

# **Optical coherence tomography findings in patients with chronic cerebrospinal venous insufficiency**

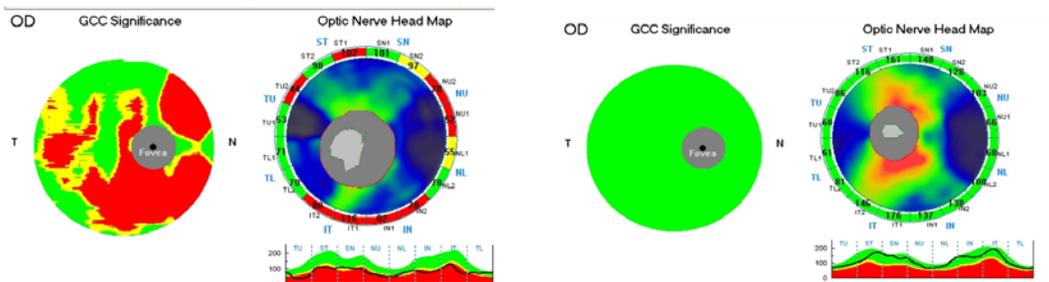
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**Introduction:** Axonal loss and also loss of neurons are thought to be the predominant cause of disability in multiple sclerosis. Optic nerve within the retinal nerve fibre layer and also retinal ganglion cells are accessible to study with optical coherence tomography (OCT), giving a measure of neurodegenerative process.

**Materials & Methods:** 216 multiple sclerosis patients (432 eyes examined). The following OCT parameters were evaluated: average ganglion cell complex (avGCC), focal loss volume (FLV) and global loss volume (GLV) of ganglion cell complex, and retinal nerve fiber layer (RNFL).

**Results:** Pathologic values of OCT parameters were revealed in majority of examined eyes: avGCC – 47% severe, 15% mild, FLV – 53% severe, 8% mild, GLV – 58% severe, 9% mild, RNFL – 44% severe and 18% mild OCT pathology. It has been found that chronic cerebrospinal venous insufficiency (CCSVI) may play a role in the ocular pathology in multiple sclerosis patients: OCT abnormal values were more common in the patients with unilateral occlusion of internal jugular vein and also in the patients with asymmetric occlusions of internal jugular veins (in the latter case OCT pathology was more pronounced at the side of a more stenosed jugular vein). However, ocular pathologies were even more common in multiple sclerosis patients without CCSVI. Besides, there have been found positive correlations between the level of OCT pathology and the degree of MS-related disability (measured with EDSS scores) and also with positive history of optic neuritis. Yet, retinal axonal loss in the eyes of multiple sclerosis patients with no history of a previous episode of optic neuritis was quite common.

**Discussion & Conclusion:** Although retinal pathology revealed by means of OCT has been already described in multiple sclerosis patients, our report is perhaps the first one, which tries to reveal correlations between CCSVI, multiple sclerosis and ocular pathology. We have demonstrated that an asymmetric outflow from the brain related to unilateral or asymmetric stenosis of the internal jugular veins was associated with a higher risk of retinal neurodegeneration. However, the problem seems to be more complex, since multiple sclerosis patients without CCSVI had also very high prevalence of ocular pathology. OCT findings in multiple sclerosis patients were somewhat similar to these of the patients with open angle glaucoma and thus maybe both pathologies share some common pathophysiologic points.



*Pathologic OCT in MS/CCSVI patient*

*Normal OCT in MS/CCSVI patient*

## References:

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