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Research Article

Analysis of Vascular Aging in Arterial Hypertension – Population-based Study: Preliminary Results

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ABSTRACT

Background: Arterial Hypertension (AH) is an uncertain and complex physiopathological disease with the Arterial Stiffness (AS) as one of the main cardiovascular alterations. Pulse Wave Velocity (PWV) is the gold standard marker for assessment of the vascular aging and an important predictor of cardiovascular risk.

Methods: Cross-sectional population-based studies, in the restricted area of Vale do Ogunjá, Salvador-Bahia. Sociodemographic data, through questionnaire and clinical data were obtained. A PWV was evaluated by applanation tonometry using the device SphygmoCor® (AtCor Medical Pty Ltd, New South Wales, Australia). Frequency and descriptive measurements of central and dispersion were obtained, and the Chi-square test to statistical analysis.

Results: PWV presented a higher mean in hypertensive patients (10.0 ± 2.2 m/s). There was a higher prevalence of AS in male individuals with advanced age and presence of risk factors. The prevalence ratio of AS was 3.7 times higher in hypertensive patients ($p = 0.002$; 95% CI: 1.6–8.5) and 7.5 times higher in patients aged above 40–74 years ($p = 0.015$; 95% CI: 2.4–23.1).

Conclusion: There was an important relation between AS and increased of PWV in the presence of hypertension. The relevance of this study is associated with the use of non-invasive clinical evaluation of PWV, contributing to improve morbidity and mortality in hypertensive patients.

HIGHLIGHTS

- Important association between arterial stiffness and arterial hypertension.
- Prevalence of arterial stiffness in the male gender, advanced age.
- Prevalence of arterial stiffness with high BMI, dyslipidemia and dysglycemia DM.
- Arterial stiffness associated to age, schooling level, BMI and arterial hypertension.

1. INTRODUCTION

Arterial Hypertension (AH) is an alteration to the cardiovascular system that presents a multifactorial genesis and an uncertain and complex physiopathology, characterized by a sustained Blood Pressure (BP) increase [1,2]. The diseases is presently established as one of the main causes of morbidity and mortality, including cerebrovascular accident, coronary artery disease, systemic atherosclerosis in other organs, arteriosclerosis, heart failure and chronic renal disease [3]. Hypertension is also an important modifiable risk factor for Cardiovascular Diseases (CVD) [4], responsible for 17 million deaths worldwide [5], a high frequency of hospitalizations, early retirement and absenteeism, evidencing an important socio-economic cost [6,7].

In 2000, 26.4% (972 million) of the adult population worldwide presented a diagnosis of AH, and for 2025 it is expected to reach 29.2% [8]. In Brazil, it is estimated that the disease is present in around 32.5% (36 million) of the adult population, with a prevalence of 68% in the elderly population [2,6]. In a population study in Salvador analyzing 1439 individuals, AH prevalence was of 29.9% [9].

One of the main vascular disorders of AH is Arterial Stiffness (AS) which has, for the last two decades, become a new and important cardiovascular risk definer, associated mainly to age and the incidence of CVD [10,11]. AS is caused by the chronological vascular aging, a physiological process that begins in the uterine phase, gaining prominence as of 30 years of age [12].

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