COMMENTS AND RESPONSES

Total and High–Molecular Weight Adiponectin in Relation to Metabolic Variables at Baseline and in Response to an Exercise Treatment Program: Comparative Evaluation of Three Assays

Response to von Eynatten et al.

The letter by von Eynatten et al. (1) provides unpublished data on the sensitivity of high–molecular weight (HMW) adiponectin versus total adiponectin in predicting metabolic outcomes. The authors focus on only one assay source (enzyme-linked immunosorbent assay; ALPCO Diagnostics, Salem, NH) and do not consider its predictive ability in comparison to other assays.

Whereas different sample sizes may have contributed to varying levels of statistical significance, the previously derived (2) effect estimates are largely comparable with those reported by von Eynatten et al. (1). More importantly, our data clearly show that both previously developed assays measuring total adiponectin (radioimmunoassay; LINCO Research, St. Charles, MO; and enzyme-linked immunosorbent assay; Mediagnost, Reutlingen, Germany) are superior to either total or HMW adiponectin, as measured by the ALPCO assay, in predicting previously reported variables (2). This is also true for the new metabolic variables reported by von Eynatten et al. herein. The areas under the curve (95% CI) for the metabolic syndrome described in Blüher et al. are as follows: $ADIPO_L$ 0.93 (0.85–1.00), $ADIPO_M$ 0.89 (0.78–1.00), $ADIPO_A$ 0.61 (0.47–0.76), and HMW adiponectin 0.59 (0.44–0.74). In von Eynatten et al., they are $ADIPO_A$ 0.68 (0.62–0.74) and HMW adiponectin 0.76 (0.71–0.81). The areas under the curve (95% CI) for insulin resistance in Blüher et al. are $ADIPO_L$ 0.96 (0.91–1.00), $ADIPO_M$ 0.92 (0.83–1.00), $ADIPO_A$ 0.65 (0.51–0.79), and HMW adiponectin 0.63 (0.48–0.77). In von Eynatten et al. they are $ADIPO_A$ 0.70 (0.61–0.79) and HMW adiponectin 0.83 (0.77–0.89). Total adiponectin, as measured by the LINCO assay, showed stronger correlations with the metabolic syndrome, insulin resistance, and HDL cholesterol than was reported by von Eynatten et al. for HMW adiponectin (Spearman correlation coefficients −0.70, −0.52, and 0.60 vs. −0.45, −0.23, and 0.38, respectively). Results from the Mediagnost assay were similar.

Although participants in our study (2) were not taking thiazolidinediones or fibrates, potential misclassification due to medication intake or other factors would have attenuated toward the null predictive ability of all adiponectin assays in determining metabolic outcomes. The very high sensitivity of the better-performing total adiponectin assay (96%), however, suggests that any medication use probably had little effect in our study.

In summary, the incremental benefit in predicting metabolic outcomes is larger among different total adiponectin assays (probably due to different antibodies used by different manufacturers) than between total and HMW adiponectin measurements using ALPCO assays. Whether HMW adiponectin (using antibodies from other manufacturers) could potentially offer an advantage over total adiponectin in predicting metabolic variables remains a distinct possibility, but the high sensitivity shown by the LINCO and Mediagnost total adiponectin assays in our study leaves a small margin for improvement. The development and use of valid and reliable measurement techniques will be of utmost importance in elucidating this key question in metabolic research. We agree that prospective studies are necessary to further examine the roles of total and HMW adiponectin in predicting metabolic outcomes, and we are currently conducting these investigations at our institution.

CATHERINE J. WILLIAMS, MPH[1]
AOIFE BRENNAN, MD[1]
MATTHIAS BLÜHER, MD[2]
CHRISTOS S. MANTZOROS, MD[1]

From the [1]Division of Endocrinology, Diabetes and Metabolism, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, Massachusetts; and the [2]Department of Internal Medicine III, University of Leipzig, Leipzig, Germany.

Address correspondence to Christos Mantzoros, MD, Division of Endocrinology, Diabetes and Metabolism, Beth Israel Deaconess Medical Center, 330 Brookline Ave., ST816, Boston, MA 02215. E-mail: cmantzor@bidmc.harvard.edu.

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