

Clopidogrel Response Stability over Time in Patients after an Acute Myocardial Infarction

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Background: High on-treatment platelet reactivity (HTPR) despite clopidogrel therapy is associated with adverse cardiac events after acute myocardial infarctions (AMI). Most studies to date assessed clopidogrel response at a single time point before or after percutaneous coronary intervention (PCI). It is unclear, however, whether the HTPR phenotype is stable over time after an AMI. Accordingly, we aimed to examine response to clopidogrel in patients with AMI treated with primary PCI over a 6 month period.

Methods: Patients with AMI treated with primary PCI were assessed for response to clopidogrel at 3 time points: in-hospital, 30-days and 6-months after the index hospitalization. Response to clopidogrel was determined by the VerifyNow P2Y12 assay (reported as P2Y12 response units, PRU) and multiple electrode aggregometry (MEA ADP test, reported as aggregation units, AU). HTPR was defined as $PRU \geq 235$ or $AU \geq 47$, respectively.

Results: Fifty-seven patients were recruited. The mean age was 54.5 ± 10.9 years, 91% were male, 19% had diabetes and 74% were admitted with ST-elevation MI. HTPR based on MEA was observed in 22.8% of patients in-hospital, 26.8% at 30-days and 18.0% at 6-months ($P=NS$). HTPR based on the VerifyNow assay was observed in 37.9% of patients in-hospital, 28.0% at 30-days and 33.3% at 6-months ($P=NS$). Mean MEA and VerifyNow results were relatively stable over time, except for a decrease in MEA values between 30 days and 6 months (in-hospital: 31.6 ± 2.2 AU, 30 days: 32.8 ± 2.7 AU, 6 months: 27.5 ± 2.3 AU, $P=NS$ for the first 2 time points, $P=0.004$ for 30 days vs. 6 months). The individual HTPR phenotypic assignment at baseline was stable in 71.9% (based on MEA) and 78.9% (based on VerifyNow) of patients at 6 month follow-up.

Conclusions: The rates of HTPR to clopidogrel therapy appear to be relatively stable up to 6 months after an AMI.