Prevalence and Risk Factors of Acute Incidental Infarcts

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Background and Purpose—The study of silent stroke has been limited to imaging of chronic infarcts; acute incidental infarcts (AII) detected on brain magnetic resonance imaging have been less investigated. This study aims to describe prevalence and risk factors of AII in a community and a clinic-based population.

Methods—Subjects were drawn from 2 ongoing studies: Epidemiology of Dementia in Singapore study, which is a subsample from a population-based study, and a clinic-based case–control study. Subjects from both studies underwent similar clinical and neuropsychological assessments and brain magnetic resonance imaging. Prevalence of AII from these studies was determined. Subsequently, risk factors of AII were examined using multivariable logistic regression models.

Results—AII were seen in 7 of 623 (1.2%) subjects in Epidemiology of Dementia in Singapore (mean age, 70.9±6.8 years; 45% men) and in 12 of 389 (3.2%) subjects (mean age, 72.1±8.3 years; 46% men) in the clinic-based study. AII were present in 0.8% of subjects with no cognitive impairment, 1.9% of those with cognitive impairment not dementia, and 4.2% of subjects with dementia. Significant association of AII was found with cerebral microbleeds (≥5) in the Epidemiology of Dementia in Singapore (odds ratio, 6.76; 95% confidence interval, 1.28–35.65; \(P=0.02\)) and in the clinic-based cohort (odds ratio, 4.65; 95% confidence interval, 1.39–15.53; \(P=0.01\)). There was no association of AII with hypertension, diabetes mellitus, or hyperlipidemia.

Conclusions—AII are more likely to be present in those with cognitive impairment. Although a cause–effect relationship between the presence of AII and cognitive impairment is plausible, the association may be because of under-reporting of symptoms by individuals with cognitive impairment. The association between AII and cerebral microbleeds may indicate cerebral vasculopathy, independent of traditional vascular risk factors. (Stroke. 2015;46:2722-2727. DOI: 10.1161/STROKEAHA.115.009963.)

Key Words: cognition ■ infarct ■ ischemic ■ neuropsychological test ■ stroke

Stroke is a global epidemic that affects 15 million people annually, 5 million of whom are left with disability.¹ Importantly, stroke doubles the risk of incident dementia in individuals aged >65 years.² However, stroke is not synonymous with a cerebral infarct; stroke is diagnosed only when an infarct or hemorrhage presents with symptoms or signs attributable to the lesion. Hence, the introduction of the term silent stroke denotes an infarct with the absence of temporally correlated stroke-like symptoms.³ ⁴ The prevalence of silent brain infarcts varies from 8% to 28%, increases with age,³ ⁵ ⁶ and is associated with increased risk of subsequent stroke, as well as cognitive impairment.⁴

The study of silent stroke has been largely limited to imaging of chronic infarcts because of the small number of studies using diffusion-weighted imaging (DWI), which detects acute infarcts. Hence, few studies have reported on acute incidental infarcts (AII), with variable prevalence because of differences in study populations and methodologies. DWI hyperintense lesions were reported in 15% of patients with cerebral amyloid angiopathy.⁷ By contrast, 0.37% of individuals undergoing magnetic resonance imaging (MRI) for a wide range of conditions in a hospital setting were reported to have AII.⁸ Moreover, 0.92% (6/649) of subjects undergoing MRI scans for research studies in cognitive impairment had AII.⁹ By contrast, the community-based Prospective Urban Rural Epidemiological (PURE) Mind substudy recently reported no AII among 793 participants.¹⁰

In view of these discrepancies, our aim is to describe the prevalence of AII and characteristics of subjects with AII,