

## **Early Platelet Response to Thienopyridine Loading in ST-Elevation Acute Myocardial Infarction at the Time of Primary Angioplasty: Predictors and Effect on Myocardial Reperfusion**

**Edward Koifman**<sup>1</sup>, Roy Beigel<sup>1,2</sup>, Paul Fefer<sup>1</sup>, Romana HersHKovitz<sup>1</sup>, Amit Segev<sup>1</sup>, Victor Guetta<sup>1</sup>, HanoCh Hod<sup>1</sup>, Nurit Rosenberg<sup>3</sup>, Shlomi Matezky<sup>1</sup>

<sup>1</sup>*Leviev Heart Center, Chaim Sheba Medical Center, Israel*

<sup>2</sup>*Heart Institute, Cedars Sinai, USA*

<sup>3</sup>*Research Institute of Thrombosis and Hemostasis, Chaim Sheba Medical Center, Israel*

### **Background:**

Early thienopyridines administration in STEMI patients assigned to primary angioplasty (PPCI) was associated with improved outcomes. However, the data regarding the early anti-platelet effect of thienopyridine therapy in STEMI and its predictors are scarce.

### **Methods:**

Ninety-nine STEMI patients referred for PPCI were prospectively evaluated. Fifty-four and 45 patients were treated with clopidogrel (600/75 mg) and prasugrel (60/10 mg) respectively. ADP-induced platelet aggregation (PA) was determined by light transmission aggregometry at the PPCI. Early ST segment resolution (STR  $\geq$  50%) and tissue myocardial reperfusion (TMP) were prospectively studied as a marker for myocardial reperfusion.

### **Results:**

Clopidogrel and prasugrel treated patients were similar regarding their baseline characteristics and angiographic findings as well as door to balloon time (47 $\pm$ 22 vs. 44 $\pm$ 16 minutes, p=0.4). At PPCI ADP induced PA was significantly lower post prasugrel compared with clopidogrel loading (63 $\pm$ 16% vs. 71 $\pm$ 19%, p=0.03). Prasugrel treated patients demonstrated better indices of myocardial reperfusion in comparison to clopidogrel, including higher rate of STR (89% vs. 72%, p=0.02) and were more likely to have TMP  $\geq$  2 (85% vs. 54%, p<0.01). PA at PPCI was affected by patient's age, baseline PA prior to thienopyridine loading, and thienopyridine to PPCI time among both clopidogrel and prasugrel treated patients. Interestingly, while smoking status had no effect on early response to prasugrel, non-smokers had lower response to clopidogrel (p=0.001).

### **Conclusion:**

In STEMI patients, prasugrel compared with clopidogrel therapy is associated with greater inhibition of PA at PPCI and better indices of myocardial reperfusion.