Commentary on Viewpoint: The human cutaneous circulation as a model of generalized microvascular function

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To the Editor: Holowatz, Thompson-Torgenson, and Kenney (2) made a valuable attempt to highlight the clinical advantages related to the evaluation of cutaneous microvascular function by laser-Doppler flowmetry. Undoubtedly, there are several reasons that favor a noninvasive approach of microvascular responses; however, my personal feeling is that the authors have substantially underestimated problems and drawbacks related to the concerned approach.

A first problem is related, in general, to the unsatisfactory interassay and intra-assay reproducibility of skin blood flow with laser-Doppler techniques. As previously pointed out by Kubli et al. (3), the mean coefficients of variation of responses recorded on different days, on the same site, in the same individual were between 10 and 20%. A even worse reproducibility was observed by Newton et al. (5).

A second relevant problem is related to the relatively poor specificity of the evaluation of endothelium-dependent responses of skin blood flow (4). As pointed out by David Celermajer (1), flow responses in the skin circulation are hardly to be considered tests of endothelial dysfunction, and although some of them may be, at least in part, endothelially mediated, this phenomenon appears not to be dependent on nitric oxide (1, 4).

Furthermore, tests of microcirculatory responses in the skin to date have not been correlated with large-vessel disease nor to the behavior of skeletal and cardiac muscle microvessels (1). For the previously mentioned reasons, the claim that evaluation of cutaneous microvascular function by laser-Doppler flowmetry may provide relevant and reliable information in clinical practice requires careful scrutiny.

References