OCT Predicts VEGF Levels in Human Eyes

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Sonoda et al. reported a new aspect of diagnostic imaging by optical coherence tomography (OCT) in their manuscript, “Correlation between reflectivity of subretinal fluid in OCT images and concentration of intravitreal VEGF in eyes with diabetic macular edema.” Neudorfer and the authors found that OCT reflectivity is variable in subretinal fluid in diabetic macula edema cases. They have already reported the cytokine profiles in diabetic retinopathy cases from intra-operative vitreous samples. In this manuscript, they examined the correlation between OCT reflectivity and the intravitreal concentration of major cytokines/growth factors, VEGF, IL-6, and IL-8. To test the hypothesis that degree of reflectivity is correlated with VEGF and vascular leakage in the subretinal fluid, they developed an experimental swine eye model for OCT reflectivity measurement. The concept is quite novel, showing that reflectivity of ocular fluid could be reproducibly measured by OCT. Notably the OCT reflectivity is well correlated to vascular permeability or intravitreous VEGF concentration, suggesting OCT provides not only quantitative morphologic information but also qualitative information. These findings suggest that the OCT reflectivity may become a new indicator of intraocular VEGF or an assessor of the effectiveness of the treatment. The method may replace the clinical roles of invasive fluorescent angiography in part. Because it is less invasive, has high reproducibility, and is easy to use, OCT will be more clinically important for diagnostic and therapeutic use of new era.

References