F-D6

복막투석 환자에서 인산청소율과 무기질 대사 지표의 관계

서울대학교 의과대학 내과학교실

이용진, 허혁, 이하정, 김동기, 주권욱, 한진석, 김성권, 안규리, 김연수, 오국환

Phosphorus Clearance is associated with Mineral Metabolic Parameters in Peritoneal Dialysis Patients

Yong Jin Yi, Hyuk Huh, Ha Jeong Lee, Dong Ki Kim, Kwon Wook Joo, Jin Suk Han
Suhng Gwon Kim, Curie Ahn, Yon Su Kim, Kook Hwan Oh

Department of Internal Medicine, Seoul National University Hospital

Background: Hyperphosphatemia is an important risk factor related to chronic kidney disease-mineral bone disorder (CKD-MBD) in peritoneal dialysis (PD) patients. Serum phosphate levels and mineral metabolic parameters are suspected to be influenced by phosphate clearance, but there is lack of studies for the influence of phosphate clearance in PD patients.

Methods: In this cross-sectional study conducted between April 2013 and February 2014, measurements of PD adequacy and phosphate clearance from 152 CAPD patients were collected. We analyzed association between peritoneal phosphate clearance (PPhCl) and peritoneal equilibration test (PET) type by ANOVA test. The impact of phosphate clearances on serum phosphate levels, and heart-to-femoral pulse wave velocities (hfPWV) were analyzed by using multiple linear regression analysis.

Results: Among total 152 subjects, 92 (60.5%) were male and the mean age was 48.7±14.9 years. Mean duration of PD was 48.6±44.9 months and total Kt/V and renal Kt/V were 1.89±0.50 and 0.39±0.55, respectively. Ninety one subjects had residual renal function. The mean peritoneal, renal and total phosphate clearances (PPhCl, RPhCl and TPhCl) were 30.6±13.6, 12.8±18.7 and 47.4±19.6 L/week/1.73m^2, respectively. PPhCl was significantly different across the PET types. High transporters had higher PPhCl than low transporters, and high-average transporters exhibited higher PPhCl than low-average or low transporters ($p<0.001$). In multiple linear regression analysis, serum phosphate levels were associated with TPhCl (β=-0.022±0.006 L/week/1.73m^2, $p<0.001$) and non-calcium-based phosphate binder uses (β=1.15±0.28, $p<0.001$. The r^2 of the model was 0.264). In the subsequent analysis, RPhCl was significantly associated with serum phosphate level ($p<0.001$), but PPhCl was only marginally associated with serum phosphate level ($p=0.056$). Aortic stiffness, represented by hfPWV, was associated with TPhCl (β=-2.59±1.08, $p=0.019$), age (β=10.72±1.66, $p<0.001$) and diabetes status (β=285.50±51.65, $p<0.001$. The r^2 of the model was 0.521)

Conclusion: In PD patients, total and renal phosphate clearance and status of non-calcium-bases phosphate binder are independently associated with the serum phosphate level. Monitoring phosphate clearance in PD patients is warranted for the adequate control of mineral metabolic parameters in dialysis patients.

Key Words: 복막투석, 고인산혈증, 인산청소율
Peritoneal dialysis, Hyperphosphatemia, Phosphate clearance