

비타민 D 결핍이 말기 신부전 환자의 빈혈과 연관있다: 단면연구

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Vitamin D Deficiency is Associated with Anemia in Patients with End-stage Renal Disease: A Cross-sectional Study

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Background: Despite new treatment strategies, anemia remains the most prevalent complication in patients with end-stage renal disease (ESRD). We investigated whether 25-hydroxyvitamin D3 [25(OH)D3] deficiency is associated with anemia in ESRD patients.

Methods: We reviewed medical records of 410 ESRD patients who had undergone renal transplantation (RTx) from April 2002 to December 2008 at Yonsei University Health System and whose 25(OH)D3 levels were measured two weeks before RTx. Patients were divided into two groups; group 1, 25(OH)D3 levels <10 ng/mL and group 2, 25(OH)D3 levels ≥10 ng/mL. We defined anemia as hemoglobin level <10 g/dL.

Results: The mean age was 40.7±11.4 years, and 262 patients (63.9%) were male. The mean serum 25(OH)D3 concentration was 11.1±6.4 ng/mL, while the mean 25(OH)D3 level were 6.5±1.8 ng/mL in group 1 and 17.2±5.6 ng/mL in group 2. A multivariate linear regression analysis showed that serum 25(OH)D3 level was independently associated with hemoglobin level after adjusting age, sex, log intact parathyroid hormone (iPTH), phosphate, alkaline phosphatase (ALP), log C-reactive protein (CRP), ferritin levels, and erythrocyte stimulating agent (ESA) dose ($\beta=0.035$; $p=0.039$). Multivariate logistic regression analysis also showed that vitamin D deficiency was an independent risk factor for developing anemia (group 1 vs. 2, odds ratio=3.283; 95% confidence interval=1.040-10.362; $p=0.043$) after adjusting for age, sex, log iPTH, phosphate, ALP, log CRP, ferritin levels, and ESA use.

Conclusion: Vitamin D deficiency is significantly associated with anemia in patients with ESRD. Randomized controlled trials are needed to determine if vitamin D supplementation can improve anemia in these patients.

Key Words: 비타민 D 결핍증, 빈혈, 말기 신부전

Vitamin D deficiency, Anemia, End-stage renal disease