

ABSTRACT

AUTOLOGOUS PLATELET-RICH PLASMA EYE DROPS ADJUVANT THERAPY IN INFECTIOUS CORNEAL ULCER: TGF β 1 TEAR CONCENTRATIONS AND CLINICAL OUTCOMES

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Abstract

Aim: This experimental study aimed to evaluate Transforming Growth Factor β 1 (TGF β 1) tear concentration and clinical outcome changes in patients with moderate-to-severe infectious corneal ulcers after given autologous Platelet Rich Plasma (PRP) eye drops adjuvant therapy.

Methods: This experimental study using a pre-post design was conducted with 18 patients with infectious moderate-to-severe corneal ulcer treated with PRP therapy as an adjunctive treatment. Using ELISA assay, tear sampling was performed before PRP treatment, using sterile Schimer paper from conjunctival inferior fornix. PRP therapy was given every 4 hours for 5 days. Clinical outcomes recording and tear sampling were then performed on day 7 and day 14 after PRP therapy. Clinical outcomes included visual acuity/VA (LogMar), degree of blepharospasm, degree of conjunctival hyperemia, size of corneal defects, and degree of pain (Visual Analog Scale). Since data were not distributed uniformly, clinical outcomes were compared with two-tailed Wilcoxon tests with significance set as $p < 0.05$.

Results: There was an increase in TGF β 1 tear concentrations after PRP therapy as much as 1398.32 ± 3240.1 pg/ml ($p < 0.001$) on day 7th and on day 14th day as much as 782.88 ± 2456.38 pg/ml ($p < 0.001$) compared to before PRP adjuvant therapy. There were clinical improvements after PRP therapy on day 7 and day 14 including improved VA ($p = 0.041$; $p = 0.003$), decreased corneal defect size ($p < 0.001$; $p < 0.001$), decreased degree of blepharospasm ($p = 0.006$; $p = 0.002$) decreased degree of hyperemia ($p = 0.014$; $p = 0.002$), and decreased degree of pain ($p < 0.001$; $p = 0.001$), respectively.

Conclusion: There was a significant increase in TGF β 1 levels in moderate-severe infectious corneal ulcers after additional therapy of autologous Platelet Rich Plasma eye drops, accompanied by clinical improvement including improved vision, decreased corneal defect area, decreased degree of hyperemia, and decreased pain scale.

Keywords: corneal ulcer, transforming growth factor β 1, platelet-rich plasma, eye drops

INTISARI

PERUBAHAN KADAR *TRANSFORMING GROWTH FACTOR B1 1 (TGF β 1)* DI AIR MATA PADA ULKUS KORNEA INFEKSI DERAJAT SEDANG-BERAT SEBELUM DAN SESUDAH TERAPI TAMBAHAN *PLATELET RICH PLASMA (PRP) AUTOLOG TETES MATA*

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Pendahuluan : *Transforming Growth Factor (TGF)*, terutama *TGF β 1* berperan dalam penyembuhan luka pada stroma kornea yaitu dalam transformasi keratosit menjadi myofibroblast Pemberian tetes *Platelet Rich Plasma (PRP)* autolog terbukti menguntungkan dalam proliferasi sel dan penyembuhan luka karena mengandung kadar *growth factor* yang tinggi, Penelitian ini bertujuan untuk mengetahui perubahan kadar TGF β 1 di air mata pada ulkus kornea infeksi derajat sedang berat sebelum dan sesudah terapi tambahan PRP autolog tetes mata

Metode : Desain penelitian ini menggunakan rancangan penelitian *pre-post design* yang dilakukan pada 18 pasien, meliputi semua pasien yang terdiagnosis ulkus kornea derajat sedang-berat dan mendapat terapi tambahan PRP autolog tetes mata di Poliklinik Mata RSUP Dr.Sardjito Yogyakarta. Pengambilan air mata dilakukan sebelum terapi, setelah terapi PRP hari ke-7 dan setelah terapi PRP hari ke-14 menggunakan kertas schimer secara steril. Pemberian tetes PRP dilakukan setiap 4 jam selama 3 hari. Perubahan klinis berupa visus, luas defek kornea, derajat hiperemia, hipopion dan skala nyeri dilakukan pencatatan

Hasil : Terdapat peningkatan kadar TGF β 1 pada hari ke-7 sebesar $1398,32 \pm 3240,1$ ($p=0,00$) dan pada hari ke-14 sebesar $782,88 \pm 2456,38$ ($p=0,00$) setelah terapi PRP dibanding sebelum terapi PRP. Kadar TGF β yang meningkat pada hari ke-7 setelah terapi kembali menurun pada hari ke-14, namun kadar TGF β 1 pada hari ke-14 masih lebih tinggi bila dibandingkan dengan sebelum terapi. Terdapat perbaikan klinis pada evaluasi setelah terapi PRP pada hari ke-7 dan hari ke-14 berupa peningkatan visus ($p=0,041$; $p=0,003$), penurunan luas defek kornea ($p=0,00$; $p=0,00$), derajat hiperemia ($p=0,014$; $p=0,00$) dan skala nyeri ($p=0,00$; $p=0,00$)

Kesimpulan Terdapat peningkatan kadar TGF β 1 yang bermakna pada ulkus kornea infeksi derajat sedang-berat setelah dilakukan pemberian terapi tambahan PRP autolog tetes mata yang disertai perbaikan klinis meliputi peningkatan visus, penurunan luas defek kornea, derajat hiperemia dan skala nyeri

Kata Kunci : ulkus kornea infeksi, *transforming growth factor β 1*, *platelet rich plasma*