Reviewer's report

Title: Association between Erythrocyte parameters and Metabolic Syndrome in Urban Han Chinese: A Longitudinal Cohort Study

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Reviewer: Ryuichi Kawamoto

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Comments

In this work the association between hematological parameters (including red blood cell count, hematocrit and hemoglobin) and metabolic syndrome (MetS) has been investigated. A total of 6513 participants with at least three repeated health checks in the five years on middle-to-upper class urban Han Chinese were recruited for this study. A positive association between hematological parameters and prevalence of MetS in Chinese persons was found. The overall writing style and study methodologies are excellent. The study was carefully done and reported. I think that this manuscript is interesting. However, there are some defects, which should be resolved, in this manuscript.

Sincerely yours,
Ryuichi Kawamoto
Department of Community Medicine, Ehime University Graduate School of Medicine, Ehime

Introduction

1) Author described that there has been little research on the correlation between hematological parameters and MetS. Is it true? Tabara et al. (Tabara Y, et al.: Association of hematological parameters with insulin resistance, insulin sensitivity, and asymptomatic cerebrovascular damage: The J-SHIP Toon Health Study. Clin Hemorheol Microcirc. 2012 Oct 29. [Epub ahead of print]) have described that hematocrit as an independent determinant of insulin sensitivity (# = -0.074, p = 0.019) and insulin resistance (# = 0.115, p < 0.001), but this association was lost after further adjustment for visceral fat area and plasma alanine aminotransferase level. Kawamoto et al. (Kawamoto et al: Hematological Parameters are Associated with Metabolic Syndrome in Japanese Community-Dwelling Persons. Endocrine, 2013; 43:334-343. ) demonstrated that hematological parameters were positively associated with insulin resistance and prevalence of MetS in Japanese dwelling-community persons. Author should quote these papers.

Materials and Methods:

2) In this study, the distribution of age may be 30 to 55 years. The women should be divided into two groups: pre-menopausal and menopausal. The authors
should take into account: i) the use of contraceptive for pre-menopausal women, and ii) hormone replacement therapy for menopausal women).

3) Please comment on how representative this group is of the target population. It is necessary in aim to understand a bias selection. Individuals with a previous diagnosis of cardiovascular disease, cerebral infarction or gastric cancer, or those who had undergone coronary artery bypass surgery, coronary stenting surgery or gastrectomy, or those who had MetS at baseline should be excluded.

4) How did authors measure office blood pressure? Was the appropriate cuff size used for obese individuals? If a standard cuff size was used for large arm, the BP (blood pressure) readings can get seemingly high. Was the BP measured only one time?

5) How about the medication, especially anti-hypertensive drugs, anti-dyslipidemic drug, and anti-diabetic drug?

6) In MetS diagnosis criteria, raised BP was defined as systolic blood pressure (SBP) ≥130 mmHg and/or diastolic blood pressure (DBP) ≥85 mmHg (the criteria of the National Cholesterol Education Program's Adult Treatment Panel (NCEP-ATP) # report), and/or current treatment for hypertension. In addition, visceral obesity is defined as waist circumference. Author should describe reasons why these criteria is used.

7) Authors should describe histories of smoking status and alcoholic status (e.g., non, past, current) in detail in Method section.

8) How was blood collecting performed? Were these dates measured under a fasting condition?

9) In all analyses, parameters with non-normal distributions (glucose, triglycerides, and GGT) should be used after log-transformation.

10) The author’s policy for selection of confounding factors in the multivariate analysis is not well described.

11) I cannot understand GEE model in the analysis of Method section. Logistic regression analyses were used to test significant determinants of MetS, and its components, serving as the dichotomous outcome variable. I cannot understand the handling of missing data.

Results

12) Author should describe the prevalence of subjects with MetS in baseline. In cohort study, subjects with Mets in baseline should be deleted in the analyses..

13) Author should describe prevalence as categorical variables (e.g., sex smoking, alcohol, exercise, sleep, and diet). The differences among the groups should be analyzed by student’s t-test for continuous variables or the #2 -test for categorical variables.

14) The author should describe the prevalence of subjects with antihypertensive,
Anti-dyslipidemic, and anti-diabetic medication also in Table 1.

15) The author should describe the prevalence of subjects with cardiovascular disease also in Table 1.

16) Author should describe prevalence of Mets and its components in other Table.

17) In Table 2, multivariate adjustment should be performed in a model including the presence of antihypertensive, anti-lipidemic, and anti-diabetic medication as well as known conventional risk factors for MetS.

18) Author should indicate each value under three-digit number (eg., RR, 1.235 (95% CI, 0.253-1.234); P<0.001)

Discussion

19) Some limitations of this study must be considered. First, hematological parameter categories are based on a single assessment of blood, which may introduce a misclassification bias. Second, authors also could not eliminate the possible effect of medication (i.e., anti-hypertensive, anti-dyslipidemic, and anti-diabetic medication) and previous disease (e.g., cardiovascular disease) on the present findings. Therefore the demographics and referral source may limit generalizability. Third, as authors described, the participants are not general population.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests.