



Shaping Tomorrow's Nephrology: Insight-Driven Kidney Care

KSN SEOUL, KOREA
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The 46th Annual Meeting of the Korean Society of Nephrology

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COEX, Seoul, Korea

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Abstract Topic : Acute Kidney Injury

Assessment of Correlation Between Effluent Fluid Ionized Calcium and Post-Filter Ionized Calcium in Critically Ill Patients Undergoing Regional Citrate Anticoagulation in Continuous Renal Replacement Therapy (RCA-CRRT)

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Objectives : Regional citrate anticoagulation (RCA) is standard for continuous renal replacement therapy (CRRT). While post-filter ionized calcium (Post-Filter iCa) is the gold standard for monitoring efficacy, it requires invasive blood sampling. This study assessed whether measuring ionized calcium in the effluent waste fluid (Effluent iCa) could serve as a viable alternative.

Methods : In a prospective study at West China Hospital (June–November 2024), 36 critically ill patients on CVVHDF with RCA were enrolled. We analyzed 216 paired samples of Post-Filter iCa and Effluent iCa. Correlation and agreement were evaluated using Pearson correlation and Bland-Altman analysis. Unsupervised cluster analysis identified patient phenotypes based on calcium profiles.

Results : A significant correlation was found between Post-Filter iCa and Effluent iCa ($r=0.551$, $p<0.001$). Bland-Altman analysis showed a minimal mean bias of -0.024 mmol/L, with 95% limits of agreement from -0.153 to 0.105 mmol/L. Cluster analysis revealed three distinct profiles: a stable majority (63%), a high-calcium group (20%) suggesting suboptimal anticoagulation, and a low-calcium group (17%) indicating more intense anticoagulation.

Conclusions : Effluent iCa significantly correlates with Post-Filter iCa. Its use as a monitoring tool can reduce iatrogenic blood loss and clinical workload while providing a reliable phenotypic marker of anticoagulation intensity during RCA-CRRT.

Fig 1.jpg



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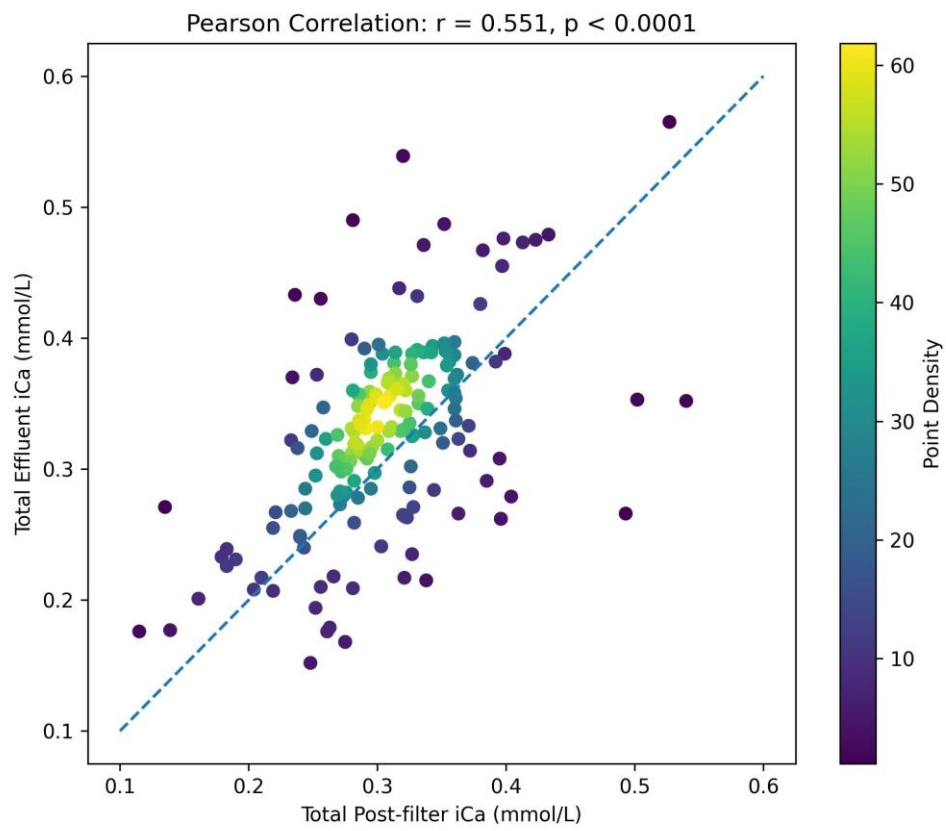


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K-means Clustering of Total iCa Data (n=3 clusters)

