Clinical and imaging determinants accounted for cognitive performance difference between patients with large-artery atherosclerosis and small-artery occlusion stroke

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Introduction: Few studies have described the patterns of cognitive deficits after ischaemic strokes of aetiological subtypes such as large-artery atherosclerosis (LAA) and small-artery occlusion (SAO), or examined factors accounting for cognitive impairment, especially in an Asian cohort. We compared the global and specific cognitive domain performance of patients with LAA and SAO at 3–6 months after the vascular event to 383 community-dwelling healthy older adult (≥ 60 years old) comparison subjects. We also examined clinical and imaging determinants that accounted for the cognitive performance difference between stroke aetiological subtypes. Method: Regression analyses were performed to determine the individual clinical and neuroimaging factors accounted for differences in global cognition between two major stroke subtypes of LAA (n=46) and SAO (n=144). Results: Patients with LAA had significantly lower mean z scores of global cognition adjusted by the demographic variables than those with SAO (Z: -0.42 vs -0.06, P=0.01). The significant difference disappeared after adjusting for clinical and imaging variables (-0.28 vs -0.16, P=0.45). The clinical and imaging variables with the highest proportion of variance (46%-72%) that accounted for the difference in global cognition between LAA and SAO were cortical infarct, right sided infarct, stroke severity and anterior circulation infarct. The combination of these four variables accounted for 92% of the variance in global cognition between patients with LAA and SAO. Conclusion: The difference of global cognition between LAA and SAO can be mostly explained by cortical infarct, right sided lesions, stroke severity and anterior circulation infarct.