Cardiology Research and Practice

Hindawi

Special Issue on

Advances in Hemodynamic Analysis in Cardiovascular Diseases

CALL FOR PAPERS

Hemodynamics studies the behavior of blood flow in the circulatory system. Abnormal blood flow has been found to be closely related to the onset and development of a wide range of cardiovascular diseases such as hypertension, atherosclerosis, valvular heart disease, and heart failure. The hemodynamic mechanism underlying the pathogenesis of cardiovascular diseases can be complex, multiscale, and multifactorial. At the macroscale, the change in blood flow often leads to a reduced flow pumping efficiency of the heart, which requires the myocardium to work harder to compensate. Such increased workload is often spatially uneven and temporally dyssynchronous, which leads to a progressive process of ventricular remodeling and functional deteriorating. At the microscale, the change of blood flow affects the behavior of the ion channels and the biochemical pathways to gene and protein expression in the endothelial cells and potentially causes endothelial cell injuries, platelet activations, and vascular remodeling. A better understanding of the hemodynamics in the heart is essential for improving the prevention and treatment of cardiovascular diseases.

Recent developments in flow imaging and computational fluid dynamics have provided physicians and researchers better tools to investigate blood flow in patients and delivered novel insights into the pathophysiology of cardiovascular diseases. The aim of this special issue is to provide a contemporary update of the advances of hemodynamic analysis in cardiovascular diseases, including the state-of-the-art flow imaging tools and computational fluid dynamics technologies, as well as novel applications, such as new hemodynamic biomarkers and algorithms, to elucidate the pathophysiology and improve the prevention and treatment of cardiovascular diseases. We welcome both primary research articles and review articles, which provide further insight into this exciting research area.

Potential topics include but are not limited to the following:

- New hemodynamic biomarkers in cardiovascular disease
- Blood flow imaging technologies and computational fluid dynamics in cardiovascular disease
- Hemodynamics in structural heart disease interventions
- Cardiac function and blood flow
- Vascular function and blood flow
- Hemodynamics in stent restenosis
- Hemodynamics of microcirculation

Authors can submit their manuscripts through the Manuscript Tracking System at https://review.wiley.com/submit?specialIssue=807840.

Papers are published upon acceptance, regardless of the Special Issue publication date.

Lead Editor
Zhen Qian, Tencent America, USA
zhenqian@gmail.com

Guest Editors
Xiao Zhou, PLA General Hospital, China
zhouxiaosmile@hotmail.com

Anqiang Sun, School of Biological Science and Medical Engineering, China
saq@buaa.edu.cn

Submission Deadline
Friday, 7 June 2019

Publication Date
October 2019