Preoperative Aspirin Therapy Does Not Increase Mortality after Emergency Neurosurgery

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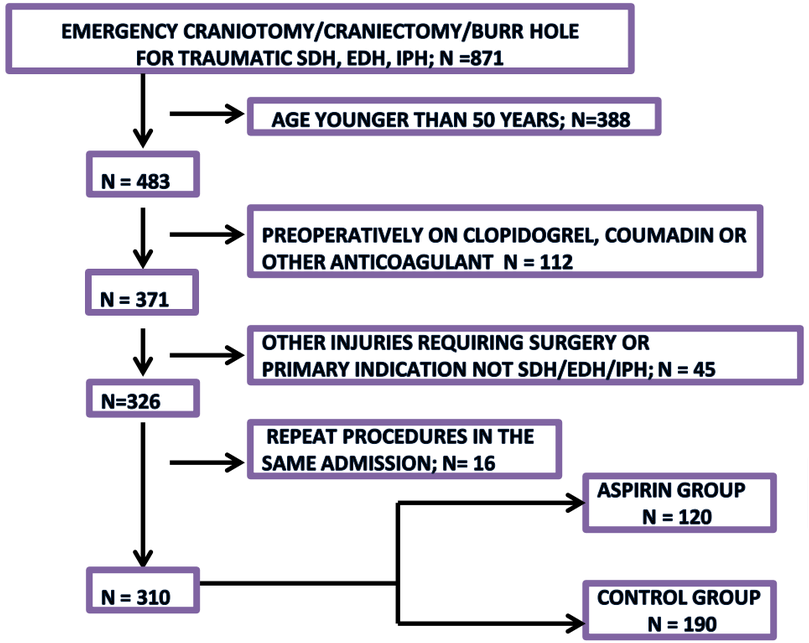
Introduction: It is common practice to discontinue anti-platelet medications prior to elective neurosurgery. This study was performed to evaluate whether aspirin taken without cessation prior to emergency neurosurgery has a negative impact on patient outcome.

Methods: This is a retrospective chart review on emergency neurosurgical procedures (craniotomies and Burr holes) performed for traumatic subdural, extradural and intraparenchymal hemorrhage over a 5 year period (2008-2012) in a level 1 trauma center. Demographic data, past medical history including chronic antiplatelet and anticoagulant medications, ASA classification, Glasgow Coma Scale (GCS) score on admission and surgical and anesthesia intraoperative data were gathered. Patients 50 years and older were included in the study. Exclusion criteria were: 1) chronic preoperative treatment with anticoagulants or antiplatelet agents other than aspirin, 2) concomitant traumatic injuries requiring surgery, and 3)repeat neurosurgery in the same admission. In-hospital mortality was considered as a primary outcome measure. Secondary outcome measures were: 1) perioperative volume of blood products transfused in a period of 48 hours before to 48 hours after surgery; 2) duration of ICU stay; 3) duration of mechanical ventilation, and 4) duration of hospital stay. Patients who received chronic aspirin therapy preoperatively (Aspirin Group) were compared to patients who did not receive aspirin (Non-Aspirin Group) using a logistic regression model to control for patient age, ASA class and GCS score, with the dependent variable for each outcome dichotomized to either greater than/equal to or less than a cutoff value chosen to demarcate an adverse vs. a routine outcome. Odds ratios for each category were compared between the aspirin and control group, with a 95% confidence interval not crossing 1.0 considered as significant.

Results: There were 310 patients identified in the cohort (68.2 ± 12 years, 63% male): patients in the Aspirin Group (n=120, 61% male) were older than patients in the Non-Aspirin Group (n=190, 64% male), (72.6 ± 12 vs. 65.5 ± 12 years, p<0.001), and had a higher GCS score (13 ± 4 vs. 11 ± 4, p<0.001). In-hospital mortality was 13% in the Aspirin and 24% in Non-Aspirin group. The unadjusted OR (0.45, 95% CI 0.24-0.84) shows significantly lower mortality in the Aspirin Group, and this OR is attenuated and becomes non-significant when adjusted for age, ASA class and admit GCS score (OR 0.68, 95% CI 0.34-1.39). Aspirin was a predictor for receiving perioperative platelet transfusion after adjusting for confounders (OR 4.136, 95% CI 2.305-7.421). None of the other secondary outcome variables show significant association with preoperative aspirin.

Conclusions: Chronic aspirin treatment without cessation in patients over age 50 undergoing emergency neurosurgery is not associated with increased mortality, and is associated with increased perioperative platelet transfusion.

METHODS



	Age (Mean ± SD)	ASA Status (Mean ± SD)	Male gender (Mean ± SD)	GCS Score on admit (Mean ± SD)
Aspirin	72.6 ± 12 P<0.001	3.11 ± 0.79 P= 0.041	61%	12.7 ± 3.5 P<0.001
Control	65.5 ± 12	3.31 ± 0.82	64%	10.5 ± 4.4

TABLE 1. DEMOGRAPHIC DATA. P VALUE VS. CONTROL GROUP

RESULTS

	Odds Ratio	95% CI	Adjusted Odds Ratio	95% CI
PRBCs (>350 mLs vs. ≤350 mLs)	.538	0.272 - 1.065	0.936	.433-2.023
FFP (transfused vs. none transfused)	.557	0.281 – 1.106	0.815	.381-1.743
Platelets (transfused vs. none transfused)	2.954	1.773 - 4.921	4.136	2.305-7.421
Cryoprecipitate (tranfused vs. none transfused) 663	.786	0.193 - 3.205	1.851	.393-8.721

TABLE 2. PERIOPERATIVE BLOOD PRODUCT TRANSFUSION.
ASPIRIN VS. NON-ASPIRIN GROUP. ODDS RATIOS ADJUSTED FOR AGE, ASA STATUS, GCS SCORE

	Odds Ratio	95% CI	Adjusted Odds Ratio	95% CI
In-Hospital Mortality	.447	.237 - .844	.685	.337 – 1.392
ICU Days (>5 days vs. ≤5 days)	.522	.318 - .854	.892	.497-1.601
Ventilator Days (>2 days vs. ≤2 days)	.406	.241 - .684	.663	.356-1.234
Hospital LOS	.463	.287 - .748	.830	.466-1.479

TABLE 3. PRIMARY AND SECONDARY OUTCOMES. ASPIRIN VS. NON ASPIRIN GROUP.
ODDS RATIOS ADJUSTED FOR AGE, ASA STATUS, GCS SCORE