Clin Investig Arterioscler. 2017;29(3):111–119

Sociedad Española de Arteriosclerosis

CLÍNICA E INVESTIGACIÓN EN ARTERIOSCLEROSIS

www.elsevier.es/arterio

ORIGINAL ARTICLE

Subclinical cardiovascular disease assessment and its relationship with cardiovascular risk SCORE in a healthy adult population: A cross-sectional community-based study

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Received 25 July 2016; accepted 17 October 2016
Available online 1 April 2017

KEYWORDS
Cardiovascular diseases;
SCORE;
Subclinical atherosclerosis;
Risk;
Asymptomatic

Abstract
Introduction: The aim of this study is to evaluate the relationship and the accuracy of SCORE (Systematic Coronary Risk Evaluation Project) risk correlated to multiple methods for determining subclinical cardiovascular disease (CVD) in a healthy population.
Material and methods: This cross-sectional study included 120 completely asymptomatic subjects, with an age range 35–75 years, and randomly selected from the general population. The individuals were evaluated clinically and biochemical, and the SCORE risk was computed. Subclinical atherosclerosis was assessed by various methods: carotid ultrasound for intima-media thickness (cIMT) and plaque detection; aortic pulse wave velocity (aPWV); echocardiography – left ventricular mass index (LVMI) and aortic atheromatosis (AA); ankle-brachial index (ABI).
Results: SCORE mean value was 2.95 ± 2.71, with 76% of subjects having SCORE <5. Sixty-four percent of all subjects have had increased subclinical CVD changes, and SCORE risk score was correlated positively with all markers, except for ABI. In the multivariate analysis, increased cIMT and aPWV were significantly associated with high value of SCORE risk (OR 4.14, 95% CI: 1.42–12.15, $p = 0.009$; respectively OR 1.41, 95% CI: 1.01–1.96, $p = 0.039$). A positive linear relationship was observed between 3 territories of subclinical CVD (cIMT, LVMI, aPWV) and SCORE risk ($p < 0.0001$). There was evidence of subclinical CVD in 60% of subjects with a SCORE value <5.
Conclusions: As most subjects with a SCORE value <5 have subclinical CVD abnormalities, a more tailored subclinical CVD primary prevention program should be encouraged.

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http://dx.doi.org/10.1016/j.arteri.2016.10.004

PALABRAS CLAVE
Enfermedades cardiovasculares;
Puntuación;
Aterosclerosis subclínica;
Riesgo;
Asintomático

Evaluación de la enfermedad cardiovascular subclínica y su correlación con la puntuación de riesgo cardiovascular SCORE en una población de adultos sanos: Un estudio transversal basado en la comunidad

Resumen
Introducción: Nuestro objetivo fue evaluar la relación y la precisión de la *Systematic Coronary Risk Evaluation*–Evaluación Sistemática del Riesgo Coronario (evaluación SCORE) correlacionada con múltiples métodos para determinar la enfermedad cardiovascular (ECV) subclínica en una población sana.
Material y métodos: Este estudio transversal incluyó a 120 personas asignadas al azar de la población general. Los sujetos con edades entre 35 y 75 años y completamente asintomáticos fueron evaluados desde el punto de vista clínico y bioquímico, y se calculó su riesgo SCORE. Se evaluó la aterosclerosis subclínica mediante varios métodos: ecografía carotídea para la determinación del grosor íntima-media y la detección de la placa; velocidad de la onda de pulso aórtico; ecocardiografía-índice de masa ventricular izquierda y ateromatosis aórtica; índice tobillo-brazo.
Resultados: El valor medio de la puntuación SCORE fue de $2,95 \pm 2,71$, con un 76% de los sujetos con una puntuación < 5. El 64% de todos los sujetos tenía cambios aumentados de ECV subclínica y la puntuación SCORE se correlacionó positivamente con todos los marcadores, excepto el índice tobillo-brazo. El 40% de los sujetos tenía placas carotídeas y el 70% ateromatosis aórtica. En el análisis multivariante, los valores aumentados del grosor íntima-media y de la velocidad de la onda de pulso aórtico se asociaron significativamente con un alto valor de riesgo SCORE (CP 4,14; IC del 95%: 1,42-12,15; p = 0,009; respectivamente CP 1,41; IC del 95%: 1,01-1,96, p = 0,039). Se observó una relación lineal positiva entre 3 territorios de ECV subclínica (grosor íntima-media, índice de masa ventricular izquierda, velocidad de la onda de pulso aórtico) y el riesgo SCORE (p < 0,0001). El 60% de los sujetos con el valor SCORE < 5 tenían indicios de ECV subclínica.
Conclusiones: La puntuación SCORE se correlaciona positivamente con la mayoría de los marcadores ateroscleróticos. Como la mayoría de los sujetos con valor SCORE < 5 tienen anomalías relacionadas con la ECV subclínica, es necesario promover una prevención primaria mejor adaptada de la ECV subclínica.

Introduction

Atherosclerotic cardiovascular diseases (CVD) represent the main cause of morbidity and mortality worldwide, requiring intensive medical surveillance and expensive therapies; however the long term prognosis still remains poor.[1,2] Primary prevention of CVD costs less than treating its complications and is based on the reduction of cardiovascular risk factors. With a continuous attention toward proper identification of patients, various algorithms of CVD risk stratification have been proposed and tested during time.[3,4] Based on the classification in different risk class categories, lifestyle changes or even pharmacological therapy for high risk patients are recommended. However, an acute atherosclerotic cardiovascular event represents the first manifestation in 30–50% of individuals that have been initially included into low to intermediate risk classes.[5]

It is clear that a simple quantification of risk factors is not sufficient for an accurate CVD primary prevention and the current guidelines admit this limitation.[1,6] Since atherosclerosis develops silently before clinical manifestations occur, the evaluation of the diseased arterial wall provides a personalized and early assessment of at-risk subjects. Several parameters of subclinical CVD and atherosclerosis have been proposed for the detection of intermediate and high-risk populations, with reasonable CVD predictive value. Carotid intima-media thickness (cIMT) and identification of atherosclerotic plaques by carotid ultrasonography,[7] ankle-brachial index (ABI) for evaluating the peripheral artery disease[8] or the detection of aortic atheromatosis and left ventricular (LV) hypertrophy by echocardiography[9] proved to be valuable markers for CVD screening. More recently introduced into clinical practice, the aortic pulse wave velocity (aPWV) proved to be an independent predictor of CVD in healthy individuals.[10]

Recently, the SHAPE (Screening for Heart Attack Prevention and Education) program recommended the screening for subclinical atherosclerosis in asymptomatic subjects aged 45–75 years in men and 55–75 years in women at intermediate risk.[5] According to the European and American CVD prevention guidelines, the measurement of ABI, IMT and the screening for carotid atherosclerotic plaques in asymptomatic adults at intermediate risk should be considered.[1,6] The role of echocardiography for the general screening in