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Impact of blood pressure control on the development of ESKD in according to the presence of metabolic syndrome

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Objectives: Hypertension has a critical impact on the development of end-stage kidney disease (ESKD). As a main component of Metabolic syndrome (MetS), controlling the blood pressure has a fundamental role for reducing the risk of ESKD. We tried to evaluate the impact of BP control on the development of ESKD depending on the MetS status in this study.

Methods: A total of 2,998,127 subjects were screened based on the national health insurance database in Korea between 2003 and 2011. The subjects with history of anti-hypertensive medication ≥30 days and underwent health check-up ≥3 times were divided into the two groups; with MetS (945,243) and without MetS (975,358). The degree of BP control was divided into 4 groups; 1) intensive well-controlled (well-C), 2) standard well-C, 3) uncontrolled subgroup 1(U-S1), and 4) uncontrolled subgroup 2 (U-S2). The risk of ESKD according to the controlled status of the BP was investigated using multivariable Cox-proportional hazard model.

Results: The more uncontrolled the BP, there were more males, higher glucose and triglycerides, lower physical activity. The subjects included U-S1 or U-S2 showed increased risk for the development ESKD irrespective of the presence of MetS. However, intensive BP control increased risk for ESKD only in subject with MetS (adjusted hazard ratio [aHR]; 1.16, 95% confidence interval [95% CI]; 1.01-1.32) compared to the subjects without MetS (aHR 1.15, 95% CI 1.0-1.33). According to the components of MetS, subjects with 3 components including hypertension has the highest impact of BP control on the development of ESKD (aHR 2.03, 95% CI 1.51-2.73), it was attenuated as increased number of components of MetS.

Conclusions: The intensity of BP control had a different impact on the development of ESKD according to the MetS status. Stringent BP control in target is needed in patients with MetS, especially satisfied MetS with the lowest criteria including HTN.