QUANTIFICATION OF RETINAL MICROVASCULAR DENSITY IN DIABETIC PATIENTS USING CIRRUS ANGIOPLEX OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY (OCTA)

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Purpose: To assess the progression of microvascular changes in diabetic patients using Zeiss Cirrus AngioPlex OCTA quantification tool in a one-year follow-up. Methods: 30 eyes from 15 diabetic subjects underwent 3x3 mm OCTA scan using Zeiss Cirrus AngioPlex (Zeiss, Dublin, CA, USA). The ETDRS diabetic retinopathy (DR) severity level was determined based on the seven-field color fundus photography assessment: 4 eyes were classified with level 10, 1 with level 15, 2 with level 20, 18 with level 35 and 5 with level 43. Data gathered from two consecutive visits with one year interval were processed, using Zeiss Cirrus AngioPlex quantification software, in order to obtain vessel density measures of superficial retinal capillary layer (SRL) and deep retinal capillary layer (DRL) in the parafovea. Results: During the one year follow-up period, 15 of the 30 eyes showed a decrease in vessel density in the SRL with a maximum of 5.7% and a minimum of 0.5%. Sixteen eyes showed a decrease in vessel density in the DRL, ranging between a minimum of 0.7% and a maximum of 37.3%. Seven eyes had a decrease in vessel density in both capillary nets. The largest decrease was found in eyes classified with ETDRS grade 43. Conclusions: Decreases in vessel density measurements obtained from OCTA images show a wide range of values in eyes with mild and moderate DR and may provide useful information to monitor changes in capillary nonperfusion.