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Association of timing of initiation of pharmacologic venous thromboembolism prophylaxis with outcomes in trauma patients

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Abstract

Background: Patients are at a high risk for developing venous thromboembolism (VTE) following traumatic injury. We examined the relationship between timing of initiation of pharmacologic prophylaxis with VTE complications.

Methods: Trauma quality collaborative data from 34 American College of Surgeons Committee on Trauma-verified levels I and II trauma centers were analyzed. Patients were excluded if they were on anticoagulant therapy at the time of injury, had hospitalization <48 hours, or received no or nonstandard pharmacologic VTE prophylaxis (heparin drip). Patient comparison groups were based on timing of initiation of VTE prophylaxis relative to hospital presentation (0 to <24 hours, 24 to <48 hours, ≥48 hours). Risk-adjusted rates of VTE events were calculated accounting for patient factors including type of pharmacologic agent in addition to standard trauma patient confounders. A sensitivity analysis was performed excluding patients who received blood in the first 4 hours and/or patients with a significant traumatic brain injury.

Results: Within the 79,386 patients analyzed, there were 1,495 (1.9%) who experienced a VTE complication and 1,437 (1.8%) who died. After adjusting for type of prophylaxis and patient factors, the risk of a VTE event was significantly increased in the 24- to <48-hour (odds ratio, 1.26; 95% confidence interval, 1.09-1.47; p = 0.002) and ≥48-hour (odds ratio, 2.35; 95% confidence interval, 2.04-2.70; p < 0.001) cohorts relative to patients initiated at 0 to <24 hours. These VTE event findings remained significant after exclusion of perceived higher-risk patients in a sensitivity analysis.

Conclusion: Early initiation of pharmacologic VTE prophylaxis in stable trauma patients is associated with lower rates of VTE.

Level of evidence: Diagnostic, level III.

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