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만성신부전에서의 알부민뇨와 빈혈의 상관관계: 유형별 만성신장질환자 생존 및 신기능 보존 10년 추적 조사 연구

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Albuminuria and Anemia in Chronic Kidney Disease: The KoreaN Cohort Study for Outcomes in Patients with Chronic Kidney Disease (KNOW-CKD)

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Background and Objectives: Anemia is common among patients with chronic kidney disease (CKD), and albuminuria is associated with unfavorable clinical outcomes in patients with CKD independent of estimated GFR (eGFR). We assessed the association of urine albumin creatinine ratio (ACR) and eGFR with anemia.

Design, setting, participants, and measurements: We conducted cross-sectional analyses of baseline data collected from KoreaN Cohort Study for Outcomes in Patients With Chronic Kidney Disease (KNOW-CKD). Multiple regression analysis was performed to identify albuminuria as an independent risk factor for anemia, and prevalence ratios for anemia were calculated by cross-categorization of ACR and eGFR.

Results: Among 1,056 patients, the mean age was 53.1±12.4 years, and the mean eGFR and ACR were 54.6±29.56 ml/min per 1.73m^2 and 733 mg/g, respectively. Anemia was present in 40.5% and transferrin saturation (TSAT) was <20% in 17.3% of the population. CKD patients with anemia were older and more likely to be women, have lower eGFR, and have diabetes, as cause of CKD, than CKD patients without anemia. Higher odds of anemia were observed in TSAT <20%, highest and lowest quintile of serum ferritin. The prevalence of anemia increased according to level of ACR, even after adjustment for age, sex, body mass index (BMI), current smoking, cause of CKD, use of erythropoiesis stimulating agents (ESA), TSAT, ferritin. Compared to the reference group with ACR <30 mg/g and eGFR ≥ 60 mL/min per 1.73m^2, albuminuria and eGFR were independently associated with anemia.

Conclusion: An independent, graded association was observed between a high ACR and the risk of anemia.

Key Words: 빈혈, 만성신부전, 알부민뇨
Anemia, Chronic kidney disease, Albuminuria