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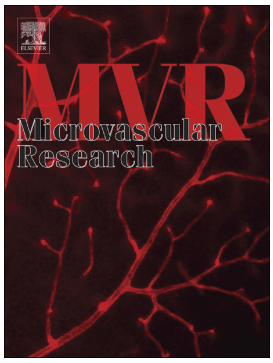

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ACCEPTED MANUSCRIPT

Monitoring microvascular perfusion variations with laser speckle contrast imaging using a view-based temporal template method

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Abstract

Purpose: Laser speckle contrast imaging (LSCI) continues to gain an increased interest in clinical and research studies to monitor microvascular perfusion. Due to its high spatial and temporal resolutions, LSCI may lead to a large amount of data. The analysis of such data, as well as the determination of the regions where the perfusion varies, can become a lengthy and tedious task. We propose here to analyze if a view-based temporal template method, the motion history image (MHI) algorithm, may be of use in detecting the perfusion variations locations. **Methods:** LSCI data recorded during three different kinds of perfusion variations are considered: (i) cerebral blood flow during spreading depolarization (SD) in a mouse; (ii) cerebral blood flow during SD in a rat; (iii) cerebral blood flow during cardiac arrest in a rat. Each of these recordings was processed with MHI. **Results:** We show that, for the three pathophysiological situations, MHI identifies the area in which perfusion evolves with time.

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