Insulin, metformin do not reduce inflammatory biomarkers for diabetes patients

September 15 2009

In patients with recent onset type-2 diabetes, treatment with insulin or the diabetes drug metformin did not reduce inflammatory biomarkers, such as high-sensitivity C-reactive protein, although the treatment did improve glucose control, according to a study in the September 16 issue of *JAMA*.

As diabetes is in part an inflammatory condition, a possible therapeutic target for patients is subclinical inflammation, a modifiable risk factor, according to background information in the article. "Proinflammatory mechanisms have been linked to the core metabolic defects of beta-cell insufficiency and insulin resistance, and elevations in levels of inflammatory biomarkers, including high-sensitivity C-reactive protein (hsCRP), IL-6, and soluble tumor necrosis factor receptor 2 (sTNFr2), predict incident type 2 diabetes among apparently healthy individuals," the authors write. Evidence is limited on whether improvement in glycemic control, insulin resistance, or both with antidiabetic agents such as insulin and metformin may beneficially change inflammation.

Aruna D. Pradhan, M.D., M.P.H., of Brigham and Women's Hospital and Harvard Medical School, Boston, and colleagues conducted a study to determine whether insulin alone or combined with metformin lowers levels of hsCRP, IL-6, and sTNFr2 in patients with recent-onset type 2 diabetes mellitus. The study included 500 adults (median [midpoint] time from diabetes diagnosis, 2.0 years), with suboptimal glycemic

control and elevated hsCRP levels. Participants were randomized to 1 of 4 treatments: placebo metformin only; placebo metformin and insulin; active metformin only; or active metformin and insulin. The researchers noted the change in the measurement of the inflammatory biomarkers from the beginning of the trial to 14 weeks.

The authors write that "no consistent association was found between glucose reduction and improvement in inflammatory status ascertained by change in levels of hsCRP, IL-6, or sTNFr2. Despite substantially improving glucose control, neither insulin nor metformin reduced inflammatory biomarker levels for the main effects evaluated or in comparisons between the individual treatment groups. An interaction between interventions was observed such that, compared with no pharmacologic intervention, those allocated to insulin alone had a significant attenuation of inflammation reduction, an effect not observed among those allocated to metformin and insulin or to metformin alone."

"From a clinical perspective, until other end-point trial data become available, these data underscore the need to improve adherence with therapies that do reduce cardiovascular events among diabetic patients, including exercise; weight management; smoking cessation; blood pressure control; and, in appropriate patients, antiplatelet and statin therapy," the authors conclude.

More information: *JAMA*. 2009;302[11]:1186-1194.

Source: JAMA and Archives Journals (news : web)