Rehabilitation Needs of the Elder with Traumatic Brain Injury

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KEYWORDS

• Traumatic brain injury • Elderly • Cognitive rehabilitation • Preventive medicine

KEY POINTS

- As the US population ages, the number of adults aging with a traumatic brain injury (TBI) and elderly patients with new TBIs will increase.
- Falls are the leading cause of TBI in adults over the age of 65.
- The needs of elderly patients with TBI are unique.
- Acute inpatient rehabilitation programs should be individualized and include interventions to address cognitive dysfunction, motor recovery, and preventive medicine.
- Elderly patients make meaningful functional gains during inpatient rehabilitation, with high rates of home discharges. These gains may be realized over longer durations of stay.

INTRODUCTION

Traumatic brain injury (TBI) is one of the leading causes of chronic disability in the United States.[1] A TBI occurs when an external force causes an alternation in brain function and/or other evidence of brain pathology.[1] TBI is often referred to as a "silent epidemic," owing to limited public awareness and to the associated complications, such as cognitive dysfunction, that may not be readily apparent.[2] A TBI has adverse effects not only on the individual, but their family, and the local and global economy.[3]

Recent studies suggest a prevalence of TBI, in the general population, of 12% to 16.7% in males and 8.5% in females.[4] In the United States, approximately 1.7 million people sustain a TBI annually.[2] A trimodal age distribution of injury risk demonstrates

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that individuals under the age of 5, individuals between the ages of 15 and 24, and adults over the age of 65 are at an increased risk for sustaining a TBI.[5] Adults aged 75 years and older have the highest rates of TBI-related hospitalization and death.[2] The rate of TBI-related hospitalizations in patients 65 years and older is estimated at 155.9 per 100,000. This rate increases dramatically with advancing age reaching 366.6 per 100,000 for patients 85 years and older.[6]

Falls are the leading cause of TBI in adults over the age of 65. From 2002 to 2010, there was an increase in fall-related TBIs, hospitalizations, and TBI-related deaths among adults aged 65 and older.[2] In this group, the estimated rate of TBI-related hospitalizations owing to a fall is 104.9 per 100,00. Fall-related TBI hospitalization increases with age, reaching 6 times this rate in those 85 years and older.[6]

With an increasing general life expectancy, both the prevalence of people living with TBI and the rates of incident TBI in the elderly are expected to increase.[7] In this context, there is a growing need to understand the effects of TBI on the aging population. Physiatrists treating this patient population should be aware of the unique rehabilitation needs of the elder patient in the acute rehabilitation setting, the interactions between TBI and advanced age, and the prognostic implications of TBI in an elderly population.

THE CONTINUUM OF REHABILITATION AFTER TRAUMATIC BRAIN INJURY IN THE ELDERLY

Acute Care

Rehabilitation for any individual who experiences a TBI begins in the acute care setting. Although the focus of care during this stage is on the prevention of secondary brain injury, rehabilitation after a TBI is ideally initiated while the patient resides in the intensive care setting.[8] In fact, the presence of a physiatrist involved in the care of the patient during this early stage has been associated with improved functional outcomes.[9] Here, the goal is prevention of complications secondary to prolonged immobilization, including skin breakdown and joint contractures. When compared with their younger counterparts, older individuals who suffer a TBI possess more comorbidities that can affect their rehabilitation care. Among these, cardiopulmonary compromise and an increased prevalence of osteoarthritis can affect the precautions and interventions provided by therapists, not only during this acute stage but throughout the entire rehabilitation spectrum.

Inpatient Rehabilitation

Inpatient rehabilitation can be a viable alternative for elderly patients with a TBI once stabilized and discharged from the acute care setting. They must meet the same admission criteria as any other patient before acceptance to an inpatient rehabilitation facility, including the need for constant medical and nursing supervision and deficits requiring at least 3 hours of therapy. The rehabilitation team must be vigilant of several comorbidities when following this population in an inpatient rehabilitation facility.

Polypharmacy

Polypharmacy and the concurrent use of psychotropic medications is common in TBI patients during postacute rehabilitation.[10] In fact, psychotropic medication administration generally increases during the course of inpatient rehabilitation for TBI.[11] Commonly prescribed psychotropic drugs include anticonvulsants, antidepressants, antipsychotics, anxiolytics, stimulants, and hypnotics.[10,11] Additionally, other classes of medications such as proton pump inhibitors, antithrombotic agents, beta-blockers, and antihypertensive agents are prevalent in TBI patients during rehabilitation and can