Detecting left ventricular dysfunction and lowering blood pressure in hypertensive patients with diabetes mellitus

Aspects of dual blockade of the renin angiotensin system

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ABSTRACT

The dissertation includes three studies all performed at the Department of Internal Medicine M, Aarhus Hospital.

The general aim was, first of all, to explore the possibilities of an echocardiographic and a biochemical marker of left ventricular dysfunction in hypertensive patients with diabetes.

Secondly to investigate a new antihypertensive treatment strategy, including the combination of an ACE-inhibitor and an angiotensin II receptor antagonist.

By use of an echocardiographic method (myocardial performance index (MPI)) of quantifying the left ventricular function, we found significantly reduced left ventricular function in 45 hypertensive patients with diabetes compared to a matched control group of non-diabetic individuals, but a similar reduction in LV function in 45 patients with essential hypertension.

The method disclosed a reduction of the diastolic performance being causal to the reduction in left ventricular function among the diabetic patients, whereas the systolic function was involved in the reduction of the left ventricular function in the essential hypertensive group.

These findings were seen despite al included participants had a normal left ventricular ejection fraction and no cardiac symptoms. Estimation of the MPI during a routine echocardiography seemed to provide new information in hypertensive patients, beyond what is provided from more difficult echocardiographic procedures.

In the second study the brain natriuretic peptide (NT-proBNP) levels of 30 normotensive and 30 hypertensive type 2 diabetic patients were compared to a matched normal group, with relation to echocardiographic assessment of left ventricular geometry, hypertrophy and the diastolic function. The NT-proBNP levels were significantly increased in hypertensive, normoalbuminuric patients with type 2 diabetes. These findings were related to the presence of left ventricular hypertrophy and increased left atrial and ventricular diameters, but not directly related to the diastolic function.

NT-proBNP seemed likely to be a solid indicator of patients with cardiovascular risk markers but not directly related to the LV function per se.

In the third study, 75 patients with hypertension and diabetes mellitus were enrolled in a randomised double blind study, investigating the blood pressure lowering abilities of either lisinopril 40 mg o.d. or dual blockade treatment with candesartan 16 mg o.d. and lisinopril 20 mg o.d. Significant blood pressure reduction was obtained in both treatment arms, but no significant difference was found between dual blockade and high dosage lisinopril. Both treatments were generally well tolerated and similar low rates of side effects were found in the two groups.