INTISARI

Latar Belakang: Vitreoretinopati proliferatif (PVR) merupakan komplikasi utama dari ablasi retina rhegmatogen (RRD) yang menyebabkan kegagalan penempelan retina pasca operasi. *Transforming Growth Factor Beta* 2 (TGF-β2) berperan penting dalam proses fibrosis dan proliferasi sel melalui mekanisme *epithelial-mesenchymal transition* (EMT), yang berkontribusi terhadap pembentukan membran preretinal dan kontraksi jaringan.

Tujuan: Mengetahui perbedaan kadar TGF-β2 vitreus pada penderita RRD dengan dan tanpa PVR serta menilai potensi TGF-β2 sebagai biomarker adanya PVR.

Metode: Penelitian observasional analitik potong lintang melibatkan 35 sampel vitreus pasien RRD yang menjalani vitrektomi, terdiri atas kelompok dengan PVR (n=12) dan tanpa PVR (n=23). Sampel vitreus diambil pada awal tindakan vitrektomi dan kadar TGF-β2 vitreus diukur dengan *enzyme-linked immunosorbent assay* (ELISA). Analisis statistik dilakukan untuk membandingkan kadar TGF-β2 antar kelompok, menilai *cut-off* dan kemampuan diskriminatifnya terhadap PVR, serta menganalisis faktor risiko yang berhubungan dengan kejadian PVR.

Hasil: Rerata kadar TGF-β2 vitreus secara signifikan lebih tinggi pada kelompok RRD dengan PVR dibandingkan tanpa PVR (4730,61 ± 2203,24 pg/ml vs 3067,43 ± 1292,05 pg/ml; p = 0,029). Analisis ROC menunjukkan *area under the curve* (AUC) sebesar 0,739 (p = 0,022; 95% CI: 0,553–0,925). Nilai *cut-off* optimal TGF-β2 untuk membedakan kasus dengan PVR adalah 2770 pg/ml dengan sensitivitas 91,7% dan spesifisitas 56,5%. Kadar TGF-β2 ≥2770 pg/ml meningkatkan risiko PVR sebesar 14,3 kali (OR=14,30; 95% CI: 1,574–129,949; p=0,018).

Kesimpulan: Kadar TGF-β2 vitreus lebih tinggi secara signifikan pada pasien RRD dengan PVR dan berpotensi sebagai biomarker adanya PVR.

Kata kunci: *transforming growth factor beta 2, vitreus, ablasi retina rhegmatogen, vitreoretinopati proliferatif*

ABSTRACT

Background: Proliferative vitreoretinopathy (PVR) is a major complication of rhegmatogenous retinal detachment (RRD) that leads to postoperative retinal reattachment failure. Although its pathogenesis is multifactorial, Transforming Growth Factor Beta 2 (TGF-β2) has been strongly implicated in PVR development due to its central role in fibrosis and epithelial-mesenchymal transition (EMT).

Objective: To determine the difference in vitreous TGF-β2 levels in RRD patients with and without PVR and to evaluate its potential as a biomarker of the presence of PVR.

Methods: A cross-sectional study was conducted on RRD patients undergoing vitrectomy at three tertiary centers. Undiluted vitreous samples were collected at the beginning of the vitrectomy procedure and analyzed using ELISA. Thirty-five patients were enrolled (12 PVR, 23 non-PVR). Statistical analyses compared TGF-β2 levels, determined its cut-off value and discriminative ability for PVR, and identified associated risk factors.

Results: The mean vitreous TGF-β2 level was significantly higher in the RRD with PVR group compared to the without PVR group (4730.61 ± 2203.24 pg/ml vs 3067.43 ± 1292.05 pg/ml; p = 0.029). ROC analysis showed an area under the curve (AUC) of 0.739 (p = 0.022; 95% CI: 0.553–0.925). The optimal TGF-β2 cut-off value indicating the presence of PVR was 2770 pg/ml, with a sensitivity of 91.7% and a specificity of 56.5%. TGF-β2 levels ≥2770 pg/ml were associated with a 14.3-fold higher likelihood of PVR (OR = 14.30; 95% CI: 1.574–129.949; p = 0.018).

Conclusion: Vitreous TGF-β2 levels are significantly higher in RRD patients with PVR and show potential as a biomarker for PVR presence.

Keywords: *transforming growth factor beta 2, vitreous, rhegmatogenous retinal detachment, proliferative vitreoretinopathy*