

Repeatability of Novel Non-invasive Measurement of Endothelial Function : ezFMD

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Background and purpose : The flow-mediated dilation (FMD), which is a conventional non-invasive method used to assess endothelial function, needs an expensive ultrasound system and requires a highly technical skill. We developed a new method to measure enclosed zone flow-mediated dilation (ezFMD), for the assessment of endothelial function. ezFMD estimates the degree of vasodilation from the oscillation signal transmitted to the cuff attached to the upper arm. The objective of this study is to assess the repeatability of ezFMD by using the mean pressure method.

Method : We assessed coefficient of variation (CV) to evaluate the repeatability of mean pressure method and simulated step down method in 12 healthy subjects. In the mean pressure method for oscillation measurement, cuff pressure is decreased continuously from the mean arterial pressure plus 10 mmHg to minus 10 mmHg.

Results : The average CVs of the mean pressure method and step down method were 27.1% and 40.1% ($p < 0.05$), respectively. This result indicates that the repeatability of the ezFMD measurement using the mean pressure method is better than that of the measurement using the step down method.

Conclusions : This study shows that the repeatability of the ezFMD measurements is improved by using the mean pressure method. We will continue to accumulate clinical data for further evaluation.

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