Perbandingan Glikosaminoglikan Urin Kelompok Risiko Rendah terhadap Risiko Sedang-Tinggi berdasarkan KDIGO 2012 pada Pasien DM Tipe 2 yang Mengonsumsi Metformin = Comparison of Urine Glycosaminoglycans in Low Risk to Medium-High Risk Groups based on 2012 KDIGO in Type 2 DM Patients Taking Metformin

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Abstrak

Glikosaminoglikan merupakan komponen penyusun glikokaliks yang berperan penting dalam per selektivitas muatan anionik kapiler glomerulus. Gangguan hemodinamik dan metabolik akibat hiperglikemia kronis menyebabkan peluruhan komponen glikokaliks endotel. Beberapa pedoman telah menyetujui keamanan tiap OAD berdasarkan fungsi ginjal. Tujuan penelitian adalah menilai keamanan penggunaan metformin (metformin dan metformin-glimepirid) berdasarkan fungsi ginjalnya serta menilai perbandingan kadar GAG urin pasien DMT 2 kelompok risiko rendah terhadap risiko sedang-tinggi PGK. Desain penelitian potong lintang dan metode consecutive di Puskesmas Depok Jaya dan Kecamatan Pasar Minggu. Sampel urin dan darah dikumpulkan untuk pengukuran eLFG, HbA1c, ACR, dan kadar GAG urin. Sebanyak 137 partisipan dinilai keamanan penggunaan metformin berdasarkan fungsi ginjalnya. Terdapat ketidaksesuaian pada 1 partisipan dalam penggunaan metformin (n=55) dan semua partisipan (n=82) sesuai dengan pedoman dalam penggunaan metformin-glimepirid. Hanya 121 partisipan yang dianalisis kadar GAG urin menggunakan 1,9-DMMB dan terdiri dari 4 yaitu kelompok risiko rendah PGK: G1-A1(eLFG 90ml/min/1,73m² - <30mg/g) (n=25) dan G2-A1(eLFG 60-89ml/min/1,73m² - <30mg/g) (n=45) serta risiko sedang-tinggi PGK: GI-A2(eLFG 90ml/menit/1,73m² - >30mg/g) (n=23) dan G2-A2(eLFG 60-89ml/menit/1,73m² - >30mg/g) (n=28). Tidak ada perbedaan bermakna (p<0,05) pada karakteristik dasar dan klinis keempat kelompok kecuali usia (p=0,006) dan HbA1c (p<0,001). Tidak terdapat perbedaan kadar GAG urin yang bermakna antara kelompok G1 dengan G2 (p=0,290) serta pada keempat kelompok (p=0,221). Terdapat perbedaan kadar GAG urin yang bermakna (p=0,034) pada kelompok normoalbuminuria dan albuminuria. Faktor lain seperti durasi DMT 2 >5 tahun dan komorbiditas dapat meningkatkan kadar GAG urin. Oleh karena itu, diperlukan studi lanjut mengenai potensi GAG urin pada awal perkembangan penyakit ginjal diabetes.

.....Glycosaminoglycans are components of the glycocalyx which play an important role in the permeselectivity of the anionic charge of the glomerular capillaries. Hemodynamic and metabolic disturbances due to chronic hyperglycemia cause the breakdown of the glycocalyx component of the endothelium. Several guidelines have agreed on the safety of each OAD based on renal function. The aims of this study were to assess the safety of using metformin (metformin and metformin-glimepiride) based on kidney function and to evaluate the comparison of urinary GAG levels in patients with DMT 2 in low-risk groups to moderate-high risk of CKD. Cross-sectional research design and consecutive in Depok Jaya Public Health Center and Pasar Minggu District. Urine and blood samples were collected for measurement of eGFR, HbA1c, ACR, and urinary GAG levels. A total of 137 participants assessed the safety of using metformin based on their kidney function. There was a discrepancy in 1 participant in the use of metformin (n=55) and all participants (n=82) according to the guidelines for the use of metformin-glimepiride. Only

121 participants were analyzed for urine GAG levels using 1,9-DMMB and consisted of 4 low risk groups for CKD: G1-A1(eGFR 90ml/min/1.73m² - <30mg/g) (n=25) and G2-A1(eGFR 60-89ml/min/1.73m² - <30mg/g) (n=45) and moderate-high risk of CKD: GI-A2(eGFR 90ml/min/1.73m² - >30mg/g) (n=23) and G2-A2(eLFG 60-89ml/min/1.73m² - >30mg/g) (n=28). There was no significant difference ($p<0.05$) in the baseline and clinical characteristics of the four groups except age ($p=0.006$) and HbA1c ($p<0.001$). There was no significant difference in urine GAG levels between the groups G1 with G2 ($p= 0.290$) and in the four groups ($p= 0.221$). There was a significant difference in urine GAG levels ($p= 0.034$) in the normoalbuminuria and albuminuria groups. Other factors such as duration of DMT 2 > 5 years and comorbidities can increase urinary GAG levels. Therefore, further studies are needed regarding the potential of urinary GAGs in the early development of diabetic kidney disease.