

The Anti Platelet Effect of Clopidogrel Pre-Treatment in Patients Undergoing Primary PCI for STEMI

Beigel, Roy; Fefer, Paul; Shenkman, Boris; Fink, Noam; Asher, Elad; Hod, Hanoach; Matetzky, Shlomi
Sheba Medical Center, The Leviev Heart Center, Tel Hashomer, Israel

Background: Pre-treatment with clopidogrel prior to percutaneous intervention (PCI) has been proven effective in various clinical settings. Small retrospective studies suggest clinical benefit for clopidogrel pre-treatment in the setting of primary PCI (PPCI) in patients with ST segment elevation myocardial infarction (STEMI). The anti platelet effect of pre-treatment with clopidogrel prior to PPCI during the narrow door to balloon timeframe in patients presenting with STEMI has yet to be evaluated.

Methods: Platelet function tests using light transmitted aggregometry were prospectively assessed in 31 consecutive patients presenting with STEMI. All patients were treated with 600mg clopidogrel loading upon admission. Blood was drawn for ADP induced aggregation prior to clopidogrel loading, at PPCI, and 72 hours later. An ECG recorded at presentation and after PPCI was assessed for early ST resolution (STR) > 50%.

Results: Baseline ADP induced aggregation was $81\pm 7\%$. The mean clopidogrel to balloon time was 50 ± 18 minutes during which ADP induced aggregation was reduced to $76\pm 10\%$ ($P=0.0096$). Only 8 pts (26%) demonstrated a positive response to clopidogrel, defined as achieving ADP induced aggregation < 70%. Responders were less likely to be diabetics and more likely to be smokers. 72 hours later ADP induced aggregation was further reduced to $50\pm 18\%$ ($P<0.001$ to baseline). Importantly, Early STR was associated with achieving lower ADP induced aggregation at PPCI (82 ± 6.1 vs. 74 ± 10 , $P=0.029$).

Conclusions: Clopidogrel pre-treatment was associated with a significant, but modest reduction in platelet ADP induced aggregation and positive response in about one quarter of the patients. Positive response was associated with early STR, which might account for the previously shown clinical benefit of clopidogrel pre-treatment in patients undergoing PPCI. The use of newer, more potent ADP blockers with a rapid onset of action may prove even greater benefit in patients undergoing PPCI.