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ATROPHY OF LEFT DORSOLATERAL PREFRONTAL CORTEX IS ASSOCIATED WITH POOR PERFORMANCE IN VERBAL FLUENCY IN ELDERLY POSTSTROKE WOMEN

Y.K. Chen¹, E. Lee², G.S. Ungvari³, J.Y. Lu², L. Shi⁴, D.F. Wang⁴, W.C.W. Chu⁴, V.C.T. Mok¹, K.S. Wong¹, W.K. Tang²

¹Neurology, ²Psychiatry, The Chinese University of Hong Kong, ³Psychiatry, University of Western Australia, ⁴Radiology, The Chinese University of Hong Kong, Hong Kong, Hong Kong S.A.R.

Introduction: Prefrontal cortex and sex difference are involved in verbal fluency network described in normal participants. Stroke patients often have prefrontal cortex atrophy.

Objectives: To investigate whether atrophy in subdivisions of prefrontal cortex and sex difference contribute to verbal fluency in non-aphasic stroke patients.

Aim: To understand the relationship between the atrophy of left dorsolateral prefrontal cortex and verbal performance in elderly poststroke women.

Methods: 30 elderly (age \geq 60 years old) women with non-aphasic ischemic stroke and 30 age-controlled stroke men recruited. Automatic segmentation methods were used to assess the volume of both sides of the whole prefrontal cortex, anterior cingulate cortex, orbital frontal cortex and dorsolateral prefrontal cortex (DLPFC), as well as white matter lesions (WMLs) volume. Mini-mental state examination (MMSE) and semantic verbal fluency test (VFT, category: foods and animals) were administered at 3 and 15 months after the index stroke.

Results: The mean (s.d) age was 73.3 \pm 7.2 in women and 72.1 \pm 6.9 in men. Men had higher education years, less diabetes and higher MMSE scores ($p < 0.05$). At 3 months after stroke, volume of the left DLPFC was significantly correlated with VFT score in women rather than men, even after controlled by age, education years, neurological deficit, diabetes, WMLs volume and infarct location (partial $r = 0.477$, $p = 0.018$). At 15 months, this correlation remained significant (partial $r = 0.548$, $p = 0.006$) in women.

Conclusion: Sex difference may be present in the neuropsychological mechanism of verbal fluency impairment in patients with cerebrovascular disease.