Hubungan Magnesium Serum dengan Kadar HbA1c dan Profil Lipid pada Penderita Diabetes Melitus Tipe 2 di Kota Semarang

Maulida Nur Firdausya[1], Etika Ratna Noer[1], Rachma Purwanti[1], Nuryanto[1]

ABSTRAK

Latar Belakang: Diabetes melitus tipe 2 merupakan masalah kesehatan utama yang berhubungan dengan defisiensi magnesium. Magnesium mempunyai peran penting dalam sekresi dan homeostasis insulin serta kofaktor metabolisme glukosa dan lipoprotein. Penelitian ini bertujuan untuk mengetahui hubungan antara magnesium serum dengan kadar HbA1c dan profil lipid penderita diabetes melitus tipe 2 di Kota Semarang.

Metode: Penelitian ini dilaksanakan pada Agustus – September 2021 menggunakan metode *cross sectional* dengan subjek penderita diabetes melitus tipe 2 berusia 45-65 tahun sebanyak 55 orang yang diambil melalui metode *purposive sampling*. Data yang dikumpulkan meliputi identitas subjek, asupan makan menggunakan SQFFQ (*Semi-Quantitative Food Frequency Questionnaire*) satu bulan terakhir, aktivitas fisik 24 jam menggunakan kuesioner PAL (*Physical Activity Level*), antropometri tinggi badan menggunakan *microtoise* dan IMT menggunakan BIA (*Bioelectrical Impedance Analyzer)* TANITA, dan kadar magnesium serum menggunakan tes fotometrik dengan reagen *xylidyl blue*, serta kadar HbA1c dan profil lipid menggunakan alat *indico clinical chemistry analyzer*. Analisis data menggunakan uji *pearson product moment, spearman's rank,* dan *chi-square,* dilanjutkan dengan *Multivariate Analysis of Covariance* (MANCOVA).

Hasil: Sebanyak 49 (89,1%) subjek penderita diabetes melitus tipe 2 mengalami defisiensi magnesium. Terdapat hubungan antara kecukupan asupan energi dengan kejadian defisiensi magnesium (p = 0,046). Terdapat hubungan antara kecukupan asupan magnesium dengan magnesium serum (r = 0,422; p = 0,001). Terdapat hubungan antara magnesium serum dengan kadar HDL (*R squared* = 0,987; p = 0,013). Terdapat hubungan antara kecukupan asupan karbohidrat (r = 0,375; p = 0,005) dan lemak (r = 0,379; *p* = 0,004) dengan kadar HbA1c. Tidak terdapat hubungan antara magnesium serum dengan kadar HbA1c, total kolesterol, trigliserida, dan LDL (p>0,05).

Simpulan: Terdapat hubungan antara magnesium serum dengan kadar HDL. Tidak terdapat hubungan antara magnesium serum dengan kadar HbA1c, total kolesterol, trigliserida, dan LDL pada penderita diabetes melitus tipe 2 di Kota Semarang.

Kata Kunci: Diabetes melitus tipe 2, magnesium serum, HbA1c, profil lipid

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[1]Program Studi Gizi Fakultas Kedokteran, Universitas Diponegoro

Correlation of Serum Magnesium with HbA1c Levels and Lipid Profiles on Type 2 Diabetes Mellitus Patients in Semarang City

Maulida Nur Firdausya[1], Etika Ratna Noer[1], Rachma Purwanti[1], Nuryanto[1]

ABSTRACT

Background: Type 2 diabetes mellitus identified by impaired insulin secretion and resistance is a major health problem associated with magnesium deficiency. Magnesium has an important role in insulin secretion and homeostasis as well as cofactor in glucose and lipoprotein metabolism. This study aimed to determine the relationship between serum magnesium with HbA1c levels and lipid profiles of patients with type 2 diabetes mellitus in Semarang City.

Methods: This study was conducted between August – September 2021 using cross sectional method in subjects with type 2 diabetes mellitus aged 45-65 years and taken by purposive sampling method. Data included subject's identity, food intake during the past month assessed by SQFFQ (Semi-Quantitative Food Frequency Questionnaire), 24 hours physical activity measured by PAL (Physical Activity Level), anthropometry for height measured by microtoise and BMI measured by BIA (Bioelectrical Impedance Analyzer) TANITA, and serum magnesium measured by photometric method using xylidyl blue reagent, while HbA1c and lipid profiles levels measured by indico clinical chemistry analyzer. Data analyzed by pearson product moment, spearman's rank, and chi-square, then continued by Multivariate Analysis of Covariance (MANCOVA).

Results: A total of 49 (89,1%) subjects with type 2 diabetes mellitus had magnesium deficiency. There's correlation between energy intake with magnesium deficiency (p = 0,046). There's correlation between magnesium intake with serum magnesium (r = 0,422; p = 0,001). There's correlation between serum magnesium with HDL levels (R squared = 0,987; p = 0,013). There's correlation between carbohydrate (r = 0,375; p = 0,005) and fat intake (r = 0,379; p = 0,004) with HbA1c levels. There's no correlation between serum magnesium with HbA1c, cholesterol total, triglycerides, and LDL levels (p>0,05).

Conclusion: There's correlation between magnesium serum and HDL levels. There's no correlation between serum magnesium with HbA1c, cholesterol total, triglycerides, and LDL levels on type 2 diabetes mellitus patients in Semarang City.

Keywords: Type 2 diabetes mellitus, serum magnesium, HbA1c, lipid profiles

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[1]Nutrition Science Program, Medical Faculty of Diponegoro University