

PRACTICE GUIDELINES: CERVICAL SPINE CLEARANCE

OBJECTIVE:

To provide guidelines for the diagnostic evaluation of the cervical spine in patients suffering multiple injuries who are at high risk for cervical spine injuries.

DEFINITION:

1. C-Spine: Includes C1 to the upper border of T1.
2. Clearance of C-Spine: A clinical decision suggesting the absence of acute bone related, ligamentous and neurologic abnormalities of the cervical spine based on history, physical exam and/or negative radiologic studies.

GUIDELINES:

1. Patients should be considered to have a possible cervical spine injury if they present with any of the following conditions:
 - a. A history of blow to the head or neck.
 - b. Pain in the cervical spine or paraspinous muscles.
 - c. Pain to palpation of the cervical spine.
 - d. Traumatic brain injury and/or skull fracture.
 - e. Facial trauma such as fractures, tooth loss or severe lacerations.
 - f. Neurologic deficits in torso, legs or arms not explained by peripheral nerve injuries.
 - g. Age >65
 - h. Dangerous mechanism (Fall >3ft/5 stairs; axial load to head; High speed MVC >45mph with roll-over or ejection; bicycle or pedestrian struck
 - i. Previous C-spine surgery
 - j. Acute paralysis
2. Awake patient GCS=15 without cervical tenderness and no distracting injury:
 - a. A patient with possible C-spine injury as defined in Section 1 above (usually based on mechanism) may have their cervical spine cleared without further radiologic evaluation if all of the following conditions exist:
 - i. No neck pain.
 - ii. No pain to palpation of midline cervical spine.
 - iii. Patient must be awake and alert with GCS=15
 - iv. No intoxication with alcohol or drugs.EXAM: Remove anterior collar while having patient keep their head still. Have patient flex and extend neck, turn left and right passively then against resistance (your hand). If there is pain on any movement STOP and replace collar. Patient will need additional radiographic examination (MRI)
 - b. The goal is to clear the C-spine within one hour in these circumstances.
3. Awake patient GCS=15 with no cervical tenderness, but with associated injuries suggesting a high likelihood of a C-spine injury:

If the patient has a dangerous mechanism (h) and has associated injuries (d-f) with possible C-spine injury, then obtain high quality CT of the C-spine with reconstruction and proceed as follows:

- i. If the radiologic evaluation is negative per the attending radiologist and the patient still has no pain, the C-spine can be cleared after a note is written in the chart.
 - ii. The goal is to clear the C-spine within four hours. If there is a significant painful “distracting” injury, then the goal is to clear the C-spine in less than 12 hours.
 - iii. If the CT shows abnormalities, then the orthopedic or neurosurgical spine service should be consulted prior to removing the collar.
4. Awake patient GCS=15 with persistent tenderness:
 - a. An Adult patient with possible cervical spine injury as defined in Section 1 above associated with cervical tenderness should be evaluated as follows:
 - i. Obtain a high-quality CT scan of the C-spine with reformatted images.
 - ii. Obtain an MRI of the C-spine.
 - b. If both are negative and have been read by the attending radiologist, the C-spine may be cleared. Appropriate documentation should appear in the chart.
 - c. If CT or MRI show bony or ligamentous abnormalities or instability, then consult orthopedic or neurosurgical spine service.
5. The patient with altered mental status and GCS <15 and possible C-spine injury as defined in Section 1 above:
 - a. The patient has a head injury or severe intoxication and cannot provide a reliable clinical exam:
 - b. Severe intoxication (drugs, alcohol):
 - i. Obtain CT Scan of C-spine at same time a head CT scan is performed.
 - ii. If CT shows no injury by attending radiologist interpretation, then leave cervical collar in place until patient awakens (EtOH will metabolize at approximately 30 mg/dl per hour), and examine for cervical tenderness. If the patient has cervical tenderness, then use the protocol outlined in Section 4 above.
 - iii. If the patient has no cervical tenderness, clear patient by clinical exam. (see above)
 - c. If the patient has an altered mental status and GCS<15 without obvious intoxication (i.e., severe head injury), then:
 - i. Obtain axial CT scan through C1 to T1 with reconstruction
 - ii. If the above CT is negative by attending read, remove the collar and place appropriate documentation of cervical spine clearance in the chart.
 - iii. If other associated spine injured MRI should be a
6. If any abnormalities are found on CT, then consult the orthopedic or neurosurgical spine service for advice on the next appropriate radiologic procedure. The cervical collar should be kept in place and spinal precautions maintained.
7. If there are any neurologic deficits or symptoms attributable to a possible cervical spinal cord injury, then consult the orthopedic or neurosurgery spine service for advice on the appropriate radiologic studies. The cervical collar should remain in place and spinal precautions observed.
 - a. Obtain a high quality CT scan of cervical spine with reconstruction.
 - c. If no bony abnormalities are seen, then obtain an MRI scan to evaluate spinal cord abnormalities.