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The effect of Phoxilium® on prognostic predictors in patients undergoing continuous venovenous hemodiafiltration

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Objectives: Phoxilium® has been widely used for prevention of hypophosphatemia in patients undergoing continuous venovenous hemodiafiltration (CVVHDF). To date, levels of phosphorus are related to mortality and also affect production and maintenance of red blood cell. The aim of this study is to show the effect of Phoxilium® on prognostic predictors such as serum phosphorus, hemoglobin (Hb) and red blood cell width-coefficient of variance (RDW-CV).

Methods: A total of 272 patients were enrolled in medical ICU between 2017~2019 and classified into two groups according to use of Phoxilium® within 48hrs after start of CVVHDF (Phoxilium® group (**P**), n=176 vs. non-Phoxilium® group (**NP**), n=96). We collected calcium/phosphorus/Hb/RDW-CV at initial point and 48hrs after CVVHDF and severity indices such as SOFA and APACHE II were also collected.

Results: P group has lower phosphorus and albumin level and higher RDW-CV than NP group (phosphorus: 5.0 ± 2.8 vs. 7.3 ± 4.3 mg/dL, albumin: 3.1 ± 0.6 vs. 3.5 ± 0.9 g/dL, RDW-CV 15.7 ± 2.6 vs. 14.6 ± 1.9 %, $P < 0.001$). There is no significant difference between two groups as for age, sex, hemodynamic parameters, CVVHDF dose and severity indices (SOFA, APACHE II). In Cox proportional hazard regression of P group, serum phosphorus level (P48hrs) and RDW-CV at 48hrs (RDW-CV48hrs) were related to mortality (P48hrs: HR 1.623, 95% CI 1.273~2.070, $P < 0.001$; RDW-CV48hrs: HR 1.115, 95% CI 1.003~1.241, $P = 0.045$). In NP group, serum phosphorus level at 48hrs (P48hrs) were significant predictors of mortality (P48hrs: HR 1.209, 95% CI 1.004~1.445, $P = 0.045$).

Conclusions: Serum phosphorus level at 48hrs after CVVHDF is a common predictor of mortality irrespective of Phoxilium® use in contrast with initial serum phosphorus level. Interestingly, RDW-CV can be applicable only to Phoxilium® group as a predictor of mortality, unlike a non-Phoxilium® group.