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Predicting risk factor of worsening kidney function in elderly Veteran population according to glycemic status

JUNG KWON, Hee Jeong Kim, **Jin Seon Jeong**

Department of Internal Medicine-Nephrology, VHS Medical Center, Korea, Republic of

Objectives : Diabetes mellitus is major cause of chronic kidney disease. Limited data relating risk factors for kidney disease across patients with or without diabetes. We aim to investigate risk factors to predict worsening kidney function in elderly veteran population with according to glycemic status.

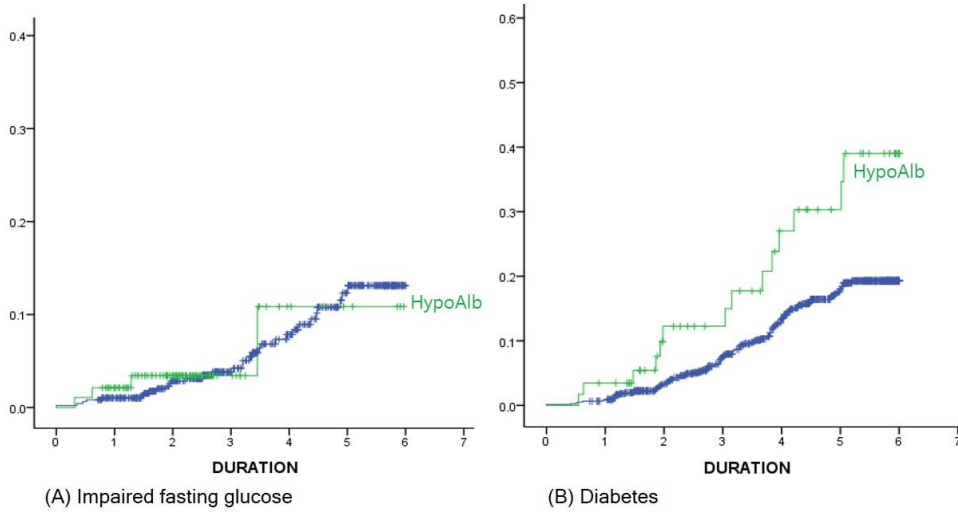
Methods : In this retrospective study, a total of 1665 patients who measured serum glucose and albumin level between January 2016 and May 2021 were included. We categorized patients according to glycemic status as three groups – normoglycemia, impaired fasting glucose and diabetes populations. We used Kaplan-Meier to plot the survival curve. The hazard ratios (HRs) of renal outcome (i.e., a 50% or more decrease of the estimated glomerular filtration rate) were calculated after using Cox regression model. Cox proportional hazards model was used to explore risk factors affecting the progression of CKD.

Results : During the median follow-up period of 3.5 years (maximum 6.0 years), the events of renal outcome occurred in 174 patients. The mean age of patients at enrolled was 76.2±9.2 years, 85% was male. Hypoalbuminemia (HR, 1.83, [95% CI 1.14-2.93]; P=0.012), hyperuricemia (HR, 1.02, [95% CI 1.10-1.17], P=0.019) and urine albumin to creatinine ratio (uACr, A3) (HR, 5.6 [95% CI 2.85-11.18], P<0.001) were risk factors for renal function decline in overall population. In diabetes population, hypoalbuminemia (HR, 2.24, [95% CI 1.28-3.91], P=0.005), hyperuricemia (HR, 1.10, [95% CI 1.00-1.20], P=0.043) and uACr (A3) (HR, 7.98, [95% CI 3.06-20.8], P<0.001) were risk factors of renal progression. In patients with impaired fasting glucose, only uACr(A3) (HR, 4.14, [95% CI 1.20-14.38], P=0.025) was a risk factor of renal progression.

Conclusions : Serum albumin, uric acid and uACr may be needed to predict the risk of worsening kidney function with diabetes. Higher uACr is also a risk factor in prediabetes.

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Figure 1. The correlation between albumin level and worsening of kidney function in IFG(A) and diabetes(B) group



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Figure 2. The correlation between uACr and worsening of kidney function in IFG and diabetes group
 A1: uACr < 30 mg/g, A2: 30 ≤ uACr ≤ 300 mg/g, A3: 300 < uACr mg/g

