THE KOREAN SOCIETY OF NEPHROLOGY
APCN & KSN 2024
June 13(Thu) - 16(Sun), 2024 Coex, Seoul, Korea
Promoting Sustainable Kidney Health: The Asia-Pacific and Beyond

Abstract Submission No.: A-0647

CFD as a Novel Serum Biomarker of Lupus Nephritis and Renal Pathology Activity

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Objectives : Lupus nephritis (LN) is a devastating chronic kidney disease (CKD) caused by Systemic lupus erythematosus (SLE) , an autoimmune disease that involves a loss of immune tolerance to endogenous materials and causes inflammatory responses and multiple organ damage. Omics approaches, such as mass spectrometry (MS) and protein array technologies could facilitate the discovery of robust and disease-specific biomarkers in SLE and LN.
Methods : Serum samples from LN patients (N = 40) and healthy controls (N = 40) were used for the initial discovery study using mass spectrometry.The PPI network was constructed by mapping the protein list to the Search Tool for the Retrieval of Interacting Genes (STRING) with the full STRING network. Then Cytoscape and its plug-in MCODE were utilized to identify key protein networks. A cohort of 80 serum samples was used and validated with commercially available ELISA kits.The correlation between clinical indicators was analyzed.
Results : The differential protein enrichment analysis was mainly based on the complement pathway, and the key network was selected as the complement protein network using Cytoscape plug-in MCODE.CFD appeared to be the most promising marker in distinguishing LN from HC with an area-under-the-curve (AUC) of 0.81. CFD could also discriminate proliferative LN and non-proliferative LN. Furthermore, serum CFD levels were positively correlated with AI (Spearman's Rank Correlation Coefficient rs = 0.53, $p < 0.001$), urine protein/creatinine (rs = 0.32, $p < 0.001$), and serum creatinine (rs =0.41, $p< 0.001$). An independent cohort of n = 80 subjects were used for ELISA validation.In the validation cohort, CFD was significantly elevated in proliferative lupus nephritis, with a more statistically significant association with clinical parameters.
Conclusions : CFD may be a promising novel serum biomarker and therapeutic target in LN.

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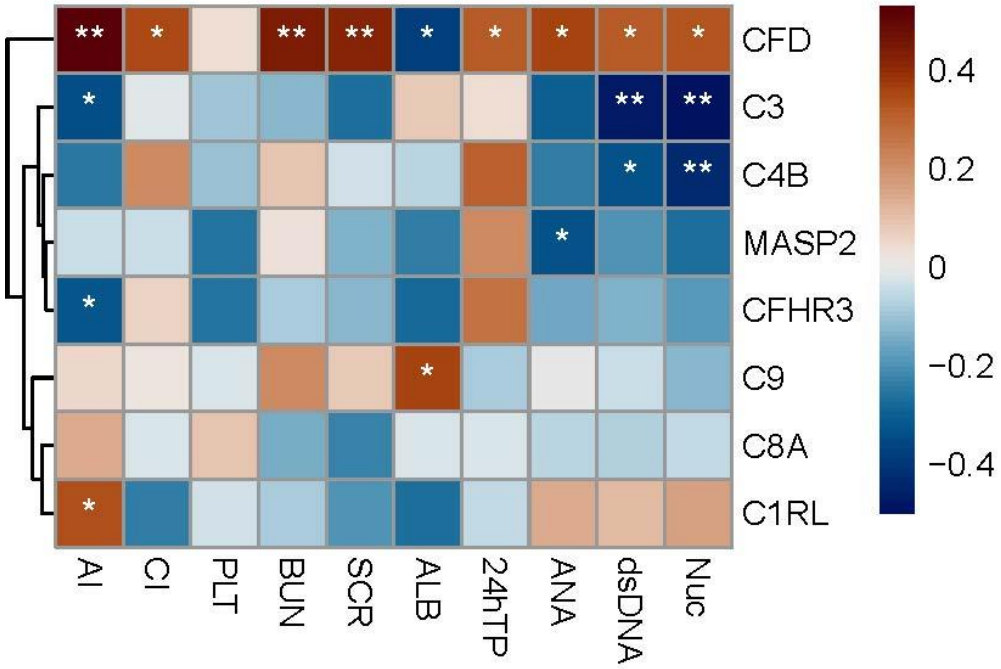

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