Retinal Optical Coherence Tomography Imaging Biomarkers in 1 Epiretinal Membrane: A Systematic Review

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Introduction: To identify and review the most novel optical coherence tomography (OCT) nomenclature and their clinical applications in retina.

Methods: A review of the literature was conducted to identify novel OCT nomenclature reported to date. A descriptive summary of all terms was completed, and representative illustrations were developed to highlight the most relevant features.

Results: A total of 37 OCT terminologies were identified. Nine terminologies were included in the vitreomacular interface disorders group, including the 4 stages of epiretinal membrane, macular pseudohole, tractional lamellar hole, degenerative lamellar hole, cotton ball sign, and foveal crack sign. Eight terminologies were included in the AMD group, including outer retinal tubulation, multi-layered pigment epithelial detachment, onion sign, double-layer sign, reticular pseudodrusen, complete outer retinal atrophy, complete RPE and outer retinal atrophy, and pre-choroidal cleft. Seven terminologies were included in the vascular disorders group, including pearl necklace sign, diffuse retinal thickening, disorganization of retinal inner layers, INL microcysts, hyperreflective retinal spots, paracentral acute middle maculopathy, and acute macular neuroretinopathy. The uveitic disorders group consisted of four terminologies, including bacillary layer detachment, syphilis placoid, rain cloud sign, and pitchfork sign. Two terminologies were identified in the disorders relating to toxicity group, including flying saucer sign and MEK inhibitor-associated retinopathy. Moreover, two terminologies were included in the disorders associated with systemic conditions group, including choroidal nodules and needle sign. There were two terminologies in the pachychoroid spectrum group, including pachychoroid and brush border pattern. Within the miscellaneous group, three terminologies were identified, including omega sign, macular telangiectasia, and omega sign (II).

Discussion/Conclusion: The pertinent features of 37 OCT terminologies were summarized and detailed illustrations consolidating the relevant features of each biomarker were included. Novel OCT biomarkers continue to be described in the literature, and a nuanced understanding of these biomarkers is essential for ophthalmologists due to their prognostic and predictive value.