Unique considerations in the assessment and management of traumatic brain injury in older adults

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Summary

The age-specific incidence of traumatic brain injury in older adults is rising in high-income countries, mainly due to an increase in the incidence of falls. The severity of traumatic brain injury in older adults can be underestimated because of a delay in the development of mass effect and symptoms of intracranial haemorrhage. Management and rehabilitation in older adults must consider comorbidities and frailty, the treatment of pre-existing disorders, the reduced potential for recovery, the likelihood of cognitive decline, and the avoidance of future falls. Older age is associated with worse outcomes after traumatic brain injury, but premorbid health is an important predictor and good outcomes are achievable. Although prognostication is uncertain, unsubstantiated nihilism (eg, early withdrawal decisions from the assumption that old age necessarily leads to poor outcomes) should be avoided. The absence of management recommendations for older adults highlights the need for stronger evidence to enhance prognostication. In the meantime, decision making should be multidisciplinary, transparent, personalised, and inclusive of patients and relatives.

Introduction

With an estimated 60 million new diagnoses globally each year,1, 2 traumatic brain injury has a major societal and economic impact. In high-income countries, the incidence of traumatic brain injury in older adults has been rising, with more than 30% of new cases reported in this age group over the past 10 years.3, 4, 5 Moreover, demographic shifts have taken place, with older individuals engaging increasingly in recreational activities and living longer, which augment the risk for traumatic brain injury.

Older age is consistently associated with worse outcomes across studies,6 which could be attributed to pre-existing comorbidities, reduced physiological reserve, and diminished potential for recovery. Furthermore, advanced care directives or pre-existing patient wishes can state that aggressive care or procedures should be withheld if these interventions would lead to survival with substantial loss of quality of life. Another factor related to poor outcome is that many older patients take antithrombotic drugs to mitigate thromboembolic risks, which can exacerbate the severity of their injury.7

The management of traumatic brain injury in older adults presents challenges and pitfalls. Few evidence-based guidelines are available to assist clinicians, partly due to the exclusion of older adults from many traumatic brain injury trials. Older adults often present with traumatic brain injury sustained after a fall. Consciousness might be preserved initially, even in the presence of considerable intracranial injury. Surgery or intensive care could be required later in the management process, and adverse outcomes are possible.8 Early withdrawal of life-sustaining treatment has been reported in older adults after a traumatic brain injury.9 This practice is not unexpected, but can be complicated by the uncertainty of prognostic models, which have diminished accuracy in older adults (partly due to exclusion from studies).10

The cutoff for older age is difficult to define. Ageing is established by biological and circumstantial changes, and the odds for these changes grow with increasing calendar age. Heterogeneity among individuals is large. Pragmatically, for this Review, we define older adults as individuals aged 65 years and older. In this Review, we summarise the unique considerations and challenges concerning older adults with traumatic brain injury, including prognostication and decision making. We provide a multidisciplinary interpretation of the evidence that could help clinicians of different backgrounds handle uncertainties in management, and we propose a framework for decision making.

Section snippets

Epidemiology

In high-income countries, older individuals comprise an increasing proportion of cases of traumatic brain injury.11 According to 2018 data extracted from the Healthcare Cost and Utilization Project in the USA, 46% of admissions to hospital for traumatic brain injury pertained to older adults and the rate of hospitalisations for traumatic brain injury among people aged 75 years and older was approximately three times higher than that among those aged 65–74 years.12 Similarly, according to a 2018

Brain trauma mechanisms and prevention

Falls are the leading cause of traumatic brain injury in older adults, with more than 78% of injuries attributed to falls from standing height or lower, including cases requiring surgical treatment for intracranial haemorrhage.5 By contrast, younger individuals are more likely to have a traumatic brain injury due to accidents that involve high speeds or falls from heights. Younger patients are also more likely to sustain epidural haematomas, diffuse axonal injury, and diffuse brain swelling,

Assessment of traumatic brain injury severity, comorbidities, and frailty

The assessment of traumatic brain injury severity can be difficult in older adults. For instance, clinical characteristics in this age group can be diverse, with many older people having comorbidities, cognitive impairment, or both, which must be taken into consideration during the assessment (figure 1). Furthermore, tools that are typically used for establishing initial traumatic brain injury severity—eg, GCS scores and head CT scans—are not always sufficient for assessment of older adults.

Challenges for rehabilitation and post-acute phase care pathways

A major challenge for post-acute care and rehabilitation of older adults with traumatic brain injury is the substantial heterogeneity not only in acute and subacute sequelae, but also in premorbid multimorbidity and functioning. This challenge is further compounded by potentially inadequate access to care for older adults due to social isolation and restricted mobility. Another challenge is the absence of evidence-based guidance in this field. Specifically in older adults, cognitive decline as

Prognostication

Predicting an older patient's outcome after traumatic brain injury is crucial for decision making but presents challenges due to the large heterogeneity in type and severity of injuries and the variability in the physiological vulnerability of older people.101, 102, 103 Frequent questions that might arise about prognosis include the degree of consciousness and functionality that a patient is likely to regain and the likely timeframe for their recovery. Highlighting the probabilistic nature of

Conclusions and future directions

In a 2022 review, the sparsity of evidence available to inform the treatment of traumatic brain injury in older adults was highlighted as a major issue,11 particularly because of the demographic shift towards older adults in the prevalence of traumatic brain injury in high-income countries. In the past few years, the amount of evidence in older patients with traumatic brain injury has increased, but many knowledge gaps persist in epidemiology, prevention, diagnostics, acute management,

Declaration of interests

SM has received consulting fees from Acasti Pharma for being a member of an adjudication committee for a clinical trial in subarachnoid haemorrhage and has received speaking and writing honoraria from the American Academy of Neurology. All other authors declare no competing interests.

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