Hypertension Associated With Diabetes Mellitus—Past and Future

In the U.S. population, there are about 6 million individuals with diabetes mellitus and approximately 30% of them have hypertension (1). These patients with both hypertension and diabetes have a particularly high risk of developing coronary artery disease (CAD) and ESRD.

On November 21 through 23, 1991, the third International Symposium on Hypertension Associated with Diabetes Mellitus was held in Boston, MA. The goal of this symposium was to review recent findings in the interdisciplinary field of hypertension associated with diabetes mellitus, a field that began almost 20 years ago with the publication by Dr. A.R. Christlieb of seminal studies on the clinical characteristics of hypertension occurring in patients with insulin-dependent diabetes mellitus (IDDM) (2).

The Boston symposium covered three main topics. The first centered around the relationship between the development of nephropathy in IDDM and predisposition to hypertension. Although some studies have failed to show this association, many authors presented evidence at this symposium that supports the hypothesis that factors that predispose to hypertension in nondiabetics "initiate" processes in the presence of hyperglycemia that lead to nephropathy, hypertension, and death with renal failure or CAD.

The second topic was the association of hyperinsulinemia with systemic hypertension, an association that was noticed a long time ago (3). After its rediscovery in the middle 1980s (4–6), there has been a flood of publications that, on the whole, support this association. At the symposium it has been discussed, however, that the association between elevated blood pressure and hyperinsulinemia or insulin resistance is rather weak and should be considered as a marker of some other relationship. The nature of the other entity is unclear and requires further studies at cellular and molecular levels.

Two decades ago, antihypertensive treatment was advocated in patients with diabetes and hypertension (2). Since then, a large number of studies have been conducted to evaluate the clinical usefulness of this treatment. Of particular importance were studies by Mogensen (7) and Parving *et al.* (8), which provided the first evidence that antihypertensive treatment slows the development of renal failure in IDDM. At the symposium, new data were reviewed that support this protective effect, but it has become clear that more comprehensive data are needed before there can be evidence-based clinical guidelines for antihypertensive treatment in patients with diabetes (9).

This supplement was designed with two goals in mind. One was to present a summary of the above topics, and the other was to present new approaches to research on hypertension associated with diabetes mellitus. The first of these is the application of methods of molecular biology to study the contribution of genes to the complications of diabetes. This endeavor may uncover the most fundamental mechanisms in the pathogenesis of hypertension, renal complications, and CAD in diabetes mellitus. The second new approach is cost-effectiveness analysis. This method provides tools for a proper evaluation of existing as well as future programs of antihypertensive management in diabetes and the development of clinical guidelines.

Finally, this symposium and publication honor the contributions of Dr. A. Richard Christlieb to the field of hypertension associated with diabetes. After more than 30 years of active research and clinical practice at the Joslin Diabetes Center, he is retiring. As a clinician and researcher, Dr. Christlieb has provided "guidelines" not only for research on hypertension and antihypertensive treatment in diabetes but also for a large number of clinical and research fellows.

I gratefully acknowledge Dr. Christlieb's tremendous contribution as associate guest editor of this supplement.

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