OPEN ACCESS

ARVO Annual Meeting Abstract | July 2018

Changes in Macular function with Multifocal Pupillography and its spatial correlation with severity of Diabetic Retinopathy

Faran Sabeti; Corinne F Carle; Christopher Nolan; Alicia Jenkins; Rohan Essex; Lauren Baker; Rakesh M Iyer; Caitlin E Coombes; Veronica Cheung; Melody Chiou; Ted Maddess

Author Affiliations & Notes

Faran Sabeti
Department of Optometry, University of Canberra, Bruce, Australian Capital Territory, Australia
Eccles Institute for Neuroscience, Australian National University, Canberra, Australian Capital Territory, Australia

Corinne F Carle
Eccles Institute for Neuroscience, Australian National University, Canberra, Australian Capital Territory, Australia

Christopher Nolan
Australian National University Medical School, Australian National University, Canberra, Australian Capital Territory, Australia
Department of Endocrinology, The Canberra Hospital, Canberra, Australian Capital Territory, Australia

Alicia Jenkins
NHMRC Clinical Trials Centre, University of Sydney, Sydney, Australian Capital Territory, Australia

Rohan Essex
Australian National University Medical School, Australian National University, Canberra, Australian Capital Territory, Australia
Department of Ophthalmology, The Canberra Hospital, Canberra, Australian Capital Territory, Australia

Lauren Baker
Department of Endocrinology, The Canberra Hospital, Canberra, Australian Capital Territory, Australia

Rakesh M Iyer
Department of Endocrinology, The Canberra Hospital, Canberra, Australian Capital Territory, Australia

Caitlin E Coombes
Australian National University Medical School, Australian National University, Canberra, Australian Capital Territory, Australia

Veronica Cheung
Australian National University Medical School, Australian National University, Canberra, Australian Capital Territory, Australia

Melody Chiou
Australian National University Medical School, Australian National University, Canberra, Australian Capital Territory, Australia

Ted Maddess
Eccles Institute for Neuroscience, Australian National University, Canberra, Australian Capital Territory,

Australia

Footnotes

Commercial Relationships **Faran Sabeti**, None; **Corinne Carle**, NuCoria (P); **Christopher Nolan**, None; **Alicia Jenkins**, None; **Rohan Essex**, None; **Lauren Baker**, None; **Rakesh Iyer**, None; **Caitlin Coombes**, None; **Veronica Cheung**, None; **Melody Chiou**, None; **Ted Maddess**, NuCoria (P), NuCoria (F), NuCoria (C)

Support None

Investigative Ophthalmology & Visual Science July 2018, Vol.59, 1893. doi:

Abstract

Purpose : We compared the relationship between central retinal structure, and central retinal function as assessed multifocal pupillographic objective perimetry (mfPOP), in patients with Type 1 and Type 2 diabetes.

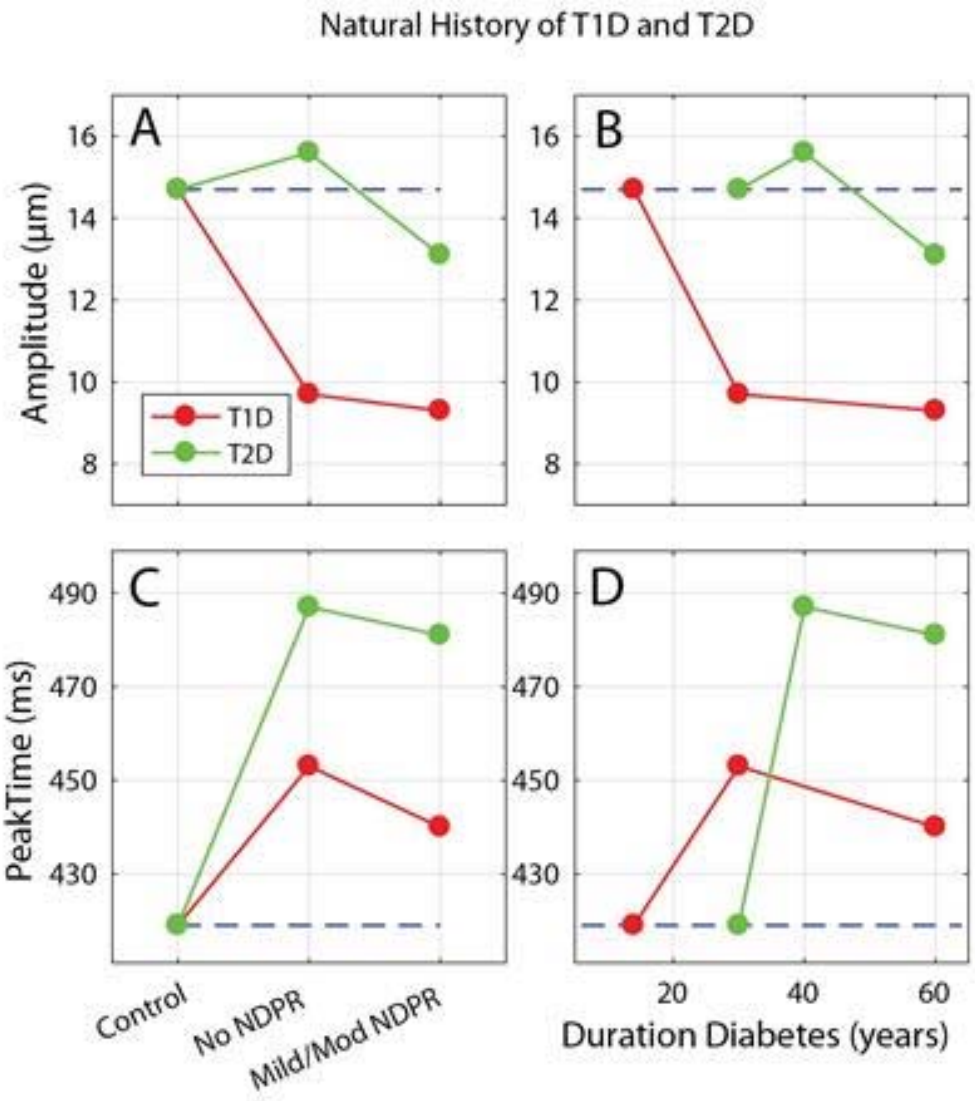
Methods : Pupillary responses were measured in thirty patients without retinopathy and thirty patients with retinopathy (25 with Type 1 diabetes, aged 52.7 ± 15.8 y; 35 with Type 2 diabetes, 61.6 ± 10.9 yr), and 43 age-matched controls (61.2 ± 9.3 y). mfPOP response amplitudes and delays within the central 30° of fixation were compared to the spatially corresponding full retinal thickness regions in the Early Treatment Diabetic Retinopathy Study (ETDRS) zones measured with optical coherence tomography (OCT). Correlation between groups were examined using Pearson's Correlation Coefficients and differences were examined using *t*-tests.

Results : The results showed that there was no significant difference in central retinal thickness, retinal nerve fiber layer (RNFL) thickness, or HbA1c for all subject groups. Patients with type 2 diabetes (T2D) and controls had similar response amplitudes. Patients with Type 1 diabetes (T1D) had significantly reduced response amplitudes compared to controls and T2D group ($P < 0.001$), and this functional loss increased with progression to retinopathy. Response delays were significantly greater in both T1D and T2D compared to controls. Local correlations between retinal thickness and mfPOP reached significance towards the borders of macula in both patient groups ($P < 0.05$).

Conclusions : Neuroretinal dysfunction measured by mfPOP amplitude loss and delays in T1D is worse than in T2D. A positive spatial correlation between retinal thickness and mfPOP responses in peripheral ETDRS regions in eyes with retinopathy might indicate that regions outside the central retina are more vulnerable in earlier stages of disease. These findings suggest that peripheral functional loss in eyes with good vision may

identify optimal candidates for early treatment and closer monitoring.

This is an abstract that was submitted for the 2018 ARVO Annual Meeting, held in Honolulu, Hawaii, April 29 - May 3, 2018.



View Original Download Slide