Metabolic Aspects and Mechanisms

9.5 Impact of Antihypertensive Treatment on Long-Term Risk of Diabetes Mellitus in a General Population Setting: Data from the PAMELA Study

M. Bombelli (1), M. Rondinelli (1), R. Sanvito (1), D. Fodri (1), E. Toso (1), H. Polo Friz (2), A. Casati (1), L. Primitz (2), F. Ganz (2), S. Buzzi (2), F. Quarti-Trevano (1), G. Grassi (1), R. Sega (2), G. Mancini (1)

(1)Clinica Medica, Università degli Studi di Milano-Bicocca, Monza; (2)Divisione di Medicina, Ospedale Vimercate, Vimercate, Italy

Introduction. In several controlled clinical trials, some types of antihypertensive treatment were found to be associated to some metabolic adverse effects, among which an enhanced number of cases of diabetes mellitus (DM). Fewer data, however, are available on this issue in the setting of the general population.

Methods. In a sample of 1347 subjects of the PAMELA Study, randomly selected from the general population of Monza (Milan, Italy), stratified for gender and decades of age (25 to 74 years), we measured: (1) office blood pressure (BP) (mercury sphygmomanometry, average of 3 measurements), (2) home BP (average of 2 self measurements by a validated semiautomatic oscillometric device, respectively at 7 a.m. and 7 p.m.), (3) ambulatory BP (Spacelabs 9020 7, automatic oscillometric measurements every 20 min during the 24 hours), (4) plasma glucose (radioenzymatic method). Threshold values for hypertension were 140/90, 132/82 and 125/79 mmHg based on office, home and ambulatory BP, respectively (cut off derived from previous analysis of the blood pressure distribution curves in the general PAMELA population). Treated hypertensive patients were the ones taking antihypertensive drugs. All subjects were re-analyzed ten years later, to identify the new cases of IFG and DM, defined when fasting blood glucose was > 110 mg/dL and > 126 mg/dl (or use of antidiabetic drugs) respectively, being < 110 mg/dL and < 126 mg/dL respectively at the first examination.

Results. At the second examination we found 101 new cases of IFG and 53 new cases of DM. Based on office BP, as compared to normotensive subjects, treated hypertensive patients have an increased risk of developing IFG and DM (adjusting for age, gender and baseline blood glucose, OR 2.266, $p=0.01$ and OR 2.77, $p=0.02$ respectively). Non treated hypertensive patients have a risk of developing IFG and DM not significantly different from the ones of normotensive subjects. In most cases, similar findings were obtained when hypertension definition was based on home and ambulatory BP (for IFG: OR 1.973, $p=0.04$ and OR 2.24, $p=0.01$ respectively; for DM: OR 3, $p=0.01$ and OR 2.787, $p=0.01$ respectively; adjusted for age, gender and baseline blood glucose).

Conclusions. In the setting of a general population, antihypertensive treatment seems to be associated with an increased risk of new onset DM.