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1.2: NORMAL AND REFERENCE VALUES OF BARORECEPTOR SENSITIVITY: THE PPS3 STUDY

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Oral Presentation Abstracts

Oral session 1

Young Investigator Oral Presentations

In association with the ESC Working Group on Peripheral Circulation

1.1

REFERENCE INTERVALS FOR CAROTID STIFFNESS

L. Engelen^{1,2}, I. Ferreira^{2,3}, C. D. A. Stehouwer², S. Laurent¹, P. Boutouyrie¹

¹Department of Pharmacology and INSERM U970, Hôpital Européen Georges Pompidou, Paris, France

²Department of Internal Medicine, CARIM School for Cardiovascular Diseases, Maastricht University Medical Centre, Maastricht, Netherlands

³Department of Clinical Epidemiology and Medical Technology Assessment, Maastricht University Medical Centre, Maastricht, Netherlands

Non-invasive measures of common carotid artery properties, such as diameter, distension and local pulse pressure, have been widely used to determine carotid stiffness (CS), which is associated with cardiovascular disease (CVD). The interpretation of CS values measured across different age, sex and risk groups has been hampered by the absence of reference values, however. We therefore aimed to establish reference intervals of CS (obtained by echotracking) to help interpretation of these measures both in research and clinical settings.

We combined CS data on 10,749 individuals (53% men; age range 15-99 years) from 13 research centres worldwide. Individuals without CVD, cardiovascular risk factors and who were not on blood pressure- and/or lipid-lowering medication constituted the 'normal' healthy sub-population (n=2,281), which will be used to establish equations for percentiles of CS across age. With these equations we further plan to generate CS Z-scores in different sub-populations thereby allowing for a standardized comparison between observed and predicted (normal) values from individuals of the same age. The independent associations of known cardiovascular risk factors will then be assessed with multiple linear regression analyses, using these Z-scores as outcome variables.

The exact results are expected by the time of Artery 12. We hope to estimate age-specific percentiles of CS in a healthy population and to assess the associations of cardiovascular risk factors with CS Z-scores, which will enable comparison of CS values for (patient) groups with different cardiovascular risk profiles, helping interpretation of such measures when obtained both in research and clinical settings.

1.2

NORMAL AND REFERENCE VALUES OF BARORECEPTOR SENSITIVITY: THE PPS3 STUDY

L. Zanoli^{1,2}, P. Boutouyrie², J. P. Empana², N. Estrugo², G. Escrivo², H. Ketthab², J. F. Prunty², D. Laude², F. Thomas², B. Pannier², P. Castellino¹, X. Jouven², S. Laurent²

¹Internal Medicine, University of Catania, Catania, Italy

²Department of Pharmacology, HEGP, AP-HP, Inserm U970, Paris, France

Aims: Dysfunction of autonomic control of heart rate is associated with increased mortality. Routine measurement of baroreceptor sensitivity

(BRS) for clinical patient evaluation needs a standardized technique and established reference values. The recent use of carotid distension rate instead of blood pressure (BP) has permitted to study the neural path of the baroreflex after fully controlling for the vascular component. We took advantage of a representative sample of the European general population and of the gold standard method for measuring arterial parameters to establish reference and normal values for BRS.

Methods: From the PPS3 study, a large epidemiological survey of working people of age 50-75, were selected the first 2992 individuals free from overt cardiovascular disease, non-diabetic, non-smokers and untreated by either anti-hypertensive or lipid-lowering drugs that constituted the reference value population, of which the subset with optimal/normal BP (n=200) is the normal value population. Subjects were categorized by age quintile and further subdivided according to BP categories.

Results: BRS decreased with age and BP category. The distribution of BRS with age and BP category is described and reference values for BRS are established. Normal values are proposed based on the BRS values observed in the non-hypertensive subpopulation without additional CV risk factors.

Conclusion: A standardization of the technique and established reference and normal values for BRS were proposed.

1.3

CENTRAL BLOOD PRESSURE: EFFECTS OF CARDIOVASCULAR RISK FACTORS OR PRESENCE OF METABOLIC SYNDROME (ON BEHALF OF THE REFERENCE VALUES FOR ARTERIAL MEASUREMENTS COLLABORATION)

A. Herbert^{1,2,3,4}

¹INSERM Team U970, Paris, France

²Biostatistics, University of Manchester, Manchester, United Kingdom

³R&D, Pennine Acute Hospitals NHS Trust, Manchester, United Kingdom

⁴R&D, Salford Royal NHS Foundation Trust, Salford, United Kingdom

Background & Objective: 87,481 data between 54 centres were combined, to establish reference values for central systolic blood pressure (cSBP). Although cardiovascular risk factors (CVRFs) are associated with cSBP, the individual strengths of their relationships are weak and the combination of some CVRFs into metabolic syndrome (MetS) could have a stronger association.

Methods: We selected 8,057 subjects untreated for hypertension, dyslipidemia or diabetes, and devoid of known CV disease, whereby all required variables were available. CVRFs, CV disease and MetS were defined according to the 2007 ESH-ESC Hypertension Guidelines. We used multivariable regression analysis of cSBP according to the number of CVRFs and the presence of MetS.

Results: The median number of CVRFs was 2 (IQR: 2-3, range: 0-5). Number of CVRFs was strongly linked to cSBP, increasing by 7 mmHg per CVRF, though there was less of an increase when the analysis was stratified by those having brachial BP \geq 130/85mmHg ('high normal' and above) and those not (beta coefficients = 4.0 and 1.5, respectively). The presence of MetS was related to cSBP to a lower extent (beta coefficient = 2.5) with insufficient evidence for an association when the analysis was adjusted according to BP status (beta coefficients = -1.8 and 0.4 within low and high BP groups, respectively).