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Reply:

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Reply:

We thank Drs Riedel and Yoo for their interest in and pertinent comments about our article "Quantification of Thrombus Hounsfield Units on Noncontrast CT Predicts Stroke Subtype and Early Recanalization after Intravenous Recombinant Tissue Plasminogen Activator."[1]

Early recanalization is the phenomenon that has the greatest impact on clinical outcome in stroke.[2] Little is known about the factors that determine the success of intravenous thrombolysis. Recently, Riedel et al[3] demonstrated that intravenous thrombolysis has nearly no potential to recanalize occluded vessels when thrombus length exceeds 8 mm. In our analysis, we found no differences in length between unrecanalized and recanalized thrombi (median 13.7 mm [interquartile range, 8.4–21.6] and 11.7 mm [interquartile range, 6.8–13.5], respectively), probably because our sample (45 patients) was small for a stroke study.[1] We agree that the compromise of pial collateral circulation could result in poor enhancement of the distal end of the clot and thereby introduce a measurement error into the thick-slab maximum-intensity-projection data from the CTA datasets. However, we showed the thrombus on 3 or 4 axial NCCT sections in nearly all cases, and we did not have the impression that clot length had been overestimated when we assessed the CTA in correlation with the NCCT before IV rtPA. In a second phase, we will tackle this issue.

On the other hand, we recommend against measuring any quantitative variable of thrombus directly on NCCT. In our study, thrombi were isoattenuated or hypoattenuated in 12 cases (26.67%), and this circumstance could lead to underestimation of the real length of the clot on NCCT. Moreover, slow blood flow immediately proximal to the thrombus can be mistaken for the classic hyperattenuated MCA sign, resulting in an overestimation of thrombus length (see our Online Figure).[1] Finally, as we stated in the limitations of the study, we also agree that thinner reconstructions of NCCT data with a section width smaller than the 3 mm, which we used in our study, might improve the accuracy of Hounsfield unit quantification in the cerebral artery.

Using noninvasive imaging tools to determine the characteristics of thrombi to predict the success of early recanalization in patients with acute stroke will very likely remain the subject of further research. A model incorporating CT information about both the composition and length of the thrombus will probably be more accurate in predicting rtPA failure and more useful for determining the best recanalization strategies.

References

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