Abstract: P25

Polymorphism of CYP2C19 is associated with poor platelet response to clopidogrel and indirectly affect TIMI-flow among Asian patients with STEMI undergoing primary PCI

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Background: The platelet response to clopidogrel treatment is very important in patients with myocardial infarction undergoing primary PCI. Asian populations have been shown to have higher proportion of CYP2C19 gene polymorphism that may alter biotransformation of clopidogrel, than Caucasians. However, it is unclear whether platelet reactivity measured by P2Y12 reaction unit (PRU) is affected by CYP2C19 polymorphism, and whether it will impair coronary flow among Asian patients with STEMI after primary PCI. Purpose: We sought to define whether polymorphisms on CYP2C19 genes will affect platelet reactivity response to Clopidogrel therapy, and whether subsequently it will affect the TIMI flow in Asian patients with STEMI undergoing primary PCI. Method: We studied 90 patients with STEMI receiving 600 mg loading dose of clopidogrel prior to primary PCI. High-on-treatment platelet reactivity was evaluated using the VerifyNow Assay. Patients with platelet reactivity more than 208 PRU are categorized as non-responders to Clopidogrel. Genotyping of CYP2C19 was performed by real-time polymerase chain reaction (PCR). Post primary PCI TIMI flow was categorized into good (TIMI flow 3), and impaired (TIMI flow <3). Results: Among all 90 patients (median age = 54.5 years old; 93.3% male), there were 36.6% patients with CYP2C19 polymorphisms, carrying *2 or *3 alleles. Platelet reactivity test revealed 23.4% of all patients were Clopidogrel non-responders. Multivariate analysis showed CYP2C19 polymorphism is associated with Clopidogrel non-responders (OR 4.7, p = 0.030), along with other factors such as: Diabetes, Renal impairment, and use of proton pump inhibitor drugs. After successful stent implantation during primary PCI, there were 24.4% patients still with TIMI flow < 3. There was no direct correlation between CYP2C19 polymorphism and TIMI flow < 3 after primary PCI. However, we found significant association between Clopidogrel non-responders and TIMI flow < 3 after primary PCI in those STEMI patients (OR 3.3, p = 0.046). Conclusions: In Asian patients with STEMI receiving clopidogrel prior to primary PCI, the CYP2C19 polymorphisms is associated with poor platelet response to Clopidogrel therapy. The Clopidogrel non-responders is associated with impaired TIMI flow after primary PCI.