KSN 2020
FULLY VIRTUAL MEETING

Abstract Type : Oral
Abstract Submission No. : OR-1672

Glomerular hyperfiltration and cancer: a nationwide population-based study

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Objectives: Glomerular hyperfiltration is associated with all-cause mortality. Herein, we evaluated the association between glomerular hyperfiltration and the development of malignant disease, the most common cause of death, in an Asian population.

Methods: We retrospectively reviewed the National Health Insurance Service database of Korea for people who received national health screenings from 2012 to 2013. Glomerular hyperfiltration was defined as the 95th percentile and greater after adjusting for age and sex. We performed a multivariate Cox regression analysis using glomerular hyperfiltration at the first health screening as the exposure variable and cancer development as the outcome variable to evaluate the impact of glomerular hyperfiltration on the development of malignant disease.

Results: A total of 1,953,123 examinations who followed-up for 4.9 years were included in this study. Among the 8 different site-specific malignant disease categories, digestive organs and female genital organs showed a significant associations between glomerular hyperfiltration and malignancy. The population with glomerular hyperfiltration showed an increased risk for stomach cancer (adjusted hazard ratio [aHR] 1.27, 95% confidence interval [CI] 1.16-1.40, *P*-value <0.001), colorectal cancer (aHR 1.23, 95% CI 1.08-1.40, *P*-value 0.002), and liver or intrahepatic malignancy (aHR 1.40, 95% CI 1.20-1.64, *P*-value <0.001). In addition, the risk for uterine and ovarian cancer was significantly increased in the population with glomerular hyperfiltration (aHR 1.36, 95% CI 1.08-1.70, *P*-value 0.008).

Conclusions: Glomerular hyperfiltration was associated with an increased risk for the development of malignant diseases in specific organs, such as the stomach, colorectum, uterus, and ovary.

Figure 1. Adjusted hazard ratio for development of malignancy in the glomerular hyperfiltration group compared to control