Foreword

Appropriate management of children with cardiovascular disease in the 21st century relies heavily on an armamentarium of sophisticated imaging techniques, such as echocardiography, computed tomography, magnetic resonance imaging (including functional techniques), angiography, and interventional procedures guided by angiography. No modern hospital can provide appropriate care for the child with cardiovascular disease without the availability of this full range of modalities.

Plain radiographs of the chest are still used in these children at the time of their initial presentation and during follow-up of medical management and after corrective surgical or interventional procedures. Although the plain radiograph does not provide the definitive anatomic and functional information depicted by the more sophisticated modalities, it serves as an initial part of the evaluation at the time of the diagnosis and is essential (usually repeatedly) following surgical correction. Accurate interpretation of the plain radiograph of the chest therefore remains vitally important. However, in recent decades there has been tremendous interest in the newer, more exciting, sophisticated modalities, and more time has been spent learning how to derive maximum information from these modalities. In this era, learning to optimize the interpretation of plain radiographic findings often assumes a less important role.

This book, authored by Drs. Yoo, MacDonald, and Babyn, highlights the plain radiographic interpretation in cardiovascular abnormalities manifesting in neonates, infants, and children. The information is presented in an organized and interesting manner. The quality of the illustrations is outstanding, and they are accompanied by extremely clear and straightforward explanations of the findings. The text also describes the common cardiovascular surgical procedures (past and present) in detail to facilitate the understanding of what can be expected to be found on the chest radiograph in these conditions postoperatively.

At the Hospital for Sick Children, Toronto, Canada, there has long been a close relationship between the pediatric radiologists, whose prime interest has been in cardiovascular disease, and the pediatric cardiologists and cardiac surgeons. This close relationship began decades ago, when the cardiac radiologist Dr. Fred Moes forged a close collaboration with Drs. Rowe, Mustard, and Freedom in cardiology and cardiovascular surgery. Over the years, other outstanding cardiac radiologists have joined the staff, such as Gordon Culham and Pat Burrows and more recently Shi-Joon Yoo and Cathy MacDonald.

This collaboration has led to the publication of many outstanding papers and books on the subject of pediatric cardiovascular disease. The present book on interpretation of the plain radiograph in these patients finds its niche by filling a specific area of interest among the other books on pediatric cardiovascular diseases published from this institution.

The information in this book is important not only to pediatric cardiovascular radiologists but also to pediatric cardiologists and cardiac surgeons. The book will become standard reading for all those training in these specialties. The manner in which it has been written and illustrated will reignite interest in the interpretation of the plain chest radiograph even for those whose main interest is in the more sophisticated modalities.

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Foreword

It is with great pleasure that I write this foreword to Drs. Yoo, MacDonald, and Babyn's tour de force, Chest Radiographic Interpretation in Pediatric Cardiac Patients.

With the ever-increasing technology available to image cardiovascular disease, it is sometimes easy to forget the value of basic clinical assessment and investigations. If ever there was an illustration that such an evolution was mistaken, it exists in this text. The extraordinary wealth of diagnostic and therapeutic information that may exist within the chest radiograph shouts out from almost every page of this extraordinary contribution. Replete with up-to-the-minute examples of virtually every abnormality imaginable, I am convinced that this book will rapidly establish itself as a seminal work in the field.

On behalf of all of the potential readers of this text, I would like to commend the extraordinary efforts of the authors for their painstaking collection and analysis on our behalf. Accrued over the course of five years, and representing many thousands of hours of analysis, illustration, writing, and production, this book is a credit not only to Drs. Yoo, MacDonald, and Babyn, but also to the combined Divisions of Cardiology and Radiology at the Hospital for Sick Children. I am proud to be associated with the authors and, in this small way, with the book itself.

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Preface

Don't be intimidated by the size of this book!

This book contains more images and drawings than words. By voyaging through many examples, the readers will become very familiar with the important radiographic features in a very short time.

Why a new book for an old topic?

Despite the enormous recent strides in medical imaging with the introduction of a variety of cross-sectional imaging techniques, chest radiography remains the gateway for initial evaluation of the child who presents with cardiovascular symptoms and/or signs. Chest radiographs are still routinely obtained when the patients present with cardiovascular symptoms and signs, after the medical, surgical, or image-guided treatments, and at regular clinic visits. There are many books and book chapters available on this topic, most of which are structured according to disease entities or findings. A few suggest a systematic approach to chest radiographs but with only a few case examples. In addition, the discussions on basic cardiac anatomy, pathology, terminology, and surgical procedures are essential but not properly tailored for those who do cardiac imaging or interpret the chest radiographs. We decided to write this book to provide the essential background knowledge needed for cardiac imaging interpretation and systematic approach to chest radiographs with an ample number of case examples. Our previous and current trainees motivated us to teach them in a logical and easy-to-understand manner. Most importantly we found ourselves in a great position to write this book, as we are engaged in reading numerous chest radiographs of excellent radiographic quality at the Hospital for Sick Children, which is one of the largest pediatric cardiac centers worldwide.

How is this book structured?

This book provides an up-to-date and tailored approach to the interpretation of chest radiography in pediatric cardiac patients providing an important foundation for today's sophisticated medical and surgical management.

The text consists of three main sections. Section I, “Getting Started,” includes chapters on normal cardiovascular anatomy, a sequential segmental approach to congenital heart disease and relevant terminology, and cardiac function and hemodynamics. A listing of current and important surgical procedures and appropriate radiographic techniques are also provided. The detailed information in this section provides a better understanding of basics of pediatric cardiology and cardiac imaging and facilitates communication among imagers, clinicians, and surgeons. Section II, representing the central part of the book, details how chest radiographs should be evaluated systematically. Each chapter includes an ample number of example cases allowing the reader to build perceptual skills and improve accuracy in interpretation of normal and abnormal radiographic findings across the spectrum of pediatric ages. Section III summarizes the pathology, clinical manifestation, and radiographic findings of a variety of individual cardiovascular lesions. Although chest radiography may not play a major role in the exact diagnosis of cardiac disease, knowledge of the usual expected radiographic findings in individual cardiac lesions will help in recognition of problems that may not already have been diagnosed or suspected, or in detection of the unusual presentation or complication of the known disease. This section utilizes a bullet form approach for quick review and reference during day-to-day practice.

Who are the target readers?

We hope that this text is useful to radiology and cardiology residents and fellows as well as pediatric and general radiologists, pediatric cardiologists and cardiac surgeons, neonatologists, and chest intensivists who are involved in the daily interpretation in reporting of the chest radiographs or direct care for pediatric cardiac patients.

Shi-Joon Yoo
Cathy MacDonald
Paul Babyn