Recovery of platelet function after LD was defined as occurring on the first day that VerifyNow (VN) P2Y12 point of care assays indicated PGE1 at 22nM to suppress P2Y1 receptor signaling along with ADP.

Methods: Subjects with established coronary artery disease and prior coronary stenting who were taking clopidogrel 75 mg daily for >14 days were enrolled (n = 96). Diabetic (n = 34) were compared with non-diabetic subjects (n = 62). Light transmittance aggregometry (LTA) was performed at various concentrations of ADP with and without the addition of PGE1, as well as VN P2Y12 assay.

Results: Residual on-treatment platelet aggregation induced by 5, 10, and 20 μM ADP was not significantly different between subjects with and without DM. Addition of 22nM and 88nM PGE1 to 20 μM ADP resulted in a significant reduction of maximal platelet aggregation (MPA). Residual platelet aggregation with PGE1 was significantly higher in subjects with DM as compared to non-diabetics. VerifyNow P2Y12 PRU was higher in subjects with DM as compared to non-diabetics (Table). VN P2Y12 reaction correlated with MPA induced by ADP 20 μM (r = 0.69) and ADP 20 μM & PGE1 22nM (r = 0.61).

Conclusion: Addition of PGE1 to ADP was associated with higher residual MPA in subjects with DM as compared to non-diabetics. On treatment MPA induced by ADP alone was not significantly different between subjects with and without DM measured by LTA. Addition of PGE1 to ADP against platelet assays may result in a higher proportion of subjects with DM being classified as non-responders. Impaired inhibitory responses to PGE1 may contribute to the high platelet reactivity phenotype in subjects with DM.

TCT-159
Recovery of Platelet Function After a Loading Dose of Prasugrel or Clopidogrel in Patients With Coronary Artery Disease
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Background: Prasugrel is associated with higher levels of residual platelet inhibition compared to clopidogrel, which may result in longer times for platelet P2Y12 receptor function to recover following drug cessation. The aim of this study was to assess the time to recovery of platelet function in patients with coronary artery disease following administration of a prasugrel or clopidogrel loading dose (LD).

Methods: Recovery of platelet function after LD was defined as occurring on the first day that VerifyNow (VN) P2Y12 reaction units (PRU) were ≥60 below pre-drug values and remained in this range. The percentage of subjects (n = 21) who recovered over time (3, 5, 7, 9, and 11 days) following 30 or 60 mg prasugrel or 600 mg clopidogrel with aspirin was assessed by measurement of PRU. The relationship between inhibition of platelet function at 24 hours post LD to time of recovery was also evaluated.

Results: Pre-drug, mean PRU was 337.6, 308.2, and 323.0 for prasugrel 60 mg, prasugrel 30 mg, and clopidogrel 600 mg, respectively. At 24 hours post-LD, mean PRU were lowest for prasugrel 60 mg (32.5), followed by prasugrel 30 mg (70.0), and clopidogrel 600 mg (193.0). Recovery for all prasugrel-treated subjects occurred from Days 3-5, while recovery for clopidogrel-treated subjects occurred from Days 3-7 (Figure 1).

Conclusion: Time for platelet function to return to baseline reflected the extent of platelet inhibition at 24 hours post-LD. Prasugrel-treated subjects required a longer time for recovery compared with clopidogrel.

TCT-160
High On-treatment Platelet Reactivity Measured by Various Platelet Function Tests: Is the Current VASP-PRI Cutoff Too Low?
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Background: High on-treatment platelet reactivity (HPR) to ADP measured by multiple methods has been linked to adverse post-PCI clinical event occurrence. The correlation of HPR cutoffs is still a matter of debate, since the predictive value and HPR group size are different depending on platelet function assays. To determine the comparable cutoff, we correlated cutoffs for HPR determined by various assays in the same patient cohort.

Methods: Platelet measures (5 μM ADP-induced light transmission aggregation (LTA):5μMADP; P2Y12 reaction units by VerifyNow (PRU), and platelet reactivity index by VASP assay (PRI)) were evaluated in (n = 936 pairs, cohort I) in stable CAD patients during P2Y12 receptor inhibitor treatment. These assays also performed in PCI-treated patients receiving standard aspirin and clopidogrel therapy (n = 584, cohort II). The HPR cutoffs were defined as LTA:5μMADP >46%, PRI >235, and PRI >50%.

Results: In the stable CAD patients, LTA:5μMADP showed significant correlations with PRU and PRI (r = 0.688). In ROC curve analysis using the cutoff of LTA:5μMADP (≥46%), the matched values of PRU and PRI were >234 (AUC 0.943, p < 0.001; sensitivity 87.3% and specificity 87.8%) and >60% (Figure A). Among PCI-treated patients, the prevalence of HPR was highest based on PRI >50% (69%) compared with other criteria (≤55%). The comparable values for LTA:5μMADP (≥46%) were PRI >235 (AUC 0.850, p < 0.001; sensitivity 85.3% and specificity 70.4%) and PRI >59% (Figure B).

Conclusion: The published cutoff values for HPR by LTA:5μMADP and PRI were well correlated, whereas published PRI >50% cutoff value may overestimate the risk of HPR. Updated cutoff of PRI > 60% may better stratify the risk for HPR and can be used in future trials.