

KORELASI KADAR HbA1c DENGAN PARAMETER ELEKTRODIAGNOSTIK NEUROPATI OTONOM DIABETIKUM

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Abstrak

Neuropati otonom diabetikum merupakan komplikasi diabetes mellitus (DM) cukup sering. Komplikasi neuropati otonom diabetikum yang cukup serius adalah ulkus diabetikum dan *silent myocard infarction*. Risiko kedua komplikasi tersebut dapat dinilai dengan pemeriksaan *sympathetic skin response* (SSR) dan interval R-R. Progresivitas neuropati otonom diabetikum meningkatkan komplikasi dan hal itu dipengaruhi oleh kontrol glikemik (HbA1c). Perlu diketahui hubungan antara SSR dan interval R-R dengan kontrol glikemik yang dinilai dengan pemeriksaan HbA1c. Penelitian ini bertujuan menghitung koefisien korelasi antara kadar HbA1c dengan SSR dan interval R-R.

Penelitian ini merupakan penelitian *cross sectional*, subjek penelitian adalah pasien rawat jalan di poli saraf RSUP Dr. Sardjito Yogyakarta yang menderita DM yang memenuhi kriteria inklusi dan eksklusi. Subjek tersebut dilakukan pemeriksaan kadar HbA1c, pemeriksaan latensi dan amplitudo SSR ekstremitas bawah serta interval R-R. Korelasi antara kadar HbA1c, variabel demografi dan laboratorium dengan latensi SSR, amplitudo SSR dan interval R-R dengan uji korelasi Pearson/Spearman dilanjutkan uji regresi linier.

Didapatkan 41 pasien DM, rerata kadar HbA1c $8,7 \pm 3,02$ %, rerata latensi SSR $2586,58 \pm 778,69$ ms, rerata amplitudo SSR $0,51 \pm 0,61$ mV, rerata rasio interval R-R $0,96 \pm 0,28$. Hasil uji korelasi bivariat yang signifikan adalah korelasi HbA1c dengan latensi SSR $r = 0,312$; $p = 0,047$, HbA1c dengan rasio interval R-R $r = -0,392$; $p = 0,011$, durasi DM dengan latensi SSR $r = 0,524$; $p = 0,000$, durasi DM dengan amplitudo SSR $r = -0,447$; $p = 0,003$ dan durasi DM dengan rasio interval R-R $r = -0,320$; $p = 0,041$. Pada uji multivariat, durasi DM berkorelasi signifikan dengan latensi SSR dengan $B = 0,417$; $p = 0,008$ dan amplitudo SSR dengan $B = -0,351$; $p = 0,021$, untuk HbA1c dengan latensi SSR didapatkan $B = 0,175$; $p = 0,248$ dan untuk HbA1c dengan rasio interval R-R didapatkan $B = -0,298$; $p = 0,063$.

Kesimpulan penelitian ini, HbA1c dan durasi DM berkorelasi positif dengan latensi SSR dan berkorelasi negatif dengan interval R-R.

Kata kunci: HbA1c, *sympathetic skin response*, interval R-R

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CORRELATION OF HbA1c LEVEL WITH ELECTRODIAGNOSTIC PARAMETERS OF DIABETIC AUTONOMY NEUROPATHY

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Abstract

Diabetic autonomic neuropathy is a frequent complication of diabetes mellitus (DM). Serious consequences of diabetic autonomic neuropathy are diabetic ulcer and silent myocardial infarction. The risk of both complications can be assessed by examining the sympathetic skin response (SSR) and the R-R interval. The progression of diabetic autonomic neuropathy increase the complications and this condition is influenced by glycaemic control (HbA1c). Thus, it is necessary to know the relationship between SSR and R-R interval with glycaemic control that assessed by HbA1c examination. The aim of this study to find the correlation coefficient between HbA1c levels and SSR and R-R intervals.

This is a cross sectional study, the subjects are DM patients in the neurology clinic of Dr. Sardjito Yogyakarta Hospital who met the inclusion and exclusion criteria. The HbA1c levels, examination of SSR latency and amplitude and R-R interval at lower extremities were assessed. The correlation between HbA1c levels, demographic and laboratory variables with SSR latency, SSR amplitude and R-R interval are tested with Pearson/Spearman correlation test followed by linear regression test.

There were 41 DM patients, mean levels of HbA1c $8.7 \pm 3.02\%$, mean SSR latency 2586.58 ± 778.69 ms, mean SSR amplitude 0.51 ± 0.61 mV, mean R-R interval ratio 0.96 ± 0.28 . The results of a significant bivariate correlation test are correlation of HbA1c with SSR latency $r = 0.312$; $p = 0.047$, HbA1c with R-R interval ratio $r = 0.392$; $p = 0.011$, duration of DM with SSR latency $r = 0.524$; $p = 0.000$, duration of DM with SSR amplitude $r = -0.444$; $p = 0.003$ and duration of DM with interval R-R ratio $r = -0.320$; $p = 0.041$. In the multivariate test, duration of DM correlated significantly with SSR latency with $B = 0.417$; $p = 0.008$ and SSR amplitude with $B = -0.351$; $p = 0.021$, for HbA1c with SSR latency $B = 0.175$; $p = 0.248$ and for HbA1c with the R-R interval ratio $B = -0.298$; $p = 0.063$.

In conclusion, both of HbA1c and duration of DM are positively correlated with SSR latency, and negatively correlated with the R-R interval.

Keyword: HbA1c, sympathetic skin response, R-R interval

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