

## INTISARI

### **PENURUNAN KADAR IL-1 $\beta$ AIR MATA DAN PERUBAHAN KLINIS PADA ULKUS KORNEA DERAJAT SEDANG SAMPAI BERAT SETELAH TERAPI COLLAGEN CROSS-LINKING (CXL)**

Departemen Ilmu Kesehatan Mata Fakultas Kedokteran Universitas Gadjah Mada/RSUP. Dr. Sardjito, Yogyakarta

**Tujuan:** untuk mengetahui perubahan kadar IL-1 $\beta$  pada air mata, serta perubahan tanda klinis setelah terapi *Collagen Cross Linking (CXL)* pada ulkus kornea derajat sedang-berat

**Metode Penelitian:** penelitian ini menggunakan rancangan penelitian *pre-post design* yang dilakukan pada 20 pasien (20 mata), semua pasien yang terdiagnosis ulkus kornea derajat sedang- berat dan memperoleh terapi CXL di poliklinik Mata RSUP Dr. Sardjito Yogyakarta. Pengambilan sampel air mata pertama dilakukan sebelum terapi CXL. Terapi CXL dilakukan dengan metode Dresden. Pencatatan data klinis dan pengambilan sampel air mata post CXL dilakukan pada hari ke-5 sesudah terapi. Data yang diambil meliputi visus, skala nyeri, blefarospasme, luar defek kornea, dan hiperemi konjungtiva.

**Hasil:** Pada dua puluh subyek yang terlibat pada studi ini. Rerata usia pasien adalah  $52 \pm 9.08$ , dengan 12 (60%) laki-laki, dan 8(40%) perempuan, Rerata kadar IL-1 $\beta$  sesudah CXL mengalami penurunan yang signifikan secara statistik ( $801.273 \pm 1696.5$  ng/ml,  $p=0.002$ ) dibandingkan sebelum CXL ( $2596.63 \pm 4464.3$ ). Rerata luas defek ulkus sesudah terapi CXL juga mengalami penurunan yang signifikan ( $0.85 \pm 13.64$  mm<sup>2</sup>  $p= 0.005$ ) dibandingkan sebelum CXL ( $27.39 \pm 23.28$  mm<sup>2</sup>). Skala sebelum dan sesudah CXL mengalami perbaikan yang signifikan pada masing-masing kelompok derajat ringan dan sedang ( $p=0,004$ ). Pada kelompok skala ringan (<4) sebelum CXL terdapat 4 pasien (20%) menjadi 18 pasien (90%) dan pada kelompok skala sedang terdapat 15 pasien (75%) menjadi 2 pasien (10%) sesudah CXL. Pada kelompok skala berat terdapat 1 pasien (5%) menjadi nol pasien sesudah CXL. Rerata visus sesudah CXL ( $1.80 \pm 0.77$ ) mengalami perubahan yang signifikan dibanding sebelum CXL ( $2.18 \pm 0.60$   $p= 0.005$ ). rerata hiperemia konjungtiva ditemukan terdapat perbedaan bermakna pada sebelum CXL yaitu pada derajat 3 terdapat 11(55%) pasien dan menjadi 4 (20%) setelah CXL. Tidak ada perbedaan rerata kadar IL-1 $\beta$  pada setiap derajat klinis setelah terapi CXL.

**Kesimpulan:** dari hasil studi ini didapatkan penurunan kadar IL-1 $\beta$ , rerata luas defek, skala (VAS), blefarospasme, dan hiperemia konjungtiva yang bermakna secara statistik pada sebelum dan sesudah dilakukan terapi CXL. Tidak ada perbedaan rerata kadar IL-1 $\beta$  pada setiap derajat klinis setelah terapi CXL.

**Kata kunci:** *ulkus kornea, collagen cross-linking, interleukin- 1 beta*

## ABSTRACT

### REDUCTION OF IL-1 $\beta$ CONCENTRATION IN TEAR AND CLINICAL OUTCOME IN MODERATE TO SEVERE CORNEAL ULCERS AFTER COLLAGEN CROSS-LINKING (CXL) THERAPY

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

**AIM:** To investigate the changes of IL-1 $\beta$  tear concentration, as well as clinical outcome after Collagen Cross-linking therapy in moderate to severe corneal ulcers.

**METHODS:** This research is based on a pre-post research design carried out on 20 patients (20 eyes), whom were diagnosed with moderate to severe corneal ulcers and underwent CXL therapy at the Ophthalmology polyclinic, Dr. Sardjito General Hospital, Yogyakarta. Concentration of IL-1 $\beta$  were measured from tears collected from patients using Schimer paper placed on their conjunctival inferior fornix. Tear collection as well as clinical information that includes visual acuity, pain scale, blepharospasm, area of corneal defect and conjunctival hyperemia was collected before CXL and 5 days after CXL therapy. CXL was carried out using the Dresden method.

**Hasil:** Twenty subjects were involved in this research. The mean age of the subjects was  $52 \pm 9.08$  with 12 (60%) male and 8(40%) female. The mean concentration of IL-1 $\beta$  after CXL therapy decreased significantly ( $801.273 \pm 1696.5$  pg/mL) compared to before CXL therapy at  $2596.63 \pm 4464.3$  pg/mL ( $p=0.002$ ). The mean area of defect also decreased after CXL therapy from  $0.85 \pm 13.64\text{mm}^2$  to  $27.39 \pm 23.28\text{mm}^2$  ( $p= 0.005$ ). The pain experienced by patients also shows immense improvement after CXL therapy in both moderate and severe corneal ulcers ( $p=0,004$ ). There were 4 patients (20%) with mild pain (VAS<4), 9 patients (45%) with moderate pain, 7 patients (35%) with severe pain (VAS>6) before CXL therapy and it improved to 11 patients (55%), 8 patients (40%) and 1 patient (5%) respectively after CXL therapy. The average visual acuity after CXL therapy is  $1.80 \pm 0.77$  (logMar), showing significant improvement from  $2.18 \pm 0.60$  (logMar) before CXL therapy ( $p= 0.005$ ). Besides, there is also a decrease in conjunctival hyperemia after CXL therapy, from 9 patients (45%) with grade 4 hyperemia to only 2 patients (10%) with grade 4 hyperemia after CXL therapy. There is no difference in average concentration of IL-1 $\beta$  in every clinical severity after CXL therapy.

**CONCLUSION:** There were decreased in concentration of IL-1 $\beta$ , mean area of defect, pain scale (VAS), improvement in blepharospasm and conjunctival hyperemia which is statistically significant after CXL therapy. However, there was no significant difference in the concentration of IL-1 $\beta$  in alleclinical markers post CXL therapy.

**KEYWORDS:** *corneal ulcer, collagen cross-linking, interleukin- 1 beta*