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CONSENSUS DEFINITION-BASED CUTOFFS OF HIGH ON-TREATMENT PLATELET REACTIVITY: VALIDATION BETWEEN LIGHT TRANSMITTANCE AND MULTIPLE ELECTRODE AGGREGOMETRIES

ACC Poster Contributions
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Background: Multiple electrode aggregometry (MEA) might represent a reliable alternative in comparison with light transmittance aggregometry (LTA). However, it has not been sufficiently validated for the determination of high on-treatment platelet reactivity (HPR) to antiplatelet therapy but also for the threshold of safety.

Methods: The platelet function measurements (n = 280) were recruited from data assessed by 5 and 20μM ADP-stimulated LTA, and 6.4μM ADP-stimulated MEA in cohort treated with dual antiplatelet therapy.

Results: The values of MEA had significant correlations with 5μM (r = 0.650, p < 0.001) and 20μM ADP-induced PRs (r = 0.684, p < 0.001). For the cutoff of efficacy (468 AU*min), the matched cutoff points were 46.4% for 5μM ADP-induced PR and 56.8% for 20μM ADP-induced PR, which were well matched with the consensus definition. When we used the cutoff of safety (188 AU*min), 5μM ADP-induced PR < 26.6% was identified as the matched cutoff point (AUC 0.686, 95% confidence interval [CI] 0.572-0.800, p < 0.001), providing a sensitivity of 59.4% and a specificity of 75.0%. The AUC of 20μM ADP-induced PR for predicting the safety point of 0.727 (95% CI 0.625-0.829, p < 0.001), and 20μM ADP-induced PR < 35.3% showed a sensitivity of 62.7% and a specificity of 76.5%.

In the assessment of agreement, a significant good agreement was observed between 5μM ADP-induced PR > 46% and MEA > 468 AU*min (☒ = 0.535, p < 0.001), with a concordant rate of 78.9%. Among patients with 5μM ADP-induced PR > 46% (n = 103), 34 patients (33.0%) showed MEA ≤ 468 AU*min. MEA > 468 AU*min also showed a significant agreement with 20μM ADP-induced PR > 59% (☒ = 0.596, p < 0.001), with a concordant rate of 81.1%. However, 30 patients (31.9%) with 20μM ADP-induced PR > 59% (n = 113) did not meet MEA > 468 AU*min.

Conclusions: The present study verifies that MEA-based HPR is significantly concordant with LTA-based HPR, when we used the cutoff values of HPR suggested by the consensus definition. In addition, the hypothetical threshold of safety may give a clue to predict the therapeutic window zone of LTA-based PR. However, LTA-based HPR could be classified into normal responders by MEA-based assessment in some patients.