Atheroma to Heart Failure: A Continuum of Disease?

Edited by Robert H. Anderson, Philip A. Poole-Wilson and Magdi H. Yacoub

Butterworth-Heinemann, Stoneham, MA (1991)
193 pages, illustrated, $99.00
ISBN: 0-7506-1335-1

This book is the first in a series of books called the *Royal Brompton Reviews* that is a forum for the discussion and dissemination of the major research and advances being made in cardiothoracic medicine, surgery, and associated specialties. The three editors from the Departments of Cardiac Morphology, Cardiology, and Cardiothoracic Surgery and their colleagues (23 authors) from the National Heart and Lung Institute in London, UK, view the process from the development of atherosclerotic plaques to the manifestation of terminal heart disease from their personal specialties, thereby gathering data from various fields of research. In 12 chapters (193 pages, 689 references) the pathophysiology of atherogenesis, the pathological findings of atherosclerosis, various diagnostic procedures and their value in ischemic heart disease, and the treatment of myocardial infarction and heart failure are reviewed.

P.A. Poole-Wilson, as one of the editors, introduces the edition by concretizing the book's hypothesis. He especially points to the fact that the factors determining disease deterioration from ischemic heart disease to heart failure are still insufficiently known and await further investigation. The facts currently known are then reviewed in the following chapters. M.F. Oliver starts by summarizing the metabolism of fatty acids and the different effects of saturated and unsaturated fatty acids and anti-oxidants on atherogenesis. The macroscopic and microscopic findings of coronary atherosclerosis are discussed by the pathologists J.M. Mann and M.J. Davies. They point to differences in the character of the plaque and the role of plaque fissures in the pathogenesis of atherosclerosis and briefly correlate this pathology to clinical symptoms and coronary angiograms. Thrombosis as the fundamental pathogenic process in myocardial infarction is then described in detail by D. Hackett. He clearly reviews the role of coronary stenosis, vasoconstriction, and coagulation in the development of coronary occlusion and evaluates the possibilities of pharmacological intervention in acute myocardial infarction. M. Williams and U. Sigwart go into further depth, discussing the invasive treatments of acute myocardial infarction and the current trends in the integration of thrombolysis, coronary angiography, and coronary angioplasty in the treatment of acute myocardial infarction, cardiogenic shock, and ischemia.

The biochemical and physiological knowledge of the role of the coronary endothelium and endothelium-derived relaxing factors in blood flow of normal and atherosclerotic coronary arteries is outlined by P. Collins. D. Mulcahy and K. Fox address the question of "Silent Ischemia—Iceberg or Mirage?" and point to its frequency in the daily lives of many patients with ischemic heart disease. The role of sudden cardiac death in ischemic heart disease and its electrophysiological basis is outlined by E. Rowland.

The link between atherosclerosis and heart failure is made by an Italian group—P. Pauletto and colleagues—who give an extensive summary of the changes in compensated and decompensated ventricular hypertrophy at molecular, cellular, and extracellular levels. They highlight the changes of mitochondrial activity, glycolysis, protein synthesis, the composition of muscle cell enzymes, and the changes of beta-adrenoceptors and adenylate cyclase at different stages of heart failure, and relate them to the contractile characteristics of the muscle cell. This review is the pathophysiological basis for the article by N. Banner and M. Yacoub who then review the recent developments in the medical management (assessment, drug therapy, circulatory support) of severe heart failure and the role of heart transplantation in these patients.

Two chapters of the book deal with the early radiological diagnosis of atherosclerosis and ischemic heart disease. First, D. Longmore leads into the basics of magnetic resonance imaging (MRI) before presenting a critical evaluation of the possibilities of MRI in diagnosis, prevention, and monitoring of atheromatous plaques by means of three-dimensional visualization and chemical composition analysis, velocity mapping of blood flow across coronary stenoses, and assessment of tissue perfusion. The role of nuclear medicine in cardiology and its role in the management of patients with coronary artery disease, and especially those with stable angina or asymptomatic patients, is then assessed by R. Underwood. Besides the conventional scintigraphy Underwood points to the advances in myocardial perfusion imaging by single emission computed tomography and the possibilities of positron emission tomography, such as quantitative assessment of regional myocardial perfusion and imaging of myocardial glucose metabolism. In addition to radiological diagnosis of atherosclerosis, M.A. de Belder evaluates the value of different noninvasive and invasive investigations in the assessment of risk and prognosis of patients with myocardial infarction, and outlines a scheme for stratification of risk of these patients.

This book is a collection of review articles that were orally presented at a symposium at the National Heart and Lung Institute discussing the spectrum of disease from coronary atherosclerosis to terminal heart failure. The book is certainly an up-to-date collection of recent findings of basic, diagnostic, and clinical research in ischemic heart disease and heart failure. Every chapter is well constructed and the topics are clearly discussed, so that even those unfamiliar with the subject can follow easily. Surprisingly, however, the contents of the chapters do not follow a continuous pattern starting from the early changes of atherosclerosis to end-stage heart failure as proposed in the book's title. Rather, they are a gathering of articles viewing this process from different perspectives, so that the reader is left alone to connect the findings to a whole picture of a process from atheroma to heart failure. Nonetheless, this book is concise and very informative and valuable for those interested in cardiac research and clinical medicine. It is certainly an excellent start for further editions of the *Royal Brompton Reviews of Diseases of the Heart and Lung*.

Martin Halle
Joseph Keul
Freiburg, Germany