

Head and Neck Injuries

Special Considerations in the Elderly Patient

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KEYWORDS

• Geriatric • Elderly • Trauma • Head • Neck • Subdural hematoma • Cervical spine • Fractures

KEY POINTS

- Injury patterns differ in geriatric patients compared with young trauma victims, and the risk of serious complications is higher in the elderly for a given level of trauma.
- Preexisting atrophy of the brain can result in delayed clinical manifestations of increased intracranial pressure from traumatic intracranial hemorrhage. The threshold for computed tomographic imaging of geriatric patients with even minor head trauma should be very low.
- Facial injuries are more likely to involve the orbital floor, lateral orbital wall, and maxilla than in non-geriatric patients.
- Cervical spine fractures are likely to occur between the occiput and C2, most frequently at the dens and C2 body. The presence of underlying diffuse idiopathic skeletal hyperostosis or ankylosis from degeneration increases the likelihood of unstable hyperextension fractures.

INTRODUCTION

Various definitions of elderly exist, but 65 years of age is used most commonly to define the geriatric population, including in the Eastern Association for the Surgery of Trauma practice management guidelines.¹ In coming years, geriatric trauma patients will comprise an increasing percentage of Emergency Department visits as the result of the rapidly growing elderly population in the United States. By 2030, one-fifth of the American population will be aged 65 years or older as the baby boomer generation continues to mature.²

Older adults comprise an even larger proportion of the trauma population. Persons aged at least 65 years of age accounted for 30% of patients recorded in the 2015 National Trauma Data Bank.³ The annual report also shows that falls account for 83% of trauma incidents in those aged

65 years and older, with much of the remainder accounted for by motorized vehicular crashes (MVC) and car-versus-pedestrian accidents.³ Falls from standing are more likely in the geriatric population for a variety of reasons, including weakness and generalized deconditioning related to chronic diseases, polypharmacy, balance and gait disturbances, vision loss, poor reaction times, and cognitive impairments.⁴ Recurrent falls are also more likely in patients who have fallen within the past year.⁵

According to the Centers for Disease Control and Prevention, unintentional injuries, most commonly from falls, were the seventh leading cause of death in those 65 years and older in 2014.⁶ Injury patterns differ in geriatric patients compared with their younger counterparts, and the elderly are at higher risk for serious complications. The case fatality rate increases for geriatric

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patients, with the mortality for those older than 84 years of age (8.73%) over twice that of all non-geriatric age groups (range 0.97%–4.10%).³ Mortality is increased in geriatric patients across all injury severity scores, body parts injured, and mechanisms of injury.^{3,7,8} Falls in patients 65 years and older resulted in more than 21,000 deaths in 2010, with an estimated \$500 million in medical costs and more than \$2 billion in work loss costs.⁶ Nevertheless, a large proportion of geriatric trauma patients can return to independent living with prompt, appropriate treatment.⁹ Elderly patients are also at risk for undertriage because of, among other reasons, normal age-related physiologic differences compared with younger adults, medication effects, and preexisting cognitive deficits.¹ Early diagnosis and aggressive management of injuries in the geriatric trauma patient are imperative, and liberal use of imaging, particularly with computed tomography (CT), plays an essential role in this task. In this article, the authors focus on injuries to the head, face, and cervical spine in geriatric trauma patients and on how they differ from the younger population, based on mechanistic, anatomic, and clinical factors.

HEAD TRAUMA

Head injuries in the elderly are common following trauma and are more likely to be significant, requiring intervention or resulting in a long-term disability or neurologic impairment.^{10,11} Although neurosurgical intervention is not usually necessary, it is more likely if focal neurologic deficits are present.¹² Adverse outcomes, including mortality and functional disability, are uniformly higher in geriatric patients when compared with younger patients with similar degree of injury.¹¹ The most frequent traumatic lesions seen in

geriatric trauma patients are contusions and subdural hematomas. Epidural hematoma, intraventricular hemorrhage, skull fractures, and pneumocephalus are seen less commonly in elderly patients.¹²

Frontal and temporal lobe contusions are certainly not unique to older age but are still prevalent in this patient population. Falling backwards from standing or on stairs is frequent in the elderly, and the resulting impact to the occiput can be associated with enough longitudinal deceleration to cause cortical contusions from a coup-contracoup mechanism (**Fig. 1**). Likewise, parasagittal or gliding contusions occur when the paramedian frontoparietal cortex slides against the rigid falx cerebri, as a result of a more lateral traumatic impact (**Fig. 2**).

Subdural hematomas result from tearing of the small bridging veins of the subarachnoid space, which tends to widen with older age secondary to involution of the cerebral cortex. This age-related volume loss partially explains why elderly patients with significant intracranial injury may not display typical neurologic signs of increased intracranial pressure.¹³ In geriatric patients, different than younger adults, subdural hematomas frequently present with imaging features of chronicity, and a clear history of trauma is not always elicited on admission to the emergency department. The hematomas can grow gradually over time without significantly increased intracranial pressure. The expansion is likely related to a combination of clot absorption and increased fibrinolytic activity within the hematoma. Recurrent microbleeds from the hematoma capsule also contribute to its growth and are responsible for the mixed density of the collections (**Fig. 3**). The development of membranous adhesions within chronic hematomas is not uncommon in the elderly. They present as relatively hyperdense

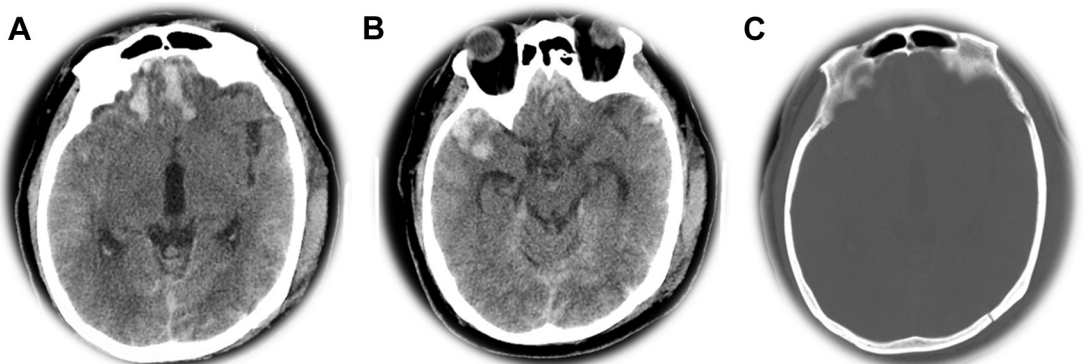


Fig. 1. Contracoup contusions in an 80-year-old patient who fell backwards from standing. Axial CT images show frontal (A) and temporal (B) hemorrhagic contusions associated with posterior parietal fracture (C).

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