Reiser, *Radiol Clin North Am* 2001; 39(1): 115-135).
- (8)
Metastases from primary breast, lung, and prostate cancer are the most common neoplasms of the spine (Ratliff and Cooper, *South Med J* 2004; 97(3): 246-253).
- (9)
MRI has proven advantages over all other imaging modalities for suspected bone metastasis; it can characterize the lesion and adjacent marrow (El-Khoury et al. *Expert Panel on Musculoskeletal Imaging. Metastatic bone disease.* 2005; Ratliff and Cooper, *South Med J* 2004; 97(3): 246-253). When MRI is not feasible, that is, it is not readily available or the patient cannot tolerate the MRI study, CT may be performed.
- (10)-RIN:**
For neurologic symptoms or findings, see the "Magnetic Resonance Imaging (MRI), Cervical Spine" criteria subset.
- (11)
In patients with known cancer and bone pain, a bone scan is appropriate for initial staging.
- (12)
Although a bone scan is positive in the vast majority of patients with spinal metastasis, it can be negative or nondiagnostic in some tumors, such as myeloma, lymphoma, and anaplastic tumors.
- (13)
The assessment is generally performed about 6 weeks after radiation is completed or after the chemotherapy is completed.