Cervical Spine Trauma

Algorithm 1: Evaluable Cervical Spine Injury Patient

Prior to Arrival at Trauma Center
- Resuscitation / ATLS protocol
- Spine stabilization
  - Place semi-rigid C-collar; immobilize entire patient on long spine board with proper padding
  - Maintain C-spine precautions (log roll, elevating HOB via reverse Trendelenburg only)

EVALUABLE PATIENT CRITERIA (must fulfill all criteria)
- Glasgow Coma Scale score = 15
- Not intoxicated
- No distracting injury (preventing patient’s full concentration on exam)
- Reliable / cooperative clinical exam

Determine if patient has neurological deficits and/or C-spine bony tenderness (not soft tissue)

No Neurological Deficit Present
- No neurological deficit and without C-spine (bone) tenderness / pain
  - Imaging*
    - No C-spine imaging required
  - Follow-Up
    - Attending physician or experienced resident (trained in Nexus: Neurosurgery, Orthopedics, Trauma):
      - Clears the C-spine.
      - Documents clearance in medical record.
      - Removes C-collar

No neurological deficit but with significant C-spine (bone) tenderness / pain
- Imaging*
  - STAT CT of cervical spine
  - Follow-Up
    - Abnormal Results (severe malalignment / fracture)
      - If CT abnormal, obtain urgent Spine consult** and obtain CT of TL spine (see Algorithm 1 in TL Spine guideline)
    - Normal Results (no malalignment / fracture)
      - If CT negative and patient’s pain resolves, patient can be clinically cleared
      - If CT negative and patient continues to complain of neck pain acceptable approaches include:
        a. Low Suspicion: obtain upright flexion/extension lateral radiographs
        b. High Suspicion: place patient in rigid c-collar and refer for outpatient follow-up with spine center
        c. Obtain non-emergent MRI

Neurological Deficit Present
- Neurological deficit referable to spine injury
  - Imaging**
    - STAT CT of cervical spine
    - STAT CT of TL spine (can be extracted from concurrent chest, abdomen, and pelvis CT if available)
  - Follow-Up
    - Order STAT Spine Consult
      - Need for MRI to be determined by spine specialist

* Determine if thoracolumbar spine (TL spine) imaging is needed, per Thoracolumbar Spine Guideline.
** Consult Spine team for 3 or more Transverse Process fractures
Algorithm 2: Non-Evaluable Cervical Spine Injury Patient

Prior to Arrival at Trauma Center
- Resuscitation / ATLS protocol
- Spine stabilization
  - Place semi-rigid C-collar: immobilize entire patient on long spine board with proper padding
  - Maintain C-spine precautions (log roll, elevating HOB via reverse Trendelenburg only)

NON-EVALUABLE PATIENT CRITERIA
(any of the following)
- Glasgow Coma Scale <15
- Intoxicated
- Distracting Injury (preventing patient’s full concentration on exam)

Determine if patient has neurological deficits and/or C-spine bony tenderness (not soft tissue)

Imaging*
- STAT CT of cervical spine
- STAT CT of TL spine (can be extracted from concurrent chest, abdomen, and pelvis CT if available)

If any abnormality, obtain Urgent Spine Consult**

Normal imaging studies but not moving extremities
- STAT MRI at suspected level of injury
  - If MRI normal, physician may remove C-collar after documenting patient’s “Cervical spine radiographic clearance” in medical record
  - If MRI abnormal, obtain emergent Spine consult**

Normal imaging studies but with focal neurological deficits consistent with cord and/or nerve root injury
- STAT MRI at suspected level of injury
  - STAT Spine consult**

Normal imaging studies and no focal neurological defects
- If patient is likely to become evaluable within 24-48 hours (i.e., intoxicated without neurological injury), continue spine precautions and reevaluate once intoxication resolved, based on either the Evaluable or Non-Evaluable guidelines
  - If MRI normal, physician may remove C-collar after documenting patient’s “Cervical spine radiographic clearance” in medical record
  - If MRI abnormal, obtain Spine consult**

- If patient is unlikely to become evaluable within 24 hours, physician may obtain non-emergent MRI

* Determine if thoracolumbar spine (TL spine) imaging is needed, per Thoracolumbar Spine Guideline.

** Consult Spine Team for 3 or more Transverse Process fractures
References

- Advanced Trauma Life Support. American College of Surgeons, Committee on Trauma. Presentation on Spine and Spinal Cord Trauma, 2008.
- American Spinal Injury Association (ASIA), Standard Neurological Classification of Spinal Cord Injury. Rev. 03/06.

Quality Measures

- Time to consult
- Time to CT
- Time to MRI
- Time to fixation
- Time to brace

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Guideline Approved


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