



Prolonged observation or routine reimaging in older patients following a head injury is not justified

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The population-based study of Ontario older emergency department (ED) patients with head injury published by Liu and colleagues assesses the risk of a delayed intracranial hemorrhage [1]. They found the risk of being diagnosed with a delayed intracranial hemorrhage may be higher in patients on warfarin versus those with no anticoagulation. Further, they found no increased risk of a delayed intracranial hemorrhage for patients on a direct-acting oral anticoagulant (DOAC) therapy versus no anticoagulant. The study did not have individual patient characteristics; therefore, the application of the Canadian CT Head Rule could not be assessed [2]. The Canadian CT Head Rule is not applicable for patients on anticoagulants. In addition, while all patients in this cohort are over 65 years old, they still would only be recommended for imaging by the Canadian CT Head Rule if they met one of the three eligibility criteria: loss of consciousness, amnesia, or confusion associated with their head injury. If not, this would be considered a “minimal” head injury not requiring imaging despite being aged > 65 years [3, 4].

This study assists us with the question, is one CT enough? The Canadian guidelines on the management of older patients following a head injury do not currently exist.

However, the current UK guidelines state that without having some additional findings, such as CT abnormalities, a persistent diminished level of consciousness, vomiting, or other clinical findings, it is not necessary to delay discharge [5]. In this study, they found the risk of a delayed intracranial hemorrhage is about 1% in patients over 65 years of age who sustain a head injury. However, the rate of subsequent bleeding is likely overstated. The overall estimates provided do not control for patients who did not have a computed tomography (CT) scan during their index visit. It is likely, and even more so in the warfarin group, that patients with a significant head injury are transferred to another ED for CT head imaging when it is not available at the initial presenting ED. This transfer and subsequent diagnosis of an intracranial hemorrhage would have counted as a delayed hemorrhage. When patients without CT imaging performed during the index visit are excluded, the delayed intracranial hemorrhage rate was no longer statistically significantly different in patients on warfarin to those with no anticoagulation use. Nevertheless, the same rationale exists for patients on a DOAC. They too likely would have been transferred to another ED for CT imaging in sites where it was not available. Yet, these patients were not found to have a higher rate of delayed hemorrhage versus patients on no anticoagulation. This is consistent with the companion study by these authors which found no difference in intracranial hemorrhage between patients on a DOAC compared with matched patients not on anticoagulation at the time of the initial head injury [6]. They did; however, find an increased risk for intracranial hemorrhage at the time of the initial injury for patients taking warfarin. Nevertheless, based on the results of this study, prolonged observation or repeat CT imaging, either after several hours or subsequent imaging following ED discharge, does not appear to be necessary.

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The 90-day timeline used in this study is very lengthy. If there was a clinically significant delayed hemorrhage, one would reasonably expect the patient to have either had prolonged symptoms or to have deteriorated long before the 90-day point. Authors of other studies have used much shorter timelines such as 3 or 14 days. [7, 8] In this high-risk older patient population who presented with a head injury, it is reasonable to expect a small, but significant percentage of these patients will sustain a second head injury within a 3-month timeframe. Reinjury is even more likely in the patient group on warfarin where 2/3 of the patients were over 80 years of age versus fewer than 1/2 over 80 years in the group with no anticoagulation.

In summary, this study reported a reassuringly low rate of delayed intracranial hemorrhage of 1.0%. Given the inherent limitations of the available data, this is a worst-case scenario and the true number is likely significantly lower. For patients on warfarin, the rate of delayed bleeding was not statistically significant when removing patients without a CT during the index visit, which is the standard of care. Hence, repeat imaging is likely not warranted, for any head injured patient without clinical signs or symptoms present to justify it. Finally, given this study, and other available studies, it is time to create comprehensive Canadian guidelines to help physicians manage patients who sustain a head injury.

Declarations

Conflicts of interest Jeffrey Perry has received a mid-career salary award from Heart and Stroke Ontario. Debra Eagles and Dar Dowlatshahi declare no conflicts of interest.

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