9th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMA2024)
June 3-7, 2024, Lisbon, Portugal

RECENT ADVANCES OF COMPUTATIONAL METHODS IN CARDIOVASCULAR AND CEREBROVASCULAR BIOMECHANICS

TRACK NUMBER (300)

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Key words: Cardiovascular and Cerebrovascular Medicine, Computational Methods, Fluid Dynamics, Computational Vision, Medical Imaging

ABSTRACT

Cardiovascular and cerebrovascular diseases are a major cause of mortality and morbidity in developed countries [1]. Atherosclerotic disease is a degenerative process that is characterized by the development of atheromatous plaques on the wall of arteries. The achievement of a supporting tool to help in clinical reasoning may help cardiologists, neurologists and surgeons to better manage the atherosclerotic disease. This tool can serve to obtain the real and detailed hemodynamics such as pressure, velocity and WSS fields along the patient artery [2,3].

However, modelling hemodynamics with real physiological conditions of each patient using principles of engineering is still a challenge. A validated numerical tool is a non-invasive method that can bring many potential benefits: enhanced non-invasive evaluation of specific lesion with more judicious and selective referral, leading to reduced risk of complications and more cost-effective strategies in the diagnosis and management of patients with atherosclerosis.

Thus, this symposium is opened to a vast number of computational works used to model the hemodynamics and specific parameters. In addition, it can cover a range of topics of experimental and clinical data acquisition for further validation of the computational studies.

The proposed symposium is a joint venture between important research areas like biomedical engineering, computational biomechanics, mathematics, computational vision, medical imaging and cardiovascular-cerebrovascular medicine.

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