KORELASI *CYSTOID SPACE* DAN KERUSAKAN *FOVEAL PHOTORECEPTOR* DENGAN *LOGARITHM OF THE MINIMUM ANGLE OF RESOLUTION (LOGMAR) VISUAL ACUITY* PADA PASIEN DENGAN *DIABETIC MACULAR EDEMA*

TESIS

Diajukan sebagai pemenuhan syarat untuk meraih gelar

Dokter Spesialis Mata

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Abstrak

Pendahuluan
Diabetic macular edema (DME) merupakan kondisi dimana terdapat akumulasi cairan pada rongga ekstraseluler intraretina pada area makula. DME dapat menyebabkan perubahan struktural maupun fungsional dari *photoreceptor*. Perubahan struktural dan fungsional tersebut dapat dievaluasi dengan pemeriksaan *Optical Coherence Tomography* (OCT) dan pemeriksaan *logmar visual acuity*.

Tujuan
Mengetahui korelasi *cystoid space* dan kerusakan *foveal photoreceptor* dengan *logmar visual acuity* pada pasien dengan *diabetic macular edema.*

Metode
Penelitian ini merupakan studi observasional analitik dengan desain *cross sectional*. Penelitian dilakukan di poliklinik Mata dan poliklinik khusus Endokrinologi RSUP. Dr. M. Djamil Padang dari April-Juli 2024. Jumlah sampel penelitian adalah 29 mata dari 24 orang penderita *diabetic macular edema* tipe *cystoid*. Pemeriksaan *cystoid space* dan kerusakan *foveal photoreceptor* dilakukan menggunakan protokol HD 1 Line 100x kemudian diukur menggunakan aplikasi image j. Pemeriksaan *logmar visual acuity* dilakukan menggunakan *Early Treatment Diabetic Retinopathy Study* (ETDRS) *chart*. Data sampel yang memenuhi kriteria inklusi dan tidak termasuk dalam kriteria eksklusi dianalisis dengan SPSS untuk menilai korelasi antar variabel penelitian

Hasil
Nilai rata-rata *cystoid space*, kerusakan *foveal photoreceptor*, dan *logmar visual acuity* pada penderita DME tipe *cystoid* adalah (614,52 ± 262,51 µm, 777,66 ± 172,99 µm, dan 0,61 ± 0,34). Terdapat korelasi kuat antara *cystoid space* dan kerusakan *foveal photoreceptor* dengan nilai $p < 0,001$ $r = 0,634$. Korelasi antara *cystoid space* dan *logmar visual acuity* memiliki kekuatan sedang dengan nilai $p = 0,046$ $r = 0,374$. Sementara itu kerusakan *foveal photoreceptor* dan *logmar visual acuity* menunjukkan korelasi kuat dengan nilai $p = 0,002$ $r = 0,543$.

Kesimpulan

Semakin lebar ukuran *cystoid space* maka akan semakin lebar kerusakan *foveal photoreceptor* dan semakin besar skala *logmar visual acuity* pada pasien dengan *diabetic macular edema*

Kata kunci
Diabetic macular edema (DME), *cystoid space*, *foveal photoreceptor*, *logmar visual acuity*, *cystoid macular edema* (CME)

CORRELATION OF *CYSTOID SPACE* AND *FOVEAL PHOTORECEPTOR* DISRUPTION WITH *LOGARITHM OF THE MINIMUM ANGLE OF RESOLUTION (LOGMAR) VISUAL ACUITY* IN *DIABETIC MACULAR EDEMA PATIENTS*

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Abstract

Introduction
Diabetic macular edema (DME) is a condition characterized by fluid accumulation in the intraretinal extracellular space in the macular area. DME can lead to structural and functional changes in photoreceptors. These structural and functional changes can be evaluated using Optical Coherence Tomography (OCT) and LogMAR visual acuity examination.

Objective
To determine the correlation of cystoid space and foveal photoreceptor damage with LogMAR visual acuity in patients with diabetic macular edema.

Methods
This study is an analytical observational study with a cross-sectional design. The research was conducted at the Eye Clinic and Endocrinology Specialty Clinic of Dr. M. Djamil Padang General Hospital from April to July 2024. The study sample consisted of 29 eyes from 24 patients with cystoid diabetic macular edema. Cystoid space and foveal photoreceptor damage were assessed using HD 1 Line 100x protocol and measured using Image J software. LogMAR visual acuity was measured using the Early Treatment Diabetic Retinopathy Study (ETDRS) chart. Data from samples that met the inclusion criteria and did not meet the exclusion criteria were analyzed using SPSS to assess the correlation between research variables.

Results
The mean values of cystoid space, foveal photoreceptor damage, and LogMAR visual acuity in patients with cystoid DME were (614.52 ± 262.51 µm, 777.66 ± 172.99 µm, and 0.61 ± 0.34), respectively. There was a strong correlation between cystoid space and foveal photoreceptor disruption with p value < 0.001, r = 0.634. The correlation between cystoid space and LogMAR visual acuity was moderate with p value = 0.046, r = 0.374. Meanwhile, foveal photoreceptor damage and LogMAR visual acuity showed a strong correlation with p value = 0.002, r = 0.543.

Conclusion
Wider cystoid space correlates with broader foveal photoreceptor damage and larger LogMAR visual acuity scale in patients with diabetic macular edema.

Keywords

Diabetic macular edema (DME), *cystoid space*, *foveal photoreceptor*, *logmar visual acuity*, *cystoid macular edema* (CME)