Annals of Epidemiology 31 (2019) 77

Contents lists available at ScienceDirect

Annals of Epidemiology

Letter to the Editor

Reply: "Diabetes-related factors and abdominal aortic aneurysm events: the Atherosclerosis Risk in Communities study"

To the Editor

We reported that diabetes mellitus (DM), fasting glucose, and plasma leptin were inversely associated with risk of abdominal aortic aneurysm (AAA), whereas the metabolic syndrome (MetS) was associated with increased risk of AAA in the Atherosclerosis Risk in Communities study [1].

In the current issue of Annals of Epidemiology, Raffort showed the interest in no significant association between fasting serum insulin and AAA risk in our study. Although in the age-, sex-, and race-adjusted model, fasting serum insulin was associated with increased risk of AAA (hazard ratio [95% confidence interval]: 1.11 [1.02–1.21]), the association was attenuated after further adjustment for other potential confounding factors and was no longer significant (hazard ratio [95% confidence interval]: 1.04 [0.94–1.15]). However, as Raffort mentioned, previous epidemiological and experimental studies have suggested an inverse association of the use of insulin sensitizer drugs, which usually lead to decreased levels of serum insulin, with AAA risk [2–4]. We have no clear reason for this discrepancy, but there is a possibility of low power in our study, and thus, future studies with more power should confirm the association between serum insulin levels and AAA risk.

Raffort also showed the interest in a positive association between MetS and AAA risk. MetS was defined by the presence of at least 3 of the following components: (1) central obesity, (2) low high-density lipoprotein cholesterol, (3) hypertension, (4) hypertriglyceridemia, and (5) abnormal glucose metabolism, which means that individuals with MetS had abnormal glucose metabolism and at least 2 nonglucose MetS components or normal glucose metabolism and at least 3 nonglucose MetS components. These suggest that harmful effects of 2 or more combined nonglucose MetS components on AAA might be larger than protective effects of abnormal glucose metabolism.

Finally, Raffort raised a question concerning the inverse association between serum leptin levels and AAA risk, even among participants without DM. Two reasons for this can be considered. First, leptin might have a causal effect on AAA risk, which should be examined by future experimental studies. Second, leptin is a marker of future and current DM, as previous studies have suggested the prediction of future DM by leptin [5,6], and thus, individuals with elevated levels of leptin but no DM at baseline might have developed DM during the follow-up, and then had decreased risk of AAA.

We hope that our findings help others to discover novel therapeutic or preventive methods for AAA.

Acknowledgment

The author thanks the staff and participants of the ARIC study for their important contributions.

This work was supported by the National Heart, Lung, and Blood Institute (NHLBI) via contracts HHSN268201100005C, HHSN268201100006C, HHSN268201100007C, HHSN268201100008C, HHSN268201100009C, HHSN268201100010C, HHSN268201100011C, HHSN268201100012C, and R01 HL103695. The Nippon Foundation provided grants to support Dr. Kubota's fellowship at School of Public Health, University of Minnesota.

References

[1] Kubota Y, Folsom AR, Pankow JS, Wagenknecht LE, Tang W. Diabetes-related factors and abdominal aortic aneurysm events: the Atherosclerotic Risk in Communities Study. Ann Epidemiol 2018;28:102–106.e1.
[2] Hsu CY, Su YW, Chen YT, Tsai SH, Chang CC, Li SY, et al. Association between use of oral-antidiabetic drugs and the risk of aortic aneurysm: a nested case-control analysis. Cardiovasc Diabetol 2016;15:125.
[3] Fujimura N, Xiong J, Kettler EB, Xuan H, Glover KJ, Mell MW, et al. Metformin treatment status and abdominal aortic aneurysm disease progression. J Vasc Surg 2016;64:46–54.e8.
[4] Golledge J, Cullen B, Rush C, Moran CS, Secomb E, Wood F, et al. Peroxisome proliferator-activated receptor ligands reduce aortic dilatation in a mouse model of aortic aneurysm. Atherosclerosis 2010;210:51–6.
[5] Schmidt MI, Duncan BB, Vigo A, Pankow JS, Couper D, Ballantyne CM, et al. Leptin and incident type 2 diabetes: risk or protection? Diabetologia 2006;49:2086–96.
[6] McNeely MJ, Boyko EJ, Weigle DS, Shofer JB, Chessler SD, Leonnetti DL, et al. Association between baseline plasma leptin levels and subsequent development of diabetes in Japanese Americans. Diabetes Care 1999;22:65–70.

Yasuhiko Kubota, MD, MPH, PhD*
Division of Cardiovascular Disease Prevention
Osaka Center for Cancer and Cardiovascular Disease Prevention
Osaka, Japan

Division of Epidemiology and Community Health
School of Public Health, University of Minnesota, Minneapolis

* Corresponding author. Division of Cardiovascular Disease Prevention, Osaka Center for Cancer and Cardiovascular Disease Prevention, 1-6-107, Jotoku Morinomiya, Osaka, Japan 5368588.
Tel: +816-6969-6712; fax: +816-6969-6720.
E-mail address: kubota@osaka-ganjun.jp.

DOI of original article: https://doi.org/10.1016/j.annepidem.2018.11.004.

The author has no conflict of interest to declare.

Available online 11 January 2019

https://doi.org/10.1016/j.annepidem.2019.01.005