Presence of subretinal fluid at baseline preserves from photoreceptor alterations in diabetic macular edema and cystoid macular edema due to central retinal vein occlusion

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Data and Methodology
SD-OCT image data of 102 patients (CRVO, n=42; DME, n=60) were analyzed at BSL and after 3 monthly anti-VEGF injections by experienced graders of the Vienna Reading Center (VRC) under the supervision of two retinal experts using custom VRC software.

The foveal B-scan of SD-OCT macular cube scans (Heidelberg Spectralis, 49 B-scans, 6x6mm) was chosen for analysis. At baseline, patients were classified into two groups, SRF present or absent.

Morphological changes in the central millimeter area such as disruption and thickening of the of Inner Segment/Outer Segment (IS/OS) line and disruption of the external limiting membrane (ELM) were quantified. Statistical comparisons were performed between the SRF/no SRF groups at BSL and M3 by Chi-Square-Test.

Aim
To characterize photoreceptor integrity in patients with or without subretinal fluid (SRF) in diabetic macular edema (DME) and cystoid macular edema due to central retinal vein occlusion (CRVO) at baseline (BSL) and after anti-VEGF therapy.

Results
- ELM disruption was significantly less present at BSL (p=0.009) and M3 (p=0.002) in patients with SRF compared to no SRF. 71 (28/43) out of 74 (29/45) patients from both SRF / no SRF groups with an ELM disruption at BSL had a persistent disruption at M3, while 18 (13/5) disruptions newly developed at M3.

- There was no significant difference in IS/OS disruption between the SRF/no SRF groups at BSL or M3 (40 total number of IS/OS disruption, 23 SRF, 17 no SRF).

- IS/OS thickening was more present in the SRF group compared to no SRF at BSL (p<0.00001). The IS/OS swelling relieved at M3 in 27 out of 29 cases in the SRF group, but persisted for all 4 cases with IS/OS thickening in the no SRF group (p=0.003).

Presence of SRF seems to play an important role in the preservation and healing process of the photoreceptors layers in DME and cystoid macular edema due to CRVO when comparing patients with and without SRF at baseline. This protective role of SRF could lead to differences in long-term visual acuity outcomes after anti-VEGF treatment.

Conclusion & Future Work

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