



REVIEW ARTICLE

Acute to chronic pain transition in extremity trauma: A narrative review for future preventive interventions (part 1)

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KEYWORDS

Extremity trauma;
Limb injury;
Acute pain;
Chronic pain;
Epidemiology;
Disability;
Psychological distress;
Acute to chronic pain transition

Abstract Background: Several studies have been conducted over the last decade that describe the issue of pain and prognostic factors of acute to chronic pain transition post extremity trauma (ET). However, no thorough interventions to prevent chronic pain development in ET patients have yet been proposed.

Objectives: This first part of a series of two articles aimed to provide a comprehensive analysis of literature on the epidemiology of pain post-ET, the impact of persistent pain on ET patients and the relevant biological transformations involved in acute to chronic pain transition. The second article will focus on risk and protective factors relating to chronic pain that could potentially assist in the development of preventive interventions.

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Methods: A narrative review of the literature was undertaken. Databases were searched to identify relevant studies and seminal works on the topics of interest.

Results: The review revealed that acute pain converts to chronic pain in up to 86% of ET patients. Analysis of study findings also indicated that chronic pain interferes with activities of daily living and capacity to work. Weak associations between chronic pain and anxiety as well as depression have been demonstrated. Anxiety and depression have been identified as important predictors of chronic pain post-ET. Neuro-immunological transformations, genetics and an emotional shift in the brain circuitry involved in nociception have been shown to contribute to the transition towards chronic pain.

Conclusions: This narrative review supports the view that acute to chronic pain transition is a prevalent and significant issue post-ET. It also provides information about patients who present a higher risk of chronic pain and features that should be integrated in preventive interventions as well as methodological considerations pertaining to the evaluation of such interventions.

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Editor comments

It is frequently stated that pain is a complex and individual experience. Practitioners who work with patients in acute orthopedic and trauma settings may well be aware that the acute pain their patients suffer can lead to chronic pain and associated disability in the future. However, this is not something often considered in the acute phase of care. Those who work in rehabilitation and outpatient settings may be more aware of the trajectory of the transfer of the pain experience from acute to chronic. In this first of two papers the authors provide a detailed discussion of some of the underpinning knowledge that practitioners need in order to begin to understand this experience from the patient's perspective so that they can provide person-centered care to those whose lives are blighted by pain many years after their injury.

JS-T

Introduction

Nearly 65% of traumatic injuries occur in individuals between the ages of 18 to 55 years ([Canadian](#)

[Institute for Health Information, 2013](#)), compromising their most productive years of life. Orthopedic lesions, including extremity trauma (ET), affect the majority of injured individuals (80%) ([Canadian](#)

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