Real world data from Multimodal Imaging in Diabetic Macular Edema

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Purpose: Diabetic retinopathy is a form of diabetic microangiopathy, and vascular hyperpermeability in the macula leads to retinal thickening and concomitant reduction of visual acuity in diabetic macular edema (DME). In this study, we present real world data in assessing the feasibility and specificity of multimodal fundus imaging biomarkers in DME diagnosis and response to interventions.

Patients/Methods: retrospective medical records review of 24 patients (42 eyes) with DME on antiVEGF treatment. Multimodal imaging data were collected and correlated with visual acuity and response to treatment at various stages of the disease.

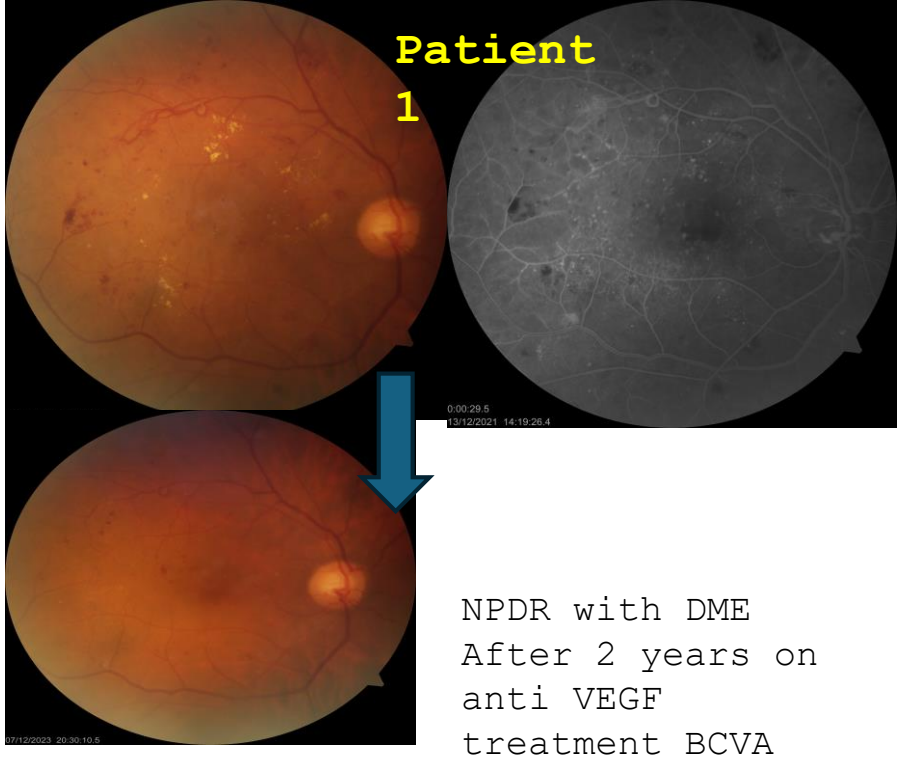
Results: fundus photography revealed clinically significant macular edema and centre-involving diabetic macular edema was diagnosed using optical coherence tomography (OCT).

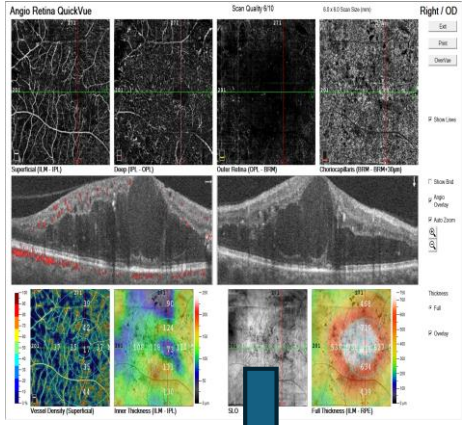
Fluorescein angiography (FA) performed the best in evaluating morphological and functional changes in retinal capillaries, e.g., microaneurysms, capillary nonperfusion, and fluorescein leakage and

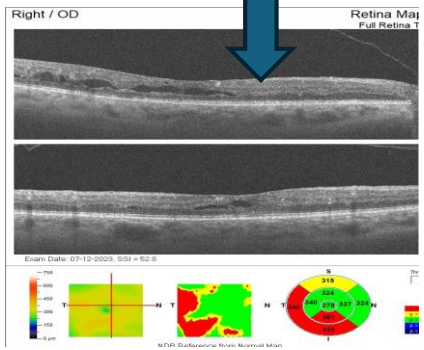
optical coherence tomography angiography (OCTA) allowed to evaluate the three-dimensional structure of the retinal vasculature and demonstrated that lamellar capillary nonperfusion in the deep layer is associated with retinal edema.

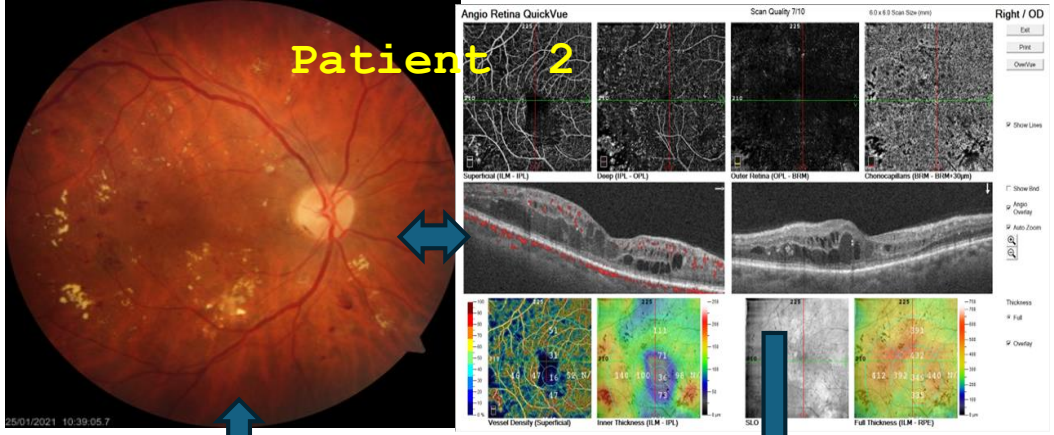
Retinal thickness measured by OCT enabled the quantitative assessment of therapeutic effects. Sectional OCT images depicted the deformation of neural tissues, e.g., cystoid macular edema, serous retinal detachment, and sponge-like retinal swelling. The disorganization of retinal inner layers (DRIL) and foveal photoreceptor damage, biomarkers of neurodegeneration, were associated with visual impairment.

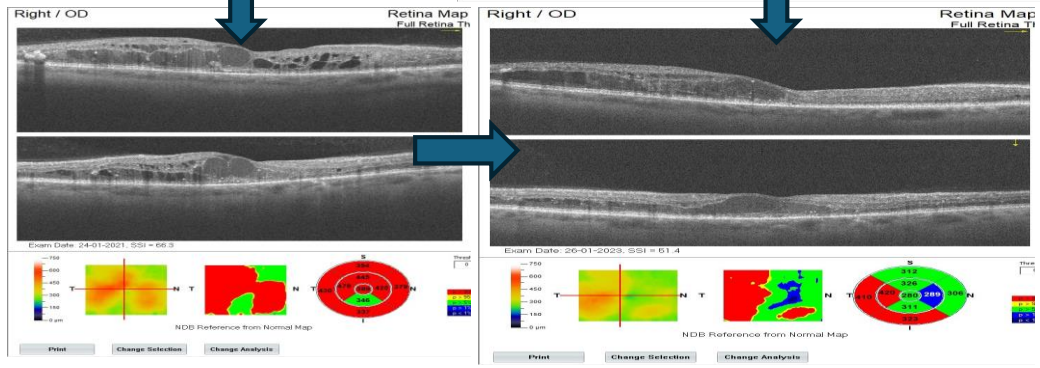
- However, the quality of OCTA images fluctuated significantly and fundus autofluorescence was not much of informative regarding the RPE damage in DME.



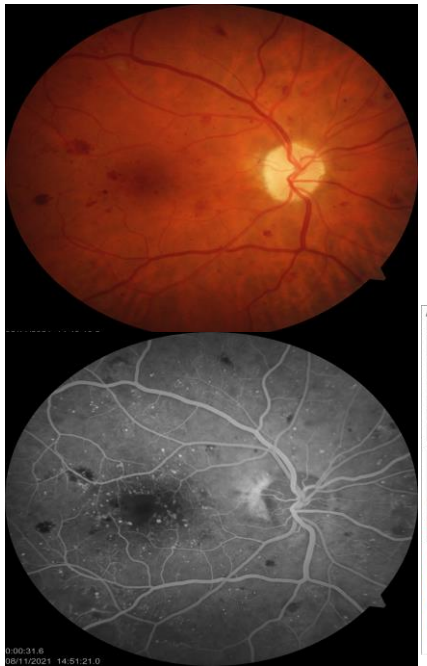


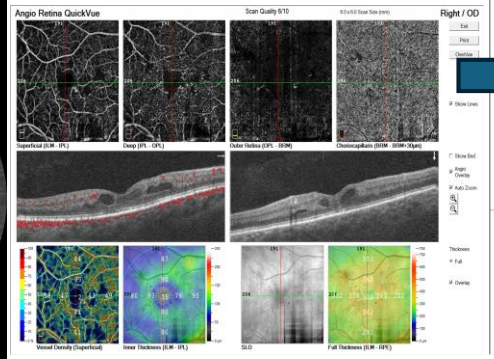


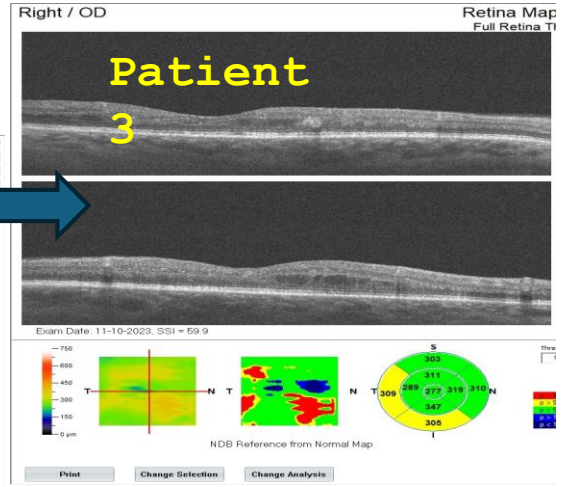




NPDR with DME After 2 years on anti VEGF treatment BCVA improved from 0.1 to 0.6 (patient 1) and stabilized at 0.4 (patient 2). Patient 3 experienced significant visual improvement with







Conclusions

Multimodal imaging help to elucidate the underlying pathology in DME variances, serving both in DME assessment at baseline and in response to treatment. However, high image quality is necessary in order to benefit from the recent imaging modalities.