



Utility and Feasibility of Platelet Sensitivity Assays to Identify Patients with Non-traumatic Intracerebral Hemorrhage Suitable for Transfusions



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Introduction

One-fifth of U.S. adults and half of those over age 65 take aspirin. Studies suggest that platelet dysfunction may be associated with hematoma expansion and clinical outcome in patients with nontraumatic intracerebral hemorrhage (ICH). Clinicians routinely administer platelets to patients with ICH and documented use of antiplatelet agents, however a substantial minority of patients on these medications do not have platelet inhibition. Recent cardiac literature suggests that 28% of patients taking aspirin, 21% taking clopidogrel and 6% taking both are nonresponders (2,3,4,5). In addition, the recent stroke guidelines state that usefulness of platelet transfusions in ICH patients with a history of antiplatelet use is unclear and is considered investigational (6). We sought to identify whether the implementation of a commercially available platelet sensitivity assay for patients with nontraumatic ICH on antiplatelet agents can provide information that can direct patient care, improve patient safety, and reduce health care costs.

Methods

A retrospective review of a prospective database was performed for all patients with nontraumatic intracranial hemorrhage on admission head CT during September 2010 through July 2011. VerifyNow platelet sensitivity assays were performed and results recorded. 550 aspirin reaction units and greater were considered aspirin nonresponders, and less than 10% inhibition on the P2Y12 assay were considered clopidogrel nonresponders. Patients with documented antiplatelet use were transfused regardless of their assay results. The number of patients with platelet inhibition and number of single

Results

155 patients were admitted with nontraumatic ICH over 10 months, all patients had platelets sensitivity assays performed. 86 patients were reported to be on antiplatelet agents. Our non-responder rates were 19% for aspirin and 0% for clopidogrel. For the 27 patients on both aspirin and clopidogrel, 19% were nonresponsive to aspirin only, 11% were nonresponsive to clopidogrel only, and 0% were nonresponsive to both (see Table 1).

There were no adverse effects from platelet transfusions. 8 units of single-donor platelets were transfused in non-responders. The fiscal value of these 8 units was 3200 dollars.

25% of patients (17/69) not taking aspirin or clopidogrel showed platelet inhibition on the aspirin assay. 6 of these patients had taken >1g ibuprofen within 24 prior to admission, 2 patients had chronic renal failure and uremia, and 2 patients were chronic alcoholics. There were no false positives for the clopidogrel assay.

Table 1					
Group	n	Our Non-responder Rate	Published Non-responder Rate	# of Transfusions to Non-responders	Cost
ASA only	58	19%	22%	6	\$2,400
Clopidogrel only	1	11%	28%	0	\$0
ASA + Clopidogrel	27	**	6%	2	\$800
Neither	69				

** 19% were nonresponsive to aspirin only, 11% to clopidogrel only, and no patients were nonresponsive to both

Conclusions

The VerifyNow assay is a quick, inexpensive method to test platelet function in patients with nontraumatic intracerebral hemorrhage and may result in improved patient safety and reduced healthcare costs by identifying patients with inhibited platelet function.

References

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