Short Communication

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Clinical Prediction Rules for Fractures and Soft Tissue Injuries: Evidence from Studies on Upper Quadrant Orthopaedic Conditions

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Abstract

This short communication sought to establish the need for clinical prediction rules (CPR) and/or clinical decision rules (CDR) in evaluation and management of upper quadrant orthopaedic conditions such as fractures and soft tissue injuries. There was one study on cervical spine fractures, one on whiplash-associated disorders, one on thoracic injuries, one on lateral epicondylalgia and one on carpal tunnel syndrome. There were no studies on shoulder and on other common orthopaedic conditions of the upper quadrant which essentiates future research in this area.

Keywords: Clinical Examination; Orthopaedic Examination; Clinical Orthopaedics; Traumatic Conditions.

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Cervical Spine Fractures

Bub et al [1] determined the clinical predictors of cervical spine fracture in the elderly to develop a clinical prediction rule to guide appropriate imaging through a retrospective case-control study and identified following factors: focal neurologic deficit, severe head injury, high-energy mechanism, and moderate-energy mechanism. The prediction rule stratified patients into risk groups with fracture probabilities ranging from 0.4% to 24.2%.

Whiplash-Associated Disorders

Hartlinget al [2] studied 353 adults involved in rear-end collisions to quantify potential risk factors for whiplash associated disorder (WAD) following a rear-end motor vehicle collision; anddevelop a simple clinical decision rule for the early identification of patients at risk for long-term WAD. The identified risk factors include: increased age, number of initial physical symptoms, and early development of the following symptoms: upper back pain, upper extremity numbness or weakness, or disturbances in vision. A CDR with three simple questions had identified the 118 cases of persistent whiplash associated disorder with a sensitivity of 91.5% and a specificity of 51.4%.

Thoracic Injuries

Holmes et al [3]determined the prevalence of thoracic injuries in 986 children sustaining blunt torso trauma and developed a CPR to identify 80 children with these injuries. Thoracic injuries included the following: pulmonary contusion, hemothorax, pneumothorax, pneumomediastinum, tracheal-bronchial disruption, aortic injury, hemopericardium, pneumopericardium, cardiac contusion, rib fracture, sternal fracture, or any injury to the diaphragm. The authors identified the following predictors of thoracic injuries: "low

systolic blood pressure, elevated age-adjusted respiratory rate, abnormal results on examination of the thorax, abnormal chest auscultation findings, femur fracture, and a Glasgow Coma Scale (GCS) score of less than 15." 98% of patients with thoracic injuries had atleast one of these predictive factors.

Lateral Epicondylalgia

Vicenzinoet al [4] developed a CPR for identifying 64 patients with lateral epicondylalgia (LE) likely to respond to mobilisation with movement and exercise (PT). "The CPR included: age (<49 years, +LR=2.6) as well as pain free grip strength on the affected (>112N, +LR=2.3) and unaffected side (<336N, +LR=2.1). Probability of improvement rose from 79 to 100% if all three were positive."

Carpal Tunnel Syndrome

Wainneret al [5] developed a CPR to assess the reliability and diagnostic accuracy of individual clinical examination items for the diagnosis of carpal tunnel syndrome (CTS) in 82 patients and found following CPR items: "1 question (shaking hands for symptom relief), wrist-ratio index greater than .67, Symptom Severity Scale score greater than 1.9, reduced median sensory field of digit 1, and age greater than 45 years. The likelihood ratio for the CPR was 18.3 when all 5 tests were positive."

There was one study on cervical spine fractures, one on whiplash-associated disorders, one on thoracic injuries, one on lateral epicondylalgia and one on carpal tunnel syndrome. There were no studies on shoulder, and on other common orthopaedic conditions of the upper quadrant which essentiates future research in this area.

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