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CLINICAL RESEARCH

Family history of stroke is potentially associated with arterial stiffness in the Japanese population



Un antécédent familial d'infarctus cérébral est potentiellement associé avec la rigidité artérielle dans une population japonaise

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KEYWORDS

Vascular stiffness;
Stroke;
Cross-sectional
studies

Summary

Background. – Studies on the association between family history of cardiovascular disease and arterial stiffness are rare.

Aims. – This study evaluated the possible relationship between family history of cardiovascular disease and arterial stiffness in the Japanese population, by measuring brachial-ankle pulse wave velocity (ba-PWV).

Methods. – A total of 1004 eligible subjects (664 men and 340 women) aged 35–69 years, who were enrolled in the baseline survey of a cohort study in Tokushima Prefecture (Japan) and who underwent ba-PWV measurement, were analysed. Information about their lifestyle characteristics and first-degree family histories of ischaemic heart disease (i.e. myocardial infarction or angina pectoris), stroke or hypertension were obtained from a structural self-administered questionnaire.

Abbreviations: ABI, ankle-brachial pressure index; ba-PWV, brachial-ankle pulse wave velocity; cf-PWV, carotid-femoral pulse wave velocity; HDL, high-density lipoprotein; J-MICC, Japan Multi-Institutional Collaborative Cohort; MET, metabolic equivalent of task; PWV, pulse wave velocity.

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Results. — Subjects of both sexes with a family history of stroke showed significantly higher multivariable-adjusted means of ba-PWV than those without that trait (P values were 0.001 in men and 0.002 in women), while those with a family history of ischaemic heart disease did not. Subjects of both sexes with a family history of hypertension showed significantly higher age-adjusted means of ba-PWV than those without that trait, although these differences disappeared after further adjusting for blood pressure or multivariable covariates. When family histories of these diseases were inserted simultaneously into the same model, these results did not alter substantially.

Conclusion. — A family history of stroke might be associated with increased arterial stiffness, independent of other known atherosclerotic risk factors, including hypertensive elements, in both sexes in the Japanese population.

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MOTS CLÉS

Rigidité vasculaire ;
Infarctus cérébral ;
Étude transversale

Résumé

Justification. — Les études sur les associations entre les antécédents familiaux de maladie cardiovasculaire et la rigidité artérielle sont rares.

Objectifs. — Cette étude a évalué la possible relation entre les antécédents familiaux de maladie cardiovasculaire et la rigidité artérielle au sein d'une population japonaise, en mesurant le paramètre vitesse de l'onde de pouls bras-cheville.

Méthode. — Mille quatre sujets éligibles (664 hommes) âgés de 35 à 69 ans, ont été inclus au sein de cette cohorte de la préfecture de Tokushima au Japon et ont bénéficié d'une mesure de la vitesse de l'onde de pouls bras-cheville, paramètre qui a été analysé. L'information concernant les caractéristiques de base, le mode de vie, les antécédents familiaux de maladie coronaire de 1^{er} degré (infarctus du myocarde ou angine de poitrine), d'infarctus cérébral et d'hypertension artérielle ont été obtenus à partir d'un questionnaire structuré renseigné par les patients.

Résultats. — Les sujets des deux sexes ayant un antécédent familial d'infarctus cérébral avaient des moyennes de vitesse de l'onde de pouls bras-cheville dans les deux sexes significativement plus élevées ($p=0,001$ chez l'homme et $p=0,002$ chez la femme), comparativement aux sujets n'ayant pas de tels antécédents, tandis que les patients ayant un antécédent familial de cardiopathie ischémique n'avaient pas de différence significative concernant ce paramètre. Les sujets des deux sexes ayant un antécédent familial d'hypertension artérielle avaient également des valeurs moyennes de cet indice plus élevées, comparativement aux sujets n'ayant pas ce trait, mais ces différences n'étaient plus significatives après ajustement sur la pression artérielle ou sur les co-variables en analyse multivariée. Lorsque les antécédents familiaux de ces affections cérébro-vasculaires et ischémiques étaient inclus dans le même modèle, ces résultats n'étaient pas modifiés de façon significative.

Conclusion. — Un antécédent familial d'infarctus cérébral pourrait être potentiellement associé avec une augmentation de la rigidité artérielle, indépendamment des autres facteurs de risque d'athérosclérose connus, hypertension artérielle en particulier, et ce dans les deux sexes, dans une population japonaise.

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Background

Cardiovascular events are major causes of death worldwide. Atherosclerosis is the main factor leading to cardiovascular events. Arterial stiffness is an indicator of atherosclerotic vascular change and can be assessed by measuring pulse wave velocity (PWV) [1]. Many epidemiological studies have reported positive associations between PWV and the development of atherosclerotic disease [2,3]. PWV is recognized as a marker of the severity of vascular damage [4]; moreover, it is a predictor of cardiovascular events [5] and mortality [6]. Brachial-ankle PWV (ba-PWV)

can be measured conveniently and non-invasively, and is useful for evaluating the early stages of atherosclerosis [7,8].

Mortality due to ischaemic heart disease is less frequent in Japan than in Western countries [9]. However, mortality and morbidity due to stroke are more frequent in Japan, especially in men [9]. Recent studies have revealed that increased PWV is associated with coronary and cerebral atherosclerosis [10,11]. Family history is a risk factor for many chronic diseases, including hypertension, ischaemic heart disease and stroke [12,13]. However, little is known about the influence of family history of cardiovascular

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