DIALYSIS ADEQUACY IS RELATED WITH CYTOKINES AND CHEMOKINES CIRCULATING LEVELS IN PATIENTS WITH END-STAGE RENAL DISEASE

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ABSTRACT: The accumulation of uremic toxins is associated to systemic inflammation and mortality in patients with end-stage renal disease (ESRD) undergoing hemodialysis (HD). Although the dialysis dose modulates the clearance of low molecular weight toxins, the relationship between dialysis adequacy and systemic inflammatory mediators is often overlooked. Thus, the relationship between dialysis adequacy and the levels of pro- and anti-inflammatory cytokines and chemokines were investigated. Forty-four volunteers (19 women and 25 men) with ESRD undergoing hemodialysis were investigated in this cross-sectional study. Age, body mass index, time in HD, nutritional status, Kt/V and blood biochemical parameters was similar in patients of both genders ($P>0.05$). Thus, patients were stratified by dialysis adequacy measured according Kt/V method (adequate $Kt/V\geq1.2$). Post-HD urea, creatinine, cytokines (IFN-γ, IL-4 and IL-10) and chemokines (CCL-2, CCL-5, CXCL-8 and CXCL-10) were higher in patients with $Kt/V<1.2$ ($P<0.05$). Kt/V exhibited significant correlation with CXCL-10/IP-10 serum levels. Positive correlation between creatinine with IFN-γ, CCL-2/MCP-1, and CXCL-10/IP-10, and negative correlation with IL-10 was identified in patients with $Kt/V<1.2$ ($P<0.05$). In patients with $Kt/V\geq1.2$, only IL-10 was positively and CXCL-10/IP-10 negatively correlated with creatinine levels ($P<0.05$). Kt/V and creatinine levels exhibited variable predictive value (Kt/V= 27% to 37%, creatinine= 29% to 47%) to explain cytokines and chemokines circulating levels in patients with adequate and inadequate dialysis dose. Taken together, our findings provide evidence that in addition to modulating uremic toxins levels, such as urea and creatinine, the dose of dialysis is associated with circulating levels of inflammatory mediators. Thus, low Kt/V results and creatinine accumulation are closed correlated with increased levels of proinflammatory cytokines and chemokines, as well as a reduction in anti-inflammatory cytokines.
Keywords - Hemodialysis, inflammation, kidney disease, pathology, uremic toxins.

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