Association Between Smoking, Hematological Parameters, and Metabolic Syndrome in Japanese Men

Cigarette smoking increases the risk for metabolic syndrome (1), and it may also affect hematological parameters (2). Because certain hematological parameters may be associated with metabolic syndrome (3), we have investigated whether the mode of association between smoking and metabolic syndrome varies according to hematological parameters.

Among individuals who had undergone a general health screening test between 1994 and 2003, 27,972 subjects (9,729 never smokers [52.8 ± 10.7 years], 7,242 former smokers [54.8 ± 9.9 years], and 11,001 current smokers [50.4 ± 9.8 years]) answered in full a questionnaire concerning their smoking habits and were enrolled in the current study. Metabolic syndrome was defined as the presence of three or more of the following: 1) fasting glucose ≥110 mg/dl, 2) blood pressure ≥130/85 mmHg, 3) triglycerides ≥150 mg/dl, 4) HDL cholesterol <40 mg/dl, and 5) BMI ≥25 kg/m². The interquartile cutoff points were 4,700, 5,500, and 6,600 cells/µl for white blood cell (WBC) count and 14.4, 15.1, and 15.7 g/dl for hemoglobin level.

Compared with the never smokers, the WBC count and hemoglobin level were significantly higher in the current smokers (5,200 ± 1,200 vs. 6,400 ± 1,800 cells/µl, P < 0.0001, and 14.8 ± 1.0 vs. 15.2 ± 1.0 mg/dl, P < 0.0001, respectively). After adjusting for age and total cholesterol level, logistic regression analysis showed that current smokers had a higher incidence of metabolic syndrome with an odds ratio (OR) of 1.59 (95% CI 1.47–1.73) compared with never smokers. Compared with the lowest quartile (Q), the incidence of metabolic syndrome was significantly more frequent in the higher quartiles of the WBC count (Q2, OR 1.73 [95% CI 1.54–1.95]; Q3, 2.50 [2.23–2.80]; and Q4, 3.80 [3.41–4.24]) and in those of the hemoglobin level (Q2, 1.65 [1.47–1.86]; Q3, 2.41 [2.15–2.70]; and Q4, 4.05 [3.63–4.53]).

The association between current smoking and metabolic syndrome was found to be statistically significant in lower quartiles of the WBC count (Q1, OR 1.40 [95% CI 1.10–1.79] and Q2, 1.36 [1.13–1.64]) but not in the higher ones (Q3, 1.02 [0.87–1.18] and Q4, 1.04 [1.09–1.21]). By contrast, the association between current smoking and metabolic syndrome was statistically significant regardless of the hemoglobin level (Q1, 1.50 [1.19–1.88]; Q2, 1.53 [1.27–1.84]; Q3, 1.43 [1.21–1.67]; and Q4 1.25 [1.09–1.43]). These results suggest that the association between smoking and metabolic syndrome may be heavily confounded by certain factors that increase the circulating WBC count.

NOBUKAZU ISHIZAKA, MD, PHD
YUKO ISHIZAKA, MD, PHD
EI-ICHI TODA, RMS
RYOZO NAGAI, MD, PHD
MINORU YAMAKADO, MD, PHD

From the Department of Cardiovascular Medicine, University of Tokyo Graduate School of Medicine, Tokyo, Japan; and the Center for Multiphasic Health Testing and Services, Mitsui Memorial Hospital, Tokyo, Japan.

Address correspondence to Dr. Nobukazu Ishizaka, Department of Cardiovascular Medicine, University of Tokyo, Hongo 7-3-1 Bunkyo-ku, Tokyo 113-8655, Japan. E-mail: nobuishizka-tky@umin.ac.jp.

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References

Changing Incidence of Major Amputation for Diabetes in Novi Sad, Serbia and Montenegro, Between 1994 and 2004

The reduction in incidence of major amputation for diabetes is an accepted target of health care, but the extent to which this is being achieved is unclear (1). Assessment of the published literature is made especially difficult by the effect of population selection and by a rapid increase in the prevalence of known diabetes in most countries. For the most meaningful results, it follows that data should be derived from selected and circumscribed populations and should be expressed in terms of the number in the community with diabetes (2).

Novi Sad is the capital of the northern province of Vojvodina in Serbia and Montenegro. All patients with known diabetes in Novi Sad and the surrounding region are managed at one of three specialist centers situated at the Regional Health Centre and the Institute of Health Care. All non-traumatic amputations are undertaken within the Department of Vascular Surgery at the Regional Health Centre. The structure of these services enables total ascertainment of all major (transfemoral and transfemoral) amputations, as well as precise definition of the numbers who have diabetes. Comprehensive record keeping was initiated in 1991 and was maintained until 1995, when it was interrupted by a period of major political and social upheaval. The city was heavily bombed in 1999, and it was only possible to return to routine data collection from 2004 onwards. Despite the events of the late 1990s, the total population and its constituent racial groups have been relatively constant.

In 1994 and 2004 the total populations of the region were 295,022 and 299,294, respectively, and the numbers with diabetes were 8,026 (2.7%) and 16,128 (5.4%), respectively. The number of first major amputations in 1994 and 2004 were 27 and 43, respectively. When expressed per 105 total population, the incidence of first major amputation for diabetes increases from 9.16 to 14.4, but when expressed in terms of the at-risk (diabetes care, November 29, number 3, March 2006)