

**HUBUNGAN *PERIPAPILLARY CHOROIDAL THICKNESS* DENGAN
GANGLION CELL LAYER-INNER PLEXIFORM LAYER
(*GCL-IPL*) *THICKNESS* PADA MIOPIA UNTUK DETEKSI GLAUKOMA**

TESIS

Diajukan sebagai pemenuhan syarat untuk meraih gelar Dokter Spesialis Mata

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ABSTRAK

Pendahuluan: Pemanjangan *axial length* pada miopia dapat menyebabkan perubahan anatomi peripapil dan makula yang lebih lanjut menimbulkan komplikasi berat seperti glaukoma. Penurunan densitas kapiler koroid yang ditandai dengan penipisan *peripapillary choroidal thickness* bersama dengan penurunan perfusi *inner* retina diduga menyebabkan kerusakan pada akson dan sel ganglion retina sehingga terjadi kematian sel ganglion retina dan penipisan *GCL-IPL thickness*. Penelitian ini bertujuan untuk menilai perbedaan *peripapillary choroidal thickness* dan *GCL-IPL thickness* berdasarkan derajat miopia dan mengevaluasi korelasi kedua variabel tersebut.

Metode: Studi observasional analitik dengan desain *cross sectional* yang dilakukan di Poliklinik Mata RSUP Dr. M. Djamil Padang pada Desember 2023–April 2024. Sampel terdiri dari 57 orang dokter muda berusia 20–26 tahun dengan miopia $\geq 0,5$ D yang kemudian dibagi ke dalam 3 kelompok (miopia ringan, sedang, dan tinggi). Pengukuran *peripapillary choroidal thickness* dilakukan menggunakan *Enhanced Depth Imaging (EDI) Cirrus HD-OCT* dengan protokol 6 mm *single raster high- definition (HD) scan* dan *GCL-IPL thickness* diukur dengan *macular cube scan 512 x 128*.

Hasil: Rerata *peripapillary choroidal thickness* paling tipis didapatkan pada kelompok miopia tinggi ($174,15 \pm 43,75 \mu\text{m}$), diikuti miopia sedang dan ringan. Kelompok miopia tinggi juga memiliki *GCL-IPL thickness* paling tipis ($77,89 \pm 4,08 \mu\text{m}$). Perbedaan nilai rerata *peripapillary choroidal thickness* antar kelompok miopia didapatkan signifikan secara statistik antara miopia ringan dengan miopia sedang ($p = 0,048$) dan antara miopia ringan dengan miopia tinggi ($p = 0,002$), sedangkan perbedaan nilai rerata *GCL-IPL thickness* yang signifikan secara statistik hanya didapatkan antara kelompok miopia ringan dengan miopia tinggi ($p = 0,003$). *Peripapillary choroidal thickness* memiliki korelasi positif dan kekuatan hubungan *moderate* dengan *GCL-IPL thickness* ($p = 0,000$ dan $r = 0,482$).

Kesimpulan: Terdapat perbedaan rerata *peripapillary choroidal thickness* dan *GCL-IPL thickness* yang bermakna secara statistik berdasarkan derajat miopia. *Peripapillary choroidal thickness* yang semakin tipis juga diikuti oleh *GCL-IPL thickness* yang semakin tipis pada miopia.

Kata kunci: *peripapillary choroidal thickness*, *GCL-IPL thickness*, miopia, *enhanced depth imaging*

CORRELATION OF PERIPAPILLARY CHOROIDAL THICKNESS WITH GANGLION CELL LAYER-INNER PLEXIFORM LAYER (GCL-IPL) THICKNESS IN MYOPIA FOR GLAUCOMA DETECTION

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ABSTRACT

Introduction: The elongation of axial length in myopia can cause changes in peripapillary and macular anatomy which further lead to severe complications such as glaucoma. Decreased choroidal capillary density characterized by thinning of peripapillary choroidal thickness along with decreased inner retinal perfusion is thought to cause damage to axons and retinal ganglion cells resulting in retinal ganglion cell death and thinning of GCL-IPL thickness. This study aims to assess the difference between peripapillary choroidal thickness and GCL-IPL thickness based on the degree of myopia and evaluate the correlation between the two variables.

Methods: An analytic observational study with a cross sectional design conducted at the Eye Polyclinic of Dr. M. Djamil Hospital Padang in December 2023–April 2024. The sample consisted of 57 junior clerkships aged 20-26 years with myopia ≥ 0.5 D who were then divided into 3 groups (mild, moderate, and high myopia). Peripapillary choroidal thickness was measured using Enhanced Depth Imaging (EDI) Cirrus HD-OCT with a 6 mm single raster high-definition (HD) scan protocol and GCL-IPL thickness was measured with a 512 x 128 macular cube scan.

Results: The average peripapillary choroidal thickness was thinnest in the high myopia group ($174.15 \pm 43.75 \mu\text{m}$), followed by moderate and mild myopia. The high myopia group also had the thinnest GCL-IPL thickness ($77.89 \pm 4.08 \mu\text{m}$). The difference in mean values of peripapillary choroidal thickness among myopia groups was found to be statistically significant between mild and moderate myopia ($p = 0.048$) and between mild and high myopia ($p = 0.002$). The statistically significant difference in mean GCL-IPL thickness was only found between the mild and high myopia group ($p = 0.003$). Peripapillary choroidal thickness was positively correlated and had moderate strength relationship with GCL-IPL thickness ($p = 0.000$ and $r = 0.482$).

Conclusion: There was a statistically significant difference in the average peripapillary choroidal thickness and GCL-IPL thickness based on the degree of myopia. Thinner peripapillary choroidal thickness was followed by thinner GCL-IPL thickness in myopia.

Keywords: peripapillary choroidal thickness, GCL-IPL thickness, myopia, enhanced depth imaging