



## Conference Abstract

# YI 2.4 Neural Baroreflex Sensitivity and Long-Term Effect of Antihypertensive Agents – A Pharmacological Substudy of the Paris Prospective Study III

Nicolas Danchin<sup>5</sup>, Catherine Guibout<sup>3,4</sup>, Xavier Jouven<sup>3,4</sup>, Marie-Cécile Perier<sup>3,4</sup>, Frederique Thomas<sup>5</sup>, Catherine Fortier<sup>1,\*</sup>, Jean-Philippe Empana<sup>3,4</sup>, Hakim Khettab<sup>2</sup>, Rosa-Maria Bruno<sup>1,2</sup>, Pierre Boutouyrie<sup>1,2</sup>

<sup>1</sup>INSERM, U970, Paris Cardiovascular Research Center, Cellular molecular and physiological mechanisms of heart failure (Team 7)

<sup>2</sup>AP-HP, Pharmacology Unit, Hôpital Européen Georges Pompidou, Université de Paris

<sup>3</sup>INSERM U970, Paris Cardiovascular Research Centre (PARCC), University of Paris

<sup>4</sup>INSERM U970, Paris Cardiovascular Research Centre (PARCC), Integrative Epidemiology of Cardiovascular Disease (Team 4)

<sup>5</sup>Preventive and Clinical Investigation Center (IPC)

### Keywords

Antihypertensive  
baroreflex  
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### ABSTRACT

**Background/Objectives:** The baroreflex is a crucial mechanism acutely modulating vascular tone and heart rate response to maintain blood pressure (BP) in an optimal range. A decrease in baroreflex sensitivity (BRS) is associated with ageing, and pathological conditions such as hypertension and diabetes. Antihypertensive agents are generally known to have beneficial effect on the BRS, however it is still uncertain if the effect is mediated through a more compliant arterial wall or a sympathoinhibitory action.

**Methods:** In the Paris Prospective Study III [1], spontaneous baroreflex, carotid stiffness and pharmacological drugs intake were available in 7967 adults (aged 55–75 years). The neural component of the baroreflex sensitivity (nBRS) was obtained with a cross-spectral analysis of variations in carotid distention rate and R-R intervals. Pharmacological classes were analysed according to the Anatomical Therapeutic Chemical (ATC) classification. Individuals with a BP lowering medication (BP-treated) were paired to non-BP treated individuals with a similar cardiovascular risk (controls) using a propensity score matching procedure ( $n = 1182$  pairs).

**Results:** Amongst pharmacological classes of BP lowering agents, only agents acting on the renin-angiotensin system (ACEi-ARB) were associated with nBRS ( $\beta = -0.08$ ,  $p = 0.045$ ). Compared to their matched controls, ACEi-ARB users had lower nBRS ( $2.79 \pm 0.66$  vs.  $2.90 \pm 0.62$ ,  $p = 0.03$ ). In multivariate analysis, ACEi-ARB remained significant ( $\text{std}\beta = -0.09$ ,  $p = 0.025$ ) after adjustment for carotid stiffness ( $\text{std}\beta = 0.25$ ,  $p < 0.001$ ) and systolic pressure ( $\text{std}\beta = -0.20$ ,  $p < 0.001$ ).

**Conclusion:** In this epidemiological study, ACEi-ARB were negatively associated with nBRS. This effect is independent of BP and stiffness, which may suggest an inhibition of sympathetic activity by ACEi-ARB.

### REFERENCE

- [1] Empana JP, Bean K, Guibout C, Thomas F, Bingham A, Pannier B, et al. Paris Prospective Study III: a study of novel heart rate parameters, baroreflex sensitivity and risk of sudden death. *Eur J Epidemiol* 2011;26:887–92.

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