CHRONIC KIDNEY DISEASE.
PATHOPHYSIOLOGY, PROGRESSION & RISK FACTORS - 2

UP-REGULATION OF INFLAMMATORY MEDIATORS AND MARKERS OF METABOLIC DERAIGNMENT IN END STAGE RENAL DISEASE AS STUDIED BY BIOCHIP ARRAY ANALYSIS

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Introduction and Aims: End stage renal disease represents a complex syndrome with multiple pathophysiological processes involving vascular, inflammatory, thrombotic, and metabolic derangement. This study was designed to utilize biochip array technology to compare the inflammatory and metabolic syndrome biomarker profiles of a maintenance hemodialysis cohort (n=81) with healthy normal male and female volunteers (n=41).

Methods: The ESRD group represented patients who are under maintenance hemodialysis at the Loyola University Clinic (n=81) and a group of healthy normal individuals (n=50). High sensitivity inflammatory cytokine chips to profile IL-2, IL-4, IL-6, IL-8, IL-10, VEGF, IFN-gamma, IL-1 alpha, IL-1 beta, MCP1, and EGF and metabolic array chip to analyze C-Peptide, ferritin, resistin, insulin, leptin, and PAI-1 were used employing Evidence Investigator (Randox, UK).

Results: In the inflammatory biochip array analysis, except for IL-2 and EGF, all the inflammatory biomarkers were found to be significantly higher than the normal group (p<0.0001). The ESRD group exhibited marked variations in the circulating levels of the inflammatory mediators and the extent of increase also varied. In the metabolic chip array analysis, all of the markers of metabolic derangement were significantly increased (p<0.001), except insulin, where a trend towards increased levels was noted.

Conclusions: These results clearly demonstrate the complexity of the pathophysiologic event in ESRD patients. A widespread increase in the inflammatory mediators, coupled with the higher levels of metabolic derangement markers suggest that the ESRD patients not only have an ongoing inflammatory process but also sustain metabolic derangement. Profiling of these mediators not only provides an understanding of the pathogenesis of this condition, but may be helpful in the risk stratification and clinical management of these patients.