

Asymmetric Dimethylarginine correlates significantly with tumour necrosis alfa but not with brachial ankle pulse wave velocity in the T2DM-METS

by Sony Wibisono

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Asymmetric Dimethylarginine correlates significantly with tumour necrosis alfa but not with brachial ankle pulse wave velocity in the T2DM-METS

Deasy ARDIANY^{1*}, Soebagijo ADI¹, Askandar TJOKROPRAWIRO¹, Ari SUTJAHJO¹, Agung PRANOTO¹, Sri MURTIWI¹, Sony WIBISONO¹.

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¹*Surabaya Diabetes and Nutrition Centre - Dr. Soetomo Teaching Hospital Faculty of Medicine Airlangga University, Surabaya, Indonesia*

Background: Endothelial dysfunction is an important phenomenon in the pathogenesis of atherosclerosis and is related to the derangements of nitric oxide (NO) synthase in the vessel wall. Asymmetric Dimethylarginine (ADMA) is an endogenous, competitive inhibitor of nitric oxide synthase and is induced by inflammatory cytokines of tumour necrosis factor (TNF)-a in vitro. Increased ADMA levels are associated with reduced NO synthesis as assessed by impaired endothelium-dependent vasodilatation. There is cause and effect relationship between endothelial dysfunction and vascular stiffening. Measurement of brachial ankle pulse wave velocity (baPWV) is simple and applicable for cardiovascular risk screening and as a marker for the severity of atherosclerotic vascular damage.

Aim: To investigate the correlation between ADMA level with TNF-a and baPWV in the type-2 diabetes mellitus (T2DM)-Metabolic Syndrome (Mets) patients.

Method: This is a cross sectional study with T2DM-Mets patients who came to the outpatient clinic of Soetomo Hospital Surabaya during January 2010 to December 2012. Subjects met the inclusion and exclusion criteria were measured their ADMA, TNF-a, and blood glucose levels in plasma. Brachial ankle pulse wave velocity (ba-PWV) was determined by using the V Serra-1000. The study was approved by the local Research Ethics Committee and subjects gave written informed consent.

Results: Thirty-seven T2DM-Mets patients consisted of 15 (40.5%) males and 22 (59.5%) females who met inclusion and exclusion criteria were enrolled in this study. Their mean of age was 51 ± 5.2 years old, duration of illness was 16.49 ± 23.4 months, A1C level was $8.5 \pm 0.9\%$, BMI was 26.7 ± 4.5 kg/m², ADMA level was 0.572 ± 0.2 μ mol/L, TNF-a level was 10.0 ± 16.5 pg/mL, and ba-PWV was $1,624.5 \pm 295.5$ cm/s. Spearman's correlation analysis showed that ADMA level was significantly correlated with TNF-a level ($p = 0.026$; $r = 0.366$). However, no significant correlation found with ba-PWV ($p = 0.134$; $r = 0.251$).

Conclusion: ADMA level is correlated with TNF-a level in this T2DM-MetS population.

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