Available online at www.sciencedirect.com

ScienceDirect

European Journal of Integrative Medicine 6 (2014) 82–89

European Journal of INTEGRATIVE MEDICINE

www.elsevier.com/eujim

Original article

Can anthropometric risk factors important in Sasang constitution be used to detect metabolic syndrome?

Eunsu Jang [1], Younghwa Baek [1], Kihyun Park, Siwoo Lee *

KM Health Technology Research Group, Korea Institute of Oriental Medicine, Daejeon, South Korea

Received 26 June 2013; received in revised form 12 October 2013; accepted 12 October 2013

Abstract

Introduction: Sasang constitutional medicine defines the different body shapes associated with various constitutions. The aim of this study was to reveal whether the anthropometric risk factors important in Sasang constitution can be used to detect metabolic syndrome (MS).

Methods: Eligible subjects (481 males and 839 females) between 40 and 60 years were recruited from 23 Korean medical clinics. SC types were divided into the Tae-eumin (TE) type and the non-TE type for males and females respectively. Body mass index (BMI), waist circumference (WC), and waist-to-hip ratio were measured in order to define MS. Pearson's correlation coefficients were calculated and logistic regression analysis was used to determine odds ratios (ORs; with 95% confidence intervals) for MS. Receiver operating characteristic analysis was conducted to determine the appropriate boundaries of anthropometric index for identifying MS.

Results: All anthropometric measurements were highly associated with each other ($p < 0.001$). All high-value measurement groups had significantly higher ORs for MS compared to low-value groups ($p < 0.001$). WC was the best predictor for MS in both the TE (AUC 0.757, 95% CI 0.69–0.82, optimal cut-off 89.9 cm) and non-TE (AUC 0.751, 95% CI 0.68–0.82, optimal cut-off 88.6 cm) males. The best predictors for MS risk were BMI (AUC 0.721, 95% CI 0.67–0.78, optimal cut-off 25.2 kg/m^2), and WC (AUC 0.814, 95% CI 0.77–0.85, optimal cut-off 80.6 cm) in the TE and non-TE females respectively.

Conclusions: Results suggest that WC may be a good predictive factor for detecting MS, but BMI seems better for TE type females.

© 2013 Elsevier GmbH. All rights reserved.

Keywords: Sasang constitution; Metabolic syndrome; Anthropometric index; ROC curve; Diagnosis

Introduction

Metabolic syndrome (MS) is defined as a combination of at least three of the following: hyperglycemia, dyslipidemia involving elevated triglycerides (TG) and/or low high-density lipoprotein (HDL) cholesterol, hypertension, or abdominal obesity. The presence of MS increases the risks of developing diabetes mellitus (DM) and cardiovascular disease [1,2]. Recently, MS has been increasingly recognized as a major cause of increasing mortality [3].

Anthropometric indices provide key information as defined risk factors for the identification of MS. Many studies have been conducted to identify the most appropriate anthropometric indices for this assessment and include; body mass index (BMI), waist circumference (WC), and waist-to-hip ratio (WHR) [4–8].

As these indices have been recognized as good indicators of MS, many researchers have accordingly tried to predict the disease using these factors. Recently, some studies suggested WC measurement as a very important index in identifying MS [9,10]. However, the anthropometric index and the cut-off points for MS risk are known to differ according to nationality, sex, and ethnicity [11–13]. These findings demand that a predictive anthropometric index with cut-off for MS might be customized according to subgroup criteria including sex and age respectively.

Sasang constitutional medicine (SCM), a unique form of Korean traditional medicine, classifies humans into four constitutions based on their traits: Taeyangin (TY), Soyangin (SY), Tae-eumin (TE), and Soeumin (SE) [14]. It suggests that clinical indexes including body measurement may be applied differently

* Corresponding author at: KM Health Technology Research Group, Korea Institute of Oriental Medicine (KIOM), 461-24 Jeonmin-dong, Yuseong-gu, Daejeon 305-811, South Korea. Tel.: +82 42 868 9555; fax: +82 42 868 9388.
E-mail addresses: ifree72@gmail.com, bfree@kiom.re.kr (S. Lee).

[1] These authors contributed equally to this work.

1876-3820/$ – see front matter © 2013 Elsevier GmbH. All rights reserved.
http://dx.doi.org/10.1016/j.eujim.2013.10.005

to a disease and health state according to Sasang constitution (SC) in SCM [15]. Several studies have revealed that the pathological index could be different according to SC [16–18]. Therefore, it may be possible to hypothesize that anthropometric indices which are important risk factors for specific disease may differ according to SC type and may exhibit different cut-off points for detecting MS. If we could determine the different index and cut-off values according to constitution, it may be possible to facilitate the gathering of customized health information in order to provide appropriate health warnings for patients using SCM.

In a previous study, physical body shape, appearance, temperament, and physio-pathological symptoms were found to be different according to SC type [23]. One study has suggested that the TE type consists of a hyperactive liver group and a hypoactive lung group, so the TE type could be characterized by a state of weak consumption and strong storage of Qi and body fluid [24]. Differences in physiological patterns result in a series of typically distinct characteristics of TE type [24]. The TE type is characterized with relatively wider WC and bigger BMI as well as feminine, retracted and conservative features [21,25,26].

Recently, several studies revealed that each constitution has higher susceptibility to pathology and several chronic diseases especially, diabetes, hypertension and abdominal obesity compared to other types [19–21]. Accordingly, the TE type itself is recognized as an important and independent risk factor in chronic disease area.

This study aimed to identify customized risk factors using the important anthropometric indices for detecting MS focusing on the TE type as well as the optimal cut-off values.

Methods

Participants

This cross-sectional study was conducted in 23 Korean medical clinics (KMCs) between November 2007 and July 2012. Eligible subjects between 40 and 60 years old were recruited. Subjects were excluded if they could not understand or follow the researcher's instructions, or maintain proper posture during measurement, were pregnant, or had body deformations, such as lumps or congenital malformations in the measurement location, i.e. following the same exclusion criteria of the previous study [21,22]. A number of 1371 subjects were enrolled in the study at first, but 54 subjects were excluded because of missing data. In total, 1317 subjects (481 males and 836 females) were included in the analysis. This study was approved by the Korea Institute of Oriental Medicine (KIOM) Institutional Review Board (I-0910/02-001). Written informed consent for participation in this study was obtained from each of the subjects.

Sasang constitutional diagnosis

Sasang constitutional diagnosis for each participant was conducted sequentially in the following manner. Firstly, the SCM experts at each hospital, who had more than 5 years of experience in clinical practice, diagnosed the SC type for each individual. They considered physical body shape, appearance, temperament, and physio-pathological symptoms of individuals for correct diagnosis. Secondly, the administration of constitution-specific herbal formulae was used as an additional method to check the participants' SC type. Only those participants, who had taken the prescribed herbal formulae for more than 30 days and who had good responses for that medication, i.e. showing clear improvements in the chief complaints and physiological symptom without any adverse effects (AE), were included. It is known in SCM that the unsuitable prescription induced AE such as indigestion, stomach-ache, and evacuation troubles [27]. Lastly, the SC type of individual was clinically confirmed by a specialist in SCM based on the medical chart review. A previous study had also followed the same procedures for diagnosing SC [28].

Data collection

For MS diagnosis, we collected data on age, sex, weight, height, WC, hip circumference (HC), blood pressure, and a blood sample. WC was measured at the umbilicus during the light-exhalation phase and HC at the maximal protuberance of the gluteal region. The measurements were obtained with the subjects in an erect standing position. The subjects wore no clothing on the upper body and folded their arms in front of their chest [22]. BMI was calculated using height and weight [weight (kg)/height (m)^2]. WHR was calculated as waist circumference divided by hip circumference. To reduce measurement bias among the KMCs, all instructors were educated by an anthropometric measurement expert with 9 years of experience in KIOM at least one or more times per year. Additionally, KIOM monitored the procedures of data collection. All instructors followed a standard operation procedure (SOP) that was developed for the "Korea Constitution Multicenter Study" [29].

The blood pressure was measured from each subject's left upper arm after sufficient rest. Blood samples were collected from all subjects' left or right brachial veins after a fast of at least 12 h. All blood tests, including fasting blood glucose, TG, and HDL cholesterol levels, were examined by one authorized laboratory to eliminate test variability and error.

Diagnostic criteria of MS

MS was defined according to National Cholesterol Education Program Adult Treatment Panel III guidelines, which stipulated that at least 3 out of 5 of the following criteria had to be met [30]: (1) diastolic blood pressure $\geq$90 mmHg and/or systolic blood pressure $\geq$140 mmHg or taking medicine for the treatment of high blood pressure, (2) fasting plasma glucose $\geq$126 mg/dl or taking medicine for the treatment of DM, (3) TG $\geq$150 mg/dl, (4) HDL cholesterol <40 mg/dl in males and <50 mg/dl in females, and (5) abdominal obesity with WC in females, and (5) abd80 cm for females. We also referred to 7th Report of the Joint National Committee in blood pressure [31], American Diabetes Association guidelines in glucose [32], and used a modified WC cut-off range for abdominal obesity [33].

Download English Version:

https://daneshyari.com/en/article/2479851

Download Persian Version:

https://daneshyari.com/article/2479851

Daneshyari.com