Optical Coherence Tomography Characteristics Before and After Anti-VEGF Treatment in Macular Edema Secondary to Retinal Vein Occlusion

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Purpose: Evaluation of spectral domain optical coherence tomography (SD-OCT) features before and after intravitreal Anti-VEGF treatment in patients with macular edema secondary to retinal vein occlusion.

Methods: In this retrospective study, patients with macular edema due to retinal vein occlusion receiving intravitreal anti-VEGF therapy with the PRN protocol after three months of loading therapy were evaluated. Best corrected visual acuity (BCVA), SD-OCT images were assessed before injection and at 1, 3 and 6 months after injection.

Results: Twenty-four eyes of 24 patients were included the study. 10 (42%) of the patients treated with ranibizumab and 14 (58%) treated with bevacizumab. The mean BCVA was 0.77, 0.63, 0.60, and 0.56 at baseline and 1, 3, and 6 months after injection, respectively (p<0.05). The mean changes from baseline central subfield thickness (CFT) were 171.9, 159.6, and 141.5 µm at 1, 3, and 6 months, respectively (p<0.001). While resolution of macular edema was occured in 11 (45%) patients in the 6 month follow-up, 13 (55%) of the patients had persistent macular edema. According to the baseline OCT images, 11 (46%) patients had disorganization of retinal inner layers, 13(54%) patients had subretinal fluid, 14(59%) patients had external limiting membrane irregularity, 12 (50%) patients had ellipsoid zone irregularity. While there was no significant decrease in the density of hyperreflective points (HRP) after injection, the decrease in HRP at the cyst edges was significant(p=0.05).

Conclusions: Anti-VEGF treatments were associated with resolution of macular edema and improvement in visual acuity in patients with macular edema secondary to retinal vein occlusion. In addition to resolution of the macular edema, SD-OCT features might be important in predicting the effectiveness of the treatment and following the patients.