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REPLY:

R. Doddasomayajula, C. Putman and J.R. Cebal

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REPLY:

We appreciate the interest and comments on our paper entitled “Differences in Hemodynamics and Rupture Rate of Aneurysms at the Bifurcation of the Basilar and Internal Carotid Arteries.”

There are a few points that we would like to clarify.

In our models, we do not use the same flow conditions for all patients. The inflow boundary conditions are scaled with the size of each person's anatomy based on a relationship determined experimentally with MR measurements¹ and consistent with flows reported in other studies.² In the absence of direct patient-specific measurements, this is, in our opinion, a reasonable approximation. In addition, our sensitivity analyses lead us to believe that relatively small variations in the boundary conditions (of approximately 30%) do not have an important effect on the conclusions drawn from the computational fluid dynamics (CFD) analysis that we are doing.³

We agree that our results should be confirmed with studies that use direct patient-specific flow conditions and large sample sizes.

On the other hand, using mirror aneurysms, as suggested, would not solve the problem because in those cases, the aneurysms are located at the same anatomic location on each side. In our study, we compared basilar tip and internal carotid terminus aneurysms, which are fed by different arteries. Furthermore, even if only patients with aneurysms at the basilar tip and the internal carotid bifurcation were considered, there is still the uncertainty of the relative flow conditions in the feeding arteries. Only in

ipsilateral multiple aneurysms fed by the same parent artery one can be sure that the inflow conditions are the same. In fact, we are submitting a new paper entitled “Hemodynamic Characteristics of Ruptured and Unruptured Multiple Aneurysms at Mirror and Ipsilateral Locations” that focuses on this issue. The results of that paper are consistent with the results presented in the current article.


We look forward to further discussions and exchanges of ideas.

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