Hubungan Homosistein dengan Fungsi Kognitif pada Pasien DMT2 yang Mengonsumsi Metformin dan Metformin-Glimepirid = Relationship of Homocysteine with Cognitive Function in T2DM Patients who Take Metformin and Metformin-Glimepiride

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Abstrak

Homosistein adalah asam amino yang dihasilkan dalam metabolisme metionin dan sistein. Berdasarkan bukti ilmiah, tingginya kadar homosistein berpotensi memiliki efek neurotoksik dan terkait dengan kemunculan penyakit neurodegeneratif. Konsumsi metformin jangka panjang oleh pasien diabetes melitus tipe 2 (DMT2) menyebabkan defisiensi vitamin B12 yang akan meningkatkan kadar homosistein. Tujuan dari penelitian ini adalah menganalisis ada tidaknya hubungan antara hiperhomosisteinemia dengan penurunan fungsi kognitif pada pasien DMT2 yang mengonsumsi metformin dan metformin-glimepirid. Penelitian dengan desain potong lintang dan metode consecutive sampling dilakukan di Puskesmas Pasar Minggu dan Puskesmas Depok Jaya. Asesmen fungsi kognitif dilakukan dengan instrumen The Montreal Cognitive Assessment dalam Bahasa Indonesia (MoCA-Ina). Sampel darah subjek penelitian dikumpulkan untuk pengukuran HbA1c dan kadar homosistein. Total 116 subjek penelitian dibagi menjadi dua kelompok yaitu subjek penelitian dengan kadar homosistein normal (n=90) dan hiperhomosisteinemia (n=26). Tidak ada perbedaan bermakna (p<0,05) pada karakteristik dasar dan klinis kedua kelompok kecuali jenis kelamin (p=0,001). Secara keseluruhan, tidak terdapat perbedaan bermakna (p=0,307) pada skor MoCA-Ina kelompok kadar homosistein normal (23 (13-30)) dan kelompok hiperhomosisteinemia (21,5 (13-29)). Analisis lebih detail pada subdomain fungsi kognitif menunjukkan bahwa tidak terdapat perbedaan bermakna pada kedua kelompok kecuali pada subdomain bahasa (p=0,025). Kelompok kadar homosistein normal memiliki skor subdomain bahasa lebih tinggi (2,71±0,521) daripada kelompok hiperhomosisteinemia (1,86±0,877). Terdapat faktor lain yang mempengaruhi fungsi kognitif yaitu usia (p=0,022), waktu tempuh pendidikan (p=0,043), serta kebiasaan merokok (p=0,033). Dapat disimpulkan bahwa tidak terdapat petbedaan fungsi kognitif pada kelompok kadar homosistein normal dan kelompok hiperhomosisteinemia kecuali pada subdomain bahasa.

.....Homocysteine is an amino acid produced in the metabolism of methionine and cysteine. Based on scientific evidence, high levels of homocysteine have the potential to have neurotoxic effects and are associated with the emergence of neurodegenerative diseases. Long-term consumption of metformin by patients with type 2 diabetes mellitus (DMT2) causes vitamin B12 deficiency which will increase homocysteine levels. The purpose of this study was to analyze whether there is a relationship between hyperhomocysteinemia and decreased cognitive function in T2DM patients taking metformin and metformin-glimepiride. The study with a cross-sectional design and consecutive sampling method was conducted at Pasar Minggu and Depok Jaya Public Health Center. Cognitive function assessment was carried out using The Montreal Cognitive Assessment in Indonesian (MoCA-Ina) instrument. Blood samples of research subjects were collected for measurement of HbA1c and homocysteine levels. A total of 116 research subjects were divided into two groups, namely research subjects with normal homocysteine levels (n=90) and hyperhomocysteinemia (n=26). There was no significant difference (p<0.05) in the basic and

clinical characteristics of the two groups except for gender (p=0.001). Overall, there was no significant difference (p=0.307) in the MoCA-Ina scores in the normal homocysteine group (23 (13-30)) and the hyperhomocysteinemia group (21.5 (13-29)). A more detailed analysis of the cognitive function subdomain showed that there was no significant difference between the two groups except for the language subdomain (p=0.025). The normal homocysteine level group had a higher language subdomain score (2.71±0.521) than the hyperhomocysteinemia group (1.86±0.877). There are other factors that affect cognitive function, namely age (p=0.022), length of formal education (p=0.043), and smoking habits (p=0.033). It can be concluded that there is no difference in cognitive function in the normal homocysteine level group and the hyperhomocysteinemia group except for the language subdomain.