Metabolic Aspects and Mechanisms

9.8 New-Onset Diabetes and Uncontrolled Blood Pressure

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Introduction. Based upon epidemiological studies, the hypothesis that hypertension may precede diabetes development has been derived. In this context it is unknown how the blood pressure control may affect this behaviour. The study evaluates how the diabetes incidence varies depending on insufficient control of blood pressure due to inadequate antihypertensive treatment.

Methods. 1754 patients affected by hypertension but not by diabetes have been retrospectively evaluated (age 54 ± 11 years; 43% female). The patients were under treatment at the Hypertension Center of "Federico II" University of Naples for at least two years (average 3 ± 1 years). According to guidelines, blood pressure has been considered recent uncontrolled above 140/90 mmHg (systolic/diastolic). The diagnosis of Diabetes Mellitus has been established accordingly 1997 American Diabetes Association (ADA) guidelines. The analysis has been performed based on the last blood pressure measurement before the diabetes diagnosis was issued or, when diabetes diagnosis was not done, on the blood pressure measurement taken in the last control.

Results. During hypertension treatment follow-up, blood pressure levels resulted well controlled in 1042 patients (C), while they were unsatisfactory controlled in 712 patients (41% of the considered population) despite antihypertensive therapy (NC). There was a significantly difference in age in the C group (53 ± 12 years of age) vs the NC (51 ± 11 years of age; $P < 0.001$) one while no difference in results were found on the bases of the sex, hypertension disease duration or basal BMI, blood pressure, glycaemia taken before meals, creatinaemia, plasma potassium concentration, lipid profile, metabolic syndrome (ATP III modified). Within the same timeframe, 109 patients (6% of the population, 41% female) have developed diabetes. Diabetes incidence resulted significantly higher with patients with uncontrolled blood pressure (8%) respect to patients with well-controlled blood pressure (4%, $OR = 2.08$, $p < 0.001$). Results from Cox analysis corrected for basal values of blood pressure and BMI, showed that the factors associated with diabetes incidence are: uncontrolled blood pressure levels ($HR = 2.10$; 95% CI = 1.41-3.12; $p < 0.001$), age ($HR = 1.02$; 95% CI = 1.02-1.04; $p = 0.03$); basal glycaemia values ($HR = 1.10$ mg/dL; 95% CI = 1.08-1.13; $p < 0.001$).

Conclusions. Within hypertensive patients and without diabetes undergoing antihypertensive treatment, uncontrolled blood pressure is associated with a doubled risk for mellitus diabetes incidence regardless of age, BMI, basal blood pressure and basal glycaemia value.