Long-term parallel tailoring of dual antiplatelet treatment with acetyl-salicylic acid and clopidogrel in patients with acute myocardial infarction and high on-treatment platelet reactivity: impact on clinical outcomes

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Introduction: Patients with myocardial infarction (MI) are treated with percutaneous intervention (PCI) followed by dual antiplatelet treatment with ticagrelor and acetyl-salicylic acid (ASA). When ticagrelor is not available or poses a high risk for the patient clopidogrel and ASA are given[1]. Interindividual variability of clopidogrel on platelet aggregation is widely recognized. Many studies have been conducted regarding individualized treatment with clopidogrel resulting in contradictory data. We designed a prospective, randomized study of individualized treatment with either clopidogrel or ASA or both in patients with acute MI and laboratory finding of high on treatment platelet reactivity (HOTPR).

Patients and Methods: We investigated 73 patients with acute (MI) after PCI and standard loading doses of ASA and clopidogrel. Platelet reactivity was analyzed with Multiplate aggregometry. 43 patients comprised a therapeutic group with repeated daily loading doses of ASA and clopidogrel and then tailored treatment with up to 300 mg of ASA and 300 mg of clopidogrel daily. 30 patients were in the control group treated with standard treatment.

Results: No significant difference in ischemic major adverse cardiovascular and cerebrovascular events (MACCE) (P=0.186) nor in overall mortality (0.521) was found when comparing the control group to the therapeutic one. However, further subanalysis revealed a higher tendency towards ischemic MACCE in the subgroup of patients with HOTPR ADP reactivity when compared to those with HOTPR ASPI reactivity (r=-0.376, P=0.013). Also, our data showed a tendency towards lower incidence of MACCE in the clopidogrel tailored subgroup (r=-0.244, P=0.078), something already shown in our previous research. When taking this into account, a significant difference in the incidence of MACCE among groups depending on all of the aforementioned therapeutic modalities is present (P=0.027).

Conclusion: Our investigation showed that tailored antiplatelet therapy in patients with acute MI treated with clopidogrel and ASA and HOTPR showed no significant difference in MACCE. However, HOTPR in ADP reactivity carries greater impact on clinical outcome than HOTPR in ASPI reactivity showing tendency towards lower incidence of MACCE in patients with clopidogrel-only tailoring.

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LITERATURE

1. Valgimigli M, Bueno H, Byrne RA, Collet JP, Costa F, Jeppsson A, et al. 2017 ESC focused update on dual antiplatelet therapy in coronary artery disease developed in collaboration with EACTS: The Task Force for dual antiplatelet therapy in coronary artery disease of the European Society of Cardiology (ESC) and of the European Association for Cardio-Thoracic Surgery (EACTS). Eur Heart J. 2017 Aug 26. https://doi.org/10.1093/eurheartj/ehx419