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The Assessment of Seasonal variation for Potassium level in Hemodialysis Patients using DialysisNet

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Objectives: Hyperkalemia is common, but serious complication in end-stage renal disease (ESRD) patients that should be managed carefully. Dietary restriction is critical in ESRD patients with reduced potassium excretion. There are differences in dietary habits culturally, and seasonal intake of foods and fruits may be different in the same culture. So, seasonal levels of potassium may be different, but research on this is scarce.

Methods: We performed a multicenter cohort study using DialysisNet in hemodialysis patients treated at one of four Korean hospitals from January 2016 to December 2016. Blood tests were performed monthly, and patients enrolled for more than 8 months of potassium testing were included. K-means, nonhierarchical method was used for clustering groups. Seasonal differences in potassium levels were analyzed by chi-square test.

Results: The total of 279 patient were analyzed. Mean patient age was 63.3 ± 13.1 years and 55.9 % were men. Overall mean potassium level was 5.08 mmol/L. Overall mean Kt/V was 1.63 per week. Trajectory analysis revealed that 52% of patients (N=146) were included in the normal group (K 4.6 ± 0.4 mmol/L), and 47% (N=133) were included in the abnormal group (K 5.6 ± 0.4 mmol/L). Mean potassium level was the highest in December among the normal group, while mean potassium level was the highest in July among the abnormal group. There were no significant differences in potassium levels by season among the normal potassium groups. However, in abnormal potassium group, potassium level was significantly higher in summer than in autumn ($p < 0.001$) and than in spring ($p = 0.007$).

Conclusions: Potassium level was significantly higher in summer compared to potassium level in autumn and in spring among the abnormal potassium group of hemodialysis patients.