DEM Journal Club

Article Appraisal

Article: Nishijima DK et al. Immediate and Delayed Traumatic Intracranial Hemorrhage in Patients With Head Trauma and Preinjury Warfarin or Clopidogrel Use. Annals of Emergency Medicine. 2012; 59(6): 460-468.

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Background and Study Objective(s)	The prevalence of both immediate and delayed intracranial hemorrhage after minor head injury in patients on either warfarin or clopidogrel has not been well studied. This study looked at head trauma patients on warfarin or clopidogrel to address the above gap in knowledge.
Study Design	This was a multicenter, prospective, observational cohort study of emergency department patients from 4 community hospitals and 2 trauma sites in the United States. Patients were enrolled between April 2009 and January 2011. The study included patients 18 years of age or older with any injury to the head or neck who had taken warfarin or clopidogrel within the last 7 days. Patients taking both warfarin and clopidogrel were excluded. Patients transferred from other facilities were excluded to minimize bias. Management of the patients was at the discretion of the attending emergency physician. Patients were followed for 2 weeks for assessment of delayed intracranial bleeds.
Results	1064 patients we included in the study (768 on warfarin, 296 on clopidogrel). Of all patients, 94% (1000/1064) received an initial CT head scan. Baseline demographics and initial clinical characteristics were similar between the clopidogrel and warfarin groups, except that aspirin use, headache, and visible evidence of trauma to the neck and scalp were more common in the clopidogrel group. Of the patients who received a CT head, 5% (95% CI 3.6% to 7.0%) of the warfarin group and 12% (95% CI 8.4% to 16.4%) of the clopidogrel group had an initial positive scan. On 2 week follow-up of the initially negative CT scans, 4 patients (0.6%, 95% CI 0.2% to 1.5%)) in the warfarin group had delayed intracranial hemorrhages. Two of the four patients died from the bleed and two required admission for observation. No patients in the clopidogrel group had a delayed ICH.
Validity of Results	This is the largest trial assessing this clinical question to date. However the validity of the results came under scrutiny at Journal Club for several reasons. The degree of head trauma came into question. Ten percent of patients in the study did not even receive an initial head CT, suggesting that this might have been a group with very minimal trauma. The study also included any trauma above the neck, not just head trauma. Furthermore the inclusion criteria of only needing to take one dose of medication within the last seven days suggests some participants may not have been fully anticoagulated. All of this may point towards an underestimate of the proportion of both initial and delayed ICHs. The possible limitations and biases arising from public knowledge were also noted at Journal Club. Warfarin is a well-known anticoagulant and the warfarin cohort may have been more aware of the need for an MD assessment with minor head trauma. The clopidogrel cohort, in contrast, on the other hand may not have been as aware of the risks and only come into the ED with more severe trauma – thus contributing to the higher percentage of initial ICH's.
Generalizability of Results	As explained above, it is possible that the numbers from this study are underestimates for true head trauma in truly anticoagulated patients. The study population was based out of Northern California and, it was felt, would be representative of the patients seen in BC. It was felt that the practice style of American physicians working in an American system may not be as generalizable to the decisions made within a Canadian context.
The Bottom Line	Plavix is at least as bad as warfarin for risk of immediate ICH's after head trauma, and patients on this medication should be assessed and managed accordingly.