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Disorganization of the Retinal Inner Layers as a Predictor of Visual Acuity in Eyes with Macular Edema Secondary to Vein Occlusion

Michael Mimouni, MD, Or Segev, BScMed, Dalia Dori, MD, Noa Geffen, MD, Victor Flores, MD, Ori Segal, MD

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ABSTRACT

PURPOSE: To determine whether spectral domain–optical coherence tomography (SD-OCT) disorganization of the retinal inner layers (DRIL) is predictive of best-corrected visual acuity (BCVA) in retinal vein occlusion macular edema (RVO-ME).

DESIGN: Retrospective cohort study.

METHODS: Setting: two tertiary centers. Patients: treatment naive RVO-ME receiving monthly intravitreal bevacizumab. Observation procedures: spectral-domain optical coherence tomography (SD-OCT) images from baseline, 4-month, and 8-month visits. The DRIL extent and additional parameters were evaluated in the 1-mm-wide fovealcentered area. Main outcome measures: BCVA at each visit.

RESULTS: A total of 136 eyes (n=136) were included in this study. Greater DRIL extent at baseline correlated with worse baseline BCVA (point estimate, 0.04; 95%CI, 0.01-0.07 per 100µm, P=0.003). In multivariate analysis extent of DRIL (P=0.03) and ellipsoid zone disruption (P<0.001) correlated with baseline BCVA. Four month DRIL reduction was associated with 8-month BCVA improvement (point estimate, 0.02; 95%CI, 0.01-0.04, P=0.01) with only DRIL remaining significant in multivariate analysis (P=0.02). Baseline DRIL predicted 8-month improvement in BCVA (point estimate, 0.03, 95%CI 0.01-0.05, P=0.04) with only DRIL remaining significant in multivariate analysis (P=0.006). Eight-month DRIL change was associated with 8-month BCVA change (point estimate, 0.03, 95%CI 0.01-0.05, P=0.001) with only DRIL remaining significant in multivariate analysis (P=0.002).

CONCLUSIONS: The change of the DRIL extent following the first three monthly injections identifies eyes with a high likelihood of subsequent BCVA improvement or decline. Therefore, the extent of DRIL before and after treatment is an additional SD-OCT parameter that may serve as a biomarker for patients with RVO-ME.

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