Preface

Choosing the optimal antiplatelet therapy in atherosclerotic disease

This special issue of *Cardiovascular Diagnosis and Therapy* focuses on platelet function and antiplatelet therapy. Platelets play a key role not only in hemostasis and thrombosis, but also in atherogenesis being now considered a potential therapeutic target in several cardiovascular scenarios. Large efforts have been made in the last decades to better understand platelet biology and pathophysiology, and to attempt a more effective therapeutic platelet inhibition. In fact, more profound platelet inhibition is crucial in atherosclerotic disease to reduce the risk of ischemic events, especially after interventional procedures such as percutaneous coronary interventions (PCI). However, stronger antiplatelet effect also implies an increased risk of bleeding, which makes necessary a thorough assessment of the individual characteristics in order to choose the most appropriate treatment for each patient.

Platelets show an extensive interplay with vascular wall and blood cells, which is essential both in thrombogenesis and in atherogenesis. In the current special issue, Hamilos *et al.* describe the interactions between platelets and endothelium, focusing on the pathophysiologic mechanisms involved in the development of atherosclerotic plaques and in the occurrence of atherothrombotic events. Cirillo *et al.* discuss the role of tissue factor (TF) in thrombosis and hemostasis, providing a special focus on platelet-associated TF and its role in atherogenesis.

Several conditions may affect platelet function and response to antiplatelet inhibitors. Among these, diabetes mellitus (DM) has an established detrimental effect in that it is associated with accelerated atherogenesis and an increased risk of atherothrombotic complications. Angiolillo *et al.* offer an up-to-date review of the currently available antiplatelet agents and their use for secondary prevention in patients with DM experiencing an acute coronary syndrome (ACS) or treated with PCI. Barbato *et al.* provide a comprehensive review on the genes involved in platelet activation and aggregation, focusing on the role of genetic polymorphisms that determine platelet response to agonists and to drugs, and portend to a hyper-reactivity phenotype.

Given such inter-individual variability, the opportunity to monitor platelet function has been investigated, with the aim to timely identify patients with high or low on-treatment platelet reactivity, who might be exposed to an increased risk of ischemic or bleeding events, respectively. Cuisset *et al.* provide an updated overview on the randomized controlled trials conducted to assess the potential benefit of monitoring platelet function in patients with coronary artery disease. Another unsolved issue is the optimal duration of dual antiplatelet therapy (DAPT) after coronary stent implantation. Valgimigli *et al.* offer a comprehensive review of the trials comparing different duration of DAPT after PCI, highlighting how short treatments may be associated with residual thrombotic risk, and too long treatments may result in increased risk of bleeding. Peace *et al.* offer special considerations on patients at high risk of bleeding, such as the elderly and those requiring anticoagulation, in which a thorough evaluation of risks and benefit should be made before choosing the most appropriate antiplatelet treatment.

Antiplatelet drugs are a cornerstone of pharmacological treatment not only in patients with coronary artery disease, but also of those undergoing interventions for peripheral artery disease and structural heart disease. Melfi *et al.* provide an overview of the available data on antiplatelet treatment for patients with lower extremity artery or carotid artery disease, whereas Nusca *et al.* discuss the current evidence on the antithrombotic management of patients undergoing transcatheter aortic valve implantation, percutaneous mitral valve repair, percutaneous left atrial appendage occlusion and percutaneous patent foramen ovale/atrial septal defects closure.

We believe that the articles selected for this special issue will provide a useful insight and an up-to-date overview on key topics in clinical and interventional cardiology, contributing to improve patient care through a more mindful selection of antiplatelet drugs.

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