中文題目:利用回溯性資料分析糖尿病前期與動脈硬化之關聯性

英文題目: Retrospective Analysis of the Association between Prediabetes and Arterial Stiffness

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Background: Diabetes mellitus (DM) is frequently associated with atherosclerotic cardiovascular disease (ASCVD). The risk of ASCVD appears early in the course of dysglycemia and macrovascular insults may present when glucose level is still in pre-diabetic range. Arterial stiffness is one of the pathological manifestations of vascular disease and represents the cumulative effect of a cluster of cardiovascular risk factors on the arterial wall. It may serve as an ideal marker to detect subclinical vascular damage. In this study, we aimed to investigate the association between prediabetes and arterial stiffness as measured by brachial-ankle pulse wave velocity (baPWV) in the non-hypertensive and non-diabetic population.

Method: A retrospective analysis was performed for subjects undergoing health check-ups in Mackay Memorial Hospital Health Evaluation Center between January 1st 2014 to December 31st 2014. Those with history of hypertension, DM, autoimmune diseases, chronic liver and kidney diseases, malignancies, endocrinopathies, systolic heart failure or congenital heart diseases were excluded. Brachial-ankle PWV was measured by automatic waveform analyzer taken by the same technician. Arterial stiffness was defined as baPWV value ≧1400 cm/s and prediabetes was defined as fasting blood glucose between 100-125 mg/dL plus glycated hemoglobin A1c (HbA1c) between 5.7-6.4%. Independent two-sample t-test was used for comparisons of continuous parameters, while the Chi-square test was used for comparisons of categorical variables. Multivariate linear regression was used to assess the association between the presence of prediabetes and baPWV.

Result: Two-hundred and fifteen subjects were enrolled for analysis. The overall incidence of prediabetes was 12.09% and prediabetic subjects have significant higher level of baPWV than control ((1419±336) cm/s vs. (1310±171) cm/s; P=0.009). The incidence of prediabetes was clearly higher in the arterial stiffness group than the normal baPWV group (22.4% vs. 8.2%; P = 0.005). However, in multivariate linear regression, only impaired fasting blood glucose remains positively and independently associated with baPWV value (P=0.047) but not elevated HbA1c.

Conclusion: Our result showed that impaired glucose metabolism is associated with increased baPWV in non-hypertensive and non-diabetic subjects. The adverse effect of dysglycemic on arterial stiffness appeared even when blood glucose level is still in prediabetic range. A larger scale study is required to validate our result and further clarification of the precise relationship may have significant clinical implications for early screening and intervention of arterial stiffness in prediabetic subjects.