Korelasi Antara Osteokalsin dan Rasio Adiponektin/Leptin pada Individu Sehat dengan dan tanpa Riwayat Orang Tua Penyandang Diabetes Melitus Tipe 2: Kajian Hubungan antara Metabolisme Tulang dan Jaringan Adiposa = Correlation between Osteocalcin and Adiponectin/Leptin Rasio in Healthy First Degree Relative of Patient with Diabetes Mellitus Type 2: A Study of the Relationship Between Bone Metabolism and Adipose Tissue

Muhammad Yusuf Hanif, author

Abstrak

Latar belakang: Kelompok first degree relative (FDR) DM tipe 2 memiliki risiko lebih tinggi mengalami gangguan metabolik dini, termasuk disfungsi jaringan adiposa yang ditandai dengan penurunan rasio adiponektin/leptin. Osteokalsin, hormon yang berperan dalam mineralisasi tulang, juga mempengaruhi sensitivitas dan sekresi insulin melalui ekspresi gen-gen yang mengatur sekresi insulin dan pertumbuhan jaringan adiposa. Hingga saat ini, belum ada penelitian yang menghubungkan rasio adiponektin/leptin dan kadar osteokalsin pada populasi FDR.

Tujuan: Mengetahui rerata kadar osteokalsin dan rasio adiponektin/leptin pada FDR DM tipe 2 serta mengetahui korelasi antara kadar osteokalsin dan rasio adiponektin/leptin pada FDR DM tipe 2.

Metode: Desain studi potong lintang, data diambil dari penelitian payung sebelumnya pada Divisi Metabolik Endokrin dan Diabetes Departemen Ilmu Penyakit Dalam FKUI/ RSCM. Pemeriksaan osteokalsin kemudian ditambahkan pada sampel studi sebelumnya. Analisis bivariat dan uji korelasi dilakukan terhadap variabel osteokalsin dan rasio adiponektin/leptin serta variabel perancu lain yaitu usia, jenis kelamin, IMT, lingkar pinggang, trigliserida, HDL, LDL, dan HOMA-IR.

Hasil: Dari 125 subjek penelitian yang terdiri dari 62 subjek FDR dan 63 subjek Non FDR, Median osteokalsin adalah sebesar 10,19 (4,4 – 26,54) ng/mL pada kelompok FDR dan 11,69 (5,72 – 23,75) ng/mL pada kelompok Non FDR. Median rasio adiponektin/leptin adalah sebesar 0,35 (0,03 – 2,83) pada kelompok FDR dan 0,41 (0,04 – 5,65) pada kelompok Non FDR. Didapatkan korelasi sangat lemah yang tidak bermakna antara kadar osteokalsin dan rasio adiponektin/leptin pada kelompok FDR (r= 0,034, p=0,796) dan Non FDR (r= -0,006, p=0,966).

Kesimpulan. Tidak didapatkan perbedaan rerata dan korelasi antara kadar osteokalsin dan rasio adiponektin/leptin pada kelompok FDR dan Non FDR.
.....Background: First-degree relatives (FDRs) of type 2 diabetes mellitus (T2DM) patients have a higher risk of developing early metabolic disturbances, including adipose tissue dysfunction characterized by a decreased adiponectin/leptin ratio. Osteocalcin, a hormone that plays a role in bone mineralization, also affects insulin sensitivity and secretion through the expression of genes that regulate insulin secretion and adipose tissue growth. To date, no studies have linked the adiponectin/leptin ratio and osteocalcin levels in

the FDR population.

Objective: To measure the mean of osteocalcin and adiponectin/leptin ratio in FDR DM type 2. To determine the correlation between osteocalcin with adiponectin/leptin ratio in FDR DM type 2.

Methods: Cross-sectional study using secondary data from previous umbrella study conducted at the Division of Metabolic, Endocrine, and Diabetes, Department of Internal Medicine, Faculty of Medicine, University of Indonesia/Cipto Mangunkusumo Hospital. Osteocalcin measurements were subsequently added to the existing study samples. Bivariate analysis and correlation tests were performed on osteocalcin and adiponectin/leptin ratio variables, along with other confounding variables, including age, sex, BMI, waist circumference, triglycerides, HDL, LDL, and HOMA-IR.

Result: A total of 125 subject was participated, consist of 62 subject in FDR group and 63 subject in Non FDR group. Median of osteocalcin level was 10.19 (4.4 – 26.54) ng/mL in FDR group and 11.69 (5.72 – 23.75) ng/mL in Non FDR group. Median of adiponectin/leptin ratio was 0.35 (0.03 – 2.83) in FDR group and 0.41 (0.04 – 5.65) in Non FDR group. There was very weak with no significant correlation between osteocalcin and adiponectin/leptin ratio in FDR ($r= 0.034$, $p=0.796$) and Non FDR group ($r= -0.006$, $p=0.966$).

Conclusion: No significant mean difference found between osteocalcin level and adiponectin/leptin ratio in FDR and Non FDR group.