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Editors

Pediatric Electrocardiography

An Algorithmic Approach
to Interpretation

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*To our spouses, children, and families who define who we are.
And to our patients to whom we humbly offer our knowledge and efforts.*

Ra-id Abdulla
William Bonney
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Preface

Like the heart itself, electrocardiograms (ECGs) wrap themselves with a shroud of mystery. With their squiggly lines and peaks and valleys that reflect the functions of the cardiac chambers that generate them, interpreting ECGs is perhaps the first attraction for young trainees to the field of cardiology. Daunting at first, but once the rules are learned, the hidden secrets of the heart become increasingly evident. It feels like detective's work, no clue is trivial, and the paradox can only be solved by the summation of all clues. However, it is this enigma that repels physicians in training and non-cardiologists from comprehending its benefits and reaping the most of its concealed information.

The ECG is frequently used as the first line of investigative studies when assessing a child with a symptom or sign suggesting a potential cardiac ailment. It is easy to order an ECG in the emergency room or in the outpatient office. The computerized interpretation provided in these settings is tempting to rely on, but unfortunately, it frequently leads to confusion as this particular interpretation tends to suggest pathology where none exists. All this culminates in supposition of cardiac disease, creating apprehension to patients and families and resulting in unwarranted referrals to pediatric cardiologists. This problem can be effectively averted once a reasonable level of proficiency in reading ECGs is attained through proper basic training, continued practice in reading ECGs, and having at hand a reference such as this book.

The first 4 chapters of this book discuss in details how electrical forces generated by the various cardiac chambers contribute to the normal ECG tracings. The subsequent 4 chapters review the various ECG abnormalities and the cardiac pathologies causing them. Chapter 9 details the various ECG presentations of systemic pathologies impacting the function and structure of the heart and as such resulting in aberrations of the ECG. Chapter 10 presents unique approach to ECG interpretation through algorithms. Throughout this book we have attempted to provide as many ECG illustrations and diagrams to make ECG learning effective.

Chapter 10 provides an analytical approach to electrocardiogram (ECG) reading through a practical approach of analyzing normal and abnormal findings of an ECG using a step by step methodological approach through algorithms. This process enables the formulation of competent differential diagnoses concisely and with ease when reviewing 12 lead ECGs and rhythm strips.

The illustrations used in this book are derived principally from electronically stored ECGs of patients that can be captured and reproduced for teaching purposes. In addition, many of the images presented were electronically drawn through computer programs allowing the production of clear and typical ECG findings.

Our hope in writing this book is to provide physicians, residents, students, and nurses with a concise reference for pediatric ECG and offer tools through which ECGs can be effectively and accurately read when performed in the inpatient or outpatient settings. Furthermore, we hope that our work will entice many young trainees to see the intrigue in electrocardiography and fall in love with this field, as we all did many years ago.

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