IMPACT OF NON-DIPPER PATTERN ON LEFT VENTRICULAR GLOBAL LONGITUDINAL STRAIN, IN HYPERTENSIVE PATIENTS.

Nacim Dahmani1, Nabila Soufi Taleb Bendia2, Mouhamed Soufiane Lounes1

Nacim Dahmani. Centre National d’Expertise Médicale du Personnel Navigant, Algiers, ALGERIA

Objective: Several studies have shown that the non-dipper blood pressure pattern, defined by a nocturnal decrease in blood pressure (BP) of less than 10% at the 24-hour ambulatory blood pressure monitoring (ABPM), is associated with an increase in cardiovascular risk and risk of target organ damage, however, there are few data on the non-dipper effects on the longitudinal strain overall studied by 2D speckle tracking. The aim of this study is to evaluate the impact of nocturnal dipper/non-dipper pattern on the global longitudinal systolic (GLS) of left ventricle by means of two-dimensional speckle tracking echocardiography (2D STE), of hypertensive patients under treatment or not.

Design and method: This is a cross-sectional descriptive study conducted over a period of 20 months, from November 2021 to June 2023. The study included a total of 382 patients with arterial hypertension, enrolled consecutively. All participants were subjected to clinical evaluation, biological examination, 24-hour ambulatory blood pressure monitoring and echocardiography with GLS. The patients were divided into dippers and non-dippers, according to the percentage reduction in systolic blood pressure (SBP) and diastolic blood pressure (DBP) at night. The study sought to analyze the relationship between these nocturnal profiles and GLS.

Results: 179 patients (46.90%) are non-dippers. The non-dippers had a significantly lower GLS value than the dippers (-19.45 ±2.03 vs -18.2 ±2.17, P < 0.001). The multivariate linear regression confirmed this independent relationship of the GLS and the non-dipping (β = -0.157, P=0.013), however, we do not find independent relationships between the non-dipping and the diastolic function on the one hand and the non-dipping and the LV geometry on the other hand.

Conclusions: This study shows that non-dipping is associated with subclinical systolic dysfunction of the LV, as shown by the decrease in the GLS studied by 2D Speckle-Tracking, in hypertensive non-dippers patients.

THE PHENOTYPE OF ESSENTIAL HYPERTENSION WITH A HIGH LEVEL OF RENIN AND A HIGH LEVEL OF ALDOSTERONE

Jungsun Cho, Sang-Hyun Ihm, Kyunghee Kim. The Division of Cardiology, Department of Internal Medicine, The Catholic University of Korea, Seoul, SOUTH KOREA

Objective: Over the years, considerable efforts have been made to divide the large, heterogeneous groups of individuals with essential hypertension into smaller, homogeneous subgroups based on hormonal responses to biological stimuli. This classification has included low-renin hypertension and non-modulators, in which changes in sodium intake do not produce the expected reciprocal changes in the adrenal gland (aldosterone) with normal or high levels of renin. In never treated essential hypertensive patients, we aim to evaluate the hypertensive phenotype according to renin and aldosterone levels.

Design and method: Consecutive patients (n=782) with never treated hypertension were enrolled between August 2009 and July 2021. All enrolled patients underwent ambulatory blood pressure monitoring and laboratory tests, including renin and aldosterone levels, and were evaluated for cardiovascular events during a median follow-up of 5 years, excluding patients with primary aldosteronism.

Results: Patients were divided into four groups based on renin and aldosterone levels:
- High renin and aldosterone (n=216), low renin and high aldosterone (n=161), high renin and low aldosterone (n=163), low renin and aldosterone (n=212). The high renin and high aldosterone group was younger and had lower urine Na/K ratio and higher heart rate than those of other groups in this study.

Conclusions: Other than low-renin hypertension or non-modulators, high renin and aldosterone hypertension could be one of the phenotypes of essential hypertension. In addition, renin and aldosterone levels could be helpful in understanding the phenotypes of essential hypertension.

RELATIONS BETWEEN WHITE COAT EFFECT OF BLOOD PRESSURE AND ARTERIAL STIFFNESS

Rong Cao1, Gang Sun1, Xiaomin Yang2. 1The Second Affiliated Hospital of Baotou Medical College, Baotou, CHINA, 2Run Run Shaw Hospital, Zhejiang University, Zhejiang, CHINA

Objective: The aim of this study was to analyze the relationship between brachial-ankle pulse wave velocity (ba PWV) and white coat effect (WCE), that is the difference between the elevated office blood pressure (BP) and the lower mean daytime pressure of ambulatory BP, in a mixed population of normotension, untreated sustained hypertension, sustained controlled hypertension, sustained uncontrolled hypertension, white coat hypertension, white coat uncontrolled hypertension.

Design and method: In multivariate analysis, after adjusting for four models, high WCE was significantly associated with ba PWV, whether WCE was analyzed as a continuous variable or dichotomous variable (β range 0.06-0.39, P < 0.05).

Conclusions: Other than low-renin hypertension or non-modulators, high renin and aldosterone hypertension could be one of the phenotypes of essential hypertension. In addition, renin and aldosterone levels could be helpful in understanding the phenotypes of essential hypertension.
Design and method: A total of 444 patients with WCE for systolic BP (54.1% female, age 61.86±13.33 years) were enrolled in the study. Patients were separated into low white coat effect (< 9.5 mm Hg) and high white coat effect (≥9.5 mm Hg) according to the median of WCE.

Results: The subjects with a high WCE showed a greater degree of arterial stiffness than those with a low WCE for systolic BP values (P < 0.05). The b-a PWV was 17.2±3.3 m/s and 18.4±3.4 m/s in low WCE and high WCE, respectively. The b-a PWV increased with the increase of WCE, showing a positive correlation between them (P < 0.05 for non-linearity). The significant association between the high WCE and the b-a PWV was confirmed by the results of multiple regression analysis after adjusting for confounding factors (beta=0.78, 95% CI 0.25-1.31, P=0.04). Similar results were observed in subgroups.

Conclusions: In conclusion, WCE is significantly associated with arterial stiffness. More research is needed to determine the WCE and target organ damage.

PHENOTYPIC CHARACTERISTICS OF PATIENTS WITH INCREASED ARTERIAL STIFFNESS IN A HYPERTENSION UNIT

Miguel Camargo, Ana Suarez, Cristina Benitez, Carolina Fernandez, Alma Aldea, Emmanuel Coloma, Manuel Torresa, Miriam Mayor, Esther Viñzes, Ana Guti, Constanza Sepulveda, Antonio Coca. Hypertension Unit. Internal Medicine Department. Hospital Clinico, Barcelona, SPAIN

Objective: Arterial stiffness is related to the increase in morbidity and mortality of patients with arterial hypertension (HTN). The characteristics of a sample of patients where PWV was performed.

Our goal was to look for differential characteristics among those with increased PWV.

Design and method: Retrospective study of patients assessed in the hypertension unit of a tertiary hospital during 2019.

Patients were assessed through ABPM by Space labs(R), Ankle brachial index by ABI Huntleigh (R) and PWV measured by SphygmoCor®.

Characteristics of patients with High PWV are presented.

Results: A total of 22 patients were included, mean age was 60±18.1, average abdominal circumference was 99.3 cm±18 and average BMI was 28.55 kg/m² (±6.4). Office Blood pressure (BP): Mean systolic BP of 156mmHg (±22), a mean diastolic BP of 76.58mmHg (±10.89), a mean heart rate (HR) of 69bpm (±10), a mean central systolic BP of 135.66mmHg (±10.76) and a mean central diastolic BP of 81.1mmHg (±12.4).

An ankle-brachial index (ABI) was performed on 9 patients, with a mean right ABI of 120 (±11.87) with a mean intima media thickness (IMT) of 626 (±206.1) and a mean left ABI of 118 (±14.61) with an IMT of 631.7 (±143.83).

Ambulatory blood pressure monitoring (ABPM) was performed in 11 of the patients, which showed a mean systolic BP of 135mmHg (±17.57), a mean diastolic BP of 75mmHg (±11.65), and mean HR of 68bpm (±11.94).

Regarding the correlation with the laboratory findings, a mean glucose value of 108 g/dl (±29.9), mean triglycerides of 146.9mg/dl (±54), mean cholesterol of 191.27mg/dl (±40.94), mean LDL of 114mg/dl (±36.57) and mean HDL of 48.7mg/dl (±11.37), and a mean glomerular filtration rate of 64ml/min (±14.25).

This sample was compared with patients with non-pathological PWV, with no significant differences between the groups.

Conclusions: We did not find statistically significant associations, in our data, that would allow us to differentiate patients who had pathological OPD during the first visit. More studies are needed.

Effect of Alpha Galactosidase on Arterial Hypertension and Its Complications in Patients with Fabry Disease

Abdelghani Bachir Cherif1, Salam Bennouar2, Sihem Rellahmer1. 1Internal Medicine Department, Bilda, ALGERIA; 2Laboratory of Biochemistry, Bilda, ALGERIA

Objective: Fabry disease (FD) is an X-linked lysosomal storage disease caused by alpha-galactosidase A deficiency. It leads to multi-systemic damage from a very young age. The diagnosis is mainly clinical and confirmed by the measurement of enzymatic activity. The objective of our study is to evaluated the blood pressure profile as well as the effect of enzymotherapy on the control of hypertension.

Design and method: We studied 9 Fabry patients (5 male and 4 female) over a period of 1 years regarding disease progression and clinical outcome under enzyme replacement therapy. All Fabry cases benefited from a complete physical examination and additional tests to assess multi-system involvement. The diagnosis is mainly clinical and confirmed by the measurement of enzymatic activity. All patients received alpha galactosidase.

Results: At baseline, 9 patients demonstrated at least 6 fibrotic left ventricular segments, 3 had 1 left ventricular segment affected (mild fibrosis). In patients without fibrosis, enzyme replacement therapy resulted in a significant reduction in left ventricular mass (232±33 g at baseline, 215±26 g at year; P<0.001). The prevalence of hypertension was 66%, whereas hypertension in patients with chronic kidney disease ranged 81%. A study using 24-hour ambulatory blood pressure monitoring (ABPM) to measure blood pressure (BP) indicated a high prevalence of uncontrolled hypertension in FD. Enzyme replacement therapy with recombinant alpha-galactosidase A reduces blood pressure and left ventricular hypertrophy in all patients. We found larger treatment effects in patients with baseline estimated glomerular filtration rates greater than 56 mL/min per 1.73 m² (hazard ratio, 0.15 [Cl.03 to 0.71]; P=0.01) compared with patients with less than 56 mL/min per 1.73 m² or less (hazard ratio, 0.75 [Cl.08 to 2.1]; P=0.08) (formal test for interaction, P=0.07). Most treatment-related adverse events were mild or moderate infusion-associated reactions, reported by 55% of patients in the agalsidase-A group.

Conclusions: Fabry disease is a rare and potentially serious disease because of its renal and cardiac complications. Early diagnosis is fundamental. Modern management of patients with FD must combine treatment of hypertension and enzyme therapy as early as possible.

NOVEL ABPM PARAMETERS AND BLOOD PRESSURE PHENOTYPES IN CKD

Bahaar Athavale, Hardik Shah, Dilip Kirpalani, Ashok Kirpalani. Bombay Hospital Institute of Medical Sciences, Mumbai, INDIA

Objective: Malignant hypertension has not disappeared and remains the most severe form of hypertension. More than 100 years after its description, many points remain unanswered. Mechanisms, definition and optimal treatment are still discussed. In 2019 we decided to launch a prospective multicenter multidisciplinary cohort in France trying filling these gaps. This study aims to describe the baseline characteristics of the first 302 included patients and compare these data to already published cohorts.

Design and method: We included patient with severe hypertension and severe hypertensive retinopathy and patients filling the HYP MOD definition from a broad range of department (cardiology, nephrology, neurology intensive care unit, emergency department, internal medicine). We collected clinical data at admission, biological, imaging and target organ damage along with social and demographic data. We also recorded diagnostic and therapeutic management, adverse events during hospitalization and characteristics at discharge.

Results: We recruited 302 patients in 32 month (105 / year) among 40 centres and different specialities. They are mostly young men (68%, mean age 48.7 +/- 14.5 years), with several interesting subgroups. Among one third of our patients were less than 40 years old, one third were from non-European origin, 13.6% were included through the multiorgan damage definition, without fundus severe injuries. Target organ damage involves the eye in 86% of patients, kidney in 54%, heart in 56%, brain in 33% and Thrombotic Microangiopathy in 13%. Our patients with severe retinopathy are very similar with those included in the most important cohorts already published. Interestingly, 22.8% of patients were treated without use of IV therapy, most patients were untreated or showed poor observance of treatments and a significant proportion had normal or low renin level.

Conclusions: These preliminary findings already challenge long standing dogma, raise many questions and provide a strong basis to address them in ancillary studies of the cohort.