F-A4

비타민 D 결핍이 인슐린저항성에 대한 신기능의 한계점에 미치는 영향

서울대학교병원 내과

이성우, 오국환, 주권욱, 김연수, 김성권, 김동기

Does Vitamin D Deficiency affect Threshold Value of Glomerular Filtration Rate for Insulin Resistance?

Seong Woo Lee, Kook-Hwan Oh, Kwon Wook Joo, Yon Su Kim
Suhnggwon Kim, Dong Ki Kim

Seoul National University College of Medicine, Department of Internal Medicine

Background: There have been few or no literatures on the threshold value of glomerular filtration rate (GFR) for insulin resistance (IR). Despite of significant association between vitamin D deficiency (VDD) and GFR, or IR, the effect of VDD on the GFR threshold for IR has not been explored.

Methods: Data from the Korea National Health and Nutrition Examination Survey in 2008, 2009 and 2010 were analyzed. The study subjects comprised 17,418 participants aged ≥20 years with data on fasting glucose, insulin and serum creatinine who did not have diabetes and kidney failure (GFR <15 ml/min/1.73m^2). VDD is defined as <15 ng/ml of serum 25-hydroxyvitamin D. GFR and IR were estimated by the equation from Modification of Diet in Renal Disease study and Homeostatic model assessment (HOMA), respectively. The association between HOMA-IR and estimated GFR (eGFR) was analyzed by analysis of covariance.

Results: eGFR group was significantly associated with HOMA-IR (p<0.001), but the association was not linear (p-trend=0.602). For the threshold evaluation, we compared the reference (≥90 ml/min/1.73m^2) with the others, and found the HOMA-IR in groups of 60-70, 45-60 and 30-45 ml/min/1.73m^2 were significantly higher than the reference. Although eGFR group was significant factor for HOMA-IR in both groups of VDD (p=0.006) and no-VDD (p=0.027), the threshold value seemed different. In VDD group, the difference of HOMA-IR became evident firstly from the comparison between 60-70 and ≥90 ml/min/1.73m^2. However, in no-VDD group, the first difference of HOMA-IR was found in comparison between 45-60 and ≥90 ml/min/1.73m^2.

Conclusion: eGFR was significantly associated with HOMA-IR. However, the association was not linear. The eGFR threshold was found in 60-70 ml/min/1.73m2 in comparison with ≥ 90 ml/min/1.73m2. Although the eGFR threshold of VDD group was similar to the whole population, that of no-VDD group was lower (45-60 ml/min/1.73m2) which suggested sufficient vitamin D supply might prevent early elevation of IR through the progression of eGFR. Further study needs to be followed to confirm our study.

Key Words: 인슐린 저항성, 신기능, 비타민 D 결핍
Insulin resistance, Kidney function, Vitamin D deficiency