

Elevated Levels of Circulating Macrophage-related Inflammatory Cytokines in Type 2 Diabetic Patients with Chronic Kidney Disease

Session Published Only

Published Only

Number 2424-PO

Category Complications–Nephropathy–Clinical and Translational Research

Author(s) VADIM V. KLIMONTOV, NATALIA E. MYAKINA, NADEZDA V. TYAN, VYACHESLAV V. ROMANOV,
Novosibirsk, Russian Federation

A growing body of evidence indicates that chronic macrophage-mediated inflammation is involved in the pathogenesis of diabetic nephropathy. The macrophage colony stimulating factor (M-CSF), macrophage inflammatory protein 1alpha (MIP-1alpha) and macrophage migration inhibiting factor (MIF) are secreted pro-inflammatory cytokines that regulate the process of proliferation and/or activation of macrophages. In the present study we assessed the relation between serum levels of these mediators and markers of chronic kidney disease (CKD) in type 2 diabetic patients.

Sixty four diabetic subjects, 14 M/50 F, 43-70 years of age, were observed. Nineteen patients had estimated glomerular filtration rate (eGFR) <60 mL/min/1.73 m². Elevated urinary albumin-to-creatinine ratio (UACR) was revealed in 15 subjects. The serum levels of macrophage-related cytokines (M-CSF, MIP-1alpha, MIF), other inflammatory markers (C-reactive protein, IL-6), urinary albumin and type IV collagen excretion were determined by ELISA and compared to control (15 healthy subjects). In patients with reduced eGFR the levels of M-CSF, MIP-1alpha, MIF and IL-6 exceeded control significantly ($p < 0.0001$, $p = 0.002$, $p = 0.02$, $p = 0.02$). Patients with eGFR ≥ 60 mL/min/1.73 m² demonstrated increase in M-CSF and MIF levels only ($p = 0.0003$ and $p = 0.001$). Concentrations of M-CSF and MIP-1alpha, as well as urinary type IV collagen, were higher in patients with reduced GFR as compared to those without ($p = 0.02$, $p = 0.02$ and $p = 0.01$). Patients with elevated UACR differed from other ones by M-CSF level ($p = 0.01$). M-CSF and MIP-1alpha correlated positively with serum IL-6 ($r = 0.59$, $p < 0.0001$; $r = 0.61$, $p < 0.0001$) and type IV collagen excretion ($r = 0.31$, $p = 0.01$; $r = 0.4$, $p = 0.001$).

These data indicate that elevated serum levels of macrophage-associated inflammatory mediators (primarily M-CSF and MIP-1alpha) are related to CKD in type 2 diabetic patients.

Keywords Diabetic Nephropathy, Inflammation
