Use and Utility of Preoperative Hemostatic Screening and Patient History in Adult Neurosurgical Patients

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Abstract

Introduction: The utility of preoperative hemostasis screening to predict complications is uncertain. We quantified the screening rate in US neurosurgery patients and evaluated the ability of abnormal test results, compared with history-based risk factors, to predict hemostasis-related and general outcomes. Methods: 11,804 adult neurosurgery patients were identified in the 2006-2009 American College of Surgeons NSQIP database. Multivariate logistic regression modeled the ability of hemostatic tests and patient history to predict outcomes (intra and postoperative RBC transfusion, return to the OR, and 30-day mortality). Sensitivity analyses were conducted using patient subgroups by procedure. Results: Most patients had all three hemostatic tests (platelet count, PT/INR, aPTT), but few had any of the outcomes of interest. Screening tests were significantly associated with intraoperative RBC transfusion, return to the OR, and mortality; abnormal INR was associated with postoperative RBC transfusion. However, all tests had low sensitivity (0.09 to 0.2), as was specificity of the platelet count (0.04-0.05). Association between patient history and each outcome was approximately the same across tests, with higher sensitivity but lower specificity. Combining abnormal tests with history accounted for 50% of mortality and 33% of each of the other outcomes. Conclusions: This is the first study to assess preoperative hemostasis screening, compared with patient history, in a large multi-center sample of adult neurosurgery patients to predict hemostasis-related outcomes. History was as predictive as laboratory testing for all outcomes, with higher sensitivity. Routine laboratory screening appears to have limited utility. Testing limited to neurosurgical patients with a positive history would save an
estimated $81,942,000 annually.