The terms “lacune”, “lacunar infarct” and “lacunar stroke” are often used interchangeably, but they are not the same thing. Lacunes are 3 to 15 mm cerebrospinal fluid (CSF)-filled cavities in the basal ganglia or white matter, frequently observed coincidentally on imaging in older people, often not clearly associated with discrete neurological symptoms. “Lacunar stroke” describes a clinical stroke syndrome with the typical symptoms and signs referable to a small subcortical or brain stem lesion.1,2 “Lacunar infarct” should refer to a lesion that was observed coincidentally on imaging in older people, often not caused symptoms (lacunar stroke/infarct) and the other not (WML/lacune) is important in itself and should lead to their similarity in appearance between clinically evident lacunar strokes because LADIS did not collect details of clinical stroke recurrences so was unable to link new “holes” to specific symptoms. What about methodology? The ascertainment of new lacunes was performed by a rater with the baseline and follow-up scans side-by-side. The scans were not coregistered; therefore, we rely on the rater’s anatomic skills to determine whether a lacune was indeed new or had been present previously but appeared different because of differences in head-positioning, a particular problem with small lesions. Thus, prior beliefs about relationships between WMLs and lacunes could have influenced scan-rating. Multivariate-modeling requires a minimum of 10 outcomes per variable: 58 subcortical lacunes allows for 5 variables and 35 basal ganglia for 3 (LADIS tested 6). WMLs are more common in subcortical white matter than in basal ganglia, possibly because there simply is more subcortical white matter. Therefore, an apparent association with WMLs in subcortical white matter but not basal ganglia could simply reflect the lower likelihood of WMLs being present in basal ganglia, not that the etiology was different.5 It seems important to make several points. The term “lacunar infarct” should be reserved for lesions that were
clearly associated with a clinical lacunar syndrome, and clearly shown to be ischemic and not hemorrhagic by use of appropriate imaging in the acute phase. The term “lacune” should be used for CSF-containing subcortical “holes” found on imaging that are either clinically silent or have no clear association with symptoms. Asymptomatic lacunar “holes” should not be assumed to be infarcts until we know more about what causes them—although “infarct” may be a convenient term for a lesion which resembles the late stage of clinically definite infarct, it implies a pathogenesis for which there is insufficient direct evidence. Rather, we should describe what we see radiologically and not infer etiology. The LADIS investigators propose that lacunes and WMLs result from perforator vessel stenoses, compromised perfusion and progressive ischemia. However, other processes could result in similar appearances. The brain has a limited set of responses to widely differing insults: very different etiologies can produce the same appearances on imaging. After all, cerebromalacea looks the same (CSF-containing area of tissue loss) whether arising from a cortical arterial occlusion, a venous occlusion, or a bang on the head. We cannot assume that the etiology of clinically evident lacunar infarcts and lacunes is similar and extrapolate from one to the other; for example, to assume that because lacunes are associated with increasing dementia, clinically evident lacunar stroke must also be—this might be, but counting lacunes would not be the way to establish this link. Whether or not lacunar lesions cavitate may depend more on the patient’s response to an insult than on factors related to the insult itself (a “per patient” rather than “per lacune” analysis in the present study could address this). Determining cerebral small-vessel disease etiology would benefit from standardization of terminology and avoidance of assumptions about causation.

Disclosures

None.

References


Key Words: lacunar infarcts ■ lacunes ■ leukoaraiosis
What Is a Lacune?
Joanna M. Wardlaw

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