Practical Algorithms in Pediatric Nephrology

Editors
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56 graphs, 1 figure and 10 tables, 2008

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Preface

The term 'algorithm' is derived from the name of the ninth century Arabic mathematician Algawrismi, who also gave his name to 'algebra'. His 'algorismus', indicated a well-defined procedure for step-by-step logical approach to mathematical problem-solving. In reading the final product, written by some of the finest pediatric nephrologists in the world and edited by my friends Drs. Israel Zelikovic and Israel Eisenstein, it is obvious that the spirit of the algorismus has been utilized in its best. The algorithm input are physical symptoms and signs, or laboratory results, which lead to a number of effective steps, and produces the diagnoses for an output.

Practical Algorithms in Pediatric Nephrology is meant as a pragmatic text to be used at the patient's bedside. The experienced practitioner applies step-by-step logical problem-solving for each patient individually. Decision trees prepared in advance have the disadvantage of unacquaintedness with the individual patient. Yet, for the physician who is less experienced with a given problem, a prepared algorithm would provide a logical, concise, cost-effective approach prepared by a specialist who is experienced with the given problem.

Thirty years after completing my pediatric residency, I discover that Pediatric Nephrology has become a sophisticated specialty with solid scientific background, of which I know so little. I would still refer my patients to a specialist with many of the diagnoses, symptoms and signs discussed here. But, with the help of this outstanding algorithms and text, I would refer them after an educated initial workup, and would be better equipped to follow the specialist's management.

This is the third in the Series of Practical Algorithms in Pediatrics, following *Practical Algorithms in Pediatric Endocrinology and Practical Algorithms in Pediatric Hematology-Oncology*. Hopefully, this volume will provide residents, fellows, general pediatricians and family practitioners some important clinical tools in understanding their patients.

Ze'ev Hochberg, MD, PhD
Series Editor

Introduction

Practical Algorithms in Pediatric Nephrology is a pragmatic text which classifies common clinical symptoms, signs, laboratory abnormalities and issues of management as they present themselves in daily practice. Aimed at an audience of general and family practitioners, pediatricians and trainees who are not exposed to pediatric nephrology problems on a day-to-day basis, it provides a rational, stepwise and as noninvasive as possible approach from which they can profit and acquire medical reasoning.

In the past decade, remarkable progress has been made in our understanding of the molecular pathogenesis of hereditary kidney diseases and congenital urinary tract abnormalities. Studies in molecular genetics and molecular biology have led to the identification of numerous kidney disease-causing mutations, provided important insights into the defective molecular mechanisms underlying various kidney diseases and structural abnormalities of the kidney, and have greatly increased our understanding of the physiology and pathophysiology of renal function in health and disease. Hence, special emphasis has been given in this book to the novel knowledge that has accumulated on the molecular pathophysiology and molecular genetics of various kidney diseases and urinary tract abnormalities, in order to deepen and strengthen the practical approach to common problems occurring in pediatric nephrology. Indeed, many of the algorithms in this book, written by leading investigators in the area of pediatric nephrology, incorporate and exemplify this 'bench to patient' approach which has become a characteristic of modern medicine.

It is the Editors' hope that the algorithmic, logical and stepwise approach to the diagnosis and management of various hereditary and acquired kidney diseases, fluid and electrolyte abnormalities, aberrations in mineral balance, and other impairments in kidney function, will equip the practitioner, inexperienced in the field of pediatric nephrology, with the tools and ability to successfully confront and manage, at least at their initial stages, clinical problems which have always been notorious for their complexity and which have been left, from the outset, to specialists in the area.

During the production process of this book, it has been our privilege to interact and work with some of the leading clinicians and teachers in the field of pediatric nephrology in the world. It has been a very enriching and gratifying experience for us, the editors, for which we thank all the authors. A final note – we have been very saddened by the recent passing of Prof. Gianfranco Rizzoni, a prominent pediatric nephrologist from Rome, Italy, who contributed several excellent algorithms to this book. We send our deep condolences to his family and friends.

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