Response to Analysis of Carotid and Ophthalmic Flow Velocity Waveforms
To the Editor:
The authors are indebted to O’Rourke and Hirata for their valuable comment to our publication “Fourier Analysis of the Envelope of the Ophthalmic Artery Blood Flow Velocity: Age- and Blood Pressure–Related Impact”. We bewail if the impression should have occurred that only local vessel properties have been considered responsible for the effect observed. We want to use the opportunity to point out that we agree with the presented influence of the reflected waves from the lower body on the local vasculature of the eye.
However, in blood flow regulation to the eye, an important regulatory role of the different endothelium-derived vasoactive substances in the extraocular ophthalmic circulation has been suggested. That is, it was reported that the human ophthalmic artery exhibits a basal release of NO, indicating that the human ophthalmic circulation normally is in a state of constant vasodilation. In arterial hypertension this and other protecting mechanisms of the ocular circulation may be deranged as a result of endothelial dysfunction, whereas the reactivity of vascular smooth muscle may be normal, increased, or reduced. Thus, a certain contribution of the locally affected vascular tone to the envelope waveform of the blood flow velocity occurs in arterial hypertension, which, however, may be much smaller than the reflected waves from the lower body.
Future studies should examine whether pharmacological interventions in the local metabolism (NO, bradykinin, or endothelin-1) may unmask the hidden secrets in the flow waveforms.

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