

KORELASI KADAR GLUKOSA DARAH PUASA DENGAN KADAR ASYMMETRIC DIMETHYLARGININE PADA DIABETES MELITUS TIPE 2

ABSTRAK

Latar Belakang: Hiperglikemia pada diabetes melitus tipe 2 akan meningkatkan *advance glycated end product* dan stress oksidatif yang akan merusak aktivitas enzim *dimethylarginine dimethylaminohydrolase* (DDAH)¹, sehingga menyebabkan kadar *asymmetric dimethylarginine* (ADMA) akan meningkat disirkulasi. Peningkatan kadar ADMA akan menghambat aktivitas enzim *nitric oxide synthase*, yang mengakibatkan *nitric oxide* menurun sehingga terjadi kerusakan endotel. Tujuan penelitian untuk mengetahui korelasi antara kadar glukosa darah puasa dengan ADMA pada penderita DM tipe 2.

Metode: Penelitian ini merupakan penelitian analitik dengan rancang potong lintang terhadap 20 orang penderita DM tipe 2 yang memenuhi kriteria inklusi dan eksklusi di Laboratorium Sentral RSUP Dr. M. Djamil Padang, mulai Februari 2016 sampai September 2016. Pemeriksaan kadar ADMA dilakukan dengan metode *sandwich Enzym Linked Immunosorbent Assay* (ELISA). Pemeriksaan glukosa darah puasa dilakukan dengan metode enzimatis *hexokinase*. Data dianalisis dengan uji korelasi Spearman, bermakna jika $p < 0,05$.

Hasil: Subjek penelitian berjumlah 20 orang terdiri atas 8 (40%) orang laki-laki dan 12 (60%) orang perempuan. Rerata umur subjek adalah 60,9 (5,9) tahun. Median kadar glukosa darah puasa pada DM tipe 2 adalah 134,5 (95-332) mg/dL. Rerata kadar ADMA pada DM tipe 2 sebesar 0,69 (0,23) $\mu\text{mol/L}$. Terdapat korelasi positif kuat yang bermakna antara kadar glukosa darah puasa dengan ADMA pada DM tipe 2, didapatkan nilai $r = 0,644$, $p < 0,01$.

Simpulan: Terdapat korelasi antara kadar glukosa darah puasa dan ADMA pada pasien DM tipe 2.

Kata Kunci: *asymmetric dimethylarginine*, DM tipe 2, glukosa darah puasa

CORRELATION BETWEEN FASTING BLOOD GLUCOSE LEVELS WITH ASYMMETRIC DIMETHYLARGININE IN TYPE 2 DIABETES MELLITUS

ABSTRACT

Background: Hyperglycemia in type 2 diabetes mellitus will increase advanced glycated end products and oxidative stress that would interfere activity of dimethylarginine dimethylaminohydrolase (DDAH) 1 enzyme, therefore will increase levels of asymmetric dimethylarginine (ADMA) in circulation. Increased of ADMA level inhibit activity of nitric oxide synthase, consequently formation of nitric oxide will decrease lead to damage endothelial. The aim of this study was to analyzed correlation between fasting blood glucose levels with ADMA in type 2 diabetes mellitus.

Methods: This was an analytical study with cross sectional design in 20 type 2 diabetes mellitus patients who meet inclusion and exclusion criteria in Central Laboratory of Dr. M. Djamil Hospital Padang, from February to September 2016. The levels of ADMA were analyzed using sandwich enzyme linked immunosorbent assay (ELISA). Fasting blood glucose tests were performed by hexokinase enzymatic method. Data were analyzed by Spearman correlation. With $p < 0.05$ consider as significant .

Results: The 20 subjects consist of 8 (40%) males and 12 (60%) females. The mean age of subjects was 60.9 (5.9) years. Median fasting blood glucose level in type 2 diabetes mellitus was 134.5 (95-332) mg/dL. Mean levels of ADMA in type 2 diabetes mellitus is 0.69 (0.23) $\mu\text{mol/L}$. There is significant positive correlation between fasting blood glucose with ADMA in type 2 diabetes mellitus, with $r = 0.644$ and $p < 0.01$.

Conclusion: There is a correlation between fasting blood glucose with ADMA in type 2 diabetes mellitus.

Keywords: asymmetric dimethylarginine, type 2 diabetes mellitus, fasting blood glucose