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J Dent. 2021 Jan;104:103535. doi: 10.1016/j.jdent.2020.103535. Epub 2020 Nov 15.

A prediction model of masticatory performance change in 50- to 70-year-old Japanese: The Suita study

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PMID: 33207241 DOI: [10.1016/j.jdent.2020.103535](https://doi.org/10.1016/j.jdent.2020.103535)

Abstract

Objectives: Declines in masticatory performance might be a risk factor for worsening nutritional intake and result in general frailty. The present study constructed and investigated a method to predict the extent to which objective masticatory performance declines with age in cases with poor oral health status.

Methods: Participants comprised 1201 participants in the Suita study with dental checkup at both baseline and follow-up (500 men and 701 women; age at baseline, 65.6 ± 7.8 years; mean follow-up, 5.1 ± 1.1 years). First, multiple linear regression analysis was performed with masticatory performance at follow-up as the dependent variable and sex as well as baseline age, number of functional teeth, maximum bite force, occlusal support, periodontal status, salivary flow rate, and masticatory performance as independent variables. Scores were assigned to each factor based on the standardized partial regression coefficient obtained from multiple linear regression analysis. Participants were divided into quintile groups (Q1-Q5) based on total scores for factors, and rates of masticatory performance change for each group were calculated and compared.

Results: Mean rates of masticatory performance change in groups Q1-Q5 from the model to predict declining masticatory performance were: Q1, -9.7%; Q2, -12.7%; Q3, -18.0%; Q4, -19.9%; and Q5, -29.8%. Thus there was a trend for masticatory performance to decrease with decreasing score.

Conclusions: The model developed in this study quantitatively predicted declines in masticatory performance after approximately 5 years.

Clinical significance: We developed a model for predicting the extent to which masticatory performance will change over the next 5 years. This model may offer a useful tool when taking measures to prevent declines in masticatory performance with aging.

Keywords: Bite force; Geriatric dentistry; Longitudinal study; Mastication; Occlusal support; Tooth loss.

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Original article

Decrease in posterior occlusal support area can accelerate tooth loss: The Suita study

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Abstract

Purpose: A decrease in posterior occlusal support is considered to increase the load on remaining teeth and thus accelerate tooth loss. Therefore, a follow-up study was carried out to perform a longitudinal analysis of the association between the posterior occlusal support region and tooth loss.

Methods: The participants of the study were 806 Suita Study participants who underwent physical health checkups both at baseline and at follow-up. The participants were classified into three groups by posterior occlusal support area (POSA) using the Eichner Index at baseline: Perfect POSA group, Eichner A; Decreased POSA group, Eichner B1–3; and Lost POSA group, Eichner B4 and Eichner C1–2. Participants were also classified into two groups according to whether they had tooth loss during the follow-up period. Tooth loss risk factors were investigated through the construction of logistic regression models with tooth loss as the dependent variable and posterior occlusal support, sex, age, periodontal disease, stimulated salivary flow rate, smoking habit, drinking habit, denture wearing, utilization of dental services, brushing habits, diabetes mellitus, osteoporosis and number of years of follow-up as independent variables.

Results: In the results of the logistic regression model, the adjusted odds ratio (95%CI) for tooth loss with the Perfect POSA group as the reference was 3.19 (1.98–5.14) for the Decreased POSA group and 4.57 (1.97–10.62) for the Lost POSA group.

Conclusions: This study showed that decreased POSA accelerated tooth loss in the general urban population.

Keywords: Tooth loss, Occlusal support, Epidemiology, Gerodontology, Risk factor

Received 3 March 2020, Accepted 31 August 2020, Available online 12 November 2020

1. Introduction

A decrease in masticatory performance due to tooth loss is reported to accelerate changes in dietary habits [1], to affect arteriosclerosis and hypertension [2, 3], and to be associated with onset of cardiovascular diseases, such as myocardial infarction, heart failure, and stroke, as well as with mortality [4]. Furthermore, particularly in older people who have more teeth missing, the stress brought on by poor outward appearance and decreased masticatory performance can cause social and environmental effects, provoking a deterioration in the quality of life (QOL) [5]. Identifying the risk factors that affect tooth loss is, therefore, a major issue for preventing not only systemic disease but also deterioration in QOL.

There have been various different investigations to date into the risk factors for tooth loss. The risk factors for tooth loss that have been reported include, not only oral disease such as periodontal status [6] and dental caries [7], but also systemic disease, lifestyle habits or societal factors, such as diabetes mellitus [8], osteoporosis [8], smoking habit [9,10], age [11], and educational background [12]. However, tooth loss is the result of these primary factors relating to each other in complex ways, and there are likely numerous factors that have yet to be clarified.

In addition to the factors mentioned above, a likely risk factor accelerating tooth loss is a decrease in occlusal support. It may be guessed that a decrease in occlusal support hastens tooth loss because the burden on the remaining teeth of the bite force becomes excessive [13], but to date there has been only a report of an investigation into the relationship between occlusal support and tooth loss, which was a study by Sato et al. [14]. They used Miyachi's Triangular Classification as a method for classifying occlusal support, and they found that tooth loss occurs most readily when the remaining number of maxillary and mandibular occlusal contacts is from 5 to 9 sites. No study has investigated the relationship between tooth loss and posterior occlusal support taking into account the effects of oral disease and lifestyle, which are risk factors for tooth loss. As well as Miyachi's Triangular Classification, occlusal support may be evaluated by the occlusal unit [15], which evaluates the total number of occlusal supports from the remaining teeth, and by the Eichner Index [16]. Of these, the Eichner Index is used with general clinical prostheses because it focuses on the evaluation of posterior occlusal support.

This study was a follow-up study of the general urban population in the 50s–70s age group that investigated the association between posterior occlusal support evaluated by the Eichner Index and tooth loss by statistical models that take into account the effects of lifestyle habits and periodontal disease.

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RESEARCH ARTICLE

Associations of equol-producing status with white matter lesion and amyloid- β deposition in cognitively normal elderly Japanese

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Abstract

Introduction: Equol, a metabolite of a soy isoflavone transformed by the gut microbiome, is anti-oxidant and anti-amyloidogenic. We assessed the associations of equol with white matter lesion normalized to total brain volume (WML%) and amyloid beta ($A\beta$) deposition.

Methods: From 2016 to 2018, 91 cognitively normal elderly Japanese aged 75 to 89 underwent brain magnetic resonance imaging and positron emission tomography using ¹¹C-Pittsburgh compound-B. Serum equol was measured using stored samples from 2008 to 2012. Equol producers were defined as individuals with serum levels >0. Producers were further divided into high (> the median) and low (\leq the median) producers.

Results: The median (interquartile range) WML% was 1.10 (0.59 to 1.61); 24.2% were $A\beta$ positive, and 51% were equol producers. Equol-producing status (non-producers, low and high) was significantly inversely associated with WML%: 1.19, 0.89, and 0.58, respectively (trend $P < .01$). Equol-producing status was not associated with $A\beta$ status.

Discussion: A randomized-controlled trial of equol targeting WML volume is warranted.

KEYWORDS

amyloid beta deposition, cognitively normal, epidemiology, equol, Japanese, Pittsburgh compound-B, soy isoflavones, white matter lesion

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Odontology. 2020 Oct;108(4):715-722. doi: 10.1007/s10266-020-00501-3. Epub 2020 Mar 5.

Periodical utilization of dental services is an effective breakthrough for declining masticatory performance: the Suita study

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PMID: 32140950 DOI: [10.1007/s10266-020-00501-3](https://doi.org/10.1007/s10266-020-00501-3)

Abstract

Masticatory performance of subjects from a general urban population was examined by measurement at baseline and again at follow-up, to clarify whether periodical utilization of dental services (PUDS) is effective in maintaining masticatory performance. Subjects comprised 1010 people (414 males, 596 females; mean age at baseline, 65.7 ± 7.8 years) who participated in the Suita study with dental checkups at both baseline and follow-up (mean follow-up, 5.2 ± 1.5 years). Number of functional teeth, occlusal support, periodontal status, masticatory performance, maximum bite force, and salivary flow rate were surveyed. Subjects were divided into a with-PUDS group (n = 430), who responded at both baseline and follow-up that they regularly utilized dental services, and a without-PUDS group (n = 580), who responded otherwise. To evaluate longitudinal changes in masticatory performance over the study period, the rate of masticatory performance change was calculated by dividing the difference in masticatory performance between follow-up and baseline by the masticatory performance at baseline. The relationship between the presence of PUDS and the rate of masticatory performance change was investigated by multiple linear regression analysis. Analysis was performed using a model with number of functional teeth as an independent variable (number of functional teeth model), and a model with occlusal support as an independent variable (occlusal support model). Multiple linear regression analysis identified PUDS as significantly associated with the rate of masticatory performance change in both the number of functional teeth model and the occlusal support model. PUDS is likely to prove effective in ameliorating reductions in masticatory performance over time.

Keywords: Dental services; Epidemiology; Gerodontology; Mastication; Statistical model.

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Development of a Cardiovascular Disease Risk Prediction Model Using the Suita Study, a Population-Based Prospective Cohort Study in Japan

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Aim: To construct a risk prediction model for cardiovascular disease (CVD) based on the Suita study, an urban Japanese cohort study, and compare its accuracy against the Framingham CVD risk score (FRS) model.

Methods: After excluding participants with missing data or those who lost to follow-up, this study consisted of 3,080 men and 3,470 women participants aged 30–79 years without CVD at baseline in 1989–1999. The main outcome of this study was incidence of CVD, defined as the incidence of stroke or coronary heart disease. Multi-variable Cox proportional hazards models with stepwise selection were used to develop the prediction model. To assess model performance, concordance statistics (C-statistics) and their 95% confidence intervals (CIs) were calculated using a bootstrap procedure. A calibration test was also conducted.

Results: During a median follow-up period of 16.9 years, 351 men and 241 women developed CVD. We formulated risk models with and without electrocardiogram (ECG) data that included age, sex, systolic blood pressure, diastolic blood pressure, high-density lipoprotein cholesterol, non-high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, diabetes mellitus, smoking, and urinary protein as risk factors. The C-statistics of the Suita CVD risk models with ECG data (0.782; 95% CI, 0.766–0.799) and without ECG data (0.781; 95% CI, 0.765–0.797) were significantly higher than that of the FRS model (0.768; 95% CI, 0.750–0.785).

Conclusions: The Suita CVD risk model is feasible to use and improves predictability of the incidence of CVD relative to the FRS model in Japan.

Key words: Cohort studies, Risk score model, Stroke, Coronary heart disease

Introduction

Cardiovascular diseases (CVDs) continue to be the leading causes of mortality worldwide^{1, 2}. CVD prevention is one of the most urgent concerns to be addressed. One aspect of CVD prevention is to identify individuals with higher risk for CVDs and manage their risk factors appropriately. Accordingly, many risk prediction tools for CVD components have been developed, such as the Framingham CVD risk score

(FRS) model³ and the Suita score model for coronary heart diseases (CHDs)⁴. However, it is usually not convenient for physicians to calculate risks separately by component and integrate them.

Recently, several risk prediction tools for multiple CVDs (CHDs and strokes) that are simple to use have been developed. However, such risk prediction tools for multiple CVDs depend on the proportion of CVD components. In other words, most of these risk prediction tools are based mainly on data from West-

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Received: January 23, 2019 Accepted for publication: December 19, 2019

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論文の要約

Cognitive function among elderly survivors prenatally exposed to atomic bombings

Am J Med DOI:10.1016/j.amjmed.2020.09.043

胎内被爆者の老年期の認知機能

山田美智子, 加藤直広, 喜多村紘子, 石原佳代子, 飛田あゆみ


背景：放射線影響研究所の成人健康調査では広島、長崎で2年毎の健診により被爆者とその対照を追跡調査している。その中には約1000人の母親の胎内で被曝した被爆者とその対照が含まれており、1978年から継続して追跡されている。胎内被爆者では小児期に知的障害を含む小児期の様々な認知機能検査で放射線の有害な影響が報告されている。胎内で放射線に被曝した集団の長期追跡は限られており、老年期の認知機能を評価した報告はほとんどない。

方法：胎内被爆者と対照からなる303人に対し、2011–2015年に **Cognitive Abilities Screening Instrument (CASI)**を用いたインタビューによる認知機能検査を実施した。調査時の年齢は65–70歳であった。対象者には小児期に著しい認知機能障害を示した者は含まれていなかった。対象者の約11%が線量250mGy以上に被曝していた。自己申告による認知症既往を調べ、また認知機能と放射線量の関連について人口動態的要因を調整して回帰分析により評価した。

結果：検査時に認知症の既往を認めたものはいなかった。全体としても妊娠週齢別でも、認知機能に有意な放射線の影響を認めなかった。年齢分布が狭い範囲に限られており、認知機能に対する年齢の影響は有意でなかった。男女別に解析すると男性で広島在住者の認知機能が長崎在住者に比べて高かった。教育レベルが高いと認知機能は有意に高かったが、教育レベルは放射線線量に関連していなかった。

結語：胎内で原爆による放射線に被曝したが、小児期に著しい認知機能低下を認めず、65–70歳に達した者では老年期の認知機能への有意な放射線影響は認めなかった。この研究のリミテーションは健診参加者のみに基づく調査結果であり、サンプル数が少ない事である。この結果を胎内での医療被曝や職業被曝を含めて一般化するには不確定要素が含まれている。胎内で放射線に被曝した他の集団における多様なエンドポイントを用いて、さらに研究する必要がある。

Differential regulation of hypoxanthine and xanthine by obesity in a general population

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Keywords

Purine metabolism, Salvage pathway, Xanthine oxidoreductase

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J Diabetes Investig 2020; 11: 878–887

doi:10.1111/jdi.13207

ABSTRACT

Aims/Introduction: Uric acid is synthesized by oxidation of hypoxanthine and xanthine using a catalyzing enzyme, xanthine oxidoreductase (XOR), which can be a source of reactive oxygen species. Plasma XOR activity is a metabolic biomarker associated with obesity, hyperuricemia, liver dysfunction and insulin resistance. However, it has recently been reported that XOR activity in fat tissue is low in humans, unlike in rodents, and that hypoxanthine is secreted from human fat tissue.

Materials and Methods: The associations of obesity with hypoxanthine, xanthine and plasma XOR activity were investigated in 484 participants (men/women: 224/260) of the Tanno-Sobetsu Study.

Results: Levels of hypoxanthine, xanthine and plasma XOR activity were significantly higher in men than in women. In 59 participants with hyperuricemia, 11 (men/women: 11/0) participants were being treated with an XOR inhibitor and had a significantly higher level of xanthine, but not hypoxanthine, than that in participants without treatment. In all of the participants, hypoxanthine concentration in smokers was significantly higher than that in non-smokers. Stepwise and multivariate regression analyses showed that body mass index, smoking habit and xanthine were independent predictors of hypoxanthine after adjustment of age, sex and use of antihyperuricemic drugs. Whereas, alanine transaminase, hypoxanthine and plasma XOR activity were independent predictors for xanthine, and alanine transaminase, triglycerides and xanthine were independent predictors for plasma XOR activity.

Conclusions: The concentration of hypoxanthine, but not that of xanthine, is independently associated with obesity and smoking habit, indicating differential regulation of hypoxanthine and xanthine in a general population.

INTRODUCTION

Hyperuricemia is closely associated with obesity and metabolic disturbances, such as insulin resistance, dyslipidemia, hypertension and cardiovascular diseases^{1–3}. In the purine metabolism pathway, uric acid is synthesized by oxidation of hypoxanthine and xanthine using a catalyzing enzyme, xanthine oxidoreductase (XOR)⁴. XOR is inducted as xanthine dehydrogenase, which catalyzes the reduction of oxidized nicotinamide adenine dinucleotide (NAD⁺) to reduced nicotinamide adenine

dinucleotide (NADH), and is post-translationally converted to xanthine oxidase, which produces hydrogen peroxide and superoxide by using oxygen⁴. Therefore, XOR can be an important source of reactive oxygen species, and it contributes to the development of oxidative stress-associated tissue disturbances⁵.

Plasma hypoxanthine is an extracellular molecule that reflects intracellular energy metabolism⁶, leading to a marker of hypoxia in tissue^{7,8} and free radical formation after reperfusion⁹. Therefore, plasma hypoxanthine is used as a tool for the diagnosis of hypoxia-related diseases, including cardiovascular disease, respiratory disease and hemolytic disorders¹⁰. Hypoxanthine is

Received 18 September 2019; revised 15 December 2019; accepted 2 January 2020



OPEN

Elevated circulating FABP4 concentration predicts cardiovascular death in a general population: a 12-year prospective study

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Fatty acid-binding protein 4 (FABP4) is secreted from adipose tissue and acts as an adipokine, and an elevated circulating FABP4 level is associated with metabolic disorders and atherosclerosis. However, little is known about the causal link between circulating FABP4 level and mortality in a general population. We investigated the relationship between FABP4 concentration and mortality including cardiovascular death during a 12-year period in subjects of the Tanno-Sobetsu Study, a population-based cohort ($n = 721$, male/female: 302/419). FABP4 concentration at baseline was significantly higher in female subjects than in male subjects. All-cause death occurred in 123 (male/female: 74/49) subjects, and 34 (male/female: 20/14) and 42 (male/female: 26/16) subjects died of cardiovascular events and cancer, respectively. When divided into 3 groups according to tertiles of FABP4 level at baseline by sex (T1–T3), Kaplan–Meier survival curves showed that there were significant differences in rates of all-cause death and cardiovascular death, but not cancer death, among the groups. Multivariable Cox proportional hazard model analysis with a restricted cubic spline showed that hazard ratio (HR) for cardiovascular death, but not that for all-cause death, significantly increased with a higher FABP4 level at baseline after adjustment of age and sex. The risk of cardiovascular death after adjustment of age, sex, body mass index and levels of brain natriuretic peptide and high-sensitivity C-reactive protein in the 3rd tertile (T3) group (HR: 4.96, 95% confidence interval: 1.20–22.3) was significantly higher than that in the 1st tertile (T1) group as the reference. In conclusion, elevated circulating FABP4 concentration predicts cardiovascular death in a general population.

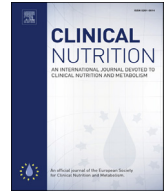
Fatty acid-binding proteins (FABPs), about 14–15-kDa cytosolic proteins, can bind long-chain fatty acids¹ and have been proposed to facilitate the transport of lipids to specific organelles in the cell¹. Among FABPs, fatty acid-binding protein 4 (FABP4), also known as adipocyte P2 (aP2) or adipocyte FABP (A-FABP), is expressed in adipose tissue including adipocytes and macrophages^{1,2}. Previous studies using animal models showed that FABP4 contributes to the development of metabolic disorders and cardiovascular disease in communication with metabolic and inflammatory pathways in adipocytes and macrophages^{3–5}. We previously showed in experimental models that inhibition of FABP4 by a small molecule might be a novel therapeutic strategy against insulin resistance, type 2 diabetes mellitus and atherosclerosis⁶. In a human study, subjects with a genetic variation of the FABP4 locus (T-87C) were shown to have a decrease in FABP4 expression in adipose tissue and beneficial effects on cardiovascular and metabolic health⁷.

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Clinical Nutrition

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Original article

Changes in a specific dietary pattern and incident dementia: A prospective cohort study

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ARTICLE INFO

Article history:

Received 18 September 2020

Accepted 26 November 2020

Keywords:

Japanese diet

Dietary pattern

Diet

Dementia

Cognition

Prospective cohort study

SUMMARY

Background & aims: Previous studies have reported that the Japanese diet is associated with a lower risk of dementia; however, whether changes in adherence to the Japanese diet affects incident dementia remains unknown. We aimed to evaluate the association between long-term changes in adherence to the Japanese diet and risk of incident dementia among older Japanese individuals.

Methods: We collected dietary information from community-dwelling older individuals living in Ohsaki city, Japan using a validated 39-item food frequency questionnaire in 1994 and 2006. Adherence to the Japanese diet was assessed using the 8-item Japanese Diet Index (JDI8) score (range: 0 to 8 points). Changes in adherence to the Japanese diet were defined as changes in the JDI8 score from 1994 to 2006. Next, the participants were classified into five groups: great decrease, moderate decrease, no changes [ref.], moderate increase, or great increase. Then, 3146 Japanese adults aged ≥ 65 years in 2006 were followed-up for 5.7 years. Incident dementia was retrieved from the long-term care insurance database. The Cox proportional hazards model was used to estimate multivariable-adjusted hazard ratios (HRs) and 95% confidence intervals (95% CIs) for incident dementia.

Results: During 14,336 person-years of follow up, 231 cases of dementia were ascertained. Compared with no changes in the JDI8 score, the multivariable-adjusted HRs (95% CIs) were 1.72 (1.13, 2.62) for great decrease, 1.10 (0.73, 1.66) for moderate decrease, 0.82 (0.54, 1.25) for moderate increase, and 0.62 (0.38, 1.02) for great increase (p -trend < 0.0001).

Conclusions: An increase in adherence to the Japanese diet was associated with a reduced risk of incident dementia, whereas a decrease in adherence was associated with an elevated risk among older Japanese individuals.

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1. Introduction

Globally, it is estimated that over 50 million people were living with dementia in 2019, and this number could increase to 152 million by 2050 [1]. Due to the lack of effective treatment for dementia and the tremendous cost of dementia care, prevention is an

urgent priority in terms of both reducing the incidence and slowing down the progression of dementia.

Diet is an important lifestyle factor that can modify the risk of dementia [2]. Some individual nutrients or food groups have been reported to be associated with a lower risk of dementia, but stronger evidence exists for healthy dietary patterns that may have complex interactions among multiple components [3]. A recent review indicated that greater adherence to healthy dietary patterns, such as the Mediterranean, Dietary Approaches to Stop Hypertension (DASH), and Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) diets, are associated with less cognitive decline and a lower risk of Alzheimer's disease [4]. Moreover, great attention has recently been given to other population-specific dietary patterns such as the Japanese diet, which is mainly characterized by a high consumption of soybean products, fish, seaweed, vegetables, and green tea [5–7]. Based on a

Abbreviations: ANOVA, analysis of variance; CI, confidence interval; DASH diet, Dietary Approaches to Stop Hypertension diet; MIND diet, Mediterranean-DASH Intervention for Neurodegenerative Delay diet; DOP, doctor's opinion paper; DR, dietary record; FFQ, food frequency questionnaire; HR, hazard ratio; JDI8, 8-item Japanese diet index; LTCl, long-term care insurance; MI, myocardial infarction; RCS, restricted cubic spline; SD, standard deviation.

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<https://doi.org/10.1016/j.clnu.2020.11.036>

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Association between Long-term Weight Change since Midlife and Risk of Incident Disabling Dementia among Elderly Japanese: the Ohsaki Cohort 2006 Study

Yukai Lu, Yumi Sugawara, Sanae Matsuyama, Ichiro Tsuji

[+ Author information](#)Keywords: [weight loss](#), [weight change](#), [dementia](#), [cognition](#), [prospective cohort study](#)[JOURNALS](#) [OPEN ACCESS](#) [ADVANCE ONLINE PUBLICATION](#)

Article ID: JE20200260

[DOI](#) <https://doi.org/10.2188/jea.JE20200260>[+ Details](#)

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Abstract

Background: Both weight loss and cognitive impairment are common in late-life, but it remains unknown whether weight change is associated with risk of incident dementia among elderly Japanese. Our study aimed to investigate the association between long-term weight change since midlife and risk of incident disabling dementia using a community-based cohort study of elderly Japanese.

Methods: In 2006, we conducted a cohort study of 6,672 disability-free Japanese adults aged ≥ 65 years. In both 1994 and 2006, the participants reported their weight using a self-reported questionnaire. Based on weight obtained at these two time points, participants were classified into: stable weight ($-1.4 - +1.4$ kg), weight gain ($\geq +1.5$ kg), and weight loss of $-2.4 - -1.5$ kg, $-3.4 - -2.5$ kg, $-4.4 - -3.5$ kg, $-5.4 - -4.5$ kg, and ≤ -5.5 kg. Incident disabling dementia was retrieved from the public Long-term Care Insurance database. Participants were followed-up for 5.7 years (between April 2007 and November 2012). Cox proportional hazards model was used to estimate multivariable-adjusted hazard ratios (HRs) and 95% confidence intervals (95% CIs) for incident disabling dementia.

Results: During 32,865 person-years of follow-up, 564 participants were ascertained as having incident disabling dementia. Compared with stable weight, the multivariable-adjusted HRs (95% CIs) were 0.97 (0.70, 1.34) for weight loss of $-2.4 - -1.5$ kg, 0.98 (0.70, 1.38) for $-3.4 - -2.5$ kg, 1.28 (0.91, 1.81) for $-4.4 - -3.5$ kg, 1.27 (0.92, 1.77) for $-5.4 - -4.5$ kg, and 1.64 (1.29, 2.09) for ≤ -5.5 kg.

Conclusion: Our study suggested that a ≤ -3.5 kg weight loss over 12 years might be associated with higher risk of incident disabling dementia among elderly Japanese.

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Clinical and Experimental Hypertension. 2020;42:685-691.

Comparison of nocturnal blood pressure based on home versus ambulatory blood pressure measurement: the Ohasama Study.

Keiko Hosohata, Masahiro Kikuya, Kei Asayama, Hirohito Metoki, Yutaka Imai, Takayoshi Ohkubo.

Abstract

Objectives: The nocturnal blood pressure (BP) is a strong predictor of hypertensive target organ damage including that in cardiovascular diseases. The use of ambulatory BP (ABP) monitoring has enabled the evaluation of nocturnal BP and detection of non-dippers. This study compared nocturnal BP values, nocturnal decline in BP, and the prevalence of non-dippers based on ABP and home BP (HBP) measurements in a general population.

Methods: Data on HBP measured with HEM 747-IC-N (Omron Healthcare Co., Ltd.) and 24-hour ABP measured with ABPM-630 (Nippon Colin) were obtained from fifty-five participants aged ≥ 20 years (mean age: 65.1 years, 78.2% women). To exclude a systematic difference between the two methods, we conducted a validation study for HBP and ABP in another population that consisted of hypertensive outpatients (mean age: 65.4 years, 53.4% women).

Results: After adjusting for the systematic difference in BP between the two methods calculated in the validation study (3.9 mmHg for systolic and 3.0 mmHg for diastolic), morning and daytime (average of morning and evening) HBP were significantly lower than morning (average of 2 h after waking) and daytime (average of being awake) ABP, respectively. No significant difference was found in nocturnal BP between HBP and ABP monitoring regardless of the quality of sleep during nocturnal HBP measurement. Agreement between HBP and ABP in the detection of non-dippers was low mainly due to the difference in daytime BP values.

Conclusion: HBP monitoring may be a reliable alternative to ABP for the assessment of nocturnal BP.

Journal of Hypertens. 2020;38:1286-1292.

Do estimated 24-h pulse pressure components affect outcome? : the Ohasama study.

Michael Bursztyn, Masahiro Kikuya, Kei Asayama, Michihiro Satoh, Benjamin Gavish, Takayoshi Ohkubo.

Abstract

Objective: Twenty-four-hour ambulatory pulse pressure (PP) is a powerful predictor of outcome. We attempted to apply the recently described PP components, an elastic (eIPP), and systolic stiffening (stPP) components from 24-h ambulatory blood pressure (BP) monitoring (AMBP), and examine their influence on outcome in the Ohasama study population.

Design and methods: Included were participants of the Ohasama study without history of cardiovascular disease (CVD), who were followed-up for total and CVD mortality, and for stroke morbidity. The PP components were derived from 24-h SBP and DBP using a model based on the nonlinear pressure--volume relationship in arteries expressing pressure stiffness relationship. Outcome predictive power was estimated by Cox regression models; hazard ratio with 95% confidence interval (CI), applied to eIPP, and stPP, adjusted for age, sex, BMI, smoking, alcohol drinking, diabetes mellitus, total cholesterol, antihypertensive treatment, and mean arterial pressure (MAP), whenever appropriate.

Results: Of 1745 participants (age 61.4 ± 11.6 , 65% women), 580 died, 212 of CVD, and 290 experienced a stroke during 17 follow-up years. PP was strongly correlated with eIPP ($r = 0.89$) and less so with stPP ($r = 0.58$), and the correlation between the two components was weak ($r = 0.15$). After the adjustment, hazard ratio of PP per 1 SD increment for total mortality, CVD mortality, and stroke morbidity were 1.095 (95% CI 0.973-1.232), 1.207 (1.000-1.456), and 0.983 (0.829-1.166), respectively.

Corresponding hazard ratios and 95% CIs were nonsignificant for eIPP, and stPP. However, among participants with median pulse rate 68.5 bpm or less (median, $n = 872$), total (327 deaths) and CVD (131 deaths) mortality were predicted by eIPP (per 1 SD increment), hazard ratio 1.231 (95% CI, 1.082-1.401), and 1.294 (95% CI, 1.069-1.566), respectively. In the subgroup of treated participants with hypertension and pulse rate 68.5 or less bpm ($n = 309$), total (177 deaths) and CVD (77 deaths) mortality were predicted by eIPP, hazard ratio of 1.357 (95% CI, 1.131-1.628), and 1.417 (95% CI, 1.092-1.839), respectively. Stroke morbidity was not predicted by either PP or the PP components.

Conclusion: In a rural Japanese population, ePP but not stPP was predictive of total and CVD mortality even when adjusted for MAP and conventional risk factors in the subpopulation with slower pulse rate. This was mostly among the treated hypertensive patients.

Tohoku Journal of Experimental Medicine. 2020;252:269-279.


Blood pressure phenotypes defined by ambulatory blood pressure monitoring and carotid artery changes in community-dwelling older Japanese adults: the Ohasama study.

Ayami Fujita, Azusa Hara, Masahiro Kikuya, Kei Asayama, Michihiro Satoh, Kaori Asakura, Yoriko Shintani, Shinya Uchida, Yuko Takatsuji, Takahisa Murakami, Takuo Hirose, Megumi Tsubota-Utsugi, Ryusuke Inoue, Kyoko Nomura, Hirohito Metoki, Atsushi Hozawa, Seiko Miyazaki, Yutaka Imai and Takayoshi Ohkubo.

Abstract

White coat hypertension is defined as elevated blood pressure in the office, but a normal blood pressure out-of-office, whereas masked hypertension is defined as elevated blood pressure in the office, but normal out-of-office blood pressure. The objective was to investigate the associations between these blood pressure phenotypes and carotid artery changes. Conventional blood pressure, ambulatory blood pressure, and carotid ultrasonography were evaluated in 851 Ohasama residents (31.8% men; mean age 66.3 years). The blood pressure phenotypes were defined by the ordinary thresholds (140/90 mmHg for conventional blood pressure, 135/85 mmHg for daytime blood pressure) and then by the 2017 American College of Cardiology/American Heart Association (ACC/AHA) thresholds for hypertension (130/80 mmHg for both conventional and daytime blood pressure), irrespective of antihypertensive medication treatment status. Blood pressure phenotypes were linearly associated with the mean intima-media thickness of the carotid artery in ascending order for sustained normal blood pressure, white coat hypertension, masked hypertension, and sustained hypertension according to the ordinary thresholds and the 2017 ACC/AHA thresholds (both linear trends $P < 0.0001$) after adjustments for possible confounding factors. The odds ratios for the presence of carotid plaques showed similar linear trends with the blood pressure phenotypes according to the 2017 ACC/AHA thresholds (linear trend $P < 0.0191$). In conclusion, there was a close relationship between blood pressure phenotypes and carotid artery changes, suggesting that blood pressure phenotypes as defined by ambulatory blood pressure are potentially useful for risk stratification of carotid artery changes in the Japanese general population.

Health status of workers approximately 60 years of age and the risk of early death after compulsory retirement: A cohort study

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Funding information

Japan Society for the Promotion of Science, Grant/Award Number: JP16K09110 and JP18K10092; Ministry of Health, Labor and Welfare, Grant/Award Number: H17-Kenkou-007, H18-Junkankitou [Seishuu]-Ippan-012, H19-Junkankitou [Seishuu]-Ippan-012, H20-Junkankitou [Seishuu]-Ippan 013, H23-Junkankitou [Seishuu]-Ippan-005, H26-Junkankitou [Seisaku]-Ippan-001, H28-Junkankitou-Ippan-003 and H29-Junkankitou-Ippan-003

Abstract

Objectives: The increasing number of working elderly people has enhanced the importance of workplace health promotion activities. We investigated the association between the health status of workers approximately 60 years of age and the risk of all-cause mortality after compulsory retirement in Japan.

Methods: The 2026 participants (1299 males and 727 females) had retired from a metal-products factory at ≥ 60 years of age. Baseline health examinations were conducted at 60 years of age and included questions about medical history and lifestyle factors; the participants also underwent a physical examination. The participants were followed up annually by mail for an average of 7.4 years. The association between health status at age 60 years and the risk of all-cause mortality was assessed by Cox proportional hazards regression analysis.

Results: During the study, 71 deaths were reported. The age- and sex-adjusted hazard ratio (HR [95% confidence interval]) for all-cause mortality was higher for males (HR, 3.41 [1.73-6.69]) compared with females, participants with a low body mass index ($< 18.5 \text{ kg/m}^2$; HR 3.84 [1.91-7.73]) compared with normal body weight, smokers (HR, 2.63 [1.51-4.58]) compared with nonsmokers, and those with three or more of four metabolic abnormalities (obesity, high blood pressure, dyslipidemia, and glucose intolerance) (HR 2.29 [1.04-5.02]) compared with no metabolic abnormalities. The associations were unaffected by adjustment for these factors.

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公表論文要約

退職時の健康状況と退職後早期死亡との関連

Health status of workers approximately 60 years of age and the risk of early death after compulsory retirement: a cohort study. J Occup Health 62 (1):e12088, 2020.

Sakurai M, Ishizaki M, Miura K, Nakashima M, Morikawa Y, Kido T, Naruse Y, Nogawa K, Suwazono Y, Nogawa K, Nakagawa H.

目的：高齢労働者の増加にともない、高齢者を対象とした健康管理の重要性が増している。しかし、これまでの退職後年齢の対象者における職域での健康管理のエビデンスはほとんどない。そこで、職域退職者集団の健康状態の追跡研究の結果から、在職中60歳前後の健康状態と退職後早期死亡の関連を明らかにした。

方法：金属製品製造業事業所の定年退職者2,026人の退職前60歳前後の健康診断の結果を収集した。また、年1回郵送による質問票調査を実施し、健康状態を把握した。質問票調査における家族からの回答や、退職者組織の物故会員情報から死亡を把握した。比例ハザードモデルを用いて健診時の各種情報と総死亡との関連を評価した。

結果：退職後より平均7.4年間追跡し、71名の死亡を確認した。男性、[女性に対してハザード比(95%信頼区間) 3.41 (1.73-6.69)]、BMI 18.5 kg/m²未満のやせているもの[正常体重者に対して 3.84 (1.91-7.73)]、喫煙者[非喫煙者に対して 2.63 (1.51-4.58)]、代謝異常集積者[肥満、血圧高値、脂質異常症、耐糖能異常を3つ以上有する者 2.29 (1.04-5.02)]で早期死亡リスクが有意に高かった。

結語：高齢労働者において、低体重、喫煙、メタボリックシンドロームが、退職後早期死亡のリスクであり、在職中の高齢者の健康管理においては適正体重の維持、禁煙、メタボリックシンドロームの予防が重要であることが示唆された。

Sex differences in the influence of elevated serum uric acid levels for cardiovascular risk in the general population with normal renal function

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(Received on January 20, 2020 & Accepted on February 13, 2020)

Abstract

The role of serum uric acid (SUA) as an independent predictor of cardiovascular events (CVEs) is uncertain, as previous studies may not have sufficiently accounted for risk factors that are strongly related to the SUA level, such as chronic kidney disease (CKD). We examined the association between the SUA level and the incidence of CVEs in each gender without CKD. Baseline data, including the SUA level, estimated glomerular filtration rate, and urinary albumin/creatinine ratio were determined in participants from a community-based population. After the exclusion of CKD, the subjects were stratified into sex-specific quartiles of SUA (n

= 15,036). A Cox regression analysis was performed to examine the sex-specific relationship between the baseline SUA level and the onset of CVEs. During a mean follow-up period of 8.8 years, there were 611 CVEs (304 in men, 307 in women). After adjusting for traditional risk factors, the hazard ratio for the onset of CVEs did not differ among the quartiles in men. In contrast, in women, a significant trend was observed. In the Japanese general population without CKD, moderately elevated SUA level is considered an independent risk factor for the onset of CVEs in women but not in men.

*Key words : serum uric acid, chronic kidney disease,
cardiovascular disease, risk factor, women*


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RESEARCH ARTICLE

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Poor self-rated health predicts the incidence of functional disability in elderly community dwellers in Japan: a prospective cohort study

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Abstract

Background: Although previous large population studies showed elderly with poor self-rated health (SRH) to be at a high risk of functional disability in Western countries, there have been few studies in which the association between SRH and functional disability was investigated in Japanese community dwellers. The association between SRH and functional disability, defined as certification of the long-term care insurance (LTCI) system, in Japanese elderly community dwellers was examined in this study.

Methods: A total of 10,690 individuals (39.5% men, mean age of 71.4 years) who were 65 years of age or more who did not have a history of cardiovascular disease or LTCI certification were followed in this prospective study for 10.5 years. SRH was classified into four categories: good, rather good, neither good nor poor, and poor. A Cox proportional-hazards model was used to determine the hazard ratios (HRs) for the incidence of functional disability among the SRH groups for each sex.

Results: The number of individuals with functional disability was 3377. Men who rated poor for SRH scored significantly higher for functional disability (HR [95% confidence interval]: poor = 1.74 [1.42, 2.14]) while women who rated rather good, neither good nor poor, and poor scored significantly higher for functional disability (rather good = 1.12 [1.00, 1.25], neither good nor poor = 1.29 [1.13, 1.48], poor = 1.92 [1.65, 2.24]; p for trend < 0.001 in both sexes).

Conclusion: Self-rated health, therefore, might be a useful predictor of functional disability in elderly people.

Keywords: Aged, Japan, Long-term care insurance, Subjective health, Functional disability, Self-rated health

Background

It has been reported that poor self-rated health (SRH) is an indication of underlying physical and mental abnormalities that are often difficult to detect through other measures of health such as body weight and blood pressure [1]. Previous studies have shown that poor SRH is associated with mortality [2], morbidity (e.g.,

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Additional prognostic value of electrocardiographic left ventricular hypertrophy in traditional cardiovascular risk assessments in chronic kidney disease

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Background: Left ventricular hypertrophy (LVH) is a common predictor of the cardiovascular prognosis in chronic kidney disease (CKD). However, whether or not electrocardiography-derived LVH (ECG-LVH) has prognostic value in patients with various degrees of CKD and improves the cardiovascular risk stratification based on traditional risk factors remains unclear.

Methods: A total of 7206 participants at least 40 years of age who were free from cardiovascular events in a general population were followed for the incidence of cardiovascular events. CKD was confirmed by either the presence of a reduced estimated glomerular filtration rate (eGFR) (<60 ml/min per 1.73 m²) or albuminuria, defined as a urinary albumin-to-creatinine ratio (UACR) of at least 30 mg/g Cr.

Results: A total of 1886 (26.2%) had CKD, of which 1471 (78.0%) had a preserved eGFR (CKD stage 1–2). After an average 11.3 years of follow-up, the adjusted hazard ratio for the incidence of cardiovascular events significantly increased for ECG-LVH according to the Sokolow–Lyon voltage, Cornell voltage, or Cornell voltage product among participants with CKD (hazard ratio 1.47, $P=0.002$), in contrast to those without CKD (hazard ratio 1.15, $P=0.210$). The inclusion of any ECG-LVH parameters improved the accuracy of reclassification in any risk prediction model based on the eGFR, UACR, or Framingham 10-year risk score in the CKD participants (net reclassification improvement = 0.13–0.32, all P values <0.040).

Conclusion: In patients with CKD stage 1–5, ECG-LVH is useful for predicting the risk of future cardiovascular events and adds prognostic information to traditional cardiovascular risk assessments.

Keywords: albuminuria, cardiovascular, chronic kidney disease, ECG, glomerular filtration rate, left ventricular hypertrophy

Abbreviations: BP, blood pressure; CKD, chronic kidney disease; CVD, cardiovascular disease; ECG-LVH,

electrocardiographic left ventricular hypertrophy; eGFR, estimated glomerular filtration rate; FRS, Framingham 10-year risk score; HDL-C, high-density lipoprotein cholesterol; IDI, integrated discrimination improvement; LVH, left ventricular hypertrophy; NRI, net reclassification improvement; SCUD, sudden cardiac and unexpected death; SD, standard deviation; UACR, urinary albumin-to-creatinine ratio

INTRODUCTION

Chronic kidney disease (CKD) is a major public health issue, as the worldwide prevalence of CKD increased by 87% and death because of CKD increased by 98% from 1990 to 2016, driven by the increased global epidemic of diabetes and hypertension [1,2]. In patients with CKD, cardiovascular disease (CVD) is the most common cause of mortality [3]. In addition, the cardiovascular complications in CKD are associated with left ventricular hypertrophy (LVH) [4,5]. It is known that LVH detected by echocardiography is associated with the incidence of CVD events in patients with CKD [6,7]. However, echocardiography may not be readily available for the assessment of LVH, especially in noncardiology units.

For the diagnosis of LVH, 12-lead electrocardiography (ECG) has been widely used as a simple and inexpensive

Journal of Hypertension 2020, 38:1149–1157

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Received 16 September 2019 Revised 8 January 2020 Accepted 17 January 2020

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DOI:10.1097/HJH.0000000000002394

BMJ Open Association between P wave polarity in atrial premature complexes and cardiovascular events in a community-dwelling population

Tomoyuki Kabutoya ¹, Yasushi Imai,¹ Shizukiyo Ishikawa,² Kazuomi Kario¹

To cite: Kabutoya T, Imai Y, Ishikawa S, *et al.* Association between P wave polarity in atrial premature complexes and cardiovascular events in a community-dwelling population. *BMJ Open* 2020;**10**:e033553. doi:10.1136/bmjopen-2019-033553

► Prepublication history for this paper is available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2019-033553>).

Received 02 September 2019
Revised 18 September 2020
Accepted 21 September 2020



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ABSTRACT

Objective To examine the association between polarity of atrial premature complexes (APCs) and stroke.

Design A prospective study.

Setting and participants A total of 11 092 participants in the Jichi Medical School cohort study were included after excluding patients with atrial fibrillation. We analysed stroke events in patients with (n=136) and without (n=10 956) APCs. With regard to polarity of APCs, patients were subcategorised into having (1) negative (n=39) or non-negative (n=97) P waves in augmented vector right (aVR), and (2) positive (n=28) or non-positive (n=108) P waves in augmented vector left (aVL).

Outcome measures The primary endpoint was stroke.

Results Patients with APCs were significantly older than those without APCs (64.1±9.2 vs 55.1±11.6 years, p<0.001). The mean follow-up period was 11.8±2.4 years. Stroke events were observed in patients with (n=13 events) and without (n=411 events) APCs. This difference was significant (log-rank 12.9, p<0.001); however, APCs were not an independent predictor of stroke after adjusting for age, sex, height, body mass index, current drinking, diabetes, systolic blood pressure, prior myocardial infarction, prior stroke and high-density lipoprotein-cholesterol (p=0.15). The incidence of stroke in patients with APCs and non-negative P wave in aVR was significantly higher than in patients without APCs (log-rank 20.1, p<0.001), and non-negative P wave in aVR was revealed to be an independent predictor of stroke (HR 1.84, 95% CI 1.02 to 3.30). The incidence of stroke in patients with APC with non-positive P wave in aVL was also significantly higher than in patients without APC (log-rank 15.3, p<0.001), and non-positive P wave in aVL was an independent predictor of stroke (HR 1.92, 95% CI 1.05 to 3.54).

Conclusions The presence of APCs with non-negative P wave in aVR or non-positive P wave in aVL on 12-lead ECG was associated with a higher risk of incident stroke.

INTRODUCTION

Atrial fibrillation (AF) is a major risk factor of stroke, is associated with severity of stroke and is a common disease with ageing.^{1–3} Atrial premature complexes (APCs) are found in healthy subjects.⁴ However, APCs are also associated with cardiovascular death⁵ and ischaemic

Strengths and limitations of this study

- Data were from a large cohort study over an 11-year period.
- Stroke events in patients with atrial premature complexes (APCs) categorised according to polarity of APCs were evaluated.
- The polarity of APCs was associated with the origin of APCs.
- The origin of APCs was not confirmed by an invasive procedure.
- There was a small number of patients with APCs.

stroke.⁶ In the general population, the detection of even a single APC by ECG is associated with AF and cardiovascular death.⁷ Kamel *et al*⁸ reported that a mechanistic link between APC as a biomarker of cardiovascular/atrial myocardial disease was much more evident in patients who had experienced stroke. Thus, the presence of APCs is a notable predictor of stroke, but the precise role played by APCs in stroke events remains unclear.

The diagnosis of focal atrial tachycardia is based on the polarity of the P wave on 12-lead ECG.⁹ The origin of APCs associated with AF has also been investigated using Holter ECG.¹⁰ Most of the triggers of AF originate from pulmonary veins¹¹; however, a method for ECG assessment of the atrial electrical excitation of APCs from firing of left pulmonary vein has not been established. The association between the polarity of the P wave of APCs obtained by 12-lead ECG and stroke has also been unclear.

The aim of this study was to evaluate the association between the polarity of APCs on 12-lead ECG and stroke events in a general population.

METHODS

Study population

This study was conducted as part of the Jichi Medical School (JMS) cohort study, which

The association between P-wave polarity in atrial premature complexes and cardiovascular events in a community-dwelling population.

Kabutoya T, Imai Y, Ishikawa S, Kario K.

BMJ Open 2020;10:e033553. doi:10.1136/bmjopen-2019-033553

Abstract

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Design A prospective study.

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Conclusions The presence of APCs with non-negative P wave in aVR or non-positive P wave in aVL on 12-lead ECG was associated with a higher risk of incident stroke.

Keywords: P-wave; atrial premature complexes; stroke.

High-Density Lipoprotein Cholesterol and Risk of Stroke Subtypes: Jichi Medical Cohort Study.

Watanabe J, Kakehi E, Kotani K, Kayaba K, Nakamura Y, Ishikawa S.

Asia Pac J Public Health. 2020 ;32:27-34.

Abstract

We aimed to investigate the relationship between high-density lipoprotein cholesterol (HDL-C) concentration and the incident stroke subtypes. We enrolled 11 027 participants between the ages of 18 and 90 years without a history of stroke in 12 Japanese communities. Cox's regression models were used for stroke subtypes, adjusted for traditional risk factors, according to the categories based on HDL-C concentrations: 1.04 to 1.55 mmol/L, ≥ 1.56 mmol/L, and < 1.03 mmol/L (as the reference). During a mean follow-up of 10.7 years, 412 stroke events had occurred. However, HDL-C was not significantly associated with the incidence of cerebral infarction and subarachnoid hemorrhage. High HDL-C concentration was associated with a decreased incidence of intracerebral hemorrhage in women (hazard ratio = 0.23; 95% confidence interval = 0.06-0.89), but not in men (hazard ratio = 0.73; 95% confidence interval = 0.27-1.97). Therefore, high HDL-C concentration might have a protective effect on the incidence of intracerebral hemorrhage, particularly in women.

Keywords: Japanese; cohort studies; high-density lipoprotein cholesterol; morbidity; stroke

Isolated low levels of high-density lipoprotein cholesterol and stroke incidence: JMS Cohort Study.

Watanabe J, Kakehi E, Kotani K, Kayaba K, Nakamura Y, Ishikawa S.

J Clin Lab Anal. 2020;34:e23087.

Abstract

Background: The cardiovascular relevance of isolated low levels of high-density lipoprotein cholesterol (HDL-C) is yet to be determined. Stroke often leads to long-term disability, and thus, not only stroke mortality but also stroke incidence is a topic of research. Although isolated low HDL-C level has been found to be a predictor for stroke mortality previously, whether it can predict stroke incidence is unknown.

Methods: In the Jichi Medical School cohort study, 11 025 community-living residents without a history of stroke were examined. Hazard ratios (HRs) for isolated and non-isolated low HDL-C levels were calculated relative to those for normal HDL-C levels in stroke patients using Cox's regression models.

Results: During the mean follow-up period of 10.7 years, 412 residents had their first-ever stroke. The multivariable-adjusted HRs for the levels of isolated and non-isolated low HDL-C were 1.11 (95% confidence interval, 0.85-1.44) and 1.35 (1.01-1.81), respectively, when compared to that for normal HDL-C.

Conclusion: Low HDL-C levels with other dyslipidemias may contribute to the incidence of stroke, not isolated low HDL-C.

Keywords: Japanese; cohort studies; high-density lipoprotein; incidence; stroke.

Combined Effect of Small Dense Low-Density Lipoprotein Cholesterol (sdLDL-C) and Remnant-Like Particle Cholesterol (RLP-C) on Low-Grade Inflammation.

Izumida T, Nakamura Y, Nino Y, Ishikawa S.

J Atheroscler Thromb. 2020 ;27:319-330.

Abstract

Aims: Small dense low-density lipoprotein cholesterol (sdLDL-C) and remnant-like particle cholesterol (RLP-C) are the novel atherosclerotic risk factors and might be strongly associated with inflammation. The basic evidence supports that sdLDL and RLP have some different mechanisms inducing an inflammatory response. Many studies have focused on the mechanism of inflammation of sdLDL-C or RLP-C per se, with limited data on the association between sdLDL-C and RLP-C in the real-world, population-based setting. Thus, the aim of this study was to investigate the association between sdLDL-C and RLP-C with inflammation.

Methods: We examined the baseline cross-sectional data of participants from the Jichi Medical School-II Cohort Study. In total, 5,305 participants (2,439 men and 2,866 women) were included in this study.

Results: Of all quartiles of sdLDL-C, the fourth had the highest high-sensitivity C-reactive protein (hs-CRP) level. Once adjusted for age, sex, smoking status, homeostasis model assessment of insulin resistance, antidiabetic and antihyperglycemic medication use, and RLP-C, sdLDL-C was significantly and positively associated with hs-CRP (geometric mean, 95% confidence interval (CI), 0.36 mg/L (0.34-0.38 mg/L), 0.37 mg/L (0.35-0.39 mg/L), 0.40 mg/L (0.37-0.42 mg/L) versus 0.44 mg/L (0.42-0.47 mg/L), $P < 0.001$ for trend). After stratifying the participants into four sdLDL-C×four RLP-C categories, the group in the fourth sdLDL-C quartile and the fourth RLP-C quartile had the highest hs-CRP level (geometric mean, 95% CI, 0.52 mg/L, 0.48-0.57 mg/L, interaction $P=0.75$).

Conclusions: SdLDL-C and RLP-C had different associations with inflammation. Our results support sdLDL-C as the potential novel factor of cardiovascular disease, independently of RLP-C.

Keywords: High-sensitivity C-reactive protein; Low-grade inflammation; Remnant-like particle cholesterol; Small dense low-density lipoprotein cholesterol.

Hemoglobin concentration and the incidence of stroke in the general Japanese population: the Jichi Medical School Cohort Study.

Sato F, Nakamura Y, Kayaba K, Ishikawa S.

J Epidemiol. DOI <https://doi.org/10.2188/jea.JE20200346>

Background: The Japanese Study on Stratification, Health, Income, and Neighborhood (J-SHINE) aims to clarify the complex associations between social factors and health from an interdisciplinary perspective and to provide a database for use in various health policy evaluations.

Methods: J-SHINE is an ongoing longitudinal panel study of households of adults aged 25–50 years. The wave 1 survey was carried out in 2010 among adults randomly selected from the resident registry of four urban and suburban municipalities in the greater Tokyo metropolitan area, Japan. In 2011, surveys for the participants' spouse/partner and child were additionally conducted. The wave 2 survey was conducted in 2012 for the wave 1 participants and will be followed by the wave 2 survey for spouse/partner and child in 2013.

Results: Wave 1 sample sizes were 4357 for wave 1 participants (valid response rate: 31.3%; cooperation rate: 51.8%), 1873 for spouse/partner (response rate: 61.9%), and 1520 for child (response rate: 67.7%). Wave 2 captured 69.0% of wave 1 participants. Information gathered covered socio-demographics, household economy, self-reported health conditions and healthcare utilization, stress and psychological values, and developmental history. A subpopulation underwent physiological (n = 2468) and biomarker (n = 1205) measurements.

Conclusions: Longitudinal survey data, including repeated measures of social factors evaluated based on theories and techniques of various disciplines, like J-SHINE, should contribute toward opening a web of causality for society and health, which may have important policy implications for recent global health promotion strategies such as the World Health Organization's Social Determinants of Health approach and the second round of Japan's Healthy Japan 21.

The Association between Sleeping Pill Use and Metabolic Syndrome in an Apparently Healthy Population in Japan: JMS-II Cohort Study.

Izumida T, Nakamura Y, Sato Y, Ishikawa S.

J Epidemiol. DOI <https://doi.org/10.2188/jea.JE20200361>

Abstract

Background: Sleeping pills are widely used for sleep disorders and insomnia. This population-based study aimed to evaluate the association between the use of sleeping pills and metabolic syndrome (MetS) and metabolic components in an apparently healthy Japanese cohort.

Methods:

We examined baseline cross-sectional data from the JMS-II Cohort Study. The criteria for MetS and its components were based on The National Cholesterol Education Program Adult Treatment Panel III. Sleep habits including the sleep duration of the subjects and the frequency of sleeping pill use were obtained using The Pittsburgh Sleep Quality Index questionnaire. For different sleep durations, the association between sleeping pill use and MetS was assessed. Odds ratios (ORs) and their 95% confidence intervals (CIs) were estimated using multiple logistic regression models to quantify this association.

Results: Our study included 6,153 individuals (mean age, 63.8 [standard deviation 11.2] years), and 3,348 (54.4%) among them were women. The association between sleep duration and MetS was an inverted J-shaped curve among sleeping pill users and a J-shaped curve among non-users. After adjustment for various confounders, less than 6 h of sleep among sleeping pill users was associated with increased rates of MetS (< 6 h, OR [95% CI]: 3.08 [1.29-7.34]). The frequency of sleeping pill use in individuals with short sleep duration showed a positive association with the prevalence of MetS and its components.

Conclusions: Sleeping pill users with a short sleep duration had a 3-fold higher chance of having MetS than non-users with a short sleep duration.

Coffee consumption and mortality in Japan with 18 years of follow-up: the Jichi Medical School Cohort Study.

Sakamaki T, Kayaba K, Kotani K, Namekawa M, Hamaguchi T, Nakaya N, Ishikawa S. Coffee consumption and mortality in Japan with 18 years of follow-up: the Jichi Medical School Cohort Study.

Public Health 2021;191:23-30.

Objective: Coffee consumption can be expected to reduce mortality due to cardiovascular diseases and cancer. This study tested the hypothesis of an inverse association between coffee intake and all-cause mortality and mortality due to cancer, coronary heart disease, or stroke. **Study design:** prospective cohort study.

Methods: We analyzed data from the Jichi Medical School Cohort Study, Japan, enrolling 9946 subjects (men/women: 3870/6,076, age: 19e93 years) from 12 communities. A food frequency questionnaire assessing the subjects' daily coffee consumption was used.

Results: During an average follow-up of 18.4 years, the total number of deaths was 2,024, including 677 for cancer, 238 for coronary heart disease, and 244 for stroke. Cox proportional hazards models were used to calculate hazard ratios (HRs) and 95% confidence intervals (CIs) of all-cause mortality and causespecific mortality due to cancer, coronary heart disease, and stroke. Overall, no significant association was shown between coffee consumption and all-cause mortality. In the cause-specific mortality analyses, stroke mortality was significantly lower in those who consumed 1e2 cups of coffee daily (HR [95% CI]: 0.63 [0.42e0.95]) than in those who do not consume coffee, and this association occurred only in men.

Conclusion: This study showed no significant association between coffee consumption and all-cause mortality. A U-shaped association between coffee consumption and stroke mortality with a 37% lower stroke mortality, only significant in men who consume 1e2 cups of coffee daily was observed. It is necessary to examine the possibility of intervention studies to reduce stroke mortality through coffee consumption.

Keywords: Coffee consumption; Mortality; Prospective cohort study; Stroke.