IRON DEPOSITION IN SUBCORTICAL NUCLEI INVERSELY CORRELATES WITH VISUAL MEMORY IN HEALTHY YOUNG ADULTS

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Iron plays a central role in many biological processes. It progressively accumulates in the central nervous system as a function of aging, and it is preferentially located in the basal ganglia and subcortical brain regions. Furthermore, abnormal accumulation of iron has been reported in numerous neurodegenerative disorders and impaired cognitive performance in elder population. MRI techniques, such as mapping of the relaxation rate R2*, represent an indirect measure of iron in brain tissues. In our study iron was measured in four subcortical nuclei (caudate, putamen, globus pallidus and thalamus) in 64 healthy young adults aged 18–30. Verbal and visuographic memory were assessed using the Rey Auditory-Verbal Learning Test and the Rey-Osterrieth complex figure task. Average iron content in subcortical nuclei and iron content separately in caudatus and putamen were significantly negatively related with visual memory also when controlled for age in the multivariate model. These findings indicate that there is a correlation between cognition and iron content of subcortical nuclei even in younger adults. To investigate if it is possible to predict future cognitive impairment and neurodegenerative disorders based on iron estimate of brain tissues needs further studies.