

# Gambaran kadar soluble vascular cell adhesion molecule (sVCAM)-1 dan mikroalbuminuria pada penderita hipertensi primer: Tinjauan khusus: Hubungan antara sVCAM dan mikroalbuminuria = The level of soluble vascular cell adhesion molecule-1 (sVCAM-1) and microalbuminuria (MAU) in primary hypertension

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## Abstrak

**LATAR BELAKANG:** Hipertensi merupakan salah satu masalah kesehatan yang turut berperan dalam peningkatan angka morbiditas dan mortalitas stroke, gagal jantung dan gagal ginjal. Morbiditas dan mortalitas hipertensi meningkat dengan makin banyaknya faktor risiko yang dimiliki, makin tinggi tekanan darah dan makin lama seseorang menderita hipertensi. Sampai saat ini mekanisme pasti terjadinya hipertensi belum jelas. Belakangan ini disfungsi endotel juga dikaitkan dengan hipertensi. Tujuan penelitian ini untuk mendapatkan gambaran kadar sVCAM-1 dan MAU, membuktikan adanya hubungan antara kadar sVCAM-1 dan MAU, menganalisis pengaruh usia, gender, obesitas, terkontrol tidaknya hipertensi, lama sakit dan kadar kolesterol terhadap kadar sVCAM-1 dan MAU pada penderita hipertensi primer.

**BAHAN DAN METODE:** Penelitian ini menggunakan 65 subyek non diabetik dengan kadar hs-CRP < 5 mg/L dan protein urin < 3+. Dilakukan pemeriksaan kadar sVCAM-1, K-LDL, albumin dan kreatinin urin terhadap subyek dengan protein urin negatif atau trace, sedangkan subyek dengan protein urin 1+ atau 2+ hanya dilakukan pemeriksaan kadar sVCAM-1 dan K-LDL. Penetapan kadar sVCAM-1 berdasarkan prinsip quantitative sandwich enzyme immunoassay, penetapan kadar K-LDL berdasarkan prinsip enzimatik homogen, penetapan kadar albumin urin berdasarkan prinsip imunoturbidimetri, penetapan kreatinin urin berdasarkan metode kinetik Jaffe dan MAU dinyatakan dengan rasio albumin 1 kreatinin urin.

**HASIL:** Hasil penelitian menunjukkan proporsi kadar sVCAM-1 tinggi sebesar 81,5 % dan MAU 27,7 %. Kadar sVCAM-1 tinggi dan MAU lebih banyak dijumpai pada subyek tua, lelaki, hipertensi tak terkontrol, lama sakit > 10 tahun dan obese. Dari hasil analisis multivariat derigail regresi rr ultipel, Adak didapatkan korelasi -yang bermakna antara kadar sVCAM-1 dengan gender dan lama sakit namun didapatkan korelasi yang bermakna antara kadar sVCAM-1 dengan usia, MAP dan K-LDL. Hubungan tersebut dapat digambarkan melalui suatu persamaan yaitu kadar sVCAM-1 = 175 + 9,7 x usia (tahun) + 5,9 x MAP (mmHg) -- 2,9 x kadar K-LDL (mg/dL) dengan nilai R<sup>2</sup> adjusted sebesar 23,1 %. Tidak didapatkan korelasi yang bermakna antara MAU dengan usia, gender, MAP, IMT, lama sakit dan K-LDL. Tidak didapatkan korelasi yang bermakna antara kadar sVCAM-1 dan rasio A 1 K.

**KESIMPULAN:** Berdasarkan hasil penelitian ini didapatkan proporsi kadar sVCAM-1 tinggi 81,5 % dan MAU 27,7 %. Hal ini menunjukkan bahwa pada penderita hipertensi primer telah terjadi disfungsi endotel. Dari analisis multivariat menunjukkan kadar sVCAM-1 berkorelasi dengan usia, MAP dan K-LDL, sedangkan MAU tidak berkorelasi dengan variabel tersebut. Kadar sVCAM-1 tidak berkorelasi dengan MAU.

*Hypertension is a health problem which contributes in the increase morbidity and mortality of stroke, heart failure, and renal failure. The morbidity and mortality of hypertension were influenced by various risk factors, the height of blood pressure and the length of illness. The mechanism of hypertension up to now remains unclear. Recently, endothelial dysfunction has been associated with hypertension. The aims of this study were to obtain the level of sVCAM-1 and microalbuminuria (MAU) in primary hypertension, to analyse the relationship between sVCAM-1 level and MAU, to analyse the influences of age, gender, obesity, control of hypertension, length of illness, and the level of LDL cholesterol on sVCAM-1 level and MAU.*

*Sixty five non diabetic subjects with hs-CRP level < 5 mg/L and protein urine < 3 + were enrolled in this cross sectional study. The level of sVCAM-1 were performed on all subjects by ELISA using reagents from R&D system, while MAU was determined by calculated the albumin : creatinine ratio in the urine. The level of LDL cholesterol was performed by homogenous enzymatic assay.*

*The results indicated that the proportion of increase of sVCAM-1 level was 81.5% and MAU was 27.7% in primary hypertension. Increase of sVCAM-1 level and MAU were found more frequently in older subjects, male, uncontrolled hypertension, length of illness more than 10 years, and obese subject. The results of multivariate analysis with multiple regression showed that sVCAM-1 level significantly correlated with age, mean arterial pressure (MAP), and LDL cholesterol level, but did not correlate with gender, and length of illness. The relationship could be formulated as:  $sVCAM-1 \text{ level} = 175 + 9.7 \times \text{age (years)} + 5.9 \times \text{MAP (mm Hg)} - 2.9 \times \text{LDL cholesterol level (mg/dL)}$  with R<sup>2</sup> adjusted 23.1%. There were no correlation between MAU with age, gender, MAP, obesity, length of illness, and LDL cholesterol level. The level of sVCAM-1 did not correlate with albumin:creatinine urine ratio (MAU).*

*Based on high proportion of increased sVCAM-1 and MAU, it is concluded that endothelial dysfunction occur in primary hypertension. The level of sVCAM-1 significantly correlates with age, MAP, and LDL cholesterol level, while MAU does not correlate with these variables. There is no correlation between sVCAM-1 level and MAU.*