COMMENTS AND RESPONSES

High Serum Uric Acid as a Novel Risk Factor for Type 2 Diabetes

Response to Dehghan et al.

We read with interest the article by Dehghan et al. (1) that reports a study of 4,536 subjects free from diabetes at baseline and suggests that serum uric acid (sUA) is a strong and independent risk factor for diabetes with a mean follow-up of 10.1 years. To elucidate the association between sUA, diabetes, and chronic hepatitis C virus (HCV) infection, we conducted a community-based study enrolling 4,982 subjects (2,060 male, aged 56.2 ± 6.2 years); subjects with sUA levels >7.0 mg/dl for men and >6.0 mg/dl for women or with prior history were defined as having abnormal sUA. The prevalence of abnormal sUA, diabetes, and positive anti-HCV was 42.9, 6.3, and 12.7%, respectively. Male subjects with diabetes (n = 325) had a significantly lower frequency of abnormal sUA and a significantly lower mean sUA level than nondiabetic subjects (39.4 vs. 53.6%, $P < 0.001$; 6.6 ± 1.7 vs. 7.2 ± 1.6 mg/dl, $P < 0.001$). In contrast, female subjects with diabetes (n = 306) had a significantly higher frequency of abnormal sUA and a significantly higher mean sUA level than nondiabetic subjects (43.8 vs. 36.2%, $P = 0.009$; 5.9 ± 1.6 vs. 5.7 ± 1.4 mg/dl, $P = 0.007$). By multivariate analyses, in men, abnormal sUA was negatively associated with diabetes (odds ratio [OR] 0.451 [95% CI 0.349–0.583], $P < 0.001$), but anti-HCV was not an independent factor. In women, positive anti-HCV was positively associated with diabetes (1.634 [1.068–2.498], $P = 0.02$), but sUA was not an independent factor.

Also worth note, it has been implied that HCV status is associated with diabetes (2), but the role of HCV infection was not analyzed in the study by Dehghan et al. (1). Another striking association we observed is the relationship between diabetes and lower sUA levels in men with a lack of association between diabetes and abnormal sUA levels in women. There is also a sex-based difference in the impact of HCV infection on diabetes. The independent effect of sUA on diabetes seems undetermined, especially in men (1,3,4). Although the important study conducted by Dehghan et al. (1) meets with agreed applause, we suggest that further studies are necessary to elucidate the role of sUA levels on the development of diabetes and the pathogenetic mechanism for the sex-based disparity, taking chronic HCV infection into consideration.

CHIA-YEN DAI, MD, MS[1,2,3]
WAN-LONG CHUANG, MD, PHD[2,3]
CHI-KONG HO, MD[1]
TSAN-TENG OU, MD[4]
JEE-FU HUANG, MD[2,5]
MING-YEN HSIEH, MD, MS[2]
MING-LUNG YU, MD, PHD[2,3]

From the [1]Department of Occupational and Environmental Medicine, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan; the [2]Hepatobiliary Division, Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan; the [3]Faculty of Internal Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan; the [4]Division of Rheumatology, Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung, Taiwan; and the [5]Department of Internal Medicine, Kaohsiung Municipal Hsiao-Kang Hospital, Kaohsiung, Taiwan.

Corresponding author: Ming-Lung Yu, d820195@gmail.com.

DOI: 10.2337/dc08-0038

References

1. Dehghan A, van Hoek M, Sijbrands EJ, Hofman A, Witteman JC: High serum uric acid as a novel risk factor for type 2 diabetes. *Diabetes Care* 31:361–362, 2008
2. Antonelli A, Ferri C, Fallahi P, Pampana A, Ferrari SM, Goglia F, Ferrannini E: Hepatitis C virus infection: evidence for an association with type 2 diabetes. *Diabetes Care* 28:2548–2550, 2005
3. Conen D, Wietlisbach V, Bovet P, Shamlaye C, Riesen W, Paccaud F, Burnier M: Prevalence of hyperuricemia and relation of serum uric acid with cardiovascular risk factors in a developing country. *BMC Public Health* 4:9, 2004
4. Nakanishi N, Okamoto M, Yoshida H, Matsuo Y, Suzuki K, Tatara K: Serum uric acid and risk for development of hypertension and impaired fasting glucose or Type II diabetes in Japanese male office workers. *Eur J Epidemiol* 18:523–530, 2003