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ABNORMAL FLUID ACCUMULATION IN THE DIABETIC RETINA QUANTIFICATION USING OCT-LEAKAGE

Oral

Cunha--Vaz J.^[1], Santos T.^[1], Marques I.^[1], Santos A.^[1], Figueira J.^[2], Lobo C.^[1]

^[1]1 - AIBILI - Association for Innovation and Biomedical Research on Light and Image ~ Coimbra ~ Portugal, ^[2]2 - Department of Ophthalmology, Centro Hospitalar Universitário de Coimbra (CHUC) ~ Coimbra ~ Portugal

Purpose:

To demonstrate abnormal fluid accumulation in the diabetic retina using OCT-Leakage.

Methods:

Seventy-four eyes from 74 type 2 diabetic patients were followed in a 3-year longitudinal study with 1-year intervals using OCT-Leakage. The OCT-Leakage algorithm is an image analysis algorithm based on the projection of low optical reflectivity (LOR) voxels to a plane perpendicular to the depth direction. LOR voxels are identified by thresholding the reflectivity intensity of OCT structural data by a reference value calculated from a normative database of healthy control subjects. Extracellular fluid distribution of a given area of the retina can be measured by the LOR area ratio. LOR sites are identified for the different retinal layers.

Results:

Center-involved diabetic macular edema (CI-DME) was identified in the first visit in 9% of eyes in ETDRS 10-20, 10% of eyes in ETDRS 35 and 15% of eyes in ETDRS 43-47. The eyes with CI-DME and subclinical CI-DME showed progressive increase in retinal extracellular fluid during the 3-year period of follow-up. CI-DME with increased retinal extracellular fluid accumulation was shown to be associated with vision loss.

Conclusions:

The prevalence of subclinical CI-DME and CI-DME in NPDR occurs independently of the severity of the retinopathy. OCT-Leakage demonstrates a progressive increase in extracellular fluid in long standing CI-DME. Variations in the increase of extracellular fluid are associated with vision loss.