1. **Effects of acupuncture on the harmonic components of the radial arterial blood-pressure waveform in stroke patients.**

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1. **Abstract**

MOTIVATION: [Stroke](http://europepmc.org/abstract/med/23619154/?whatizit_url=http://europepmc.org/search/?page=1&query=%22Stroke%22) induces abnormal microcirculatory blood flow perfusion resistance in cerebral vascular beds, which may in turn alter the arterial pulse transmission. This study aimed to determine if the frequency-domain harmonic index for the blood-pressure waveform is useful in monitoring the microcirculatory blood flow perfusion response in cerebral vascular beds of [stroke](http://europepmc.org/abstract/med/23619154/?whatizit_url=http://europepmc.org/search/?page=1&query=%22stroke%22) patients following acupuncture stimulation. METHODS: Bilateral radial arterial blood-pressure waveform and laser-Doppler flowmetry signals were obtained noninvasively before and after acupuncture in 17 stroke patients. The amplitude proportion (Cn) for all the acquired pulses and the coefficient of variance (CVn) for harmonics 1-10 were calculated to evaluate the blood-pressure harmonic variability.

RESULTS: The laser-Doppler flowmetry parameters showed that the cerebral microvascular blood flow supply could be improved following acupuncture. For the blood pressure waveform harmonic index, there were significant increases in C5 and C6 and decreases in CV5 and CV7 on the [stroke](http://europepmc.org/abstract/med/23619154/?whatizit_url=http://europepmc.org/search/?page=1&query=%22stroke%22)-affected side, but no significant changes on the contralateral side.

CONCLUSION: Cn values might reflect changes in arterial pulse transmission, and the blood-pressure-harmonic-variability response might be partly attributable to cardiovascular regulatory activities caused by acupuncture-induced changes in the cerebral microvascular blood flow perfusion. The present findings of blood pressure waveform harmonic analysis may be useful to the development of a noninvasive and real-time technique for evaluating treatment efficacy in [stroke](http://europepmc.org/abstract/med/23619154/?whatizit_url=http://europepmc.org/search/?page=1&query=%22stroke%22) patients.

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