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Transient trace dip-stick albuminuria is associated with all-cause death, cardiovascular death, and incident chronic kidney disease

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Objectives: Although albuminuria is a well-known risk factor for end-stage kidney disease, all-cause mortality, and cardiovascular mortality, even if the degree of albumin-to-creatinine ratio is less than 30 mg/g, the clinical significance of transiently noticed albuminuria by dip-stick test in these major outcomes has not been evaluated.

Methods: We analyzed data from National Health Insurance Service-National Sample Cohort from Korea. Based on this cohort, we analyzed the effect of transient albuminuria on all-cause death, cardiovascular death, and incident chronic kidney disease (CKD) compared to a no albuminuria group.

Results: Among 1,025,340 individuals of the cohort, 121,876 and 2,815 were referred to the transient albuminuria group and the no albuminuria group, respectively. Adjusted hazard ratios of the transient albuminuria group for cardiovascular death and incident CKD were 1.76 (1.01 – 3.08) and 1.28 (1.15 – 1.43), respectively. There were significant differences in all-cause death, cardiovascular death, and incident CKD between transient albuminuria and no albuminuria groups after propensity score matching ($p = 0.0037$, $p = 0.015$, and $p < 0.0001$, respectively). Propensity score matching with bootstrapping showed that hazard ratios for all-cause death and cardiovascular death were 1.39 (1.01 – 1.92) and 2.18 (1.08 – 5.98), respectively.

Conclusions: Our study suggest that albuminuria were noticed transiently trace in dip-stick albuminuria might be an unneglectable risk factor for adverse outcomes in the future. If patients are noticed to have transient trace albuminuria by a urine dipstick test, continuous monitoring might be required.

Figure 1

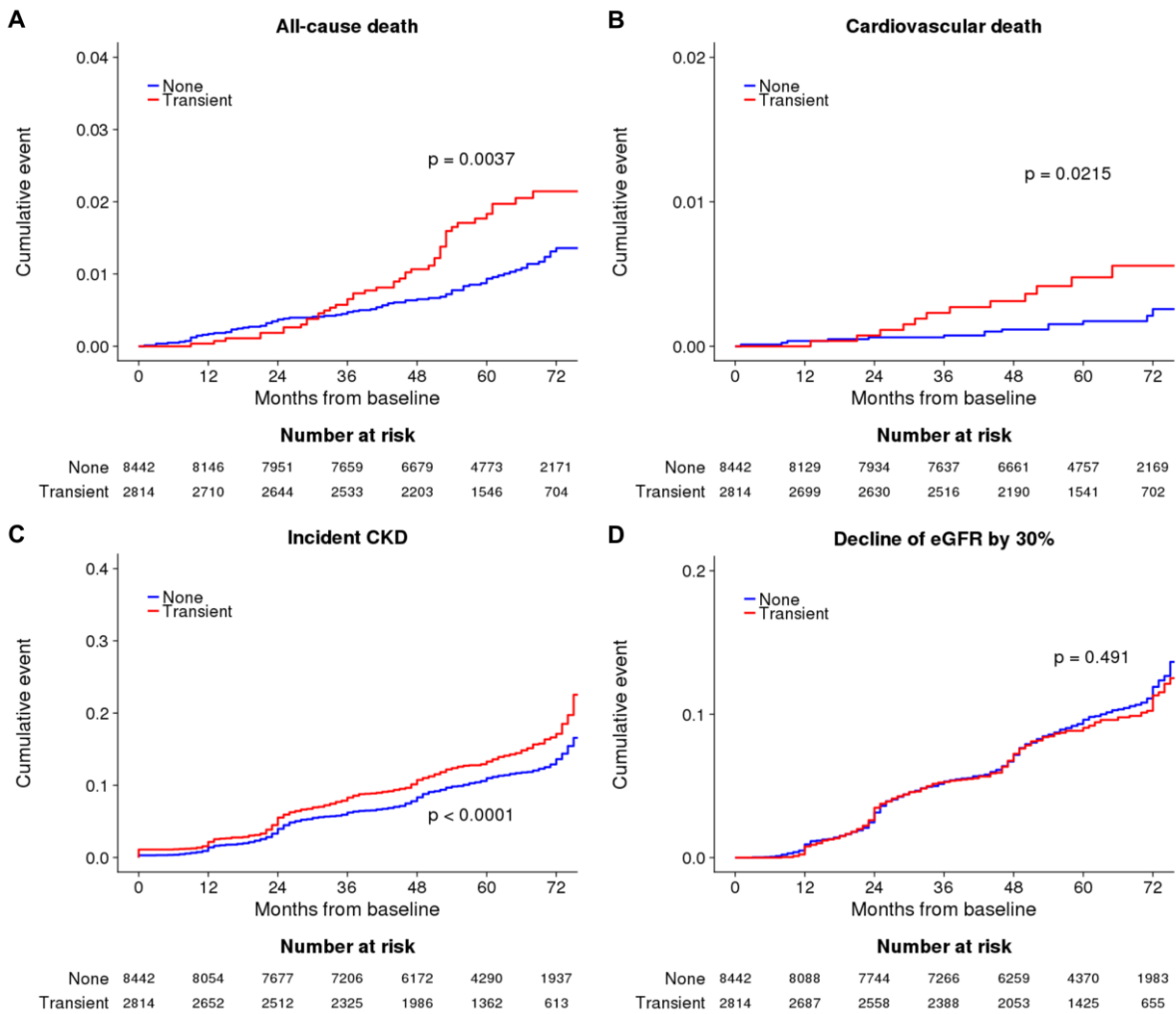


Figure 1. Kaplan-Meier curves of adverse outcomes after propensity score matching process for transient albuminuria and no albuminuria groups. The red line denotes the transient albuminuria group; The blue line indicates the no albuminuria group. Adverse outcomes included all-cause death (A), cardiovascular death (B), incident CKD (C), and a decline in eGFR by more than 30% from the baseline (D).

Figure 2

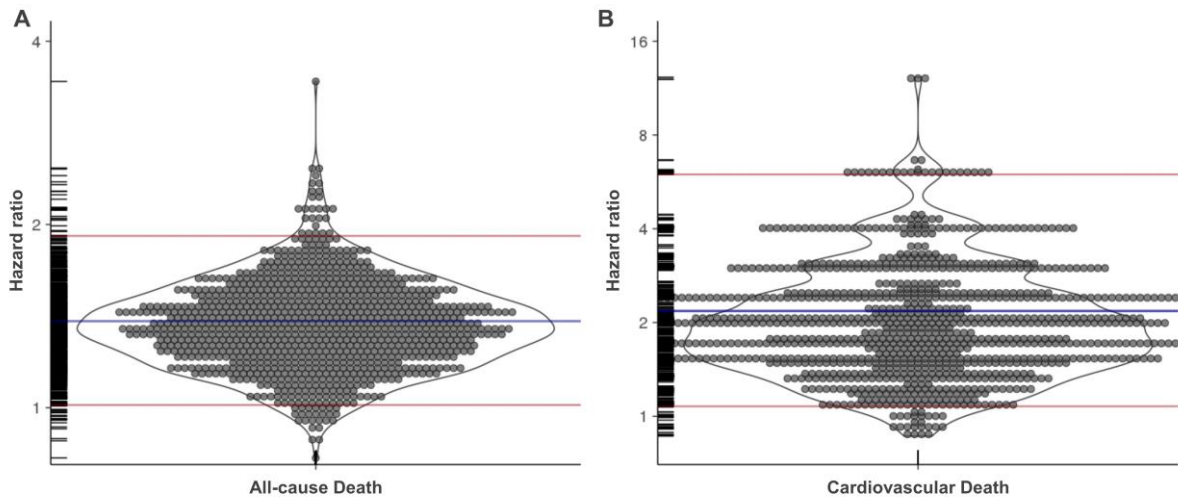


Figure 2. The hazard ratio of transient albuminuria on all-cause death and cardiovascular death after bootstrapping with propensity score matching. Each circle represents a hazard ratio for all-cause death (A) and cardiovascular death (B). Blue lines and red lines represent mean and 95% confidence intervals, respectively. Rug plot for data is displayed along the y-axis.