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Poorly connected motor and somatosensory region showing atrophy in the cerebellum in SAOA patients

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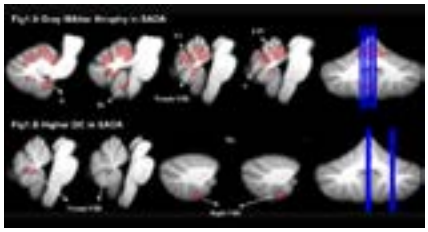
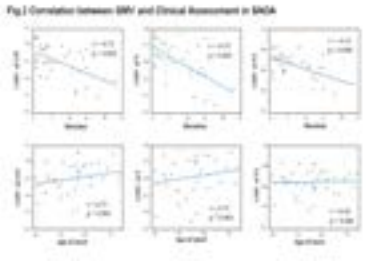
Goal of this study was to investigate the structural and functional changes in the cerebellum in sporadic ataxia with adult onset (SAOA), and to test for potential associations between structural-functional alterations in the cerebellum and disease duration. 37 SAOA patients (62.38 ± 9.53years) and 49 healthy controls (HC) (65.08 ± 6.85years) underwent a structural and resting state functional MR (rs-fMRI) scan. Focusing on the cerebellum, we performed voxel-based-morphometry and a voxel-wised degree centrality (DC) as key marker for network integrity. Group differences were calculated using two-sample t-tests, controlling for age, gender and total intracranial volume (only structure) ($p < 0.01$; FWE corrected, cluster-extent 20 voxels). GM atrophy in both anterior (lobule I-IV) and posterior cerebellum (lobule VI, VIII, IX and X) and GMV alternations are highly related to clinical assessments in SAOA patients. Meanwhile, SAOA patients showed significant higher DC in the right and vermis VIII. Interestingly, the disease-related atrophy regions tend to be poorly connected in cerebellar networks. In general, regions found are known to be involved in motor and somatosensory processing, being in line with clinical appearance of SAOA.





Recent Publications

1. Abele, M., et al. (2007). "Sporadic adult onset ataxia of unknown etiology: A clinical, electrophysiological and imaging study." J Neurol 254(10): 1384-1389.
2. Harding, A. E. (1981). "Idiopathic" late onset cerebellar ataxia. A clinical and genetic study of 36 cases." J Neurol Sci 51(2): 259-271.
3. Klockgether, T. (2010). "Sporadic ataxia with adult onset: classification and diagnostic criteria." *Lancet* Neurol 9(1): 94-104.
4. Klockgether, T. (1990). "Idiopathic cerebellar ataxia of late onset: Natural history and MRI morphology." J Neurol Neurosurg Psychiatry 53(4): 297-305.
5. Muzaimi, M. B. (2004). "Population based study of late onset cerebellar ataxia in south east Wales." J Neurol Neurosurg Psychiatry 75(8): 1129-1134.

Biography

Xueyan Jiang is doing her PhD study in Germany Center for Neurodegenerative Disease, DZNE. She finished her bachelor degree in Applied Mathematics and master degree in Psychology. She has published 3 papers in reputed journals (e.g. Human Brain Mapping).

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