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Increased macrophage activation marker soluble CD163 is associated with graft dysfunction and metabolic derangements in renal transplant recipients

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Objectives: Renal allograft is vulnerable to numerous insults and is associated with metabolic derangements. Macrophages are regulators of inflammation and play a role in obesity, lipid metabolism and insulin resistance (IR). The present study was designed to assess macrophage activation, reflected by serum soluble CD163 (sCD163), in renal transplant recipients (RTR) and its relation to chronic allograft dysfunction (CAD) and metabolic derangements

Methods: Fifty recipients of renal transplantation (RT) [22 with stable renal function and 28 with CAD] and 20 age- and sex-matched healthy controls were enrolled in the study. Serum sCD163 and high sensitivity C-reactive protein (hsCRP) were measured using enzyme linked immunosorbent assay. Anthropometric measurements, renal function, lipid profile and homeostatic model assessment of IR (HOMA-IR) were estimated. Renal interstitial fibrosis (IF) was graded in renal biopsies of CAD.

Results: RTR mean age was 38.84±9.28 years and 83% of them were males. Post-transplant dyslipidemia, diabetes and IR (HOMA-IR >2) were present in 42%, 24% and 86% of RTR respectively. Serum sCD163 levels were significantly higher in RTR with stable renal function and CAD than in healthy controls (814.41±59.62 ng/ml and 1021.21±120.82 ng/ml vs. 602.90±114.98 ng/ml respectively) and in RTR with CAD than in patients with stable renal function ($P < 0.001$). Serum sCD163 levels were positively correlated with body mass index, waist-to-hip ratio, worsening renal function, dyslipidemia, HOMA-IR and serum hsCRP in RTR and with the degree of renal IF in RTR with CAD ($P < 0.05$). ROC curve showed that serum sCD163 was superior to serum hsCRP in detecting CAD after RT (AUC = 0.972 vs. 0.753 respectively, $P = 0.001$).

Conclusions: Macrophage activation, reflected by increased circulating sCD163, may play a role in the development of CAD and metabolic derangements after RT. Serum sCD163 could be a potential biomarker for renal allograft dysfunction.