

ABSTRAK

Profil Interleukin-6 Vitreus pada Penderita Ablasi Retina Rhegmatogen dengan dan tanpa *Proliferative Vitreoretinopathy*

Yuandani Saputra¹, Supanji¹, Indra Tri Mahayana¹

¹Departemen Ilmu Kesehatan Mata, Fakultas Kedokteran, Kesehatan Masyarakat dan Keperawatan, Universitas Gadjah Mada - RSUP dr. Sardjito, Yogyakarta

Latar Belakang: *Proliferative vitreoretinopathy* (PVR) merupakan komplikasi serius dari ablasi retina rhegmatogen (*rhegmatogenous retinal detachment/RRD*) yang berperan dalam kegagalan penanganan medis maupun bedah. Interleukin-6 (IL-6) diduga berperan dalam patogenesis PVR melalui mekanisme inflamasi intraokular. Studi ini bertujuan untuk mengevaluasi kadar IL-6 vitreus pada pasien RRD dengan dan tanpa PVR serta menilai potensi kadar IL-6 sebagai biomarker prediktif kejadian PVR.

Metode: Penelitian potong lintang ini melibatkan 23 subjek yang menjalani vitrektomi pars plana, terdiri atas 10 pasien RRD dengan PVR dan 13 pasien RRD tanpa PVR yang memenuhi kriteria sampel. Sampel cairan vitreus dikumpulkan dari sentral vitreus pada awal prosedur vitrektomi sebelum irigasi dinyalakan dan dianalisis menggunakan metode *enzyme-linked immunosorbent assay* (ELISA) untuk mengukur kadar IL-6 vitreus. Data kemudian dianalisis berdasarkan karakteristik demografis dan klinis mata, serta dilakukan analisis statistik lanjutan.

Hasil: Rerata kadar IL-6 vitreus secara signifikan lebih tinggi pada kelompok RRD dengan PVR dibandingkan kelompok tanpa PVR ($256,70 \pm 214,97$ pg/ml vs $82,32 \pm 78,55$ pg/ml; $p=0,018$). Analisis kurva *receiver operating characteristic* (ROC) menunjukkan *area under the curve* (AUC) sebesar 0,777 ($p=0,026$; 95% CI: 0,572–0,982). Berdasarkan indeks Youden, nilai ambang diskriminatif kadar IL-6 vitreus untuk memprediksi PVR adalah 165,95 pg/ml, dengan sensitivitas 70% dan spesifisitas 85%. Analisis regresi logistik biner menunjukkan bahwa kadar IL-6 vitreus lebih dari 165,95 pg/ml berhubungan dengan 12,83 kali peningkatan risiko kejadian PVR pada pasien RRD (OR=12,83; 95% CI: 1,695–97,193; $p=0,013$).

Kesimpulan: Kadar IL-6 vitreus secara signifikan lebih tinggi pada pasien RRD dengan PVR dibandingkan tanpa PVR. Temuan ini mendukung potensi IL-6 vitreus sebagai biomarker prediktif kejadian PVR pada kasus RRD.

Kata Kunci: *interleukin-6 vitreus, ablasi retina rhegmatogen, proliferative vitreoretinopathy*

ABSTRACT

Profile of Vitreous Interleukin-6 in Rhegmatogenous Retinal Detachment with and without *Proliferative Vitreoretinopathy*

Yuandani Saputra¹, Supanji¹, Indra Tri Mahayana¹

¹Department of Ophthalmology, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada - dr. Sardjito General Hospital, Yogyakarta

Background: Proliferative vitreoretinopathy (PVR) is a serious complication of rhegmatogenous retinal detachment (RRD) that significantly contributes to medical and surgical failure. Interleukin-6 (IL-6) is suspected to play a role in the pathogenesis of PVR through intraocular inflammatory mechanisms. This study aimed to evaluate vitreous IL-6 levels in patients with RRD, with and without PVR, and to assess its potential as a predictive biomarker for the development of PVR.

Methods: This cross-sectional study included 23 patients undergoing pars plana vitrectomy, comprising 10 patients with RRD complicated by PVR and 13 patients without PVR, all meeting the sampling criteria. Vitreous fluid samples were collected from the central vitreous body at the beginning of vitrectomy surgery prior to the initiation of irrigation, and were analyzed for IL-6 levels using enzyme-linked immunosorbent assay (ELISA). Data were then analyzed in relation to demographic and clinical ocular characteristics, with further statistical evaluation performed.

Results: The mean vitreous IL-6 level was significantly higher in the RRD with PVR group compared to the non-PVR group (256.70 ± 214.97 pg/ml vs. 82.32 ± 78.55 pg/ml; $p = 0.018$). Receiver operating characteristic (ROC) curve analysis yielded an area under the curve (AUC) of 0.777 ($p = 0.026$; 95% CI: 0.572–0.982). Based on the Youden index, the optimal cutoff value of vitreous IL-6 for predicting PVR was 165.95 pg/ml, providing 70% sensitivity and 85% specificity. Binary logistic regression analysis revealed that vitreous IL-6 levels greater than 165.95 pg/ml were associated with 12.83-fold increased the odds of developing PVR in RRD patients (OR = 12.83; 95% CI: 1.695–97.193; $p = 0.013$).

Conclusion: Vitreous IL-6 levels are significantly elevated in RRD patients with PVR compared to those without PVR. These findings support the potential use of vitreous IL-6 as a predictive biomarker for the development of PVR in RRD cases.

Keywords: *vitreous interleukin-6 level, rhegmatogenous retinal detachment, proliferative vitreoretinopathy*