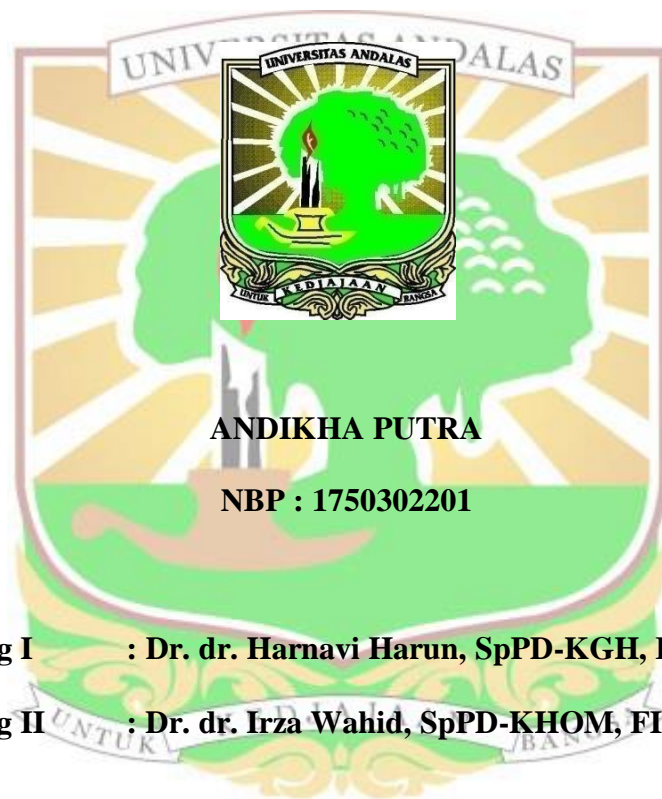


TESIS

**PERBEDAAN KADAR ERITROPOIETIN DAN RESEPTOR
ERITROPOIETIN PADA BERBAGAI GRADASI
ANEMIA RENAL PASIEN PGK STADIUM 5**



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ABSTRAK

PERBEDAAN KADAR ERITROPOIETIN DAN RESEPTOR ERITROPOIETIN PADA BERBAGAI GRADASI ANEMIA RENAL PASIEN PGK STADIUM 5

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Pendahuluan : Penyakit ginjal kronis (PGK) merupakan masalah kesehatan utama di seluruh dunia, dengan prevalensi global 8-16%. *Kidney Disease Outcome Quality Initiative* (KDOQI) mendefinisikan penyakit ginjal kronis sebagai kerusakan ginjal selama ≥ 3 bulan atau perkiraan GFR (eGFR < 60 ml / menit / $1,73m^2$). Anemia renal adalah anemia normositik normokrom yang disebabkan oleh defisiensi eritropoietin. Keberhasilan tatalaksana anemia pada PGK menggunakan ESA sebesar 80%, 10-20% pasien PGK mengalami kegagalan terapi ESA sehingga dipikirkan apakah reseptor eritropoietin berperan pada kejadian anemia pada PGK. Karena itu diperlukan penelitian untuk melihat kadar eritropoietin (Epo) dan reseptor eritropoietin (EpoR) pada PGK. Penelitian ini membandingkan kadar eritropoietin dan reseptor eritropoietin pada berbagai gradasi anemia renal pasien PGK stadium 5.

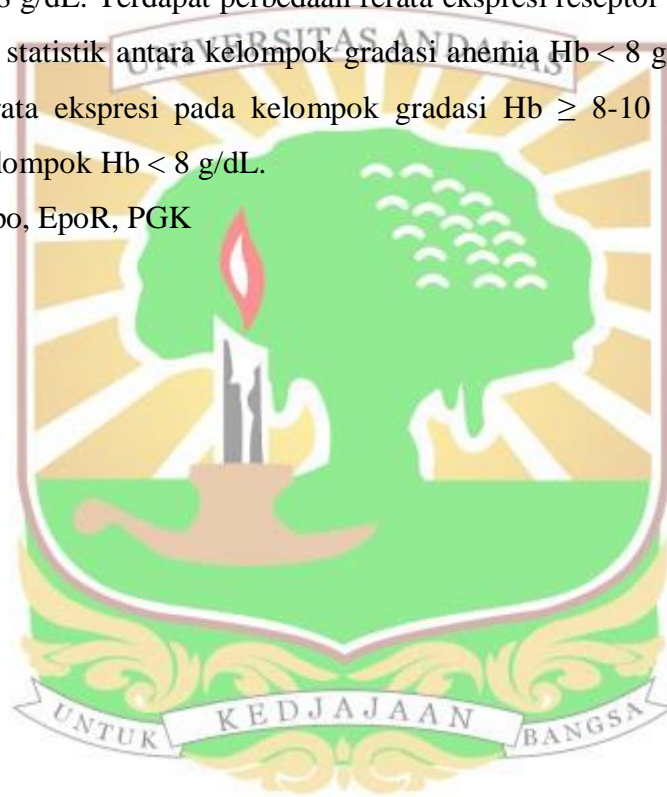
Metode : Penelitian ini adalah suatu penelitian observasional analitik dengan menggunakan metode *cross-sectional* yang dilaksanakan di Bagian Ilmu Penyakit Dalam RSUP Dr. M. Djamil Padang selama 6 bulan. Sampel dipilih secara *consecutive sampling* mencakup 30 orang pasien PGK stadium 5 yang memenuhi kriteria inklusi dan eksklusi dibagi menjadi dua kelompok gradasi anemia yaitu Hb < 8 g/dl dan Hb $\geq 8-10$ g/dl. Pada sampel dilakukan pemeriksaan kadar eritropoietin dengan metode ELISA dan ekspresi reseptor eritropoietin dengan *quantitative* RT-PCR yang kemudian dianalisis perbedaannya menggunakan SPSS 21,0.

Hasil : Pada penelitian ini didapatkan rerata kadar eritropoietin pada kelompok Hb < 8 g/dL yaitu 2,44 (SD 1,43) mIU/mL dan rerata kadar eritropoietin pada kelompok Hb $\geq 8-10$ g/dL yaitu 5,29 (SD 2,58) mIU/mL. Perbedaan kadar Eritropoietin pada berbagai

gradasi anemia ini bermakna secara statistik dengan nilai $p : 0,001$ ($p < 0,05$). Penelitian ini didapatkan rerata ΔCt ekspresi EpoR pada kelompok $Hb < 8$ g/dL yaitu 4,35 (SD 1,01) dan rerata ΔCt ekspresi EpoR pada kelompok $Hb \geq 8-10$ g/dL yaitu 6,81 (SD 1,21). Perbedaan ekspresi reseptor eritropoietin pada berbagai gradasi anemia ini bermakna secara statistik dengan nilai $p < 0,001$ ($p < 0,05$).

Kesimpulan : Terdapat perbedaan kadar eritropoietin yang bermakna secara statistik antara kelompok gradasi anemia $Hb < 8$ g/dl dan $Hb \geq 8-10$ g/dl, dimana kadar eritropoietin pada kelompok gradasi $Hb \geq 8-10$ g/dL lebih tinggi dibandingkan kelompok $Hb < 8$ g/dL. Terdapat perbedaan rerata ekspresi reseptor eritropoietin yang bermakna secara statistik antara kelompok gradasi anemia $Hb < 8$ g/dl dan $Hb \geq 8-10$ g/dl, dimana rerata ekspresi pada kelompok gradasi $Hb \geq 8-10$ g/dL lebih tinggi dibandingkan kelompok $Hb < 8$ g/dL.

Kata kunci : Epo, EpoR, PGK



ABSTRACT

DIFFERENCES IN ERITROPOIETIN AND ERITROPOIETIN RECEPTOR LEVELS IN VARIOUS GRADATIONS OF RENAL ANEMIA IN STADIUM 5 CKD PATIENTS

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Introduction : Chronic kidney disease (CKD) is a major health problem worldwide, with a global prevalence of 8-16%. The Kidney Disease Outcome Quality Initiative (KDOQI) defines chronic kidney disease as kidney damage for 3 months or an estimated GFR (eGFR < 60 ml/min/1.73m²). Renal anemia is a normochromic normocytic anemia caused by a deficiency of erythropoietin. The success of anemia management in CKD using ESA is 80%, 10-20% of CKD patients experience failure of ESA therapy so that it is considered whether erythropoietin receptors play a role in the incidence of anemia in CKD. Therefore, research is needed to see the levels of erythropoietin (Epo) and erythropoietin receptors (EpoR) in CKD. This study compared the levels of erythropoietin and erythropoietin receptors in various grades of renal anemia in patients with CKD stage 5.

Methods : This research is an analytical observational study using a cross-sectional method which was carried out at the Internal Medicine Department of Dr. M. Djamil Padang for 6 months. The sample was selected by consecutive sampling including 30 CKD stage 5 patients who met the inclusion and exclusion criteria and were divided into two groups of anemia gradations, namely Hb < 8 g/dl and Hb 8-10 g/dl. The samples were examined for erythropoietin levels by ELISA method and erythropoietin receptor expression by quantitative RT-PCR which was then analyzed for differences using SPSS 21.0.

Results : In this study, the mean erythropoietin level in the Hb < 8 g/dL group was 2.44 (SD 1.43) mIU/mL and the mean erythropoietin level in the Hb group 8-10

g/dL was 5.29 (SD 2.58) mIU/mL. The difference in erythropoietin levels in various gradations of anemia was statistically significant with p value: 0.001 ($p < 0.05$). This study found that the mean Ct of EpoR expression in the Hb group < 8 g/dL was 4.35 (SD 1.01) and the mean Ct of EpoR expression in the Hb group 8-10 g/dL was 6.81 (SD 1, 21). The difference in erythropoietin receptor expression in various gradations of anemia was statistically significant with $p < 0.001$ ($p < 0.05$).

Conclusion : There was a statistically significant difference in erythropoietin levels between the anemia grading group Hb < 8 g/dl and Hb 8-10 g/dl, where the erythropoietin level in the Hb gradation group 8-10 g/dL was higher than the Hb < 8 g/dL. There was a statistically significant difference in the mean erythropoietin receptor expression between the anemia grading group Hb < 8 g/dl and Hb 8-10 g/dl, where the mean expression in the Hb grading group 8-10 g/dL was higher than the Hb < 8 g/dL.

Keywords : Epo, EpoR, PGK

