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Size Criterion for Lacunar Infarction

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From their study on lacunar infarct size using diffusion-weighted MRI, Cho et al. [1] conclude that the 15 mm size criteria may no longer be used for lacunar infarction. Although this conclusion may be right, the premises underlying it may not.

First of all Cho et al. used 'positive' criteria to define middle cerebral artery disease and cardioembolism but 'negative' criteria for small vessel disease (absence of middle cerebral artery disease and cardioembolism). The validity of such definition may be questioned. It is obvious that MRA cannot reliably detect small vessel disease (SVD) but cannot exclude it either. Until MRA is validated by a reliable other method, it cannot be used to diagnose or exclude SVD. Therefore, SVD may be present in patients with large vessel disease or cardioembolism, although perhaps less likely.

Second, the authors implicitly suggest that the lacunar hypothesis equals a deep ischemic brain lesion of less than 15 mm with SVD as its cause, but this would be incorrect. Such lesions are 'usually' caused by the occlusion of a single perforator, leaving room for other causes to be looked for [2]. If such cause is found, oral anticoagulation in case of atrial fibrillation or carotid endarterectomy in case of a high grade internal carotid artery stenosis should not be withheld from such patients [3, 4]. Size restriction was suggested to make local SVD the most likely cause of a small deep infarct, because it was estimated to correlate with the maximum tissue volume supplied by a single penetrator in most cases. Using MRI, a 20 mm limit may well be applied instead of 15 mm, and some SVD infarcts may even be larger. However, it seems reasonable to assume that the larger the lesion, the less likely it will be caused by a local occlusion of a single penetrator. So, eventually, I agree with Cho et al. [1] in the sense that 'a grey area of uncertainty' around the cutoff size of 15 mm for lacunar infarction may be employed, although this agreement is not based on the findings of their study.

References

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Reply to the Letter by Lodder: Size Criterion for Lacunar Infarction

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We appreciate Dr. Lodder's interest in our paper. We agree that we used negative criteria for small vessel disease (SVD). Therefore, we cannot rule out the possibility that SVD may coexist in patients with middle cerebral artery disease (MCAD), internal carotid artery disease (ICAD) or cardiogenic embolism (CE). However, we think that positive criteria for SVD cannot be made with current imaging technologies. Only recently has 7.0-tesla MRI demonstrated individual lenticulostriate arteries in normal subjects [Cho, pers. commun.]. Thus, more advanced technologies will eventually allow us to examine our hypothesis in the