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Review of retinal and choroidal thickness in Parkinson's disease evaluated with optical coherence tomography

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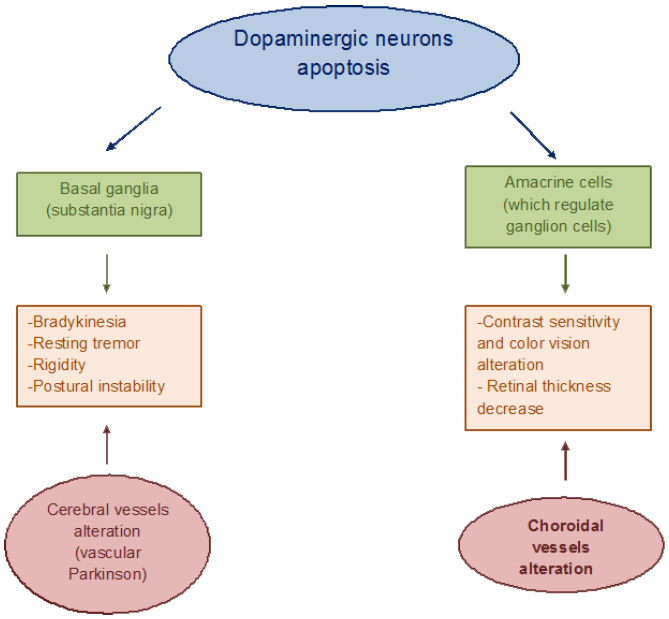
Parkinson's Disease (PD) is a neurodegenerative process that causes a selective loss of dopaminergic neurons, mainly in the basal ganglia. It also affects the intra retinal dopaminergic circuitry. Optical Coherence Tomography (OCT) is a non-invasive imaging technique which is used in ophthalmology to evaluate the layers of the retina and choroid (the vascular layer that nourishes the retinal cells). Since 2004, several studies have proved changes on various retinal layers in PD using OCT; however, there are discrepancies among their results. Some of them have correlated retinal thickness with the severity or duration of the disease, demonstrating that OCT measurements may be an innocuous and easy biomarker for PD progression. Other studies have demonstrated visual dysfunctions since early phases of the disease. Lastly, the most recent studies that use Swept Source OCT technology, have found choroidal thickness increase in PD patients. This study has reviewed 24 articles from PubMed on OCT and PD in order to determine the altered retinal and choroidal parameters in PD and their possible clinical utility. Retinal thickness is decreased in the macular and in the peripapillary area in patients with PD. The retinal nerve fiber layer thickness is especially decreased. These findings could be due to the loss of ganglion cells that happens in neurodegenerative diseases and the loss of amacrine cells, which are dopaminergic cells. Choroidal thickness could be increased in patients with PD. This could be due to an increase of the fibro vascular tissue, similar to what happens to cerebral vessels in vascular Parkinson. Some parameters of retinal thickness have been correlated with the severity and duration of the disease. Consequently, OCT could be an innocuous biomarker for PD progression.



Biography

Javier Obis is an Ophthalmologist, has expertise in ophthalmological alterations related to Parkinson's disease. He has published several articles in PubMed about retinal and choroid alterations measured with OCT in neurological diseases, especially in PD. He has researches on visual alterations related with PD and other neurological diseases. He is currently working on his doctoral thesis, which studies the retinal and choroid thickness alterations that appear in patients with PD and also the visual alterations that these patients suffer.

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