Dermatological Manifestations of Kidney Disease

Julia R. Nunley
Edgar V. Lerma
Editors

Springer

Dermatological Manifestations of Kidney Disease

Julia R. Nunley • Edgar V. Lerma
Editors

Dermatological Manifestations of Kidney Disease

Springer

Editors
Julia R. Nunley
Department of Dermatology
Virginia Commonwealth University Medical Center
Nelson Clinic
Richmond, VA, USA

Edgar V. Lerma
Department of Medicine
Section of Nephrology
University of Illinois at Chicago/Advocate Christ Medical Center
Oak Lawn, IL, USA

ISBN 978-1-4939-2394-6 ISBN 978-1-4939-2395-3 (eBook)
DOI 10.1007/978-1-4939-2395-3

Library of Congress Control Number: 2015932484

Springer New York Heidelberg Dordrecht London

Printed on acid-free paper

Springer Science+Business Media LLC New York is part of Springer Science+Business Media (www.springer.com)

To all my colleagues, mentors, teachers, fellows, residents, and students, I am grateful for what each of you have shown and taught me over the past many years. I am a better student, teacher, physician, and person because of each of you.

To all my friends and family, especially my parents, I am eternally indebted and thankful for the unconditional love and support you have all given to me.

Julia R. Nunley

To all my mentors, and friends, at the University of Santo Tomas Faculty of Medicine and Surgery in Manila, Philippines, and Northwestern University Feinberg School of Medicine in Chicago, IL, who have in one way or another influenced and guided me to become the physician that I am.

To all the medical students, interns, and residents at Advocate Christ Medical Center whom I have taught or learned from, especially those who eventually decided to pursue Nephrology as a career…

To my parents and my brothers, without whose unwavering love and support through the good and bad times, I would not have persevered and reached my goals in life …

Most especially, to my two lovely and precious daughters Anastasia Zofia and Isabella Ann, whose smiles and laughter constantly provide me unparalleled joy and happiness; my very loving and understanding wife Michelle, who has always been supportive of my endeavors both personally and professionally, and who sacrificed a lot of time and exhibited unwavering patience as I devoted a significant amount of time and effort to this project. Truly, they provide me with motivation and inspiration.

Edgar V. Lerma

In memory of Lisa M. Grandinetti, MD, an extraordinary dermatologist, wife, mother, and daughter. She died of ovarian cancer on February 27, 2015.

The editors would like to acknowledge Lisa M. Grandinetti, MD, Assistant Professor in the Department of Dermatology who passed away during the production of this book project. Dr. Grandinetti was a member of the Department of Dermatology of the University of Pittsburgh. An outstanding clinician, educator, and mentor, she ran the Department's Cutaneous T-cell Lymphoma Clinic, one of the largest of its kind in the country, through which she directed the care of patients across the tri-state area. She was an accomplished investigator having led several clinical trials that provided cutting-edge therapies to her patients. Importantly, she served as the Program Director of the Dermatology Residency Program. She had a passion for education and was a friend and mentor to all of the department's trainees. She was instrumental in the completion of this book project. Lisa's research, clinical and teaching contributions will be long remembered.

Julia R. Nunley
Edgar V. Lerma

Foreword

In Greek mythology Proteus was an early sea god known for representing the constantly changing nature of the oceans, and the adjective protean has come to mean "capable of assuming many forms." The manifestations of kidney disease can be described as protean, as the loss of the ability to maintain homeostasis by regulating the composition of the blood and other body fluids affects every cell and organ system in the body. Healthy kidneys protect the whole organism by maintaining constancy of the extracellular environment and by responding to signals derived from diet and from changes in the circulation. They do so by having evolved a highly complex architecture, with more different cell types than any other organ in the body. The term uremia refers to the accumulation of solutes in the blood that are normally excreted by healthy functioning kidneys, and the myriad of retention solutes contain molecular entities toxic to almost every organ system. While the term uremia is often reserved for advanced kidney failure, we are increasingly aware that lesser degrees of kidney dysfunction are also associated with more subtle but clinically significant multiorgan dysfunction. Moreover, the kidneys, as the most highly vascularized organs in the body, are highly susceptible to injury from systemic conditions, including diseases associated with inflammation and autoimmunity. Thus, a modern-day re-paraphrasing of Osler might conclude that "he or she who knows kidney disease knows medicine."

Among the many organs affected by kidney disease is the dermis. Like the kidney, the skin, or outer covering of the body, has a protective role for the whole organism, by covering the underlying soft tissue, bone, muscle, and the internal organs. The skin is the largest organ in the body and also has a complex architecture with many layers, a multitude of cell types, and a high level of both vascularization and innervation. Perhaps it is not surprising that there are many dermatological conditions associated with kidney disease and that a majority of patients living with kidney disease also have dermatological problems. Moreover, cutaneous manifestations of systemic diseases that also involve the kidney are common, and properly diagnosing the skin condition can help lead to the correct renal diagnosis as well.

This new book edited by Nunley and Lerma fills an important niche in providing bedside clinical resources for the care of patients with kidney disease who have dermatological manifestations. The handbook format and the inclusion of many high-resolution photomicrographs greatly increase bedside utility. By including coverage of complications due to immunosuppression and kidney transplantation, the book takes a comprehensive approach useful as a single source for complex diagnostic problems. While the pace of acquisition of new medical knowledge is often fast and furious, this book provides canonical information likely to stand the "test of time," within the specific domain of nephrology and within the broader context of internal medicine.

Jonathan Himmelfarb, M.D.
Division of Nephrology
Department of Medicine
University of Washington
Seattle, WA, USA

Foreword

Drs. Nunley and Lerma have put together a stellar group of colleagues interested in the cutaneous manifestations associated with renal disease. They have included diseases that are inherited, immunologic, infectious, drug-induced, and acquired in other manners. The dermatologists that they have selected are among the elite individuals within our field, and each has provided acute insight into the disorder or disease that they have been asked to write about.

This book reveals to the reader the spectrum of skin disease that can be associated with diseases of the kidneys. If the visible clues are ignored, both common manifestations and unusual disorders will be misdiagnosed. The editors and their contributing authors have provided you with substantial information that will improve your clinical acumen and offer advantages to understanding and managing patients with cutaneous diseases that reflect kidney disease.

Jeffrey P. Callen, M.D.
Division of Dermatology
University of Louisville School of Medicine
Louisville, KY, USA

Preface

The recently published KDIGO Guidelines defined chronic kidney disease (CKD) as abnormalities of kidney structure or function present for over 3 months—regardless of underlying kidney disease. CKD is further divided into stages based on the level of function as estimated by glomerular filtration rate (GFR). According to this definition, all individuals with a GFR <60 mL/min/1.73 m^2 for 3 months are classified as having CKD, irrespective of the presence or absence of kidney damage. The rationale for including these individuals is that a reduction in kidney function to this level or lower represents loss of half or more of the adult level of normal kidney function, which may be associated with a number of systemic manifestations.

Nearly 100 % of patients with CKD have at least one significant dermatologic manifestation [1]. These cutaneous manifestations occur for various reasons: (1) diseases that affect the kidney and the skin; (2) skin conditions that are common or unique to uremia per se; (3) complications due to immunosuppression from transplantation. Although some of these conditions are inconvenient, many are serious and life altering and some life threatening. This book serves as an all-inclusive reference of these conditions readily available to practitioners providing medical care to these patients. As the population of patients with CKD continues to grow at a high rate and more care falls to primary care physicians, this information needs to be readily available.

This book is divided into three parts: (1) Dermatologic conditions seen in disorders causing chronic kidney disease, (2) Dermatologic conditions associated with chronic kidney disease, and (3) Dermatologic conditions associated with kidney transplantation. There is also a chapter focusing on pharmacological aspects of the disease process.

Each chapter provides discussions in pathobiology, extensive clinical discussions and photos, as well as in-depth treatment options. Utilizing images, recommendations for workup and therapy, the reader will be able to recognize, appropriately evaluate, and treat these conditions more effectively.

Richmond, VA, USA — Julia R. Nunley
Oak Lawn, IL, USA — Edgar V. Lerma

Reference

1. Udayakumar P, et al. Cutaneous manifestations in patients with chronic renal failure on hemodialysis. Indian J Dermatol Venereol Leprol. 2006;72:119–25.

Contents