Isolated systolic hypertension and combined systolic-diastolic hypertension for prediction of new-onset diabetes mellitus: Data from a 8-year-follow-up study

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Background/Introduction: Isolated systolic hypertension (ISH) and combined systolic-diastolic hypertension (CH) are related with increased cardiovascular risk, while new-onset diabetes mellitus (NOD) is linked with atherosclerosis progression. Purpose: The aim of the present study was to compare the predictive role of ISH and CH for the incidence of NOD in a cohort of essential hypertensive patients.

Methods: We followed up 1435 non-diabetic essential hypertensives with office systolic blood pressure (BP)=140 mmHg [mean age 57 years, 730 males, office BP=153/92 mmHg] for a mean period of 8 years. All subjects had at least one annual visit and at baseline underwent echocardiographic study and blood sampling for estimation of metabolic profile. Patients with baseline ISH exhibited office systolic BP=140 mmHg and office diastolic BP <90 mmHg, while those with CH had office systolic BP=140 mmHg and office diastolic BP =90 mmHg. Moreover, NOD was defined if at one or more of the follow-up visits a previously non-diabetic patient reported being on insulin or an oral hypoglycemic drug or if casual plasma glucose concentration =200 mg/dl or fasting glucose concentration =126 mg/dl or 2-h post load glucose =200 mg/dl during an oral glucose tolerance test. Results: The incidence of NOD over the follow-up period was 4.2% (n=60). Patients with ISH (n=460) compared to those with C? (n=975) were older (65±11 vs 54±10 years, p<0.0001), had at baseline lower waist circumference (94.5±11 vs 99±13 cm, p<0.0001), office systolic BP (149±12 vs 155±13 mmHg, p<0.0001), office diastolic BP (80±8 vs 98±6 mmHg, p<0.0001), while did not differ regarding left ventricular mass index, glucose and lipid levels (p=NS for all). Univariate Cox regression analysis revealed that baseline ISH (hazard ratio=2.143, p=0.016) and CH (hazard ratio=1.272, p=0.029) predicted NOD. However, in multivariate Cox regression model, age (hazard ratio=1.039, p<0.001), baseline glucose levels (hazard ratio 1.011, p=0.016), waist circumference (hazard ratio=1.067, p<0.001) and ISH (hazard ratio=1.651, p=0.029) but not CH turned out to be independent predictors of NOD.

Conclusions: In essential hypertensive patients, ISH but not CH exhibits independent prognostic value for NOD. These findings support that ISH constitutes a hypertensive phenotype of increased metabolic risk needing careful evaluation and treatment.