



Coronary Care

Second Edition

**Gary S. Francis
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Coronary Care

Second Edition

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To our parents and teachers, without whom it would never have been started; and to our wives, Margaret and Helle, without whom it would never have been finished

Foreword

Rapid changes in our knowledge concerning coronary atherosclerosis and its complications clearly justify a new edition of *Coronary Care*. As our understanding has increased, our management strategies have undergone modification of a greater or lesser degree. In many aspects, a radical shift is taking place, and Drs. Francis and Alpert, together with their contributing authors, have gone to great lengths to see that this is reflected throughout the second edition.

Coronary care is offered to those patients having or suspected of having coronary atherosclerosis and one or more of its thrombotic complications. An appreciation of the vital role of thrombosis in the acute clinical syndromes of unstable angina and acute myocardial infarction is less than two decades old. With total occlusion both myocyte death and intramyocardial collagen disruption occur rapidly. Thus, interventions to prevent occlusion or to restore blood flow are now recognized as the cornerstone of management. Thrombolytic therapy is discussed throughout this second edition, with Chapter 20 specifically addressing unstable angina.

While the "open vessel" theory, addressed in Chapter 27, is reasonable and accepted by all, the timing of that opening is now evidently critical. Late opening may be associated with improved healing and a reduction in the incidence of cardiac arrhythmias. However, the problem of adverse remodeling of large infarcts in many patients remains unsolved. Experimental studies in animals indicate that the current permissible interval between total occlusion and reperfusion of up to 4 hours is far too long. The objective to reduce the time to treatment to a more desirable 90 minutes may be possible for many patients. This requires reconsideration of management in the home (for example, aspirin therapy) and initiation of thrombolytic (and perhaps anticoagulation) therapy by paramedics.

The critical role of disturbed vascular biology in atherogenesis, and in the complications of coronary atherosclerosis, as thoroughly examined in Parts III, IV, and V of this text, is becoming evermore apparent. As the number of related factors and their variable interaction are studied, the designation of this disease as "polygenic, multifactorial" be-

comes obvious. Platelet function and hemostatic mechanisms exhibit a circadian behavior and can be modified by autonomic triggers. Areas of lipid-rich atheroma proximate to established stenosis with a weakened fibrous cap may provide a powerful thrombogenic effect on flowing blood. A variety of mechanisms are implicated in vascular spasm, plaque rupture, and the natural thrombotic and anti-thrombotic, coagulative and anticoagulative balances that exist in circulating blood. Recent large-scale clinical trials have, regrettably, focused on the relatively minor advantages of one lytic or anticoagulative agent or combination thereof when compared to another. These trials have deviated attention from the fundamental importance of the time from complete coronary occlusion to the initiation of reperfusion. As Drs. Francis and Alpert discuss throughout *Coronary Care*, clearly a new focus on strategies to facilitate the shortest possible time between symptom onset and drug administration is now necessary. The incidence of chronic heart failure over the past three decades has increased—probably due to patients who have survived larger myocardial infarctions. That we have substituted chronic heart failure for improved hospital mortality is a cause for concern.

The benefits of mechanical revascularization evidenced by older surgical studies are now being confirmed in those patients suitable for prompt direct angioplasty that successfully displaces intravascular thrombus and modifies residual disease of the culprit vessel. These results suggest that a prompt evaluation of coronary anatomy may provide benefit. The management of patients with coronary atherosclerosis following myocardial infarction or unstable angina has been less than satisfactory, and cardiologists must become knowledgeable about diabetes, lipids, and thrombosis. Dependency on dietary intervention to substantially modify abnormal lipid patterns has not been successful—although the resulting benefits of weight loss and modification of high blood pressure are unquestioned. Recent drug studies have demonstrated that significant lipid lowering is accompanied by a marked reduction in clinical events in patients with established coronary artery disease—with or without prior myocardial infarction. Sub-

stantial and sustained lipid lowering achieved by the statin class of lipid-lowering drugs points to the probability of major benefit. Chapter 35 combines insightful text with useful tables in its discussion of lipids and lipid-lowering drugs.

New developments concerning coagulation-related risk (fibrinogen, serum iron, platelet adhesiveness, and other factors) are in the forefront of research in this field and will undoubtedly play a significant part in coronary care in the future. These

issues, and ongoing consideration of the inflammatory nature of early atherogenesis and the possible relation of a disturbance of endothelial function due to viral infection, offer good reason to believe that a third edition of this excellent text by Drs. Francis and Alpert will be required in the not too distant future.

Harold J. C. Swan

Preface

The last two decades have witnessed remarkable growth in our understanding of acute, unstable ischemic heart disease. A great deal is now known about the pathophysiology of these clinical syndromes. Diagnosis and therapy have also improved quite remarkably. As a result of these advances, morbidity and mortality have declined strikingly. Nevertheless, there is still a great deal of information that needs to be acquired if we are to achieve continuing advances in this arena. Nowhere is this need more challenging than in the patients with acute myocardial infarction. Myocardial reperfusion therapy, angioplasty, and pharmacologic support of patients with acute unstable coronary artery disease are improving constantly. Many uncertainties remain, however. What is clear is that therapy has continued to evolve in the direction of rapid intervention. With changing therapy come new complications, additional costs, and conflicting data. Periodically, it is essential that we pause and review the progress made to date, realizing that the very latest information cannot always be included. It is in this spirit, the contemplative pause, during which information is digested and assimilated, that we present the second edition of *Coronary Care*, a single authoritative source encompassing diagnosis and management of patients with acute coronary syndromes.

The purpose of the first edition of this book was to update physicians and other health care personnel concerning acute coronary care. Contributing authors were asked to provide an up-to-date and balanced review of their topics, realizing that there still was substantial controversy and uncertainty in many areas, such as thrombolytic therapy and emergent angioplasty. Diagnostic and therapeutic options were discussed in detail, with some overlap provided to emphasize varying points of view.

For the second edition, we urged contributors to update their subject area and to refine pathophysiologic, diagnostic, and therapeutic paradigms in light

of advances achieved during the 5 years that have passed since the original edition was published. Approaches to the care of patients with acute coronary syndromes will continue to be refined, but our intent is to furnish the reader with the most current data and hypotheses in this era of coronary care.

This text is not intended to be an exhaustive or entirely comprehensive review of the subject matter. For example, electrocardiographic changes present in acute myocardial infarction are not discussed in detail. Myocardial imaging with positron emission tomography (PET) or magnetic resonance imaging (MRI) is mentioned only briefly. In the case of electrocardiography, there are many excellent textbooks available that discuss the subject thoroughly. The imaging techniques of PET and MRI are still evolving, particularly in the context of acute myocardial infarction, and are not used routinely to manage patients with unstable coronary disease. This presentation may change in coming decades and chapter contents will be altered accordingly.

We wish to express our gratitude to the contributing authors who participated in this venture and who provided critical reviews of subject matter related to their areas of expertise. This is truly their book. Nearly all contributors are actively involved in the day-to-day care of patients with acute myocardial infarction, and thus can provide useful and practical guidelines for readers. We are also most grateful to our editors at Little, Brown and Company, without whose tireless efforts this second edition could never have been completed. We are also very grateful to our spouses and families, whose support is essential in any undertaking of this nature. We hope that our readers will find this second edition as useful and comprehensive as the original volume.

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Contents

Foreword

Preface

Contributing Authors

xv

xvii

xix

I. Pathophysiology and Pathology of Acute Myocardial Infarction

- | | | |
|---|--|----|
| 1. Pathophysiology of Acute Myocardial Infarction | Joseph S. Alpert | 3 |
| 2. Triggering of Acute Myocardial Infarction | Otavio C. E. Gebara
James E. Muller
Geoffrey H. Tofler | 19 |
| 3. Biochemistry of Acute Myocardial Infarction | Heinrich Taegtmeyer | 29 |
| 4. Pathology of Acute Myocardial Infarction | Brooks S. Edwards
Jesse E. Edwards | 53 |

II. Clinical Diagnosis and Routine Management of Acute Myocardial Infarction

- | | | |
|--|---|----|
| 5. History and Physical Examination in Myocardial Ischemia and Acute Myocardial Infarction | David R. Murray
Robert A. O'Rourke
Ann D. Walling
Richard A. Walsh | 73 |
| 6. Plasma Enzymes in Acute Myocardial Infarction | Peter R. Puleo
Robert Roberts | 97 |

vii

7. Routine Management of Acute Myocardial Infarction	Gary S. Francis	123
8. Hemodynamic Monitoring of Acute Myocardial Infarction	Joel M. Gore Peter L. Zwerner	141

III. Electrical Complications of Acute Myocardial Infarction: Diagnosis and Treatment

9. Approach to Patients with Asymptomatic Ventricular Arrhythmias After Myocardial Infarction	Eric N. Prystowsky	167
10. Heart Block in Acute Myocardial Infarction	Robert W. Peters	177
11. Treatment of Ventricular Arrhythmias in Acute Myocardial Infarction	Raymond L. Woosley Jean T. Barbey	193
12. Treatment of Supraventricular Arrhythmias in Acute Myocardial Infarction	Borys Surawicz John D. Slack	217

IV. Mechanical Complications of Acute Myocardial Infarction: Diagnosis and Treatment

- | | | |
|---|---|-----|
| 13. Hemodynamic Profiles of Pump Disturbances in Acute Myocardial Infarction: Management Strategies | Kanu Chatterjee | 237 |
| 14. Pharmacologic Support of the Failing Circulation in Acute Myocardial Infarction | Jay N. Cohn | 251 |
| 15. Mechanical Support of the Failing Circulation in Acute Coronary Insufficiency and Myocardial Infarction | Gordon L. Pierpont | 261 |
| 16. Pump Failure, Shock, and Cardiac Rupture in Acute Myocardial Infarction | Prediman K. Shah
Gary S. Francis | 289 |
| 17. Left Ventricular Remodeling Following Acute Myocardial Infarction | Edward J. Brown, Jr.
Marc A. Pfeffer | 325 |
| 18. Pericardial Complications of Myocardial Infarction | David H. Spodick | 333 |
| 19. Diastolic Abnormalities of Acute Myocardial Infarction | J. A. Bianco | 343 |