

Retinal fiber layer and choroid thickness are reduced in cluster headache: results from a Optical Coherence Tomography study

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Introduction: Cluster headache (CH) is the most frequent trigemino-autonomic headache with severe unilateral pain probably due to an increased venous load in the inflamed cavernous sinus.

We aimed to evaluate structural abnormalities in the retina of episodic CH patients using Optical Coherence Tomography (OCT) in order to investigate the possible correlation between clinical and retinal characteristics.

Materials: This observational and cross-sectional study screened CH patients according to the International Classification of Headache Disorders (ICHD-3 beta), referring to the Headache Centre of the University of Catania in the period between 1st September 2016 to 30th April 2017. Demographical and clinical data were collected. We also recruited 44 patients diagnosed by chronic migraine (CM) according to the ICHD-3 beta and 23 healthy-control subjects. CH patients previously treated with O₂ therapy were excluded from the analysis.

Methods: All the participants underwent a complete ocular examination and OCT assessment (Cyrrus 5000, Carl Zeiss Meditec, Dublin, CA). For right eye (RE) and left eye (LE) we studied the mean retinal nerve fiber layer (RNFL) thickness, single quadrants analysis and choroid thickness (CT). Eyes with retinal and optic disc pathology were excluded.

Results: Out of 42 CH patients, a total of 19 patients diagnosed as CH (mean age 29.6±12.7, 84.2% men) were selected for the study. We found that RNFL in both eyes was thinner in CH compared to controls (Table 1). Quadrants analysis showed that inferior sector was reduced in CH compared to controls (Table 2). Moreover CH patients showed a significant reduction in CT compared to controls and to CM (Table 3). The eye of the headache side presented thinner inferior sector (114.5±6.8 vs 122.5±9.0µm, p<0.01 in RE, 116.2±6.1 vs 124.7±7.1µm, p<0.01) and CT (Table 4) compared to the non-affected side. No correlations were found between clinical and retinal parameters.

Discussion: Our data demonstrated that retina is affected in episodic CH. Moreover we found a significant CT reduction in CH respect to controls and CM.

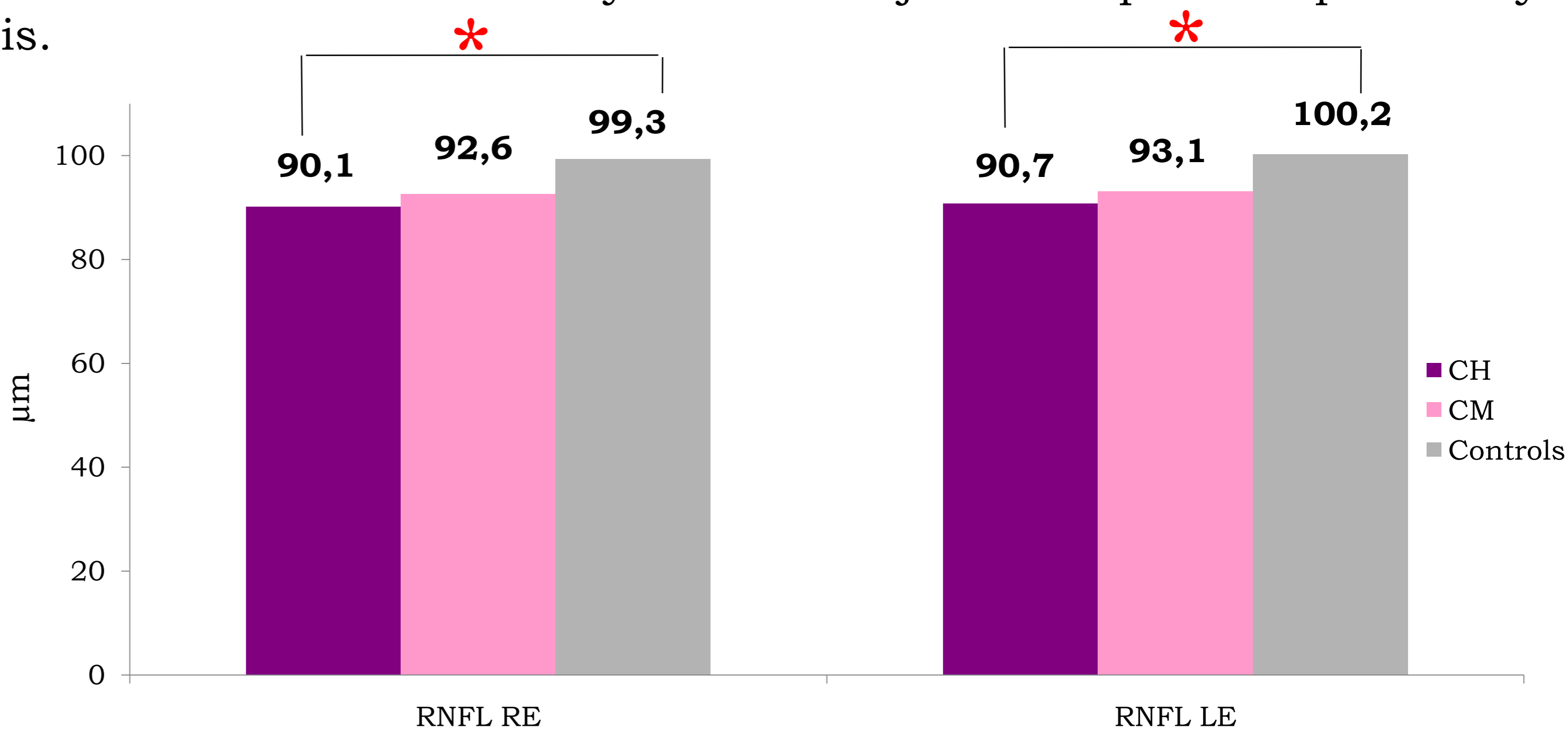


Figure 1

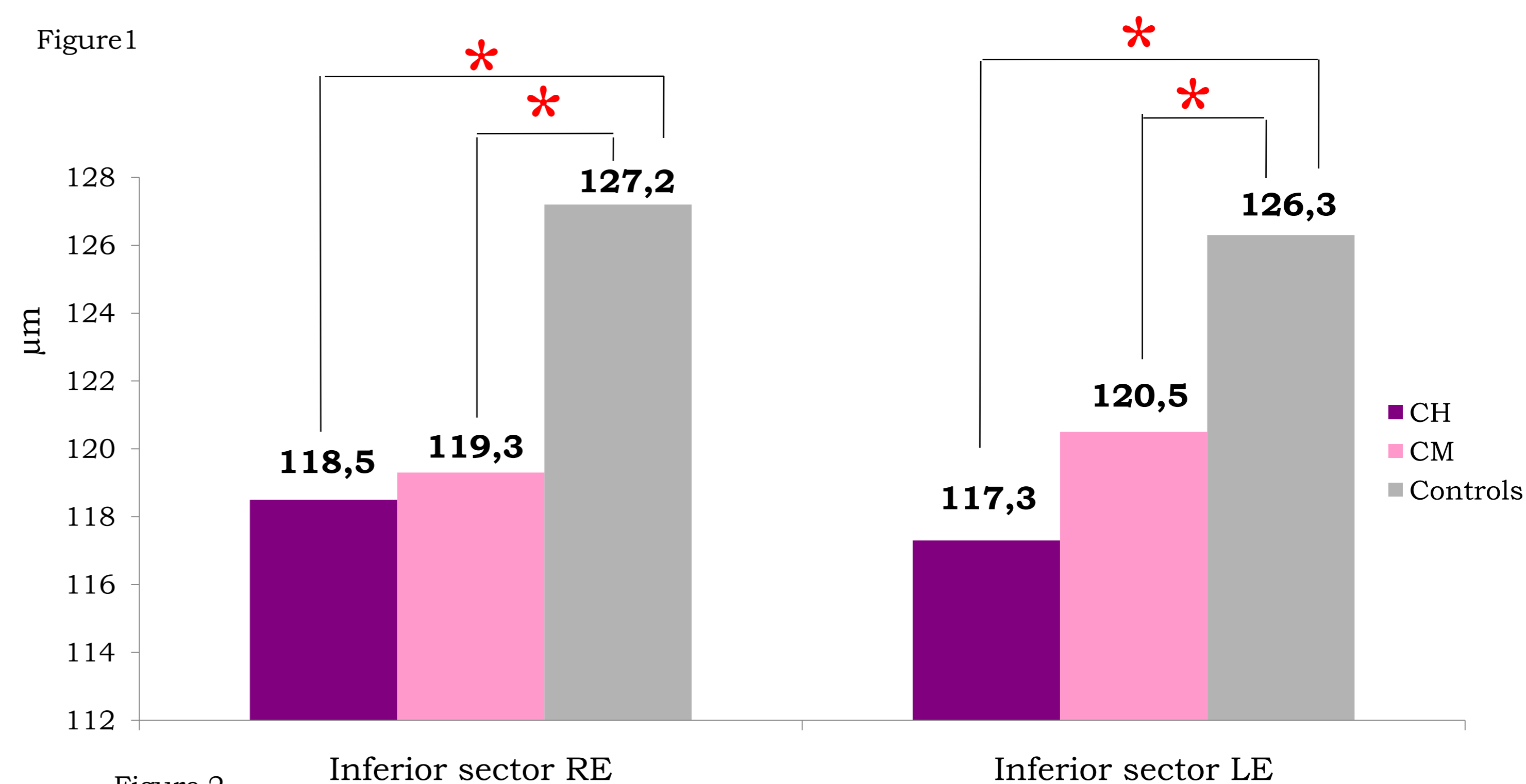


Figure 2

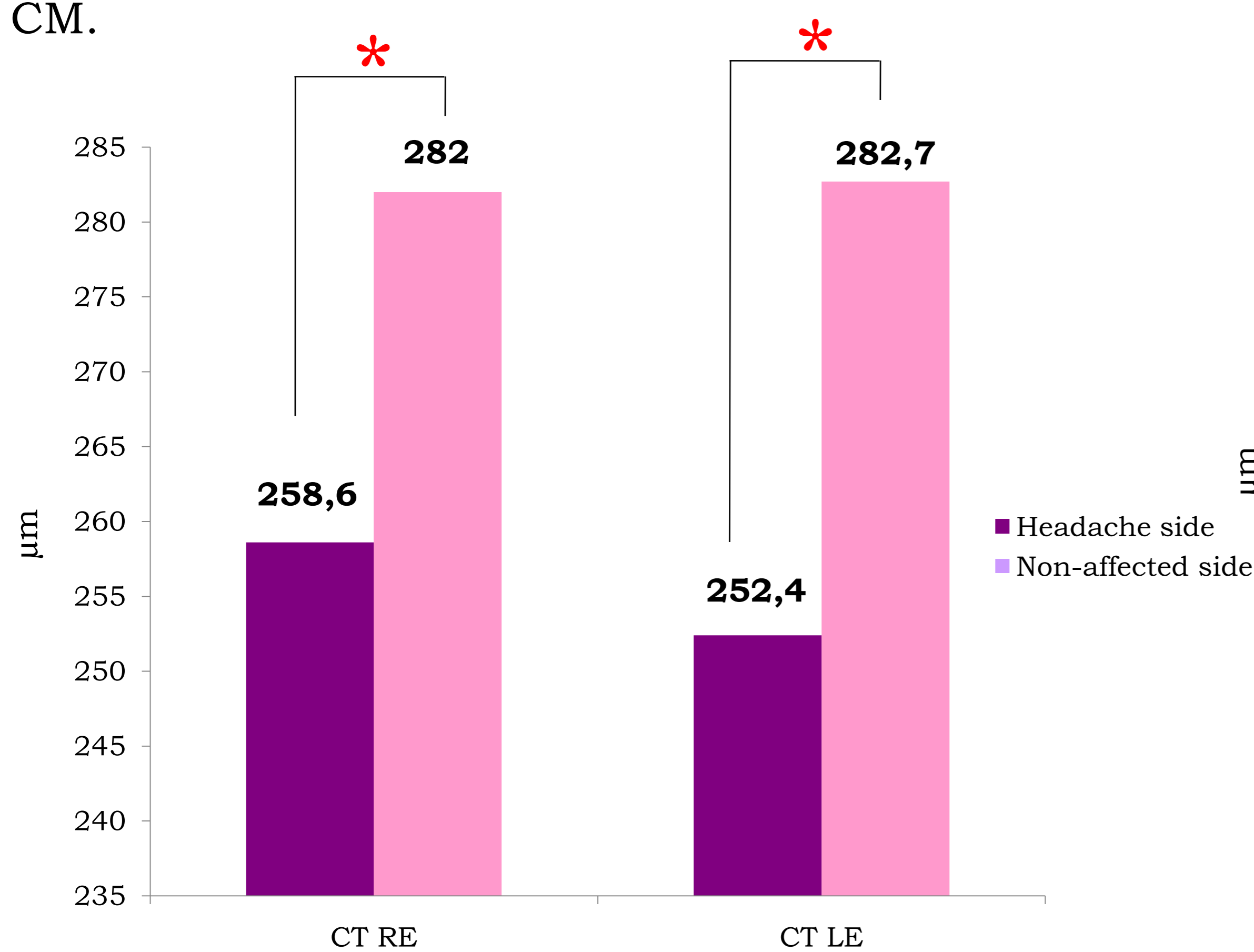


Figure 3

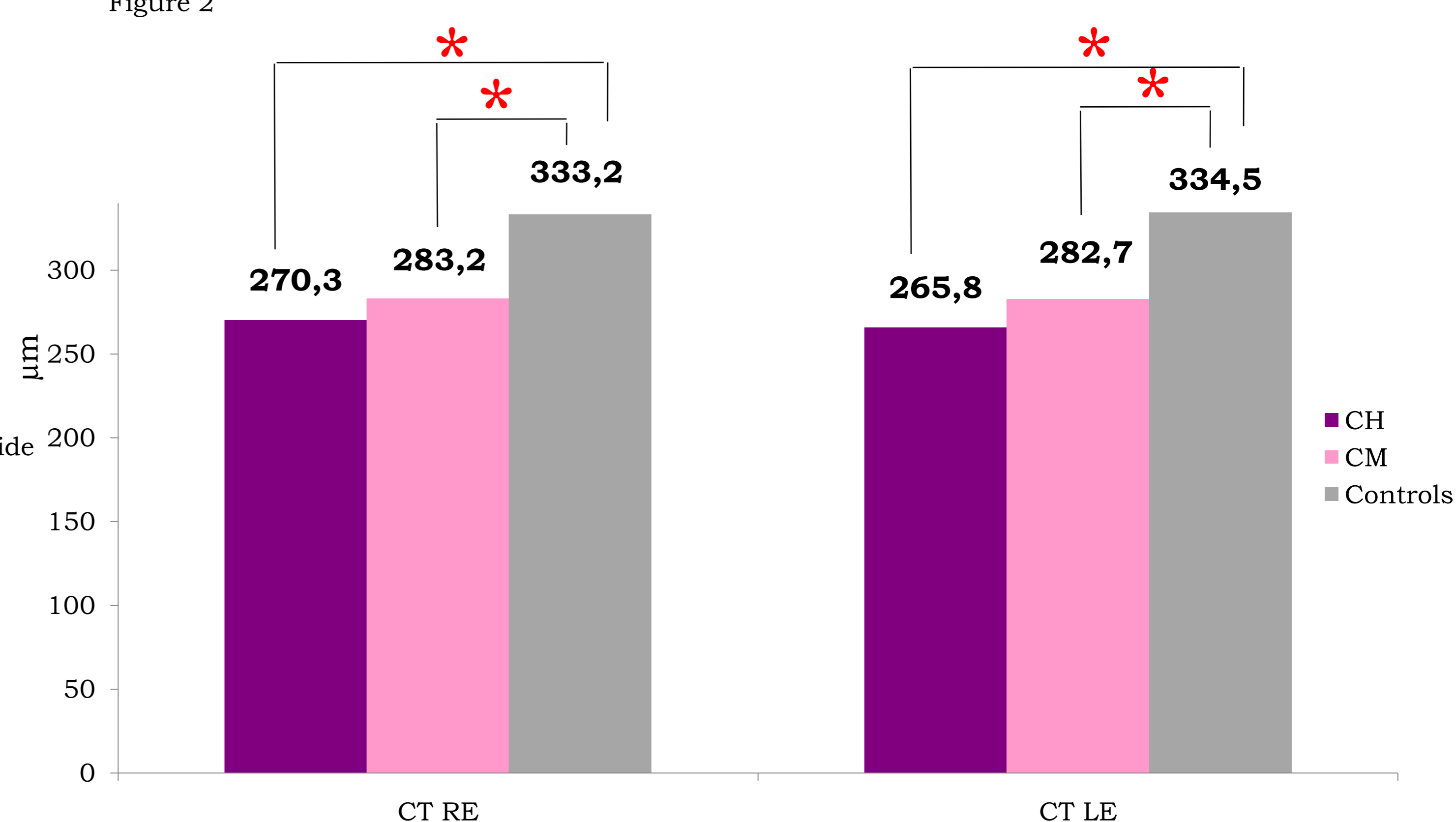


Figure 4

*: <0.01

Conclusion: We confirmed that retinal profile is affected in CH; in particular, the involvement of CT, especially in the affected side, could be explained by vascular changes of retinal vessel during CH attacks.

C. Ewering et al. Temporal retinal nerve fiber layer thinning in cluster headache patients detected by optical coherence tomography. Cephalalgia 2015, Vol. 35(11) 946-958 Hilde K Ofte. et al. Retinal vasculature in cluster headache. Cephalalgia 2017, Vol. 37(2) 197-198