



Abstract Type : Oral presentation

Abstract Submission No.: A-0708

Abstract Topic : Basic Research

Alteration of Cyclo(His-Pro) Levels After Hemodialysis and Its Association with Immune Cell Profile Changes in End-Stage Kidney Disease

Jin-kyung Kwon¹, Jae-iK Oh³, Seong Min Lee², Dong Ki Kim¹, Seung Hee Yang¹, Sehoon Park¹

¹Department of Internal Medicine-Nephrology, Seoul National University Hospital, Korea, Republic of

²Department of Biomedical Science, Seoul National University College of Medicine, Korea, Republic of

³Department of Internal Medicine, Seoul National University College of Medicine, Korea, Republic of

Objectives : Cyclo(His-Pro) is a naturally occurring cyclic dipeptide with known antioxidant and anti-inflammatory properties. Recent studies suggest its potential as a biomarker for clinical severity in end-stage kidney disease (ESKD). Since hemodialysis alters circulating metabolites, we evaluated whether Cyclo(His-Pro) levels change after dialysis and whether such changes are linked to immune cell profile alterations.

Methods : Eighteen ESKD patients undergoing maintenance hemodialysis at a tertiary hospital in Korea were enrolled. Blood samples were collected before and after a single dialysis session. Cyclo(His-Pro) levels were measured using liquid chromatography–mass spectrometry (LC-MS). In 8 representative patients, peripheral blood mononuclear cell (PBMC) profiles were analyzed using single-cell RNA sequencing (scRNA-seq) pre- and post-dialysis.

Results : Cyclo(His-Pro) levels significantly decreased after dialysis (mean: 35.45 → 25.50 ng/mL, $P < 0.001$). This reduction was not associated with sex, dialysis filter type, or cardiovascular disease history. However, patients with lower baseline blood urea nitrogen (BUN) showed a significantly greater reduction in Cyclo(His-Pro) (mean difference: 16.25 vs. 7.53 ng/mL, interaction $P = 0.005$). scRNA-seq analysis revealed that decreases in Cyclo(His-Pro) were associated with reduced CD4⁺ T cells and B cell subsets, while natural killer T cells were relatively unchanged. Monocyte proportions increased modestly post-dialysis.

Conclusions : Cyclo(His-Pro) levels decrease significantly after hemodialysis, especially in patients with lower uremic burden. These changes correlate with shifts in immune cell populations, suggesting a potential role for Cyclo(His-Pro) in inflammation regulation in dialysis patients. It may serve as a useful biomarker for immune modulation in ESKD.

그림 2.jpg

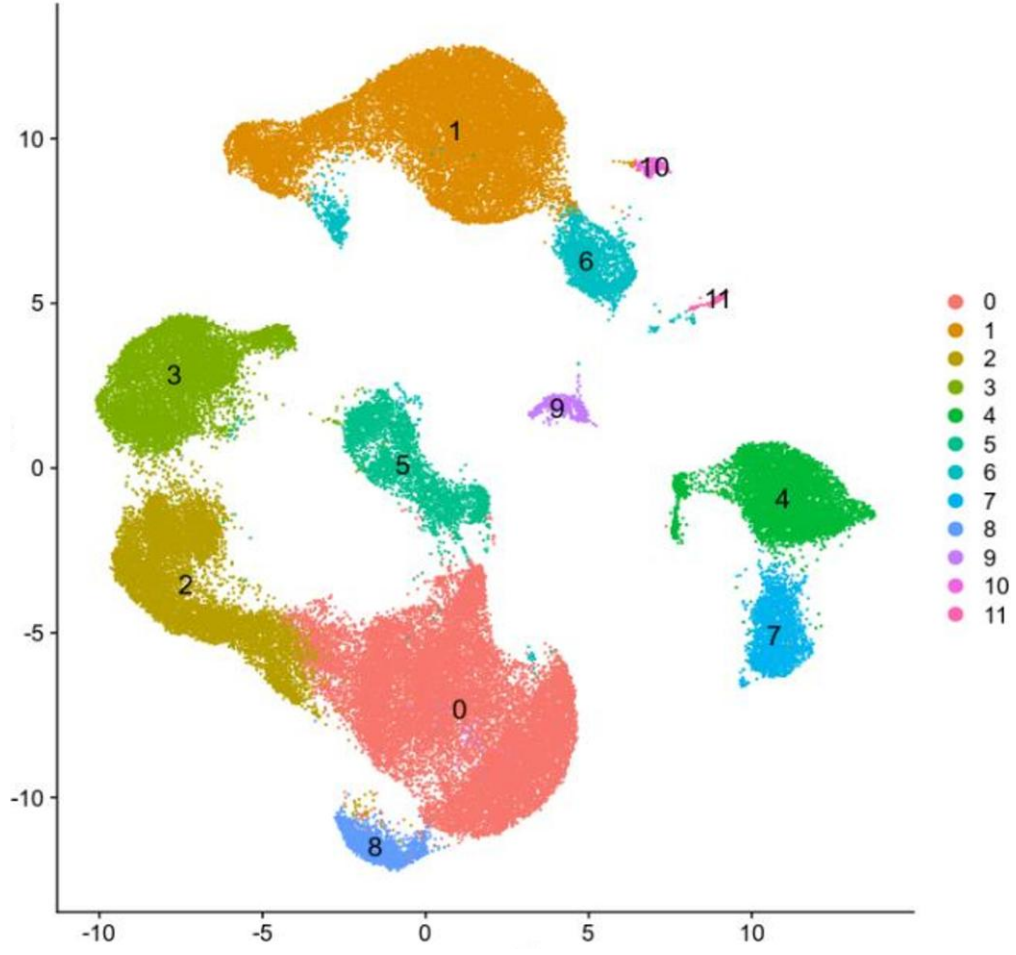


그림 2.jpg

