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Insulin resistance is associated with incident chronic kidney disease in population with normal renal function

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Objectives: Insulin resistance is prevalent in chronic kidney disease (CKD) and may accelerate its progression. This study aimed to investigate whether insulin resistance was associated with the development of incident CKD in a population with normal renal function.

Methods: A total of 3,331 individuals with normal renal function from a community-based cohort formed the study population. We determined the relationship between insulin resistance indices and incident CKD using Cox proportional hazard model and Kaplan-Meier survival analysis.

Results: During a mean follow-up of 11.03 ± 4.22 years, incident CKD occurred in 414 (12.4%) participants. The high homeostasis model assessment-insulin resistance (HOMA-IR) level group had an increased risk of incident CKD (HR, 1.40; 95% CI, 1.13-1.74; p = 0.002) compared to the normal group after adjusting for confounding factors The risk of incident CKD also increased with lower quantitative insulin sensitivity check index (QUICKI) levels (HR, 0.62; 95% CI, 0.41-0.92; p = 0.018) and higher leptin-adiponectin ratio (LAR) levels (HR, 1.23; 95% CI, 1.06-1.42; p = 0.006).

Conclusions: Higher insulin resistance indices were associated with the incidence of CKD. Our data suggests that increased insulin resistance may be involved in the development of incident CKD in individuals with normal renal function.

Figure 1. Kaplan-Meier free-CKD probability curve with the log-rank test between high HOMA-IR group and incident CKD. High group is associated with poor free-CKD probability compared to normal group.