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DIABETES AND CARDIOVASCULAR DISEASE

Second Edition

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DEDICATION

To my daughters, Jessica and Lauren, and my mother Rose for their patience, love, inspiration, and support.

—MTJ

To my parents and my wife Maria.

—AV
The cause of diabetes mellitus is metabolic in origin. However, its major clinical manifestations, which result in most of the morbidity and mortality, are a result of its vascular pathology. In fact, the American Heart Association has recently stated that, “from the point of view of cardiovascular medicine, it may be appropriate to say, diabetes is a cardiovascular disease” (1). But diabetic vascular disease is not limited to just the macrovasculature. Diabetes mellitus also affects the microcirculation with devastating results, including nephropathy, neuropathy, and retinopathy. Diabetic nephropathy is the leading cause of end-stage renal disease in the United States, while diabetic retinopathy is the leading cause of new-onset blindness in working-age Americans.

The importance of this text on Diabetes and Cardiovascular Disease is evident by the magnitude of the population affected by diabetes mellitus. Over 10 million Americans have been diagnosed with diabetes mellitus, while another 5 million remain undiagnosed. The impact from a public health perspective is huge and increasing. As the population of the United States grows older, more sedentary, and obese, the risk of developing diabetes and its complications will increase.

Epidemiological studies have identified diabetes mellitus as a major independent risk factor for cardiovascular disease. Over 65% of patients with diabetes mellitus die from a cardiovascular cause. The prognosis of patients with diabetes mellitus who develop overt clinical cardiovascular disease is much worse than those cardiovascular patients free of diabetes mellitus.

The 24 chapters of Diabetes and Cardiovascular Disease focus on either clinical or basic aspects of diabetes and cardiovascular disease. Part I, Pathophysiology, reviews the mechanisms and risk factors for diabetic cardiovascular disease. Part II focuses on the heart in diabetes mellitus, including coronary artery disease and congestive heart failure. The peripheral vascular system is the subject of Part III, which addresses epidemiology, mechanisms, methods of assessment, and treatment of this macrovascular disease. Lastly, Part IV reviews the different microvascular effects in individuals with diabetes mellitus, including retinopathy, nephropathy, neuropathy, and microcirculation of the diabetic foot.

The aim of Diabetes and Cardiovascular Disease is to serve as a comprehensive review of both the basic and clinical aspects of diabetic vascular disease for the practicing clinician. The readership will include cardiologists, general internists, vascular specialists, family physicians, and medical students, along with other interested practitioners and allied health personnel. The text is also directed toward both clinical and basic research scientists, and emphasis has thus been given to both theoretical and practical points. Each chapter covers its topics in great detail and is accompanied by extensive references.

We are indebted to the many people who worked on this volume. In particular, we wish to thank those talented and dedicated physicians who contributed the many chapters in this text. We were fortunate to have the collaboration of a group of authors who were among the most prominent in their respective fields. We hope that our efforts will serve as a stimulus for further research in this increasingly important health concern.
We want to extend our deepest appreciation to Paul Dolgert and Craig Adams of Humana Press for guiding us through the preparation of this book. As well, we want to give a special thanks to Dr. Christopher Cannon, who saw the need for such a volume and gave us the opportunity to edit this text.

Michael T. Johnstone, MD
Aristides Veves, MD, DSc

REFERENCE

It has been only four years since the first edition of this very successful text, *Diabetes and Cardiovascular Disease*. During this time, interest in diabetes mellitus as a risk factor for cardiovascular disease has increased logarithmically, having been the subject of many studies now found in the cardiology literature as well as American Heart Association statements in *Circulation*. This higher level of attention is only a reflection of the increasing obesity and diabetes mellitus epidemic that continues to build in Western societies, and in particular, the United States.

With the substantial increase in information resulting from this research and the ever-increasing numbers of people afflicted by diabetes mellitus, the need for a text that summarizes the information obtained, diagnostic and therapeutic guidelines becomes increasingly important. We believe our second edition mirrors the increased attention focused on this disease process, which affects about 16 million people in the United States alone.

With this burgeoning interest in diabetic cardiovascular disease, it is challenging to keep up with all the important developments in the area. In an effort to do so, we have made significant changes to this second edition. All the chapters have been updated and new ones have been added. In particular, the chapters on hypertension and dyslipidemia, as well as heart failure, and coronary artery disease and diabetes mellitus have undergone extensive “makeovers.”

We have reorganized the chapters, putting the basic science chapters in the first half of the text, with the clinical chapters now in the second half. We have moved the chapters on diabetes and dyslipidemia and hypertension to the clinical section of the text. The last chapter, “Diabetes Mellitus and Coronary Artery Disease,” has not only been significantly redone, it is now at the end of the text in an effort to serve as a summary of the clinical macrovascular disease chapters.

In the basic section, we have added chapters on diabetes mellitus and PPARs by Dr. Plutzky, and PARP activation and the nitrosative state by Drs. Pacher and Szabó. The role of estrogens in diabetic vascular disease is discussed by Drs. Tsatsoulis and Economides, and finally the effect of adipocyte cytokines in the development of diabetes mellitus is discussed. On the clinical side, we have added chapters on interventional therapy in cardiac and peripheral vascular disease by Drs. Lorenz, Carrozza, and Garcia, as well as a chapter on cardiovascular surgery in diabetes by Drs. Khan, Voisine, and Sellke.

We again want to thank Craig Adams, Developmental Editor, and Paul Dolgert, the Editorial Director at Humana Press, as well as their office staff for their assistance in putting together this text. Also we want to give again a special thanks to Dr. Christopher Cannon whose vision it was to include such a text in the *Contemporary Cardiology* series.

*Michael T. Johnstone, MD*

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