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ORIGINAL ARTICLE

Most advisable strategy in search of asymptomatic target organ damage in hypertensive patients

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Ambulatory blood pressure/home blood pressure monitor;
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Renal disease;
Risk assessment

Abstract
Objective: To evaluate the diagnostic potential of seven examinations in order to define the most suitable strategy for target organ damage (TOD) search in hypertensive patients.
Methods: This is a descriptive, cross-sectional study. 153 consecutive treated and essential hypertensive patients were enrolled. Patients with established cardiovascular or chronic renal disease (stage $\geq$4) were excluded. TOD search was assessed by: glomerular filtration rate (GFR), albumin/creatinine ratio (ACR), electrocardiogram (ECG), echocardiogram (ECO), ankle–brachial index (ABI), pulse wave velocity (PWV), and carotid ultrasound (intima media thickness and presence of plaques). The rationale of our strategy ought to determine the performance of applying a set of the most widely available tests (GFR, ACR, ABI, ECG) and advise about the optimal sequence of the remaining tests.
Results: The sample was 64.4 $\pm$ 7.9 years old, 45.8% males. 82.6% of the sample had any TOD at all. The resulting algorithm found a 37% TOD in relation to GFR, ACR, ABI and ECG values. Adding carotid ultrasound added up to 70% of the studied population and properly classified (TOD+/TOD−) 89% of the cohort. When performing PWV, 78% of the patients had been identified as TOD+ and 96% of the population was correctly identified. Contribution of ECO was minor.
Conclusion: After running the more widely available explorations (GFR, ACR, ABI, ECG), a step-by-step strategy that included carotid ultrasound, PWV and ECO could be the best sequence for TOD search in asymptomatic hypertensive patients.

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Nefropatía hipertensiva;
Estratificación de riesgo

Estrategia óptima de búsqueda de daño de órgano diana asintomático en el hipertenso

Resumen
Objetivo: Evaluar el rendimiento diagnóstico de un panel de siete pruebas de determinación de daño de órgano diana (DOD) aplicadas de forma sistemática, a fin de sugerir la estrategia óptima para la búsqueda de DOD en el hipertenso.
Método: Estudio descriptivo y transversal. Se incluyeron 153 pacientes diagnosticados de hipertensión esencial bajo tratamiento farmacológico. Se excluyeron pacientes con enfermedad cardiovascular establecida o enfermedad renal crónica estadio $\geq$4. Se realizó una búsqueda de DOD mediante filtrado glomerular estimado (FGe), índice albúmina creatinina (IAC), hipertrofia ventricular por electrocardiograma (ECG) y ecocardiograma (ECO), índice tobillo brazo (ITB), velocidad de la onda de pulso (VOP) y ecografía carotídea (placas y grosor íntima media). Se propuso una estrategia de búsqueda de DOD en la que tras la realización de las exploraciones más accesibles (FGe, IAC, ITB y ECG) se sugiere la secuencia de exploraciones a realizar con mayor eficacia diagnóstica.
Resultados: La edad media fue 64.4 $\pm$ 7.9 años, siendo el 45.8% varones. El 82.6% presentó algún tipo de DOD. Según el algoritmo propuesto, las pruebas de mayor accesibilidad diagnosticaron un 37% de DOD en la muestra. Tras añadir la ecografía carotídea, se detectó DOD en el 70%, y el 89% de la población fue apropiadamente clasificada en DOD+/DOD−. La realización de VOP incrementó la prevalencia de DOD hasta el 78%, y el 96% de la muestra fue correctamente clasificada. La contribución de la ECO fue menor.
Conclusión: Tras la realización de las exploraciones más accesibles (FGe, IAC, ITB y ECG), la realización sistemática de ecografía carotídea, VOP y ECO podría ser la estrategia óptima para la búsqueda de DOD en el hipertenso.

Introduction

The cardiovascular risk stratification in primary prevention commonly refers to the use of demographic clinical data (age, gender, family history of cardiovascular disease) and cardiovascular risk factors (diabetes, dyslipidaemia, hypertension, etc.).[1] Likewise, the clinical guidelines for arterial hypertension recommend searching for silent target organ damage (TOD) in both hypertensive and prehypertensive patients.[2] It has been shown that the presence of subclinical TOD is of major importance in the treatment and management of the hypertensive patient.[3] In addition, silent TOD is a predictor for future cardiovascular events independent of the Systematic COronary Risk Evaluation (SCORE)[4,5] and involves an additional risk according to the ESH/ESC guidelines.[2]

Notwithstanding, the asymptomatic character of most forms of vascular lesions makes the stratification process even more difficult. Moreover, the application frequency is relatively low in spite of the predictive value of TOD detection,[5–9] mainly due to the lack of consensus regarding the most suitable and feasible approach or search strategy for TOD in the hypertensive patient.[2]

The current study aims to evaluate the usefulness and performance of seven different methods systematically applied to TOD identification in a cohort of hypertensive patients without cardiovascular disease (CVD): glomerular filtration rate (GFR), albumin/creatinine ratio (ACR), electrocardiogram (ECG) to measure Cornell and Sokolow criteria, echocardiogram (ECO) to check for left ventricular hypertrophy (LVH), ankle–brachial index (ABI), pulse wave velocity (PWV), and carotid ultrasound in order to estimate the occurrence of plaques and intima media thickness (IMT). The main objective is to offer a research tool that could serve as a clinical guide when facing the difficult task of risk stratification in asymptomatic hypertension.

Methods

Design study and population

The current study is an observational, descriptive and cross-sectional study assessed in hypertensive patients who were attending their general practitioner. The recruitment was carried out by consecutive sampling in several health centres in our hospital area, with urban characteristics. Inclusion criteria were as follows: patients treated pharmacologically, with no changes in antihypertensive pharmacological treatment or hospital admissions for any cause within the previous three months. Patients with chronic renal failure stage $\geq$4 or overt CVD (cerebrovascular events, coronary artery disease, heart failure, symptomatic peripheral arterial disease or hospital admission due to CVD) were excluded from the study. All participants provided written informed consent. The study was performed in accordance with the Helsinki declaration and was approved by the Area Research Ethics Committee.

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