Reviewer's report

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

Version: 3 Date: 5 August 2012

Reviewer: Chan Yun Kim

Reviewer's report:

This study investigated the relationship between the retinal nerve fiber layer (RNFL) thickness as measured by optical coherence tomography (OCT) and lifetime cognitive change in healthy older people. And their conclusions was increased RNFL thickness appeared to be associated with lower general processing speed and lower general cognitive ability when age 11 IQ scores were included as a covariate in a community dwelling cohort of healthy older people. This is an interesting study, but it is an opposite direction when comparing with previous report by van Koolwijk. When we meet contradictory results, we should be cautious to the later results inevitably.

Major problems
1. Because old people usually have more major eye problems (such as cataract, retinal disorder, glaucoma..) than young people, ophthalmologic examinations which could exclude eye diseases are essential in this study. The authors should describe how to prove healthy in the subjects. If not, the limitation of this point should be described carefully.
2. It is well known that visual impairment may be associated with low cognitive function. The authors also need to describe visual status of the subjects.
3. The authors need to describe and discuss more detail why the results of their study is contradictory to previous study by van Koolwijk.

Minor problem
1. Part of some misspellings;
   - The second line on page 5 ; IT -> It
   - It seemed to need to use consistent abbreviation either “S.D.” or “SD”.
   - It would be better to add micrometer unit (µm) when describing the RNFL thickness.
2. In the results from the analysis of RNFL thickness measured by OCT, three more or less standard deviation is classified as outlier. The authors need to describe why exclusion criteria were caught.

Level of interest: An article of limited interest
Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests.