Hubungan inflamasi kronik, polimorfisme gen IL-6-174, dan IL-10-1082 dengan sindrom inflamasi malnutrisi pada pasien hemodialisis = Association between chronic inflammation, polymorphic IL-6-174 and IL-10-1082 gene with malnutrition-inflammation syndrome on hemodialysis patients

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Abstrak

ABSTRAK

Pada pasien hemodialisis (HD), banyak penelitian di negara maju membuktikan hubungan yang erat antara inflamasi, komplikasi kardiovaskular, malnutrisi, dan mortalitas yang tinggi. Inflamasi yang ditandai dengan meningkatnya IL-6 dan CRP, serta berkurangnya sitokin anti-inflamasi IL-10, mempunyai peran utama dalam terjadinya berbagai komplikasi pada pasien HD di Indonesia, terdapat perbedaan pelaksanaan HD, yaitu HD yang lebih jarang (2 kali seminggu), banyak menggunakan dialiser selulosal diasetat, proses ulang, low flux, dan tanpa air yang sangat murni, yang kesemuanya menyebabkan risiko respons inflamasi yang tinggi. Pada kenyataannya, prevalensi inflamasi dan nilai rata-rata CRP di Indonesia lebih rendah. Polimorfisme gen IL-6-174G>C dan gen IL-10-1082G>A telah dibuktikan mempengaruhi tingkat produksi IL-6 dan CRP. Perbedaan proporsi alel G, C pada IL-6-174, dan alel G, A pada IL-1082, berbagai bangsa dan ras, mungkin menjadi penyebab perbedaan di atas. Sindrom inflamasi malnutrisi (SIM) pada pasien HD berbeda dengan malnutrisi pada populasi. Pada SIM, faktor inflamasi, uremia dan katabolisme protein lebih berperan. Hal ini memerlukan cara penilaian status malnutrisi yang berbeda. Penelitian ini dilakukan untuk mendapatkan frekuensi polimorfisme gen IL-6-174 dan IL-10-1082, mengetahui faktor yang berperan dalam SIM, mengetahui perbedaan prevalensi inflamasi pada pasien dengan malnutrisi dan sebagai validitas penilaian SGA.

Telah dilakukan penelitian pada pasien yang menjalani HD 2 kali seminggu, 5 jam per kali HD, tanpa komplikasi penyakit lainnya, dan semua memakai dialiser selulosa diasetat yang diproses ulang. Dari 64 pasien yang diperiksa, didapatkan gen IL-6-74GG 95,31%, CC 3,13% dan GC 1,56%. Gen IL-1082AA 89,06%, GA 10,94%, dan GG tidak didapatkan. Proporsi alel ini hampir sama seperti yang didapatkan di Korea, Jepang dan Cina, berbeda dengan yang didapat di AS, ras Kaukasia, Amerika-Afrika, Hispanik dan Eropa (Kaukasia). Selain perbedaan pada proporsi gen, kami mendapatkan konsenlrasi CRP (6,23±5,57 mg/L), frekuensi malnutrisi (24,7%), dan skor MIS (6,7) yang lebih rendah dibanding dengan data dari AS dan Eropa. Mengingat sedikitnya alel C pada gen IL-6-174 dan alel G pada gen IL-10-1082, analisis statistik yang dilakukan tidak dapat memperlihatkan pengaruh perbedaan alel terhadap manifestasi klinik. Inflarnasi kronik mempengaruhi terjadinya malnutrisi (PR 3,03; 1K 95% 1,53-6,06; P = 0,012). Penilaian dengan skala SGA berkorelasi balk dengan parameter antropometri (IMT, LLA, LOLA, HGS), dan albumin serum. Albumin serum sebagai parameter inflamasi kronik berkorelasi balk dengan parameter nutrisi yang lain, sedangkan CRP tidak. Didapatkan kesan yang kuat bahwa pada pasien HD, gen IL-174GG bersifat protektif, sedangkan gen IL-1082AA tidak begitu berperan. Selain itu dibuktikan adanya pengaruh inflamasi terhadap malnutrisi dan SGA terbukti merupakan penilaian sindrom malnutrisi inflamasi yang cukup baik.

<hr><i>ABSTRACT
Many studies on HD patients in developed countries have conferred strong evidence of closed correlation between inflammation, cardiovascular complication and high mortality rates. Inflammation, indicated by high levels of CRP and IL-6, has a major role in initiating and sustaining complications. Adapting to high cost, HD in Indonesia is conducted in a little different ways. Patients are dialyzed twice a week, 5 hours each, using reprocessed cellulose/diacetate membrane dialyzer, and without ultrapure water. All of these contribute to a high risk of inflammation, but in fact the prevalence of inflammation in Indonesia is relatively low. IL-6-174G>C and IL-10-1082G>A polymorphic gene have been proven to influence the production of IL-6 and CRP. The difference in the proportion of allele G, C in IL-6-174, allele G, A in IL-1082 in a variety of people's races might cause the difference in the prevalence and the level of inflammation. Malnutrition inflammation syndrome (MIS) on HD patients is different from malnutrition in general population. In MIS, the inflammatory factors, uremia, and protein catabolism of protein are more dominant. These matters probably require a different assessment method of malnutrition status. The purpose of this study was to obtain the frequency of polymorphic gene IL-6-174 and IL-10-1082 to find out the prominent factors in MIS, and to find out the difference in the inflammation prevalence in patients with malnutrition and to serve as validity of SGA assessment.

A study on patients who were on hemodialysis twice a week, 5 hours each session has been conducted. The subjects had no other co-morbidities and all of them used reprocessed diasetat cellulose dialyzers. Out of 64 patients examined, IL-6-174GG was obtained 95.31%, CC 3.13% and GC 1.56%, IL-1082AA 89.06%, GA 10.94%, but absence of GG genotype. The proportion of these alleles was almost similar to that obtained in Korea, Japan and China, but it was different from that obtained in the US for the Caucasian race, African Americans, Hispanic people, and the Caucasian people in Europe_ Besides the difference in gene proportion, it was obtained that CRP (6.23±5.57 mg/L), malnutrition (24.7%), and malnutrition inflammation score (6.7) were lower compared with the data from Europe and the United States. Considering the scanty amount of allele C in IL-6-174 gene and G allele in IL-10-1082 gene, based on the statistic analysis performed it did not revealed the influence of the difference in allele on the clinical manifestation. It was found that chronic inflammation influenced the occurrence of malnutrition (PR 3.03; CI 95% 1.53-6.06; P = 0,012). The scoring by the SGA scales correlated well with the anthropometric parameters (body mass indes, mid arm circumtance, midarm muscle circumference, hand grip strength and serum albumin. A very resolute impression was obtained in HD patients that IL-6-174GG gene was protective in nature whereas IL-10-1082 AA gene had a less considerable role. In addition to that, it was proven that there was influence of information on the occurence of malnutrition and SGA consitutes a good enough assessment for malnutrition inflammation syndrome.