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Association of chronic coffee consumption with blood pressure and albuminuria

*Se won OH, Kum hyun HAN, Sang youb HAN

Internal medicine, Ilsan Paik Hospital, Inje University College of Medicine, Goyang, Korea, Korea,South

Objectives : The effect of coffee consumption on blood pressure is inconclusive. Caffeine acutely raises sympathetic nerve outflow, circulating catecholamine, and blood pressure. However, tolerance to these effects was known to develop rapidly, and caffeine caused natriuresis and endothelium-dependent vasodilation. In addition, it was recently reported that coffee consumption reduced the risk of cardiovascular disease, cardiovascular death, and chronic kidney disease. We evaluate the association of coffee consumption with blood pressure, urinary sodium excretion, and albuminuria.

Methods : An observational study using data from the Korean National Health and Nutrition Examination Survey V-VI (2012, 2014, 2015) was performed. We excluded participants aged <18 years, estimated glomerular filtration rate < 60 ml/min/1.73m2, and non-responder of food frequency questionnaires (M=9398).

Results : Participants who drank coffee <1 times per week (group 1) was 17.4%, 1-7 times per week (group 2) was 36.2%, 8-20 times (group 3) was 23.4%, and ≥21 times (group 4) was 23.1%. Both men and women, systolic blood pressure (SBP) was inversely associated with coffee consumption (p for trend <0.001). Estimated SBP means of the lowest consumption group was 113.9 mmHg (95% CI, 113.1-114.7) and 119.9 mmHg (95% CI, 118.8-121.1) in women and men; the highest consumption group was 111.6 mmHg (95% CI, 110.7-112.5) and 117.6 mmHg (95% CI, 116.9-118.4), respectively. However, coffee consumption was not associated with diastolic blood pressure. Frequent coffee consumption was related to the increase of urinary sodium excretion both in men (p for trend =0.016) and women (p for trend =0.002). Coffee consumption was associated with decrease of insulin resistance in non-diabetic women (p for trend= 0.018). The group with highest coffee consumption showed the highest risk reduction of albuminuria (OR 0.527, 95% CI, 0.362-0.767), group 3 was 0.620 (95% CI, 0.435-0.883), and group 2 was 0.655 (95% CI, 0.477-0.899) adjusted by multiple factors.

Conclusions : Chronic coffee consumption is inversely associated with blood pressure and albuminuria, and positively associated with urinary sodium

excretion.

Keywords : coffee; blood pressure; albuminuria; sodium