COMMENTS AND RESPONSES

Comment on: Kim et al. Prospective Study of Serum Adiponectin and Incident Metabolic Syndrome: The ARIRANG Study. Diabetes Care 2013; 36:1547–1553

Kim et al. (1) conducted a 2.6-year follow-up study targeting 5,178 inhabitants aged 40 to 70 years to elucidate the effect of serum adiponectin on the risk of development of metabolic syndrome (MetS). The number of participants in the first follow-up survey was 3,862, and the final sample size became 2,044 (831 men and 1,213 women), after exclusion of subjects for several reasons, including lack of adiponectin measurement and diagnosis of MetS in the baseline study. They calculated the odds ratio using multivariate logistic regression analysis. In addition, they checked the improvement of the predictive ability of serum adiponectin for MetS using a statistical procedure named receiver operating characteristic (ROC) curve analysis.

I am satisfied with the adequate number of new-onset MetS events, and the clear evidence of a sex difference obtained using two types of indicators in the ROC curve analysis. However, I have some queries on their selection of multivariate logistic regression analysis in their survey. They have described the date of their baseline survey and also that of their first follow-up study. I suppose that there were individual differences in the follow-up period, which was not less than 4 months, and the average of 2.6 years of follow-up should be handled with caution. Instead of logistic regression analysis, I would rather recommend Cox proportional hazards regression analysis if the target population can be followed-up continuously. By this procedure, event occurrence (new-onset MetS) with duration and censored cases can be effectively used.

Second, they used adjustments for several confounders, including the homeostasis model assessment of insulin resistance (HOMA-IR), BMI, and LDL cholesterol in their multivariate analysis. To avoid the poor predictive ability of HOMA-IR for insulin resistance, subjects with a fasting plasma glucose of 140 mg/dL or higher should be excluded when using HOMA-IR, which has been clarified by hyperinsulinemic-euglycemic clamp and hyperglycemic clamp studies. Furthermore, several lipid indicators are weakly but mutually associated, and there is a strong correlation between the BMI and waist circumference. To avoid overadjustment, I propose to exclude such confounders for the analysis.

Finally, I am afraid of the poor representativeness of the study outcome for Korean inhabitants because less than 40% (2,044/5,178) of the initially enrolled population was included in the final risk estimation.

As compared with reports with small numbers of events (2,3), I agree that the number of events in this survey was sufficient. However, from the definition of MetS, the change of judgment from MetS-positive to MetS-negative or vice versa happened during the survey. To resolve this problem, I also recommend Cox proportional hazards regression analysis to handle the events more adequately. In other words, multivariate logistic regression analysis should be used only when the follow-up period of the population is constant.

The trial presented by Kim et al. (1) showed stable statistical estimates with sufficient statistical power. However, a final conclusion should be made by keeping satisfied recovery rate on survey with Cox proportional hazards regression analysis, if possible.

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DOI: 10.2337/dc13-0747

Acknowledgments—No potential conflicts of interest relevant to this article were reported.

References

1. Kim J-Y, Ahn SV, Yoon J-H, et al. Prospective study of serum adiponectin and incident metabolic syndrome: the ARIRANG study. Diabetes Care 2013;36:1547–1553
2. Choi KM, Yannakoulia M, Park MS, et al. Serum adipocyte fatty acid-binding protein, retinol-binding protein 4, and adiponectin concentrations in relation to the development of the metabolic syndrome in Korean boys: a 3-y prospective cohort study. Am J Clin Nutr 2011;93:19–26
3. Kotooka N, Komatsu A, Takahashi H, et al. Predictive value of high-molecular weight adiponectin in subjects with a higher risk of the development of metabolic syndrome: From a population based 5-year follow-up data. Int J Cardiol 2012; S0167-5273:01441–01446