

Circadian Rhythm Types in Individuals with Diabetic Macular Edema

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Background and Hypothesis:

Diabetic Retinopathy (DR) is the leading cause of vision loss in patients with diabetes. Diabetic macular edema (DME) can be associated with any stage of DR, causing thickening and swelling of the macula, leading to vision impairment. Circadian rhythm, the body's natural clock that governs physiological processes and dictates our sleep-wake cycle, is known to be affected by DR and DME. This study hypothesizes that DME will be associated with a more extreme circadian rhythm type.

Methods:

Individuals 18 years or older with a diagnosis of type I or type II diabetes complicated by DME were given a 19-item Morningness-Eveningness Questionnaire (MEQ) to determine their circadian rhythm and sleep patterns. Information regarding demographics, metabolic parameters, diabetes, visual acuity and DME severity was collected.

Results:

In this ongoing study, we compiled data from 54 individuals out of a targeted enrollment of 160. Overall, the MEQ scores characterized more individuals as morning types, followed by intermediate and evening types. The preliminary analysis shows a weak, insignificant positive correlation with retinal thickness in the right eye and a weak, insignificant negative in the left eye. In addition, a weak, insignificant negative correlation was also observed between MEQ and right eye visual acuity, with the opposite trend occurring in the left eye. DME variables such as mean central foveal thickness decreased insignificantly in right eyes from morning to evening groups but increased in the left eye.

Conclusion and Potential Impact:

Our study suggests DME individuals are mostly morning type instead of evening type. However, there is no strong relationship between MEQ scores and DME parameters. As we recruit more individuals in the future, we hope to establish a more significant relationship that could improve our understanding of how circadian rhythms and DME are interconnected and could lead to new treatments.