CLOPIDOGREL NON-RESPONSIVENESS IS ASSOCIATED WITH THROMBOEMBOLIC EVENTS FOLLOWING CAROTID STENTING

Introduction One of the biggest concerns associated with endovascular procedures is the development of thromboembolic events. To mitigate this risk, patients are placed on dual antiplatelet therapy. Interestingly, there is a known variation in one’s ability to appropriately respond to antiplatelet medications and patients with decreased responsiveness may be at an increased risk of developing ischemic complications. Routine testing of antiplatelet responsiveness is not performed at most endovascular centres and is still a topic of controversy within the neurosurgical community. Previous studies have described the utility of platelet function testing within patients undergoing intracranial procedures, but very few studies have focused exclusively on patients undergoing extracranial carotid stenting procedures. Those that have, are retrospective in nature and the VerifyNow assay, which may not be as accurate as impedance aggregometry, has been the platelet function test of choice. Therefore, the objective of our study was to determine if non-responsiveness to acetylsalicylic acid and clopidogrel, as measured by whole blood impedance aggregometry, was associated with the development of symptomatic thromboembolic events in patients undergoing carotid stenting procedures.

Methods A prospective study was conducted at the Foothills Medical Centre in Calgary, Alberta, Canada from August 2019 to February 2021. Patients undergoing carotid stenting procedures and who were on dual antiplatelet therapy consisting of acetylsalicylic acid and clopidogrel were enrolled in the study. Responsiveness to the antiplatelet medications was determined through whole blood impedance aggregometry and the treating neurointerventionalists were blinded to the results. Therefore, no changes were made to the antiplatelet medications based on the results of the platelet function tests. The primary outcome was the development of a symptomatic thromboembolic event at 90 days after the procedure.

Demographic, clinical, radiological, and procedural variables were analyzed to determine which factors were associated with the development of thromboembolic events.

Results One hundred and two procedures were performed in 100 patients and eight (8%) thromboembolic events occurred during the study. The non-response rate of clopidogrel and acetylsalicylic acid was 15% and 9%, respectively. Age (p=0.03) and non-responsiveness to clopidogrel (p=0.003) were associated with the development of thromboembolic events. Twenty-seven percent of the patients who were non-responsive to clopidogrel developed a thromboembolic event compared to only 5% of the patients who were responsive to clopidogrel. Acetylsalicylic acid non-responsiveness was not associated with the development of thromboembolic events (p=0.36). The multivariable model showed that clopidogrel non-responders were independently associated with the development of a thromboembolic event (adjusted OR 6.14, 95% CI 1.25, 30.11, p=0.03).

Conclusion Our study demonstrated that patients who were identified as clopidogrel non-responders, using whole blood impedance aggregometry, were at an increased risk of developing thromboembolic events. The results of our study validate the need for larger observational studies or randomized controlled trials to assess the utility of routine platelet function testing prior to carotid stenting procedures.

Disclosures S. Muram: None. K. Panchendrabose: None. M. Eagles: None. S. Abdul Salam: None. J. Wong: None. J. Riva-Cambrin: None. A. Mitha: 1; C; Stryker Neurovascular. 2; C; Cerus Endovascular, Stryker Neurovascular.

SYMPATHETIC NERVOUS SYSTEM ACTIVATION CAUSES CEREBRAL PERFUSION DEFICIT AND CEREBRAL VASOCONSTRICTION IN SWINE

Introduction Cerebral vasospasm occurs from reversible narrowing of blood vessels, leading to stroke and poor patient outcome. One of the biggest concerns associated with cerebral vasospasm is the development of a symptomatic thromboembolic event at 90 days after the procedure. Demographic, clinical, radiological, and procedural variables were analyzed to determine which factors were associated with the development of thromboembolic events.

Results One hundred and two procedures were performed in 100 patients and eight (8%) thromboembolic events occurred during the study. The non-response rate of clopidogrel and acetylsalicylic acid was 15% and 9%, respectively. Age (p=0.03) and non-responsiveness to clopidogrel (p=0.003) were associated with the development of thromboembolic events. Twenty-seven percent of the patients who were non-responsive to clopidogrel developed a thromboembolic event compared to only 5% of the patients who were responsive to clopidogrel. Acetylsalicylic acid non-responsiveness was not associated with the development of thromboembolic events (p=0.36). The multivariable model showed that clopidogrel non-responders were independently associated with the development of a thromboembolic event (adjusted OR 6.14, 95% CI 1.25, 30.11, p=0.03).

Conclusion Our study demonstrated that patients who were identified as clopidogrel non-responders, using whole blood impedance aggregometry, were at an increased risk of developing thromboembolic events. The results of our study validate the need for larger observational studies or randomized controlled trials to assess the utility of routine platelet function testing prior to carotid stenting procedures.

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Abstract O-038 Figure 1 CT perfusion scan (top row) coronal view of approximate fronto-temporal area of swine brain (outlined in white box) at baseline, with right SCG stimulation, with lidocaine + right SCG stimulation. Cerebral angiogram (bottom row) AP view of swine cranial arterics at baseline, with right SCG stimulation, with lidocaine + right SCG stimulation. Small arrow: ACA. Arrowhead: aMCA. Large arrow: APA.