

COCHRANE CORNER

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Spinal Immobilisation in Prehospital Trauma Patient

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Background

Indications for prehospital spinal immobilization have changed dramatically over the history of modern Emergency Medical Systems.¹ Prehospital practice currently comprises immobilization of essentially all patients with any potential for spinal injury based on mechanism of injury.¹ Cost-effective care of trauma patients has advanced significantly, and numerous studies examining indications for spine radiographs in trauma patients have been published.²⁻⁷ The findings of these studies universally support the use of clinical criteria to determine the need for spinal radiographs. They also support the presumption that without symptoms and physical findings associated with spinal injury, no significant spinal injury exists. Spinal immobilization on a rigid backboard is not without complications. Besides the direct cost of the equipment, there are also significant effects on patient comfort and the cost of Emergency evaluation. Respiratory compromise due to the strapping techniques used and pressure complications from rigid immobilization have been reported.⁸⁻⁹ Head and back pain is a nearly universal complication of prolonged rigid spinal immobilization and can alter Emergency department presentation and evaluation, necessitating radiographs that might have been avoided by omitting spinal immobilization in asymptomatic patients.¹⁰⁻¹¹

Data Source

The Cochrane Library 2005, Issue 1.

Search Terms

[Prehospital Search Filter Version - 1.0](#)¹²

Spine, spinal, cervix, cervic*, lumbar, thorac*, neck, whiplash, immobil*, stabili*, stable, collar, backboard, back-board, splint*, board*, strap*

Search Results

Protocols

None

Systematic Reviews

Kwan I, Bunn F and Roberts I, on behalf of the WHO Pre-Hospital Trauma Care Steering Committee. Spinal immobilization for trauma patients. The Cochrane Database of Systematic Reviews, Date of Most Recent Substantive Amendment: 22 January 2001.

Clinical Trials

None

Commentary

The authors of the systematic review did not find any randomized controlled trials (RCTs) quantifying the effect of spinal immobilization in trauma patients, and the possible adverse effects of its application. Therefore, the effects on mortality, neurological injury, spinal stability and adverse effects in this cohort of patients remain uncertain. Domeier¹¹ conducted a study in 2002 to evaluate five pre-hospital clinical criteria—altered mental status, neurological deficit, spine pain or tenderness, evidence of intoxication, or suspected extremity fracture—the absence of which identified 94.9% of pre-hospital trauma patients without a significant spine injury. Hauswald and Braude¹³ in their review of literature mention that it is now clear that immobilization subjects most patients to expensive, painful, and potentially harmful treatment for little, if any, benefit. Low-risk patients can be safely cleared clinically, even by individuals who are not physicians. March et al¹⁴ reported that over time, standard immobilization causes a false-positive exam for midline vertebral tenderness. Studies done on healthy volunteers have shown that the vacuum splint is more comfortable than long spinal boards with no loss of stability. Randomized controlled trials and large prospective studies are needed in trauma patients to validate the decision criteria for spinal immobilization in trauma patients with high risk of spinal injury.

The Bottom Line

The Cochrane review conducted in 2001 did not find any randomized trials on pre-hospital spinal board immobilization but numerous reports, reviews and studies highlight use of clinical criteria along with mechanism of injury necessitating future RCTs for level 1 evidence.¹⁵

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