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Predictors of response to Clopidogrel in Patients with ACS

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Objectives: Many studies have demonstrated a significant individual variability in platelet response to clopidogrel, with up to one third of patients (pts) being non-responders. Unresponsiveness to clopidogrel, as measured by platelet reactivity, is associated with worse prognosis. Defining predictors of response to clopidogrel may be of clinical importance. In pts with stable coronary artery disease (CAD), smoking, diabetes mellitus (DM) and elevated body mass index (BMI) were shown to impact the response to clopidogrel. Nevertheless, the predictors in pts with acute coronary syndrome (ACS) are unknown.

Methods: The study comprised 245 consecutive acute myocardial infarction (AMI) pts. On the third day platelet aggregation (conventional aggregometry using 5-µmol/l adenosine diphosphate -ADP), hs C-reactive protein (CRP), platelet count and mean platelet volume (MPV) were determined for all pts. Pts with ADP platelet aggregation > 70% were considered clopidogrel resistant (CR) pts.

Results: Eight four pts (34%) were CR (ADP aggregation: 81 ± 17% vs. 49 ± 17%, p<0.001). No difference was found regarding male gender and age between CR and responders (80% vs. 83% p=0.5; 61±10 vs. 60±8 yrs p=0.12, respectively). Prior ACS, coronary revascularization, hyperlipidemia, family history of CAD, smoking, DM, BMI, hypertension and prior aspirin use, were all of no significant difference between the two groups. CR pts were more likely to present with ST elevation M.I but the differences did not achieve statistical significance (84.3% vs. 77.9%, p=0.11). CRP and platelet count also did not differ between the study groups. However, CR as compared to responders had significantly higher MPV (9±1.2 fl vs. 8±1 fl, p=0.0017).

Conclusions: Among pts with ACS, pts' epidemiologic characteristics did not predict response to clopidogrel, however, increased MPV which is associated with platelet activation, strongly predicted unresponsiveness to clopidogrel.