

INTISARI

Latar Belakang: Cedera akut pada ginjal umumnya disebabkan oleh keadaan iskemi dan diketahui dapat berlanjut menjadi penyakit ginjal kronis. Keadaan ini juga diketahui berkaitan dengan proses inflamasi, fibrosis dan penuaan sel.

Tujuan: Mengkaji pengaruh cedera Iskemi/Reperfusi (I/R) ginjal pada ekspresi mRNA p16, TGF- β , dan NF- κ B di tubulus ginjal mencit.

Metode: Penelitian ini menggunakan menggunakan metode kuasi-eksperimental dengan desain *post-test only controlled group*. Penelitian ini dilakukan dengan subjek berupa mencit galur Swiss jantan (3 bulan, 30-40gr), dengan perlakuan I/R. Mencit dibagi menjadi 4 kelompok yaitu 1 kelompok Sham Operation (SO), dan 3 Kelompok I/R yang determinasi pada hari 1, 8, dan 12. Perhitungan mRNA menggunakan Reverse-Transcriptase Polymerase Chain Reaction (rt-PCR) dan elektroforesis Hasil kemudian diuji untuk mengetahui perbedaan rata rata ekspresi mRNA masing-masing gen dan dikorelasikan diantaranya.

Hasil: Hasil menunjukkan ekspresi mRNA meningkat bermakna ($p > 0.05$) pada ekspresi mRNA p16 dan TGF- β hari ke 8 dan 12 daripada SO. Dengan ekspresi mRNA p16 and TGF- β mRNA tertinggi pada hari ke 12. Terdapat peningkatan ekspresi mRNA NF- κ B, tapi tidak bermakna statistik ($p < 0.05$). Peningkatan ekspresi mRNA NF- κ B memuncak pada hari ke 8. Korelasi positif bermakna ditemukan pada p16 dengan TGF- β dan NF- κ B dengan TGF- β .

Kesimpulan: Ekspresi mRNA p16, NF- κ B, dan TGF- β lebih tinggi dibandingkan dengan group SO. Terdapat korelasi positif antara ekspresi p16 dan NF- κ B dengan TGF- β .

Keywords: Cedera ginjal akut, cedera iskemi/reperfusi, penuaan seluler, fibrosis.

ABSTRACT

Background: Acute Kidney Injury (AKI) is commonly caused by kidney Ischemic/Reperfusion Injury (IRI) and many survivors of the condition are known to develop Chronic Kidney Disease (CKD) and eventually led to End-Stage Renal Disease (ESRD). This condition is known to be related with chronic inflammatory condition, fibrosis and cellular senescence.

Objective: To elucidate the effect of kidney ischemic/reperfusion injury on the mRNA expression of p16, TGF- β , and NF- κ B in renal tubule.

Methods: This is a quasi-experimental study with a post-test only controlled group design. This study used male Swiss background mice (3 months, 30-40gr) under kidney Ischemic/Reperfusion (I/R) model. The mice were separated into 4 groups of Sham Operation (SO), I/R1, I/R8, I/R12. Reverse-transcriptase Polymerase chain reaction (rt-PCR) and electrophoresis were done to calculate p16, TGF- β , and NF- κ B mRNA expression used as markers of cellular senescence, tubular fibrosis, and tubular inflammation respectively. The mean difference of mRNA expression between each group were statistically analysed and correlated with each other.

Results: It was revealed that p16 and TGF- β mRNA expression were higher compared to SO, and were statistically significant ($p > 0.05$). With both p16 and TGF- β mRNA expression on I/R12 had the highest mean value. However, NF- κ B mRNA expression was higher compared to SO but was not statistically significant ($p > 0.05$). Significant positive correlation was found between p16 and TGF- β , and NF- κ B and TGF- β .

Conclusion: The expression of p16, NF- κ B, TGF- β on all group are higher compared to SO. p16 and NF- κ B expression positively correlate with TGF- β expression

Keywords: Acute Kidney Injury, Ischemia/Reperfusion Injury, Senescence, Fibrosis