

Increased CRP: An extended biomarker of microvascular risk in men with type 2 diabetes

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Abstract

Background: The usefulness of C-reactive protein (CRP) to predict cardiovascular disease (CVD) in type 2 diabetes (T2DM) remains controversial. As many factors linked to obesity can modulate CRP in T2DM, we comprehensively revisited the cardiometabolic phenotype of patients with normal or raised CRP, taking into account the sexual dimorphism of its serum value.

Methods: 1005 T2DM patients (651 males, 354 females; macroangiopathy 38%; coronary artery disease 26%; microangiopathy 47%) were divided depending on whether CRP level was $\leq$ or >3 mg/L. Thirty percent of men ($n = 195$) and 39% of women ($n = 137$) had raised CRP. Their cardiometabolic phenotype and presence of micro- and macrovascular complications were compared to those with normal CRP.

Results: In both gender, patients with elevated CRP had higher body mass index, waist circumference, fat mass, visceral fat, insulinemia, HbA1c, and lower muscle mass and insulin sensitivity. They had more atherogenic dyslipidemia, higher non-HDL-C and apolipoprotein B₁₀₀, and more lipoprotein(a) (+59% in men and +38% in women). In both sexes, there was no difference between patients with normal or high CRP regarding overall macroangiopathy (42% vs. 45% [men]; 27% vs. 28% [women]), coronary and peripheral artery disease, or stroke. Only in men, microangiopathy was more prevalent when CRP was raised (61% vs 44%; $p < 0.0001$).

Conclusions: This study shows major sex-related differences in microangiopathies in T2DM patients with high CRP levels. The latter are unrelated to prevalent CVD despite an unfavorable metabolic phenotype. By contrast, increased CRP may represent an extended biomarker of microvascular risk in men with T2DM.

Keywords: CRP; Cardiovascular disease; Gender; Lipoprotein(a); Microangiopathy; T2DM.