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MÜLLER CELLS IN CHOROIDEREMIA: AN OCT-BASED QUANTITATIVE STUDY

Oral

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Purpose:

To quantitatively investigate Müller Cells' morphology in choroideremia (CHM), using a novel OCT-based approach.

Methods:

Observational and cross-sectional study on a series of genetically confirmed CHM cases and healthy controls. All subjects underwent Optical Coherence Tomography (OCT) (Spectralis HRA+OCT, Heidelberg Engineering) and OCT-Angiography (DRI Triton, Topcon Corporation). The following parameters were extracted from OCT scans, using a previously published method: Müller Cells' number, Müller Cells' number per slab, Müller Cells' density, Müller Cells' intensity and Müller Cells' tortuosity. On OCTA reconstructions, vessel density (VD) from the superficial capillary plexus (SCP), deep capillary plexus (DCP) and choriocapillaris (CC) was quantified in the islet of apparently healthy retina.

Results:

Ten eyes of 10 CHM patients and 20 eyes of 20 healthy male controls were included. Our algorithm was able to detect and reconstruct Müller Cells' in all eyes. The mean number of Müller Cells per single slab was of 89.6 for CHM and 203.3 for controls ($p < 0.001$). In the quantitative analysis, CHM is characterized by a reduction of Müller Cells' intensity, density, and tortuosity, when compared to healthy controls. Quantitative Müller Cells' parameters were correlated positively with VD at DCP.

Conclusions:

A reduction of Müller Cells' number and density in CHM can be detected using a novel quantitative OCT-based approach. Müller Cells' morphology in CHM is characterized by a lower tortuosity, reflecting a less complex spatial configuration, maybe linked to a loss in intercellular connections.