

## **Cognitive impairment after lacunar stroke: systematic review and meta-analysis of incidence, prevalence and comparison with other stroke subtypes**

Cognitive impairment and dementia are common after stroke. It is unclear if risk differs between ischaemic stroke subtypes. Lacunar strokes might be less likely to affect cognition than more severe, larger cortical strokes, except that lacunar strokes are associated with cerebral small vessel disease (SVD), which is the commonest vascular cause of dementia.

Cognitive impairment appears to be common after lacunar strokes despite their small size, suggesting that associated SVD may increase their impact.

Dementia is common soon after stroke but we know little of the mechanisms or whether the risk varies with stroke subtype. Stroke risk factors, amounts and regions of the brain affected, and suggested stroke mechanisms all vary with stroke subtype, and could influence the risk of cognitive impairment after stroke. For example, as cortical ischaemic strokes often affect a large area of brain, they may carry a higher risk of cognitive impairment than the smaller, less neurologically severe, lacunar strokes. Alternatively, lacunar strokes may carry a higher risk of cognitive impairment than would be expected on the basis of the lacunar infarct alone as they are part of the spectrum of SVD. SVD, which affects the brain diffusely and is the commonest vascular cause of cognitive impairment, could be unmasked by a new lacunar stroke.

We defined dementia as impairment of cognitive function which interfered with every-day activities, and we defined MCI as impairment of cognitive function not severe enough to interfere with everyday life. We used the term 'cognitive impairment' to refer to any impairment of cognitive function whether MCI or dementia.

An apparent association between dementia and lacunar stroke may be related to undiagnosed pre-stroke cognitive impairment or the stroke unmasking the presence of SVD.

There is a lack of information on long term prognosis yet the chances of continuing cognitive decline after lacunar stroke may be higher than in non-lacunar stroke due to the differences in underlying pathology: SVD affects the brain diffusely whereas non-lacunar stroke often has an extracranial cause.



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