論文審査の要旨

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Development of predictive equation and score for 5-year metabolic syndrome incidence in Japanese adults

（日本人成人における5年後のメタボリックシンドローム発症の予測式およびスコアの作成）

Predicting metabolic syndrome (MetS) is important for identifying high-risk individuals and providing preventive interventions. The degree applicant created a prediction score for MetS, for participants aged 30-69 years, with 5-yeas follow-up time and free from MetS at baseline using data from Kagoshima Kouseiren Hospital. The outcome was defined as 5-years MetS, according to Japanese MetS diagnostic criteria.

As a result, the following findings were identified in this study.

1. This study included 54,198 Japanese adults (mean [±SD] age, 54.5 ± 10.1 years; men 46%) with a 5-year follow-up. A total of 2,326 (6.4%) and 1,216 (6.7%) paticipants in derivation and validation cohorts developed MetS, respectively.

2. After risk stratification, we found that age, sex, systolic blood pressure (SBP), diastolic blood pressure (DBP), body mass index (BMI), triglycerides (TG), low density lipoprotein cholesterol (LDL-C), high density lipoprotein cholesterol (HDL-C), fasting plasma glucose (FPG), tobacco smoking, and alcohol consumption were the common independent predictors of MetS.

3. For MetS primary score, eleven risk factors were used and scores were assigned to each risk factor categories as follows: Age (0-2), Sex (0-3), BMI (0-5), SBP (0-2), DBP (0-2), TG (0-3), LDL-C (0-2), HDL-C (0-2), FPG (0-3), Current smoking (0-2), and Alcohol consumption (0-1). The total score range 0-27 points, with cut off point of 14 and AUC of 0.81 (sensitivity 0.81, specificity 0.81).

4. For MetS simple score, seven risk factors were used, as follows: Age (0-2), Sex (0-3), BMI (0-5), SBP (0-2), DBP (0-2), Current smoking (0-2), and Alcohol consumption (0-1). The total score ranged from 0-17 points, with cut off point of 15, and AUC of 0.78 (sensitivity 0.83, specificity 0.77).

5. Furthermore, the equation model was developed using similar risk factors. The AUC was 0.85 (sensitivity 0.86, specificity 0.55).

Few previous studies have developed MetS score models for different populations, however, the majority lacked validation, were cross-sectional studies, had smaller sample size, did not involve lifestyle factors, and none have used Japanese criteria for MetS. The present study used the Japanese MetS definition criteria to develop and validate a primary score, an equation, and a simple prognostic model for 5-year MetS risk in the general Japanese population. The scores can be used to emphasize lifestyle changes as key to reducing the risk of cardiovascular diseases. This study contributes to the existing body of evidence, and presents a new MetS simple score, therefore, it is judged sufficient for dissertation.