

**Abstract Type : Poster**

**Presentation No. : PNO 041**

**Vitamin D deficiency is associated with erythropoietin deficiency and endogenous erythropoietin resistance in patients with chronic kidney disease**

**Il Young Kim**<sup>1</sup>, June Hyun Kim<sup>1</sup>, Min Jeong Kim<sup>1</sup>, Dong Won Lee<sup>1</sup>, Soo Bong Lee<sup>1</sup>, Miyeun Han<sup>2</sup>, Harin Rhee<sup>2</sup>, Sang Heon Song<sup>2</sup>, Ihm Soo Kwak<sup>2</sup>

<sup>1</sup>Department of Internal Medicine-Nephrology, Pusan National University Yangsan Hospital, Korea, Republic of

<sup>2</sup>Department of Internal Medicine-Nephrology, Busan National University Hospital, Korea, Republic of

**Objectives:** Erythropoietin (EPO) deficiency and resistance to endogenous EPO is an important pathophysiological feature in anemia of chronic kidney disease (CKD). 1,25 dihydroxyvitamin D [1,25(OH)<sub>2</sub>D] deficiency is known to contribute to anemia of CKD. We aimed to investigate the associations between serum 1,25(OH)<sub>2</sub>D and anemia, EPO deficiency, and endogenous EPO resistance in patients with CKD

**Methods:** This study included 409 patients with CKD [glomerular filtration rate (GFR) < 60 ml/min/1.73m<sup>2</sup>] who were not on dialysis therapy. Patients on exogenous EPO therapy and patients with iron deficiencies were excluded. Endogenous EPO resistance was assessed by calculating the ratio of endogenous EPO to hemoglobin (Hb) (endogenous EPO/Hb ratio). The associations of Hb level, endogenous EPO level, and the endogenous EPO/Hb ratio with clinical and laboratory variables were investigated by univariate and multivariate analyses.

**Results:** In univariate analysis, serum 1,25(OH)<sub>2</sub>D level was correlated with the Hb level, endogenous EPO level, and the endogenous EPO/Hb ratio. Multiple regression analysis revealed that the serum 1,25(OH)<sub>2</sub>D level remained significantly associated with the Hb level ( $\beta = 0.523$ ,  $P < 0.001$ ), endogenous EPO level ( $\beta = 0.119$ ,  $P = 0.034$ ), and the endogenous EPO/Hb ratio ( $\beta = -0.106$ ,  $P = 0.035$ ), even after adjusting for other confounding factors, including the levels of parathyroid hormone and the inflammatory marker C-reactive protein.

**Conclusions:** The serum 1,25(OH)<sub>2</sub>D level exhibited significant associations with anemia, EPO deficiency, and endogenous EPO resistance in CKD patients. These associations were independent of secondary hyperparathyroidism and inflammation status.