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COMBINATION OF ULTRA-WIDE-FIELD COLOUR FUNDUS PHOTOGRAPHY AND OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY DEMONSTRATE DIFFERENT SUBTYPES OF NON-PROLIFERATIVE DIABETIC RETINOPATHY

Oral

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Purpose:

To identify changes in central vascular density (VD) using Optical Coherence Tomography Angiography (OCTA) in diabetic patients with and without peripheral lesions identified on ultra-wide-field fundus photography (UWF-FP).

Methods:

A cross-sectional observational study in patients with Diabetes Type I and II. All patients underwent UWF 200º examinations with OPTOS California (Optos, Dunfermline,UK) and central 3x3mm Zeiss Angioplex acquisitions (Cirrus HD-OCT 5000, Zeiss Meditec Inc.). UWF images were graded based on the presence and location of DR lesions: A-eyes without lesions; B-eyes with lesions inside the 7-ETDRS fields area; C-eyes with lesions inside and outside the 7-ETDRS fields area; and D-eyes with peripherical lesions only (outside 7-ETDRS fields area). OCTA metrics such as, vascular density (VD) and perfusion density (PD) were computed with Carl Zeiss Meditec Density Exerciser (version:10.0.12787).

Results:

730 diabetic eyes were considered. 142 (19.5%) presented visible lesions in UWF-FP while 588 (80.5%) showed no visible lesions. From the 142 eyes with visible lesions, 26 (18%) showed only lesions inside the 7-ETDRS fields area, 42 (30%) presented visible lesions inside and outside the 7-ETDRS fields area and 74 (52%) presented visible lesions only in the peripheral retina.
Values of VD and PD on SD-OCTA were significantly decreased in all groups ($p<0.001$). The group with lesions both inside and outside the 7-fields ETDRS area showed the most significant decrease of VD and PD ($p=0.012$ and $P=0.010$, respectively).

Conclusions:

Central retinal VD and PD show changes in macular vessel density in eyes of diabetic individuals without visible lesions or with visible lesions only in the periphery of the retina. These findings suggest the need for OCTA and UWF-FP to characterize different phenotypes and subtypes of DR.