

# Hubungan antara kadar hemoglobin A1C dan high sensitivity C-reactive protein dengan obstruksi mikrovaskular pada pasien infark miokard akut dengan elevasi segmen ST pasca intervensi koroner perkutan primer = Relationship between hemoglobin A1C and high sensitivity C-reactive protein with microvascular obstruction in ST segment elevation acute myocardial infarction after primary percutaneous coronary intervention

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## Abstrak

Latar belakang. Kemajuan terapi reperfusi pada pasien infark miokard akut menimbulkan satu fenomena yang turut berperan dalam prognosis pasien, yaitu fenomena no reflow atau obstruksi mikrovaskular. Mekanisme OMV diduga memiliki 4 komponen patogenik utama yaitu embolisasi distal aterotrombotik, cedera reperfusi, cedera iskemia, dan kerentanan individu. Hiperglikemia akut diketahui berhubungan dengan OMV pada pasien IMA, namun peran hiperglikemia kronik masih kontroversial. Hiperglikemia berperan dalam komponen kerentanan individu, serta mempengaruhi peningkatan faktor inflamasi yang berperan dalam komponen cedera reperfusi. Kedua faktor ini yaitu hiperglikemia kronik yang digambarkan HbA1C dan inflamasi yang digambarkan hsCRP belum pernah diteliti secara bersamaan dalam menilai OMV dengan satu metode. Penelitian ini akan meneliti hubungan antara HbA1C dan hsCRP dengan OMV yang dinilai menggunakan indeks resistensi mikrovaskular, suatu metode terbaru dalam menilai OMV dengan akurat pada fase awal dan memiliki nilai prognostik yang signifikan.

Metode. Sebanyak 55 pasien IMA-EST yang menjalani IKPP dipilih secara konsekutif sejak Januari-Juni 2014. HbA1C dan hsCRP diambil saat masuk UGD, penilaian IMR diambil segera setelah tindakan IKPP. Perhitungan statistik menggunakan SPSS 17.

Hasil. Dari 55 pasien didapatkan proporsi laki-laki sebesar 93%, dengan rerata umur  $51,91 \pm 8,87$  tahun. Faktor resiko penyakit jantung koroner terbanyak adalah merokok yaitu 69%. Semua pasien menjalani tindakan IKPP dengan waktu iskemia  $489,45 \pm 169,95$  menit dan waktu perfusi  $124,91 \pm 76,49$  menit. Nilai rerata IRM  $53,22 \pm 41,11$  dengan nilai rerata HbA1C  $6,46 \pm 1,22$  %, dan rerata hsCRP  $4,98 \pm 3,39$  mg/dL. Dari analisis bivariat didapatkan HbA1C tidak berhubungan dengan IRM ( $r=0,22, p=0,10$ ), dan hsCRP juga tidak berhubungan dengan IRM ( $r=0,24, p=0,08$ ). Setelah disesuaikan dengan variabel perancu pada analisis multivariat, didapatkan hubungan signifikan antara HbA1C dengan IRM ( $p=0,03$ ) namun hsCRP tidak berhubungan dengan IRM ( $p=0,31$ ).

Kesimpulan. Kadar HbA1C saat admisi berhubungan dengan IRM pada pasien IMA-EST yang menjalani IKPP dan hsCRP saat admisi tidak berhubungan dengan IRM pasien IMA-EST yang menjalani IKPP.

.....Background: Advances in reperfusion therapy for acute myocardial infarction led to a phenomenon of distal no reflow or myocardial obstruction (MVO), which associated with worse outcome and prognosis. The potential mechanism of MVO had four major pathogenic components: distal atherotrombotic embolization, reperfusion injury, ischemic injury, and individual susceptibility. Association between acute hyperglycemia and MVO in acute myocardial infarction has been found, but the role of chronic hyperglycemia remained controversial. Hyperglycemia affected individual susceptibility to microcirculatory

injury, and also induced systemic inflammation which had a role in reperfusion injury. Association of both these factors--chronic hyperglycemia, determined by Hemoglobin A1C, and inflammation factor, measured by high sensitivity C-Reactive Protein-- with MVO had never been studied simultaneously. This cross-sectional study will determine the association between HbA1C and hsCRP with MVO assessed with index of microvascular resistance, an invasive novel method to assess MVO in acute phase and had significant prognostic factor.

Methods: 55 patients with acute ST-elevation myocardial infarction underwent primary percutaneous coronary intervention were taken consecutively from January to June 2014. Blood samples for HbA1C and hsCRP were taken before the procedure. IMR was taken immediately after the primary percutaneous coronary intervention procedure. Statistical calculation used SPSS 17.

Results: From 55 patients included in the study, there were 93% men, with mean age of  $51.91 \pm 8.87$  years. The most common risk factors for coronary heart disease was smoking (69%). All patients underwent primary percutaneous coronary intervention with mean onset to balloon time was  $489.45 \pm 169.95$  minutes and mean door to balloon time was  $124.91 \pm 76.49$  minutes. Mean IMR was  $53.22 \pm 41.11$ , with mean HbA1c was  $6.46 \pm 1.22\%$  and mean hsCRP was  $4.98 \pm 3.39$  mg/dL . From bivariate analysis, there was no association between HbA1C and IMR ( $r=0,22$ ,  $p = 0,10$ ), and between hsCRP and IMR ( $r = 0,24$  ,  $p=0,08$ ). In multivariate analysis , there was relationship between HbA1C with IRM (  $p = 0,03$ ) and hsCRP were also not associated with IRM (  $p = 0,31$  ).

Conclusions. There was association between hemoglobin A1C levels on admission with IMR and no association between hsCRP levels on admission with IMR, in patients with acute ST-elevation myocardial infarction underwent primary percutaneous coronary intervention.