

Research Article

The relationship of alcohol consumption with left ventricular mass in people 35 years old or older in rural areas of Western China

Yunjing Yang, MD, Nan Zhang, MD, PhD, Wei Huang, MD, PhD, Rui Feng, MD, Panpan Feng, MD, Jun Gu, MD, Gang Liu, MD, and Han Lei, MD, PhD*

Department of Cardiology, The First Affiliated Hospital of Chongqing Medical University, Chongqing Medical University, Chongqing, China

Manuscript received October 12, 2016 and accepted February 12, 2017

Abstract

The aim of this study was to investigate the association between alcohol intake and left ventricular mass (LVM) independent of the effects of blood pressure and other factors in rural areas of Western China. The present study included 1007 subjects (487 men and 520 women) aged ≥ 35 years from the Tongan district, Chongqing, China. The quantity and frequency of alcohol consumption were estimated from a validated questionnaire. Echocardiography was used to assess left ventricular dimensions. Drinkers was associated with higher LVM compared with nondrinkers ($\beta = 6.9$, 95% confidence interval: 1.3–12.5, $P = .015$). A dose-dependent higher LVM across increasing alcohol consumption was observed ($P < .05$). LVM was significantly correlated with regular drinking ($\beta = 10.0$, 95% confidence interval: 3.6–16.4). In subjects with hypertension, quantity of alcohol consumption (P for interaction = .013) and frequency of alcohol consumption (P for interaction = .025) were strongly associated with higher LVM when stratified by blood pressure. However, interactions linked to age, body mass index, and gender were found to be no significant difference. These results indicate that both quantity and frequency of alcohol consumption are independent predictors of LVM in rural areas of Western China. The effects of alcohol consumption on LVM are enhanced among subjects with hypertension. *J Am Soc Hypertens* 2017;■(■):1–7. © 2017 American Society of Hypertension. All rights reserved.

Keywords: Alcohol intake; hypertension.

Introduction

Cardiovascular disease is the most common cause of death and has become a major public health problem worldwide. It contributes to approximately 44.6% and 42.5% of

The study was sponsored by the “12th Five-Year Plan” National Science and Technology Support Program and “Prevalence rate investigation and key technology research of Chinese important cardiovascular disease,” project number: 2011BAI11B01.

Conflict of interest: All authors declare that they have no conflicts of interest.

*Corresponding author: Han Lei, MD, PhD, The First Affiliated Hospital of Chongqing Medical University, Chongqing Medical University, Yixueyuan Road, No.1, Yuzhong District, Chongqing 400016, China. Tel: 862368485787; Fax: 862368485111.

E-mail: leihan@cqmu.edu.cn

deaths in urban and rural China, respectively. The mortality of cardiovascular disease in rural areas was 296 per 100,000 people which was higher than that in urban areas in 2014.¹ Left ventricular mass (LVM) determined by echocardiography has been reported to be a strong predictor of cardiovascular morbidity and mortality in numerous studies.^{2,3} Established determinants of LVM include gender, age, body size, physical activity, and blood pressure, but self-report alcohol consumption is ambiguous.^{4,5}

Observational analytic epidemiologic studies test whether self-reports of alcohol are associated both with adverse and beneficial outcomes. Excessive chronic alcohol consumption is known to be detrimental to the myocardium and has been associated with elevated blood pressure, stroke, and cardiac arrhythmias.^{6–8} A positive association between alcohol consumption and LVM was observed in the Atherosclerosis Risk in Communities

Study⁹ but not in the Coronary Artery Risk Development in Young Adults study and other studies.^{10,11} However, the debate has been focused on the quantity of alcohol consumption, and the relationship between frequency of alcohol consumption and LVM has also not been explored. Compared with American, Western Chinese people have different alcohol consumption. In United States, the most popular drink is beer (5% alcohol content), while in Western China, it is white spirit (40%–60% alcohol content).^{12,13} In a recent analysis of the China Kadoorie Biobank study involving half a million adults, the prevalence rate of regular drinking was seen the highest in urban area of northeast China and rural area of Western China, and mean alcohol consumption was highest in rural area of Western China.¹³ The aim of the present study was to investigate the association between alcohol consumption itself, the quantity of alcohol consumption, and frequency of alcohol consumption and LVM independent of the effects of blood pressure and other potential factors in a rural area of Western China.

Methods

The study was a part of large-scale epidemiologic study of the prevalence of dominant cardiovascular diseases in China. A total of half a million individuals across 22 provinces, 5 autonomous regions, and 4 municipalities were selected for participation by multistage-stratified random sampling. In this study, we studied 487 men and 520 women who were 35 years or older residing in the Tongnan district of Chongqing, which is a rural area of Western China. All subjects provided informed consent, and the protocol was approved by the Institutional Ethics Review Board of Chongqing Medical University. Information on demographic characteristics, including smoking status and individual and family history of disease, was collected by the questionnaire. The weight and height were measured with the participants wearing light-weight clothing and no shoes; body mass index (BMI) was calculated as the weight divided by height squared. The blood pressure of the participants was collected in three consecutive measurements at 1-minute interval with an electronic sphygmomanometer after the participants rested for at least 5 minutes. The examination room is quiet when blood pressure was taken, and there were no humans present during the three blood pressure measurements. Before the blood pressure measurements, the participants were advised to avoid alcohol consumption, cigarette smoking, coffee or tea, and exercise for at least 30 minutes. An appropriately sized cuff based on the circumference of the right upper arm of the participant was selected. The average of the three readings was calculated and used in all analyses. Blood samples were analyzed centrally at the national center for cardiovascular disease. Triglyceride, total cholesterol, low-density lipoprotein cholesterol, high-density lipoprotein cholesterol, and

fasting blood glucose levels were measured using standard enzymatic methods.

The quantity and frequency of alcohol consumption were assessed by the questionnaire. The subjects were asked if they currently drank alcoholic beverages and, if not, whether they had done so in the past. Current drinkers were asked how often they usually drank beer, liquor, or wine and the quantity consumed. The amount of alcohol consumed was calculated in grams per day (g/d) by multiplying the consumption of each beverage by its ethanol content and was categorized as follows: none, < 50 g/d, and ≥50 g/d.^{14,15} The frequency of alcohol consumption was categorized as follows: none, occasional (1 drink per week), and regular (<1 drink per week).

The echocardiographic examination was performed by an experienced cardiologist with the subject respiring quietly in the left lateral position. The reader of the echocardiograms was blinded to the specific exposures of interest such as alcohol consumption. Echocardiographic images were obtained using a complete two-dimensional, M-mode, pulsed and continuous wave and color-flow Doppler. Echocardiograph (Vivid 7, GE Healthcare, USA) was performed on each subject and consisted of measurements of the left ventricular internal dimension, interventricular septal thickness, posterior wall thickness, and left ventricular ejection fraction. The measurements were made at end diastole in the parasternal long axis according to the recommendations of the American Society of Echocardiography.¹⁶ Eight valuable images were stored for consultation and quality control. Experienced professionals were assigned as quality control staffs to check the operator's daily operation standards, random recheck of 5% of the image data for review and fill the daily quality control form. The LVM was calculated using the formula by Devereux et al:

$$\text{LVM(g)} = 0.8 * 1.04 \left[(\text{IVS} + \text{PWT} + \text{LVID})^3 - (\text{LVID})^3 \right] + 0.06$$

Statistical Analysis

Continuous variables have been presented as the mean ± standard deviation and categorical variables as frequencies. The chi-square test and *t* test were used to assess for differences between categorical and continuous variables, respectively. Spearman correlation was used to assess univariate associations. Multivariate linear regression was used to investigate the associations between quantity and frequency of alcohol consumption and LVM, adjusted for two models. A *P* value less than .05 was considered statistically significant. All analyses were performed using Empowerstats (<http://www.empowerstats.com>) and the statistical package R.

Download English Version:

<https://daneshyari.com/en/article/5613916>

Download Persian Version:

<https://daneshyari.com/article/5613916>

[Daneshyari.com](https://daneshyari.com)