Laju filtrasi glomerulus penderita thalassemia mayor dengan hemokromatosis menggunakan uji bersihan kreatinin dan kadar cystatin C serum = Assessment of glomerular filtration rate in p-thalassemia major patiens with hemochromatosis using calculated creatinine clearance test and serum cystatin C level

F.X. Hendriyono, author

Abstrak

Penderita thalassemia mayor berisiko mengalarni hemokromatosis yang dapat merusak dan menurunkan fungsi ginjal. Pemeriksaan kadar kreatinin serum secara rutin telah digunakan untuk menilai fungsi ginjal namun cara ini banyak kekurangannya, sedangkan parameter baru cystatin C serum diketahui febih baik dibandingkan kreatinin namun belum pernah diteliti pada penderita thalassemia mayor dengan hemokromatosis. Dengan mengetahui Iebih dini adanya penurunan fungsi ginjal maka diharapkan dapat menghambat progresititas penurunan fungsi ginjal pada penderita thalassemia mayor dengan hemokromatosis.

Penelitian ini bertujuan menilai fungsi ginjal penderita thalassemia mayor dengan hemokromatosis. Janis penelitian, potong lintang diiaporkan dalam bentuk deskriptif analitik. Pengambilan darah dan data subyek dilaksanakan di pusat Tfralassemia ilmu Kesehatan Anak dan pengukuran laboratorium dilaksanakan di Departemen Patologi Klinik FKU/RSCM. Semua pasien yang memenuhi kriteria masukan diambil yaitu usia 10-21 tahun, saturasi transferin > 55%, pengobatan desferal < 3 kali per minggu, tidak mendapat obat yang mengganggu sekresi kreatinin.

Hasil penelitian didapatkan, kadar kreatinin serum berkisar 0,2-0,7 mg/dL kadar cystatin C serum berkisar 0,69-1,31 mg/L, laju filtrasi glomerulus berdasarkan kadar cystatin C serum dengan menggunakan rumus Hoek (LFG-C) berkisar 57-112,1mL/menit/1,73m2, laju filtrasi glomerulus berdasarkan kadar kreatinin serum menggunakan rumus Counahan-Barrat (LFG-K) berkisar 95,2-288,1 mL/menit/1,73 m2 dan tidak dijumpai perbedaan hasil antara lelaki dan wanita pada parameter tersebut diatas. Dare 62 penderita thalassemia mayor dengan hemokromatosis didapatkan penurunan fungsi ginjal yaitu laju filtrasi glomerulus < 90 mL/menit/1,73m2 sebesar 75,8% jika ditetapkan dengan LFG-C yang mulai terlihat setelah 96 bulan mendapat transfusi berulang. Namun jika ditetapkan dengan LFG-K semuanya belum menunjukkan adanya penurunan fungsi ginjal. Dijumpai korelasi antara lamanya mendapat transfusi darah dan LFG-C dengan r = - 0,475; sedangkan antara total volum darah transfusi dengan LFG-C dengan r = -0,467; antara kadar kreatinin dan cystatin C serum dengan r = 0,504. Dijumpai korelasi lemah antara LFG-K dan LFG-C dengan r = 0,37. Tidak djumpai adanya korelasi antara kadar cystatin C serum dengan saturasi transferin. Didapatkan persamaan garis linier regresi pengaruh lamanya mendapat transfusi darah (Y} terhadap rerata LFG-C (X) yaitu Y = 569,1 - 5,06X, sedangkan pengaruh total volum darah transfusi (Y) terhadap LFG-C (X) yaitu Y 107380,7 - 617,414X. Pada penderita thalassemia p mayor dengan hemokromatosis kadar kreatinin serum cenderung rendah oleh karena itu pemantauan fungsi ginjal tidak dianjurkan menggunakan LFG-K, sebaiknya menggunakan LFG-C.

<hr><i>Patients with j3-thalassemia major are at risk of developing hemochromatosis that will deteriorate and decrease renal function. Routine serum creatinine measurement has utilized to assess renal function, but

this method has a lot disadvatages, while cystatin C a new parameter is known to be better than serum creatinine but had never been studied in p-thalassemia major patiens with hemochromatosis. Early detection of decreased renal function cans hopefully, slower the progressivity of renal function decrease in 13-thalassemia major patiens with hemochromatosis.

The aim of this study was to access renal function in p-thalassemia major patiens with hemochromatosis. This study was designed as cross-sectional study, and the report was analytic descriptive. Blood and subject data collection was performed in the Thalassemic Center, Departement of Child's Health, FMU1 and laboratory test were performed in the Departement of Clinical Pathology, FMUI, Cipto Mangunkusumo National Hospital. All eligible patiens, i.e aged 10-21 years, with transferrin saturation of > 55%, on desferal with frequency of less than 3 timelweek, not on any medication that affect creatinine secretion, were included in this study.

Result of this study showed that serum creatinine level ranged between 0.2-0.7 mg/dL, serum cystatin C level ranged between 0.69-1.31 mg/dL, glomerular filtration rate based on serum cystatin C level calculated with Hoek formula (GFR-C) ranged from 57- 112.1 mUminll.73 m2, glomerular filtration rate base on serum creatinine level calculated with Counahan-Barrat formula (GFR-K) ranged from 95.2-288.1 mL/min/1.73 m2 and there were no significant difference between male and female for all the parameters above. Of 62 subjects, we found decreased renal function, Le. GFR < 90 mL/min/1.73 m2 in 75,8% if GFR-C was used, and decrease was evident approximately 96 months after first administration of repeated transfusion regiment. But, if GFR-K was used, none of the patiens showed decrease renal function. There were negative correlation between the time interval from first transfusion and GFR-C (r = - 0.475) and between total volume of transfused blood (r = -0.467). Positive correlation was observed between serum creatinine and cystatine C level (r = 0.504). Weak correlation was found between serum cystatin C level and transferrin saturation. The equation of linear regression between the length of transfusion (Y) and mean GFR-C (X) was Y = 569.1 - 5.06X, while linear regression line between total volume of transfused blood (Y) and GFR-C (X) was Y = 107380,7 - 617.414X. In p-thalassemia major patiens with hemochromatosis, serum creatinine level tended to be low, thus GFR-K is not recommended for determination of renal function, and instead, GFR-C is a better measure of renal function in those patiens.</i>