

INTISARI

Latar belakang: Keberhasilan tatalaksana anemia pada penyakit ginjal kronik dengan hemodialisis (PGK-HD) perlu pemantauan status besi untuk mendeteksi defisiensi besi dan menghindari efek terapi besi berlebih yang merugikan pasien. Parameter status besi konvensional saturasi transferin dan feritin dipengaruhi oleh keadaan inflamasi, dan parameter %HYPO (konsentrasi hemoglobin seluler <28 g/dL) diharapkan dapat menggambarkan ketersediaan besi yang sebenarnya sehingga dapat memandu pemberian terapi besi pada pasien PGK-HD.

Tujuan : Mengetahui penampilan diagnostik %HYPO sebagai pemandu terapi besi pada PGK-HD.

Metode : Uji diagnostik dengan standar rujukan saturasi transferin <20% atau feritin <200 ng/ml, pada pasien PGK-HD di Unit hemodialisis RSUP Dr. Sardjito Yogyakarta. Validitas diagnostik dievaluasi menggunakan kurva ROC dan perhitungan tabel 2x2 pada berbagai nilai *cut-off*.

Hasil : Subjek penelitian 105 orang dengan rerata usia 50,6 tahun, terbanyak adalah pasien laki-laki 59%, dengan penyakit etiologik hipertensi 49(46,6%) pasien, diabetes melitus 33(31,4%) pasien. Terdapat perbedaan parameter %HYPO antara kelompok defisiensi besi (median 7,6%) dan non-defisiensi besi (median 3,6%) secara signifikan ($p < 0,001$). Luas *area under the curve* parameter %HYPO untuk deteksi defisiensi besi adalah 76,6% dan diperoleh *cut-off* ideal adalah >5,8%. Pada *cut-off* tersebut, didapatkan sensitivitas (Sn), spesifisitas (Sp), nilai ramal positif (NRP), nilai ramal negatif (NRN), *positive likelihood ratio* (+LR) dan *negative likelihood ratio* (-LR) berturut-turut 94,9%, 63,6%, 60,7%, 95,5%, 2,6 dan 0,081. Untuk kepentingan panduan pemberian terapi besi, dipilih *cut-off* %HYPO >10,1% dengan Sn, Sp, NRP, NRN, +LR dan -LR berturut-turut 20,5%, 98,4%, 88,9%, 67,7%, 13,6 dan 0,81. Pada nilai %HYPO >5,8% - 10,1%, disarankan pemeriksaan konfirmasi sebelum pemberian terapi besi.

Simpulan : Pada *cut-off* %HYPO >10,1% dengan spesifisitas 98,4% dapat digunakan untuk memandu pemberian terapi besi.

Kata kunci : %HYPO, anemia defisiensi besi, penyakit ginjal kronik, hemodialisis, terapi besi.

ABSTRACT

Background: Successful management of anemia in chronic kidney disease on hemodialysis (CKD-HD) requires monitoring of iron status in order to detect iron deficiency and avoid the adverse effects of excessive iron therapy that is detrimental to patients. Conventional parameters of iron status, transferrin saturation and ferritin, are affected by inflammatory conditions, while %HYPO (cellular hemoglobin concentration <28 g/dL) are expected to be able to reflect the actual iron availability, thus may be have the potential as guide for iron therapy in CKD-HD patients.

Objective: To assess the diagnostic performance of %HYPO as a guide for iron therapy in CKD-HD patients.

Method: Diagnostic test with ferritin reference standard <200 ng/ml or transferrin saturation $<20\%$, among CKD-HD patients in the hemodialysis unit of Dr. Sardjito Hospital Yogyakarta. Diagnostic validity is evaluated using ROC curve and 2x2 tables analysis using various cut-off values.

Results: A total of 105 subjects were recruited for the study, with a mean age of 50,6 years, most of whom were male patients (59%), with etiology of hypertension in 49 (46,6%) patients, diabetes mellitus in 33(31,4%) patients. There was a significant difference in %HYPO parameters between iron deficiency group (median 7,6%) and non-iron deficiency group (median 3,6%) ($p < 0,001$). The area under the curve of %HYPO parameter for iron deficiency detection was 76,6% and the ideal cut-off was $>5,8\%$. Using the cut-off, the sensitivity (Sn), specificity (Sp), positive predictive value (PPV), negative predictive value (NPV), positive likelihood ratio (+LR) and negative likelihood ratio (-LR) were 94,9%, 63,6%, 60,7%, 95,5%, 2,6 and 0,081, respectively. For the purposes of guideline for iron therapy administration, a %HYPO cut-off of $>10,1\%$ was chosen with Sn, Sp, NRP, NRN, + LR and -LR of 20,5%, 98,4%, 88,9%, 67,7%, 13,6 and 0,81, respectively. Meanwhile, for %HYPO between $>5,8\% - 10,1\%$, it is recommended for confirmation tests before administration of iron therapy.

Conclusion: % HYPO cut-off $>10,1\%$ with a specificity of 98,4% may be used to guide the administration of iron therapy.

Keywords: %HYPO, iron deficiency anemia, chronic kidney disease, hemodialysis, iron therapy.