

ABNORMAL FUNCTIONAL CONNECTIVITY OF AMYGDALA IN LATE ONSET DEPRESSION WAS ASSOCIATED WITH COGNITIVE DEFICITS, BUT NOT WITH DEPRESSIVE SEVERITY

Y. Yue¹, Y. Yuan², Z. Hou³, W. Jiang¹, F. Bai², Z. Zhang²

¹Southeast University, ²Affiliated ZhongDa Hospital and Institute of Neuropsychiatry of Southeast University, Nanjing, ³The 4th People's Hospital of Wuhu City, Wuhu, China

Background: Major depressive disorder (MDD) is associated with abnormal functional connectivity (FC) of amygdala and decreased function of cortico-limbic circuit, which play important roles in the pathogenesis of MDD. However, little is known about the connectivity alterations in late-onset depression (LOD), and whether such disrupted function is correlated with cognitive impairment is unclear.

Methods: A total of twenty-three LOD patients and thirty-seven controls underwent neuropsychological tests and resting-state functional magnetic resonance imaging (RS-fMRI). Regional homogeneity (ReHo) and FC of bilateral amygdala seed were used to analyze blood oxygen level-dependent fMRI data between groups.

Results: Compared to controls, LOD groups showed weaker functional activity in bilateral middle frontal gyrus and left medial orbitofrontal gyrus, moreover, the decreased ReHo was positively correlated with Trail making test-B score (TMT-B, $r=0.462, P=0.04$). In aspects of FC, left amygdala has reduced FC with right fusiform gyrus, right superior temporal gyrus and right putamen, while right amygdala has reduced FC with left cerebellum. Further correlative analysis found that the decreased FC between amygdala and right putamen was positively correlated with Verbal fluency test-verb score (VFT-verb, $r=0.513, P=0.021$) and the decreased FC between amygdala and superior temporal gyrus was positively correlated with Auditory Verbal Memory Test-delayed recall score (AVLT-delayed recall, $r=0.446, P=0.049$).

Conclusions: Our finding of reduced activation of prefrontal gyrus as well as decreased connection of bilateral amygdala may be key factors of impaired cognitive function in LOD patients and these changes could be early indicator for cognitive deficits.