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Clinical Study

How often are interfacility transfers of spine injury patients truly necessary?

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Abstract

BACKGROUND CONTEXT: Traumatic spine injuries are often transferred to regional tertiary trauma centers from outside hospitals (OSHs) and subsequently discharged from the trauma center's emergency department (ED) suggesting secondary overtriage of such injuries.

PURPOSE: The aim of the study was to investigate the definitive treatment and disposition of traumatic spine injuries transferred from OSH, particularly those without other trauma injuries or neurologic symptoms.

STUDY DESIGN: This was a retrospective study.

PATIENT SAMPLE: Adult patients presenting to a single Level 1 trauma center with spine injuries were included.

OUTCOME MEASURES: The outcome measures considered in the study were appropriateness of transfer, treatment, and cost.

METHODS: Four thousand five-hundred consecutive adult patients presenting to a single Level 1 trauma center with spine injuries (isolated or polytrauma) were reviewed. This consisted of 1,427 patients (32%) transferred from an OSH ED. All OSH, emergency medical services, and receiving institution (RI) patient records and imaging were reviewed.

RESULTS: Patients who were neurologically intact, nonpolytrauma, and without critical medical issues at the OSH (isolated intact spine transfers) comprised 29% of transfers. Helicopters transported 13% of these patients. The most frequent injuries were compression (26%), burst (17%), and transverse process (10%) fractures. Seventy-eight percent were discharged directly from the RI's ED. Similarly, 15% were not given any formal treatment, 13% had surgery, and 72% given orthosis treatment. The average cost for transportation and ED costs for those discharged from the RI ED were $1,863 and $12,895, respectively. Of the isolated intact spine transfers, 42% were considered to be inappropriate to warrant transfer. This was defined as those sent from an OSH with an orthopedic or neurosurgeon on staff and clearly stable injuries with minimal chance of progressing to instability. Isolated intact spine transfers whose OSH spine imaging was not considered unstable was 25% of transfers with a helicopter used to transport 14% of these patients. Eighty-seven percent were discharged from the ED, whereas only 3% went onto surgery.

CONCLUSIONS: This study is the first to investigate interfacility transfers with spine injuries and found high rate of secondary overtriage of neurologically intact patients with isolated spine injuries. Potential solutions include increasing spine coverage in community EDs, increasing direct communication between the OSH and the spine specialist at the tertiary center, and utilization of teleradiology.

Keywords: Overtriage; Transfer; Spine; EMTALA; ED; Trauma

FDA device/drug status: Not applicable.

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EVIDENCE & METHODS

Context
Overtriage of patients with spinal injuries and inappropriate transfers to tertiary care facilities are important concerns for the spine surgical community as a whole. This topic has not been extensively addressed in the literature. The authors performed a retrospective review of the records of a single center to determine the incidence of overtriage in the setting of spinal trauma.

Contribution
Forty-two percent of patients with isolated spinal injuries who were neurologically intact were considered inappropriately transferred by the authors. Eighty-seven percent of these patients were discharged directly from the receiving institution's ED. The cost of transport averaged $1,863, while average ED costs were $12,895.

Implications
The authors present their experience with the phenomenon of overtriage and present some approaches that could be used to redress this issue. All of their postulates, however, remain speculative in nature. It should be emphasized that characterization of overtriage and ''inappropriate transfer'' were based on criteria developed entirely by the authors and may not be representative of a consensus within the medical community as a whole. As the authors appropriately point out, their retrospective design introduces a number of opportunities for bias, and the experience at their facility may not be translatable to other tertiary care centers. While highlighting their own experience with overtriage over a four-year period and raising some interesting points for discussion, their results cannot be generalized to other hospitals and should not be used to inform policy.

—The Editors

Introduction

The Emergency Medical Treatment and Active Labor Act (EMTALA) was created in 1986 to guide the interhospital transfer of patients presenting to the emergency department (ED) [1]. It requires that patients presenting to an ED be stabilized and transferred to a tertiary center if a higher level of care is required. In 2003, further modifications were made that no longer require hospitals to provide 24-hour specialty coverage [2]. Conversely, EMTALA requires tertiary centers to accept the transfer of patients in need of higher levels of care. Such a requirement has the potential to overwhelm regional tertiary referral centers with minimally injured patients and shift the resource of burden to these centers [3].

It is evident that the establishment of referral trauma centers has substantially reduced injury-related morbidity and mortality [4–6]. Moreover, a trauma system with appropriate triage and transportation is necessary to provide optimum patient care. A key function of such a system is to determine which patients require a tertiary trauma center and which can receive care locally. When this process breaks down, secondary overtriage to higher level trauma centers occurs.

Historically, undertriage was the main concern for the medical community. However, with the ED overcrowding and rising health-care costs receiving more attention, overtriage has begun to be explored. Primary overtriage refers to the transport of patients from the field to hospital, whereas secondary overtriage refers to transfer between hospitals. The extent of secondary overtriage has not been well described up to this point. It has been peripherally investigated in the orthopedic trauma literature, which found an increasing number of inappropriate transfers over the recent years [7,8]. This practice can overwhelm system resources, delay definitive care, and create added burden on patients and their families.

Given that 26% of ED visits in 2010 were over 4 hours long and spine injuries encompass 4.8% (1.8 million) of trauma-related ED visits, an assessment of secondary overtriage of patients with spine injuries is clearly warranted to identify potential areas for reducing costs and improving resource utilization [9]. The purpose of this study was to investigate the definitive treatment (operatively vs. nonoperatively) and disposition (admitted vs. discharged) for ED patients with spine injuries transferred from outside hospital (OSH), especially those without other trauma injuries or neurologic deficits/symptoms. Furthermore, based on these findings, potential solutions to help minimize unnecessary transfers and facilitate the decision-making process for stable spine injuries are explored.

Materials and methods

Institutional review board approval was obtained before initiation of the study. All consecutive patients presenting to a single adult Level 1 trauma center from January 2009 through March 2013 were retrospectively reviewed. All patients with a spine injury (isolated or polytrauma) were identified via *International Classification of Diseases* codes and review of a prospectively spine database at the receiving institution (RI). This resulted in 4,500 patients presenting with a spine injury. Of these, 1,427 patients (31.7%) were transferred from an OSH ED to the RI's ED.

All available OSH, emergency medical services, and RI patient records and imaging were thoroughly reviewed for the 1,427 transferred patients with a spine injury. The reason for transfer, accepting specialty, and patient condition (stable vs. unstable) were recorded from a standardized interfacility transfer form. This form is completed with the help of the RI's transfer center, transferring physician at OSH, and accepting physician at the RI. Insurance status at the time of ED care at the RI was categorized