

## **Brain atrophy correlates with optic nerve atrophy in LHON with MS-like disease-Harding's syndrome - case report**

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Context: Leber's hereditary optic neuropathy (LHON) is maternally inherited mitochondrial optic nerve degeneration with bilateral optic atrophy that very rare is associated with multiple sclerosis like disease. Objective: To report on an optic nerve atrophy coexist with severe brain atrophy in case of a young female with multiple sclerosis (MS-like) disease with LHON confirmed by genetic testing with m. 117778GA mutation. Case report: 22- year-old female experienced two episodes of right and left painless progressive decrease of visual acuity with subsequent bilateral profound optic nerve atrophy with pale discs on ophthalmoscopy and two recovered, steroid response exacerbation of numbness in right arm, left lower limb and weakness of lower limbs. Harding's syndrome was diagnosed by typical MS brain and thoracic spinal cord lesions, positive CSF with oligoclonal bands and m.117778GA mutation. Brain MRI after 10 years of first symptoms (visual) appearing showed significant brain atrophy in addition to the patient's age and gender information estimated by percentile generation program of CorTechs Labs. Results showed advanced brain atrophy with loss whole and regional volume: whole brain and thalami volume in 1<sup>st</sup> percentile for age with lateral ventricles, inferior lateral ventricles and 3<sup>rd</sup> ventricle volume in 99<sup>th</sup> percentile. Cerebral white matter volume was in 61<sup>st</sup> percentile with high cerebral white hypointensities volume in 99<sup>th</sup> percentile. Conclusion: Optic nerve atrophy correlates with advanced whole and regional brain atrophy in LHON with MS-like disease.