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Systemic and intraocular factors related to retinal thicknesses variations in patients with Parkinson's disease

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ABSTRACT

Parkinson's disease (PD) is characterized by a neurodegenerative process, which has been previously reported to involve some retinal layers, in particular the peripapillary retinal nerve fiber layer (RNFL) and macular ganglion cell complex (mGCC). When measuring pRNFL and mGCC by Optical Coherence Tomography in PD patients, it should not be neglected the role of possible both sistemic and intraocular factors, which have been proven to modify intraretinal thicknesses measurements. Nonetheless, also dopaminergic drugs administration could represent another important confounding factor, given their neuroprotective effect exerted on retina.

To the Editor,

We read with interest the article entitled “Retinal changes in Parkinson's disease and glaucoma” recently published by Matlach et *al.* [1] in your journal.

In this study the authors compared macular ganglion cell complex (mGCC) and peripapillary retinal nerve fiber layer (pRNFL) thicknesses in respectively 30 patients with Parkinson's disease (PD), 60 patients diagnosed with glaucoma and 40 healthy subjects, finding no statistical difference in these retinal layers between PD patients and the control group [1]. In this regard, the authors should be congratulated for the prospective design of the study, for having adopted the Spectral Domain Optical Coherence Tomography (SD-OCT) device, which allows a more detailed visualization of each retinal layer and, nonetheless, for having found a significant thinning of superior pRNFL in the ipsilateral eye to the most-affected body side in PD patients in comparison with healthy subjects.

However, we would like to point out some methodological concerns on this study. Firstly, the authors did not specify if in the exclusion criteria they considered, beside macula diseases, optic neuropathy and a recent history of eye surgery, also systemic diseases such as systemic hypertension, which could have represented an important confounding factor; in this regard, a cohort study published by Kong et *al.* revealed the inverse association between systemic hypertension and macular thickness in various subfields of the retina [2]. Thus, we think that a more thorough screening for common systemic diseases affecting retina have been performed by the authors.

Secondly, the authors did not report if the complete eye examination included, beside the visual acuity and refractive status measurements, also the evaluation of ocular biometric parameters such as axial length, which has been shown to be an independent variable influencing pRNFL thickness. In fact, a prospective study by Oner et *al.* reported the negative association between axial length and pRNFL in healthy subjects [3]. Hence, in addition to measurements of the refractive status, also measurements of axial length by ocular biometry could have been provided by the authors, in order to rule out another important possible confounding factor.

Thirdly, the authors measured intraocular pressure (IOP) by Goldmann applanation tonometry only in patients with previous diagnosis of glaucoma; however, it is well known that IOP is a dynamic and independent variable responsible of glaucoma and subsequent mGCC and pRNFL damage, being subjected to continual variations [4]. Thus, when measuring retinal thicknesses by SD-OCT, it should be suggested to perform also the IOP measurement on regular basis in both healthy controls and the examined group.

Lastly, it has been documented the neuroprotective effect on retina, and in particular on RFLN, exerted by dopaminergic drugs, commonly administered to PD patients [5]. Hence, we deem that when evaluating retinal thicknesses in PD patients treated with dopaminergic agents, it should not be neglected that the results of the study could be altered by the administration of this class of drugs.

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Disclosures of conflict of interest

All the authors reported no conflict of interests.

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