Quantification of Nonperfusion And Neovascularization on Ultrawide-field Fluorescein Angiography in Patients with Diabetes and Association with Vitreous Hemorrhage, Macular Edema, and Vitrectomy

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Purpose

• To identify risk factors associated w/ increased areas of foveal avascular zone (FAZ), neovascularization (NV) and nonperfusion (NP) in diabetic patients
• To calculate a threshold total NP associated with an increased risk of proliferative diabetic retinopathy (PDR)

Methods

Patient Enrollment
• IRB-approved retrospective chart review (HUM00120509) b/w Jan 2009 and May 2018
• Inclusion: 18 years or older, diagnosed w/ type 1 or 2 diabetes mellitus (DM)

Statistical Analysis
• All analysis conducted in R (Core Team, 2019)
• For associations analysis, linear multivariate regression performed w/ geem and geepack.1

Demographics
• 651 eyes from 363 patients (42.4% female)
• 76 (11.7%) no DR, 92 (41.1%) mild non-proliferative DR (NPDR), 144 (22.1%) moderate NPDR, 220 (33.8%) PDR, 18 (2.8%) unknown

Nonperfusion and Neovascularization Analysis

Significant associations: male w/ total NP (P=.005), black race (Figure 1) w/ total NV (P=.04), VH (Figure 2) w/ total NP (P=.02)

Further Analysis

Total NP threshold of 77.48 mm² (95% CI: 54.24-92.66) for increased risk of PDR (sensitivity 59.5%, specificity 73.6%)

Conclusion

These findings suggest eyes with at least 77.48 mm² of NP are at risk for PDR. Male sex, black race, and presence of VH are associated with greatest areas of NP and NV.

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