Clinical Correlates of Infarct Shape and Volume in Lacunar Strokes: The Secondary Prevention of Small Subcortical Strokes Trial.

BACKGROUND AND PURPOSE: Infarct size and location are thought to correlate with different mechanisms of lacunar infarcts. We examined the relationship between the size and shape of lacunar infarcts and vascular risk factors and outcomes.

METHODS: We studied 1679 participants in the Secondary Prevention of Small Subcortical Stroke trial with a lacunar infarct visualized on diffusion-weighted imaging. Infarct volume was measured planimetrically, and shape was classified based on visual analysis after 3-dimensional reconstruction of axial MRI slices.

RESULTS: Infarct shape was ovoid/spheroid in 63%, slab in 12%, stick in 7%, and multicomponent in 17%. Median infarct volume was smallest in ovoid/spheroid relative to other shapes: 0.46, 0.65, 0.54, and 0.90 mL, respectively (P<0.001). Distributions of vascular risk factors were similar across the 4 groups except that patients in the ovoid/spheroid and stick groups were more often diabetic and those with multicomponent had significantly higher blood pressure at study entry. Intracranial stenosis did not differ among groups (P=0.2). Infarct volume was not associated with vascular risk factors. Increased volume was associated with worse functional status at baseline and 3 months. Overall, 162 recurrent strokes occurred during an average of 3.4 years of follow-up with no difference in recurrent ischemic stroke rate by shape or volume.

CONCLUSIONS: In patients with recent lacunar stroke, vascular risk factor profile was similar among the different infarct shapes and sizes. Infarct size correlated with worse short-term functional outcome. Neither shape nor volume
was predictive of stroke recurrence.

**CLINICAL TRIAL REGISTRATION:**

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