

Repeat Fall Risk in Geriatric Patients following Fall-Induced Traumatic Head Injury

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Abstract

Study Objectives

Falls are a major cause of morbidity and mortality in the geriatric population. There are many known risk factors for falls, with poor health and physiologic decreases in function as the major contributors to fall risk in the elderly. However, the risk factors for a repeat fall after initial emergency department (ED) discharge are not well-described. Falls after ED discharge are fairly common, particularly in patients who experienced fall-induced head trauma. These repeat falls are potentially preventable, particularly in the acute setting. This study seeks to prospectively investigate risk factors for a repeat fall within 14 days of an initial incidence of fall-induced head trauma leading to an ED visit.

Methods

This is a prospective cohort study of patients who presented to the EDs of one of two university-affiliated community level I trauma centers with annual ED volumes of 50,000 and 69,000. Study enrollment spanned from August 2019 to August 2020. On a daily basis, ED patients were screened for enrollment and were included if over the age of 65 years and presented with head trauma due to a fall. Patients were excluded if they were admitted during the initial ED visit, sustained fatal injuries, had a penetrating injury, or had intracerebral hemorrhage. A chart review was performed relating to the patient's initial ED visit. Patients were followed, and the electronic health record was used to ascertain information about return visit(s) to the ED within 14 days, reason for follow-up visit and patient progression.

Results

2143 patients were identified with an average age of 82.5 years (SD 8.5) with 1306 females (60.9%) and 837 males (39.1%). 14.1% of patients returned to the ED within 14 days of initial ED presentation with 8.3% presenting with a complaint related to the initial trauma, 3.2% with a new medical complaint and 2.5% with a new injury due to a repeat fall. Patient comorbidities including dementia (OR 3.02, 95% CI, 1.72-5.33, $P < 0.001$), stroke (OR 2.12, 95% CI, 1.05-4.27, $P = 0.031$), and smoking (OR 4.27, 95% CI, 1.76-10.37, $P < 0.001$) were significantly associated with an increased risk of repeat ED visit within 14 days of initial visit.

Conclusions

Two factors associated with increased ED returns were items from the past medical history relating to cognition and mentation. Accordingly, we hypothesize the neurologic aspects of balance, decision making and spatial perception play a significant role in this. Tobacco use having a four times increased rate of 14 day ED returns was unexpected, however, we suspect this association may relate to the neurotoxic effects of tobacco use and subsequent increases in neurovascular fragility. With the high rate of 14 day ED returns after fall-induced head trauma, we propose consideration of these factors when making care recommendations to prevent repeat falls.