Prevention

CLINICAL ASSESSMENT OF THE ASSOCIATION BETWEEN MICROALBUMINURIA AND PREDICTORS OF ATHEROSCLEROSIS IN PATIENTS WITH EARLY UNTREATED TYPE 2 DIABETES OR ESSENTIAL HYPERTENSION

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Authors: Dong Il Shin, Ki-Bae Seung, Suk Min Seo, Pum-Joon Kim, The Catholic University of Korea, Seoul, South Korea

Background: Microalbuminuria (MAU) has been reported as a predictor of atherosclerotic cardiovascular disease in patients with diabetes (DM) or hypertension (HBP). We evaluated the association between MAU and other predictors of atherosclerosis and determined which of 2 aspects of atherosclerosis, arterial thickness or stiffness, more highly correlates with MAU in such patients.

Methods: Total 223 patients with untreated type 2 diabetes or essential hypertension without overt nephropathy were enrolled. The urinary albumin-to-creatinine ratio (ACR) was assessed to define MAU as an ACR of 22-250 mg/g in men and 31-350 mg/g in women. We classified subjects into 4 groups: MAU-D (diabetes with MAU, n=52), NAU-D (diabetes with normoalbuminuria, n=57), MAU-H (hypertension with MAU, n=58) and NAU-H (hypertension with NAU, n=56). Arterial stiffness was assessed by brachial-ankle pulse-wave velocity (PWV), and thickness was measured by carotid intima-media thickness (IMT). High-sensitive C-reactive protein (hsCRP) and left atrial volume were also assessed.

Results: The levels of hsCRP, IMT, and PWV were significantly higher in the MAU than in the NAU group (2.8±1.4 vs 0.8±0.4mg/L, 0.9±0.2 vs 0.6±0.1mm, and 18.1±2.4 vs 14.8±1.5m/sec, p<0.05). The DM-MAU had significantly higher levels of hsCRP, IMT, and PWV than the DM-NAU group (3.1±0.8 vs 0.9±0.4mg/L, 0.9±0.2 vs 0.6±0.1mm, and 18.8±2.8 vs 15.5±1.4m/sec, p<0.05). In HBP, the results were similar (2.5±1.7 vs 0.7±0.5mg/L, 0.8±0.2 vs 0.5±0.1mm, 17.4±2.2 vs 14.1±1.1m/sec, p<0.05). The levels of PWV and hsCRP were significantly higher in the DM-MAU than in the HBP-MAU group, but not IMT. In the DM-MAU group, the level of MAU was positively correlated with the level of PWV (r=0.43, p<0.05), but not with IMT.

Conclusions: MAU was strongly associated with arterial stiffness, thickness, and inflammation in untreated diabetic or hypertensive patients. Interestingly, the association between MAU and arterial stiffness is more obvious in diabetic than in hypertensive patients. In patients with diabetes, the level of MAU is more highly correlated with arterial stiffness than thickness.