Responses to "Evidence That Neural Mechanisms do not Have Important Effects on Cerebral Blood Flow"

The contribution by Drs. Heistad and Marcus implies that they are tolerably certain that neural pathways have little or no important effect in regulating cerebral blood flow. My view is that because of uncertainties about the methods for measuring blood flow which are currently in use and about the neural pathways themselves, we do not know. And it may be necessary to qualify the question at issue by defining the species that we are talking about.

I think that I shall probably have to retract my view somewhat that all the methods for measuring cerebral blood flow in current use are basically sound. It seems that, with the possible exception of the venous drainage method, the methods in current use are based on principles which are either imperfectly understood or extremely difficult to validate, and its limitations and difficulties of interpreting the clearance curves are apparent and, I should have thought, well known. In consequence, I favour the second explanation.

I cannot but agree with Heistad and Marcus that there is a fairly straightforward series of questions which have to be answered positively before a significant role for nerves in the regulation of cerebral blood flow can be claimed. However, I reiterate that we are not yet in a position to answer many of these questions one way or the other. I have in mind, in particular, our own observations1 which question the origin of the abundant cholinergic fibres on cerebral blood vessels. Until this question, which involves what is arguably the most important group of vasomotor nerves, and other similar questions are resolved, it will not be possible even to say whether or under what conditions the dilator or other pathways are activated.

My position remains unchanged. Because of uncertainties about methods and of the neural pathways themselves, it is difficult to assign a precise role to extrinsic nerves in regulating cerebral blood flow. But it would be a bold man who, on the present evidence, dismisses them as being of no account.

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*Circ Res.* 1978;43:816
doi: 10.1161/01.RES.43.5.816

*Circulation Research* is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0009-7330. Online ISSN: 1524-4571

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circres.ahajournals.org/content/43/5/816.citation

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