THE HEART AND HYPERTENSION

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Editor

YORKE MEDICAL BOOKS

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Printed in the United States of America.

THE HEART AND HYPERTENSION
First Edition

Library of Congress Cataloging in Publication Data

The Heart and hypertension.

Includes index.
1. Heart—Hypertrophy. 2. Hypertension—Complications and sequelae. I. Messerli, Franz H. [DNLM: 1. Heart—drug effects. 2. Heart—physiopathology. 3. Hypertension—drug therapy. 4. Hypertension—physiopathology. WG 340 H4357]
RC685.H9H4 1987 616.1'29 87-13316
ISBN 0-914316-45-1

Dedication

This book is dedicated to the late Robert C. Tarazi, M.D., who for many years led the way in this field.

Franz Messerli

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Preface

"The course of any case of cardiac hypertrophy may be divided into three stages: (a) the period of development which varies with the nature of the primary lesion, (b) the period of full compensation—the latent stage—during which the heart's vigor meets the requirement of the circulation, (c) the period of broken compensation." Little remains to be added to these sentences written by Sir William Osler in the first edition of his textbook, *Principles and Practice of Medicine*, almost a century ago. Osler's three stages of left ventricular adaptation to an increased afterload were substantiated in 1962 by the lucid observation of Meerson. An elegant experimental design allowed him to identify: (1) a stage of increased cardiac function that was followed by (2) a stage of adaptation (hypertrophy) of the myocardium, which represented a compensation for the increased afterload bringing the wall stress back to normal; and (3) a stage of the failing left ventricle that leads to venous congestion and pulmonary edema. A similar sequence of pathophysiologic events was subsequently described in patients with essential hypertension.

However, although it is still fashionable to consider the heart as a hollow viscus that provides mechanical energy to propel blood through the vascular tree, it is not a muscular pump only. It can be considered a sophisticated biologic apparatus that contains a complex of control and effective mechanisms that are involved in electric excitation, contraction coupling, contraction, and possibly endocrine function. Like the kidney and the brain, the heart plays a threefold role in essential hypertension: first, it is directly involved in the pathogenesis of arterial hypertension. Its contractile force generates the energy needed to increase blood pressure. Recent evidence indicates that a natriuretic factor generated in the atrium of the heart may directly participate in the pathogenesis of essential hypertension. Second, the heart suffers as a target organ of long-standing hypertension. Long-standing blood pressure elevation leads to left ventricular hypertrophy and hypertensive heart disease with their grave outlook. Third, cardiac function and structure are directly and indirectly affected by a variety of antihypertensive agents.

This volume provides a critical review of recent research into these three areas that connect the heart to arterial hypertension. Our book is intended to provide a synoptic view of our present knowledge in this rapidly expanding area. The text is written for physicians, cardiologists, or investigators who would like to deepen their understanding of cardiac involvement in hypertension and of progression as well as regression of left ventricular hypertrophy, and the heart's structural and functional response to various blood pressure lowering agents.

I would like to express my gratitude to the authors of the chapters, all experts in their field, who have given willingly of their talents and efforts so that this needed critique could be compiled. In addition, my deep appreciation goes to Marion Stafford, Medical Editor of Alton Ochsner Medical Foundation, for her invaluable support, and her able and efficient handling of the manuscript material. To the staff of Yorke Medical Books, and in particular to Herb Paureiss, I owe many thanks for the personal care and attention I received.

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New Orleans, Louisiana
January 1987

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