



Analysis of time-dependent variability in cardiometabolic risk factors, biochemical and immunological markers in patients with end-stage renal disease undergoing hemodialysis

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Abstract: Hemodialysis patients (HP) are exposed to malnutrition, cardiometabolic and pro-inflammatory risk factors. However, limited knowledge of variability in these risk factors remains a central limitation for adequate clinical management of PH. From a longitudinal study, we investigated the relationship between time-dependent variability in cardiometabolic risk factors and biochemical markers with cytokines and adipokines circulating levels in HP. Thirty-eight HP (women = 15, men = 23) aged 54.13 ± 16.78 years old underwent three independent anthropometric, nutritional, biochemical and immunological assessments (1, 6 and 12 months). Patient's characteristics (body mass, comorbidities, history of kidney disease and time on hemodialysis) were similar after sex stratification. From grouped data, 31.6 to 100.0% HP exhibited multiple malnutrition and cardiometabolic risk factors in all time-points evaluated. All anthropometric and nutritional results and most biochemical markers were similar in 1, 6 and 12 months follow-up, indicating a marked time-dependent stability. Urea, creatinine, total proteins, albumin, adipokines (adiponectin, leptin and resistin) and cytokines (TNF, IL-6 and IL-10) levels were highly variable in 12 months follow-up. Direct correlations between leptin and fat mass, TNF and IL-6 with creatinine and pre-dialysis urea were observed in all time-points (1, 6 and 12 months). Creatinine and pre-dialysis urea were negatively correlated with IL-10 for the entire follow-up. Fat mass, creatinine and pre-dialysis urea were predictive markers of leptin, TNF, IL-6 and IL-10 variability. Our findings indicated that biochemical, nutritional and cardiovascular risk factors exhibit low time-dependent variability in HP under clinical and nutritional monitoring. However, adipokines and cytokines are highly variables, which can potentially be influenced by body adiposity, creatinine and urea clearance. Thus, these parameters can contribute to predict the inflammatory status in HP.

Keywords: Malnutrition; Hemodialysis; Inflammation; Kidney disease.

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