Longitudinal Changes in Choroidal Thickness in Childhood

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**PURPOSE**

- Evidence from cross-sectional studies\(^1\)\(^2\) suggests that choroidal thickness (ChT) varies with age and refractive error in childhood. However, to date there have been no longitudinal studies examining changes in pediatric ChT.
- In this prospective study, the longitudinal changes in ChT and its relationship with eye growth were examined in a population of normal children with a range of refractive errors.

**METHODS**

- One hundred and one children (41 myopes and 60 non-myopes), aged 10-15 years participated in this longitudinal study.
- Each child had macular chorio-retinal optical coherence tomography (OCT) images (Spectralis enhanced depth imaging OCT, 6-line macular star scan) and axial ocular biometry measurements collected every 6 months over an 18 month period (i.e. 4 visits over 18 months).
- Subfoveal and parafoveal ChT were derived from manual segmentation of the OCT images by an experienced, masked observer (Fig 1).
- The transverse scale of the OCT scans were adjusted to account for ocular magnification, based upon individual refraction and biometry data at each visit.
- Linear mixed models were used to examine the longitudinal changes in ChT, and to explore the relationship between changes in ChT and axial eye growth over the study.

**RESULTS**

- At the baseline study visit, the myopic children (mean 299 ± 75 \(\mu\)m) exhibited significantly thinner ChT compared to the non-myopic children (mean 368 ± 76 \(\mu\)m) (p<0.001), (Fig 2).
- A significant increase in both subfoveal ChT (mean increase 13 ± 22 \(\mu\)m, p<0.001), and axial length (105 ± 155 \(\mu\)m, p<0.001) was observed over the 18 month study (Fig 3).
- There was no significant time by refractive group interaction (p=0.46), indicating a similar change in choroidal thickness over time in myopes and non-myopes.

**CONCLUSIONS**

- A significant increase in ChT was found to occur in normal children over 18 months. Those children undergoing faster axial eye growth/myopia progression exhibited less thickening, or a thinning of the choroid, independently of refractive error group. These findings support a potential role for the choroid in the mechanisms regulating eye growth in childhood.

**REFERENCES**

1. Bidaut-Garnier et al. Retina; 2014; 34: 768-74