Lymphocyte-suppressing, endothelial-protective and systemic anti-inflammatory effects of metformin in fenofibrate-treated patients with impaired glucose tolerance

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Abstract:

Background: No previous clinical study has been designed to assess the additive effect of metformin and a fibrate on lymphocyte secretory function. The aim of our study was to investigate whether metformin produces any effect on lymphocyte cytokine release in fibrate-treated patients with early glucose metabolism abnormalities.

Methods: The study included 80 patients with isolated impaired glucose tolerance and normal plasma lipids who complied with lifestyle modifications and received chronic fenofibrate treatment. These subjects were randomly assigned to 90 day’s treatment with either high-dose metformin (3 g daily in three divided doses) or placebo. Plasma lipids, glucose homeostasis markers, plasma C-reactive protein and intercellular adhesion molecule-1 levels, as well as lymphocyte release of proinflammatory cytokines were determined before randomization and at the end of the treatment.

Results: Beyond improving glucose homeostasis, metformin reduced plasma C-reactive protein levels and lymphocyte release of tumor necrosis factor-α and interferon-γ, as well as tended to reduce interleukin-2 release and plasma intercellular adhesion molecule-1.

Conclusions: Our study shows that metformin potentiates lymphocyte-suppressing, endothelial-protective and systemic anti-inflammatory effects of fenofibrate, and suggests that patients with impaired glucose tolerance may benefit the most from the combined treatment with a fibrate and high-dose metformin.

Key words: fibrates, inflammatory cells, low-grade inflammation, metformin, prediabetes