Platelet Hyperreactivity Project

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Background. Aspirin is a cornerstone in the treatment and prevention of ischemic vascular events. However, despite strong inhibition of thromboxane A2 production by aspirin, around 30% of patients display a preserved platelet function, defining "high on-treatment platelet reactivity". We and others showed that high on-treatment platelet reactivity was associated with recurrence of arterial ischemic events. The causes of this phenotype are unknown.
Working hypothesis. High- and low on-treatment platelet reactivity are characterized by differences in the expression of specific gene products involved in platelet secretion.
Specific aims. The aim of this project is to characterize the proteome profile of platelet alpha-granule complemented with the proteome profile of platelet secretion releasate in 2 groups of patients with high- and low on-treatment platelet reactivity.
Methods. We will first screen stable cardiovascular patients on chronic aspirin treatment as the only antiplatelet drug. Subjects with the highest and lowest on-treatment platelet reactivity will be identified and further evaluated by proteomics analysis. Moreover, this approach will be complemented by transcriptomics and bioinformatics analysis. Finally, validation experiments will be performed.
Expected values of the proposed project. This project may delineate new targets for the prevention of arterial ischemic events.