

ABSTRAK

Tujuan: mengetahui hubungan antara densitas sel endotel kornea (ECD) dan sudut bilik mata depan (BMD) pada kasus glaukoma sudut tertutup kronis. Perubahan morfologi bilik mata depan yaitu sudut yang dangkal didapatkan berikatan dengan penurunan *outflow* dan peningkatan tekanan intraokular (TIO) pada GPSTp kronis.

Metode: Penelitian dilakukan di RS Mata JEC. Subjek penelitian berusia <75 tahun, dengan tekanan intraokular > 21mmHg dan derajat sudut bilik mata depan *grade 2* atau kurang berdasarkan klasifikasi Van Herick. *Anterior segment optical coherence tomography* (AS-OCT) digunakan untuk menilai sudut bilik mata depan (BMD; sudut). *Noncontact specular microscope* digunakan untuk mengukur parameter kornea yaitu densitas sel endotel kornea (ECD; sel/mm²), koefisien variasi (CV; $\mu\text{m}^2/\text{sel}$), heksagonalitas sel (HEX; %), dan ketebalan kornea sentral (CCT; μm). Tekanan intraokular (TIO) diukur dengan *Goldmann applanation tonometry* (GAT). Pemeriksaan lapang pandang dengan *visual field analyzer*.

Hasil Penelitian: Didapatkan hubungan antara sudut BMD dan TIO terkoreksi ($r=-0,282$; $p=0,05$) dengan korelasi negatif lemah, bermakna secara statistik, yaitu korelasi pada sudut BMD ≤ 15 dengan TIO terkoreksi didapatkan $r=0,435$ dan $p=0,03$ memiliki hubungan yang signifikan secara statistik, dan didapatkan juga korelasi yang bermakna antara TIO terkoreksi dengan penipisan RNFL yaitu $r=-0,411$ dan $p=<0,01$. Peneliti berupaya untuk menilai progresivitas penyakit dengan menilai kerusakan sel endotel kornea dan jaringan trabekulum dengan asumsi berasal dari embriologi yang sama sehingga kerusakan yang terjadi sejalan. Kerusakan sel endotel kornea dinilai dengan densitas sel (ECD), ketebalan kornea (CCT), koefisien variasi (CV), dan heksagonalitas (HEX). Nilai ECD yang memiliki rerata \pm SD sebesar $2479,42 \pm 396,49$ sel/mm², CV $37,08 \pm 7,65\%$, HEX $50,94 \pm 10,50\%$, dan CCT $543,19 \pm 34,46$ μm . Ketebalan CCT juga didapatkan korelasi yang bermakna dengan penipisan RNFL yaitu $r=0,297$ ($p=0,03$). Korelasi antara ECD dan RNFL dengan ECD < 2000 sel/mm² ($r=0,593$ dan $p=0,16$) korelasi positif sedang yaitu terjadi penipisan RNFL pada sel endotel <2000 sel/mm².

Kesimpulan: Hubungan antara BMD, ketebalan kornea sentral, TIO, dan ketebalan iris dengan kerusakan endotel kornea pada GPSTp kronik tidak bermakna secara statistik. Sudut bilik mata depan (BMD) yang signifikan berpengaruh terhadap tekanan intraokular (TIO) pada glaukoma primer sudut tertutup (GPSTp) kronik adalah sudut dengan besar ≤ 15 derajat. Penelitian ini mendapatkan korelasi positif sedang ($r=0,593$) antara ketebalan ketebalan RNFL dengan densitas endotel <2000sel/mm² pada GPSTp kronik.

Kata Kunci: Glaukoma sudut tertutup primer (GPSTp) kronik, *endothelial cell density* (ECD), *retinal nerve fibre layer* (RNFL)

ABSTRACT

Objective: To determine the relationship between corneal endothelial cell density (ECD) and anterior chamber angle (AC) in cases of chronic primary angle-closure glaucoma (PACG). Changes in the morphology of the anterior chamber which is a shallow angle, were found to be associated with decreased outflow and increased intraocular pressure (IOP) in chronic PACG.

Methods: The study was conducted at JEC Eye Hospital. The study subjects were <75 years old, with intraocular pressure > 21mmHg and anterior chamber angle grade 2 or less based on the Van Herick classification. Anterior segment optical coherence tomography (AS-OCT) was used to assess the anterior chamber angle (BMD; angle). A noncontact specular microscope was used to measure corneal parameters, namely corneal endothelial cell density (ECD; cells/mm²), coefficient of variation (CV; $\mu\text{m}^2/\text{cell}$), cell hexagonality (HEX; %), and central corneal thickness (CCT; μm). Intraocular pressure (IOP) was measured by Goldmann applanation tonometry (GAT). Visual fields were assessed with a visual field analyzer.

Research Results: There was a relationship between the angle of BMD and corrected IOP ($r=-0.282$; $p=0.05$) with a weak negative correlation, statistically significant, and the correlation at the angle of BMD ≤ 15 with corrected IOP obtained $r=0.435$ and $p=0.03$ had a statistically significant relationship, and a significant correlation was also found between corrected IOP and RNFL depletion ($r=-0.411$ and $p<0.01$). Researchers attempted to assess disease progression by assessing damage to corneal endothelial cells and trabecular tissue with the assumption of originating from the same embryology so that the damage that occurred was correlated. Corneal endothelial cell damage was assessed by cell density (ECD), corneal thickness (CCT), coefficient of variation (CV), and hexagonality (HEX). ECD values which have a mean \pm SD of 2479.42 ± 396.49 cells/mm², CV $37.08 \pm 7.65\%$, HEX $50.94 \pm 10.50\%$, and CCT $543.19 \pm 34.46 \mu\text{m}$. The thickness of the CCT also found a significant correlation with the depletion of the RNFL ($r=0.297$, $p=0.03$). The correlation between ECD and RNFL with ECD < 2000 cells/mm² ($r=0.593$, $p=0.16$) was moderately positive with RNFL depletion in endothelial cells < 2000 cells/mm².

Conclusion: The association between AC angle, central corneal thickness, IOP, and iris thickness with corneal endothelial damage in chronic PACG was not statistically significant. Anterior chamber angle which has a significant effect on IOP in PACG is an angle with a magnitude of ≤ 15 degrees. This study found a moderate positive correlation ($r=0.593$) between RNFL thickness and endothelial density < 2000 cell/mm² in chronic PACG.

Keywords: Chronic primary angle closure glaucoma (PACG), endothelial cell density (ECD), retinal nerve fiber layer (RNFL)