INTISARI

EKSPRESI ERITROPOETIN, RESEPTOR ERITROPOETIN DAN KONSENTRASI HEMOGLOBIN PADA MENCIT GAGAL GINJAL KRONIS

Kajian Terhadap Model Hewan Coba Cedera Iskemia Reperfusi, *Unilateral Ureteral Obstruction* dan Nefrektomi 5/6 Subtotal

Latar Belakang: Anemia merupakan komplikasi awal pada penyakit ginjal kronis. Penyebab utama anemia adalah inadekuatnya produksi eritropoetin untuk proses eritropoesis. Namun beberapa penelitian menunjukkan kadar serum eritopoetin yang tinggi pada kasus CKD dengan anemia. Hal ini mengindikasikan bahwa respon sumsum tulang terhadap EPO mengalami supresi pada pasien CKD.

Tujuan Penelitian: Penelitian ini bertujuan untuk mengetahui ekspresi eritropoetin, reseptor eritropoetin dan konsentrasi hemoglobin pada mencit model hewan coba cedera iskemia reperfusi, *unilateral ureteral obstruction* dan nefrektomi 5/6 subtotal.

Metode: subjek penelitian ini adalah 20 ekor mencit jantan galur Swiss umur 3 bulan. Hewan coba dibagi menjadi 4 kelompok yakni kelompok Sham Operation (SO, n=5), cedera iskemia reperfusi (IR, n=5), *unilateral ureteral obstruction* (UUO, n=5) dan nefrektomi 5/6 subtotal (SN, n=5). Pada akhir perlakuan dilakukan pemeriksaan kadar serum kreatinin dan konsentrasi hemoglobin yang diambil dari darah vena retroorbita. Pemeriksaan ekspresi eritropoetin, CD117 dan reseptor eritropoetin menggunakan *Reverse Transcriptase-Polymerase Chain Reaction* (RT-PCR) dan dianalisis dengan *software ImageJ*. Data dianalis dengan uji statistik one way ANOVA dan *Kruskall Wallis* ($p<0,05$).

Hasil Penelitian: Kadar serum kreatinin lebih tinggi pada kelompok IR, UUO dan SN dibandingkan dengan kelompok SO ($p<0,05$). Konsentrasi hemoglobin lebih rendah pada kelompok IR, UUO dan SN. Ekspresi eritropoetin tinggi pada kelompok IR dan SN namun rendah pada kelompok UUO dibandingkan dengan kelompok SO ($p<0,005$). Ekspresi reseptor eritropoetin rendah pada kelompok IR, UUO dan SN dibandingkan kelompok SO ($p<0,05$).

Kesimpulan: Terjadi penurunan Hb diikuti penurunan ekspresi reseptor eritopoetin meskipun ekspresi eritopoetin yang bervariasi pada mencit model gagal ginjal kronis.

Kata Kunci: gagal ginjal kronis, anemia, eritropoetin, reseptor eritropoetin.

ABSTRACT

ERYTHROPOIETIN EXPRESSION, ERYTHROPOIETIN RECEPTOR AND HEMOGLOBIN CONCENTRATION IN CHRONIC KIDNEY DISEASE MICE MODELS

Study toward Ischemic-Reperfusion Injury, *Unilateral Ureteral Obstruction,* and 5/6 Subtotal Nephrectomy Mice Models

Background: Anemia is an early complication of chronic kidney disease. Mainly, it caused by inadequate production of erythropoietin for erythropoiesis. However, some studies indicate the high level of serum erythropoietinin CKD with anemia. It indicates that there was suppression of bone marrow response towards EPO win CKD patient.

Objective: To investigate the expression of erythropoietin, erythropoietin receptor, and hemoglobin concentration in ischemic-reperfusion injury, unilateral ureteral obstruction, and 5/6 subtotal nephrectomy mice models.

Methods: Twenty male mice Swiss Background (3 months-old) were divided into 4 groups, Sham Operation (SO, n=5), ischemic-reperfusion injury (IR, n=5), *unilateral ureteral obstruction* (UUO, n=5) and5/6 subtotal nephrectomy (SN, n=5). In the end of the treatment, blood was collected from the retro-orbital vein for serum creatinine level and hemoglobin concentration measurement. Erythropoietin, CD117, and erythropoietin mRNA expression were measured by using *Reverse Transcriptase-Polymerase Chain Reaction*(RT-PCR) and analyzed by using *software ImageJ*. Data were analyzed by using one-way ANOVA and *Kruskall Wallis*($p<0.05$).

Results: Serum creatinine level in the IR, UUO, and SN groups are higher than the SO group ($p<0.05$). Hemoglobin concentration in the IR, UUO, and SN groups are lower than the SO group. Erythropoietin expression in the IR and SN groups are higher, and the SN group is lower than the SO group ($p<0.05$). Erythropoietin receptor expression in IR, UUO, and SN groups are lower than the SO group ($p<0.05$).

Conclusion: A decline in Hb followed by a decrease in erythropoietin receptor expression, although the expression of erythropoietin which vary in mice model of chronic renal failure.

Keywords: chronic kidney disease, anemia, erythropoietin, erythropoietin receptor