Reviewer's report

Title: Retinal nerve fiber layer thickness and cognitive ability in older people: the Lothian Birth Cohort 1936 study

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Reviewer: Francisco Ascaso

Reviewer's report:

The authors analyze the relationship between the RNFL thickness as measured by OCT and lifetime cognitive change in healthy older people. They conclude that increased RNFL thickness appeared to be associated with lower general processing speed and lower general cognitive ability. The paper needs a major revision.

Introduction. Page 5, last sentence. The authors should mention several recent papers dealing with the role of OCT in other neurodegenerative disorders with frequent cognitive changes like schizophrenia,1 obstructive sleep apnea syndrome2 or acute mountain sickness.3


Methods. The study was not randomized and, as the authors say when discussing the limitations of the study, they should have taken into account the lens status and the refractive error of the examined subjects, because both of them are important confounding variables which may produce distortioned results.

Results. How can the authors explain that in present study an increased peripapillary RNFL thickness was associated with lower general cognitive ability and general processing speed, whereas previous studies have shown a decreased peripapillary RNFL thickness in mild cognitive impairment and Alzheimer disease patients –as they mention in the introduction–?

Have the authors studied the OCT macular thickness and volume parameters?
Discussion. Another limitation would be that all the cognitive data were collected at a prior assessment (mean time elapsed between assessments= 381 days).

In page 12, paragraph of discussion, the authors should clarify which study used scanning laser polarimetry and which one optical coherence tomography.

Page 8, 1st paragraph, 2nd line. “IT is a computerized task (…)” must be changed by “It is a computerized task (…)”

Page 11, last sentence. The sentence “found that these were all the in a negative direction” must be replaced by “found that these were all them in a negative direction”

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests