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CONFOCAL MULTICOLOR SIGNAL DEPENDS ON PERFUSION CHARACTERISTICS OF RETINAL MICROANEURYSMS IN DIABETIC RETINOPATHY AS DETECTED BY OCTA

Oral

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Purpose:

To propose a non-invasive multimodal imaging categorization of retinal microaneurysms (MA) secondary to diabetic retinopathy

Methods:

The study was designed as cross-sectional, observational, including patients affected by diabetic retinopathy (DR). Multimodal imaging included confocal MultiColor, blue autofluorescence (BAF), optical coherence tomography (OCT) and OCT angiography (OCTA) images. MA green- and red-reflectance components were assessed by confocal MultiColor, reflectivity properties by OCT, and MA perfusion features by OCTA. In addition, we included high-resolution (HR) and high-speed (HS) OCTA scans to assess HR-HS agreement in detecting retinal MA and to highlight different perfusion features detected by both OCTA acquisitions.

Results:

We analyzed 216 retinal MA, categorized as green (46; 21%), red (58; 27%) and mixed type (112; 52%). Green MA were mainly hyperreflective on OCT, with no or poor filling on OCTA. Red MA were characterized by isorefective signal on OCT and full filling on OCTA. Mixed MA showed hyperreflective border and hyporefective core on OCT and partial filling on OCTA. MA HR/HS size discrepancy highlighted no differences in size and reflectivity when considering red MA, whereas it progressively increased as MA changed from red to green MultiColor signal. MA types significantly correlated with visual acuity, DR duration and severity

Conclusions:

Retinal MA can be reliably classified by means of a fully non-invasive multimodal imaging-based assessment. MA types are related with visual acuity, DR duration and DR severity. Both HR and HS OCTA are highly feasible in detecting MA, although HR OCTA should be preferred when fibrotic evolution goes on.