JOSEPH B. KIRSNER
ROY G. SHORTER

Inflammatory Bowel Disease

SECOND EDITION

Inflammatory Bowel Disease

EDITED BY

Joseph B. Kirsner, M.D., Ph.D.

Louis Block Distinguished Service Professor of Medicine Formerly Chief of Staff and Deputy Dean for Medical Affairs University of Chicago Department of Medicine Chicago, Illinois

Roy G. Shorter, M.D.

Consultant, Departments of Pathology and Medicine, Mayo Clinic and Mayo Foundation Professor of Pathology and Medicine, Mayo Medical School Rochester, Minnesota

SECOND EDITION



LEA & FEBIGER • PHILADELPHIA
1980

Library of Congress Cataloging in Publication Data

Kirsner, Joseph Barnett, 1909– Inflammatory bowel disease.

Includes bibliographical references and index.
1. Ulcerative colitis.
2. Enteritis, Regional.
I. Shorter, Roy Gerrard, joint author. II. Title.
RC862.C63K57 1980 616.3'44 79-8884
ISBN 0-8121-0698-9

Copyright © 1980 by Lea & Febiger. Copyright under the International Copyright Union. All Rights Reserved. This book is protected by copyright. No part of it may be reproduced in any manner or by any means without written permission of the publisher.

Published in Great Britain by Henry Kimpton Publishers, London
PRINTED IN THE UNITED STATES OF AMERICA

Print No. 3 2 1

INFLAMMATORY BOWEL DISEASE

Preface

The larger size of this second edition reflects not only the addition of material on Crohn's disease of the upper gastrointestinal tract but also the expanding knowledge and the broadening scope of the "nonspecific" inflammatory bowel diseases. Much has been learned in recent years, information that is vital to clinicians and to investigators. In 200 B.C. the Roman General Lucius Paulus stated. "Commanders should be counseled chiefly by persons of known talents, by those who made the art of war their particular study, and whose knowledge is derived from experience, by those who are present at the scene of action, who see the enemy, who see the advantages that occasions offer, and who, like people embarked in the same ship, are sharers of the danger." The contributors to this edition have been in the vanguard of those involved in developing this newer knowl-

edge. We take especial satisfaction in this association.

We hope that the book will continue to be helpful to physicians and surgeons everywhere and also that it will serve as an informative and stimulating resource for investigators as they seek to unravel the "puzzles within puzzles" of inflammatory bowel disease. We sense a new attitude about IBD today, an increasing expectation that more fundamental knowledge of the nature and causation of these disorders is within reach. As more investigators are attracted to these problems and more ingenious and enlightening research is carried out, we have reason to hope that, in the not too distant future, knowledge of inflammatory bowel disease may reach the level needed to facilitate the cure. To this long-awaited achievement, this book is respectfully dedicated.

Chicago, Illinois Rochester, Minnesota JOSEPH B. KIRSNER ROY G. SHORTER

Contributors

THOMAS P. ALMY, M.D.

Third Century Professor of Medicine Dartmouth Medical School Hanover, New Hampshire

WITOLD BARTNIK, M.D.

Senior Lecturer in Medicine Department of Gastroenterology and Metabolism Medical Center of Postgraduate Education Warsaw, Poland

OLIVER H. BEAHRS, M.D.

Consultant, Department of Surgery Mayo Clinic Professor of Surgery Mayo Medical School Rochester, Minnesota

GEORGE E. BLOCK, M.D.,

F.A.C.S.

Professor of Surgery University of Chicago Chicago, Illinois

MURRAY DAVIDSON, M.D.

Professor of Pediatrics
State University of New York at Stonybrook
Director of Pediatrics
Queens Hospital Center
Chief, Pediatric G.I. Program
Long Island Jewish—Hillside Medical
Center, Bronx, New York

ARMANDO GIULIANO, M.D.

Department of Surgery University of California at San Francisco San Francisco, California

DONALD J. GLOTZER, M.D.

Associate Professor of Surgery Harvard Medical School Surgeon, Beth Israel Hospital Boston, Massachusetts

MICHAEL J. GOODMAN, B.M., B.CH., D.PHIL, M.R.C.P.

Consultant Physician and Gastroenterologist Bury General Hospital Greater Manchester, England

SHERWOOD L. GORBACH, M.D.

Chief, Infectious Diseases
Tufts New England Medical Center
Hospital
Professor of Medicine and Microbiology
Tufts University School of Medicine
Boston, Massachusetts

ROLLIN W. HUGHES, JR., M.D.

Assistant Professor of Medicine Mayo Medical School Rochester, Minnesota

KENNETH A. HUIZENGA, M.D.

Professor of Medicine Mayo Medical School Senior Consultant in Gastroenterology Mayo Clinic—Mayo Foundation Rochester, Minnesota

HENRY D. JANOWITZ, M.D.

Clinical Professor of Medicine Mount Sinai School of Medicine of the City University of New York Head, Division of Gastroenterology Mount Sinai Hospital New York, New York

MARTIN F. KAGNOFF, M.D.

Associate Professor of Medicine Department of Medicine University of California at San Diego La Jolla, California

KEITH A. KELLY, M.D.

Professor of Surgery Mayo Medical School Rochester, Minnesota

FRED KERN, JR., M.D.

Professor of Medicine Head, Division of Gastroenterology University of Colorado Medical School Denver, Colorado

JOSEPH B. KIRSNER, M.D., PH.D., M.A.C.P.

Louis Block Distinguished Service Professor of Medicine University of Chicago Attending Physician A. M. Billings Hospital Chicago, Illinois

BURTON L. KORELITZ, M.D.

Chief, Section of Gastroenterology Lenox Hill Hospital New York, New York

SUMNER C. KRAFT, M.D., F.A.C.P.

Professor of Medicine and Committee on Immunology University of Chicago Chicago, Illinois

DAVID H. LAW. M.D.

Professor of Medicine University of New Mexico School of Medicine Chief, Medical Service Veterans Administration Medical Center Albuquerque, New Mexico

ARTHUR E. LINDNER, M.D.

Associate Professor of Medicine Associate Dean New York University School of Medicine New York, New York

RICHARD H. MARSHAK, M.D.

Clinical Professor of Radiology Mount Sinai School of Medicine of the City University of New York New York, New York

JAMES R. MCPHERSON, M.D.

Associate Professor of Medicine Mayo Medical School Rochester, Minnesota

CLIFFORD S. MELNYK, M.D.

Professor of Medicine Head, Division of Gastroenterology University of Oregon Health Science Center Portland, Oregon

A. I. MENDELOFF, M.D., M.P.H., F.A.C.P.

Physician-in-Chief Sinai Hospital of Baltimore Professor of Medicine Johns Hopkins University School of Medicine Baltimore, Maryland

B. C. MORSON, M.D., F.R.C.S., F.R.C.PATH.

Department of Pathology St. Mark's Hospital London, England

SIDNEY F. PHILLIPS, M.D.

Professor of Medicine Mayo Medical School Rochester, Minnesota

JAMES L. A. ROTH, M.D., PH.D.

Professor of Clinical Medicine University of Pennsylvania School of Medicine Chief, Gastroenterology Service Director, Institute of Gastroenterology Presbyterian-University of Pennsylvania Medical Center Philadelphia, Pennsylvania

DAVID B. SACHAR, M.D.

Associate Professor of Medicine The Mount Sinai School of Medicine of the City University of New York New York, New York

ROY G. SHORTER, M.D., M.R.C.P., F.R.C.PATH., F.A.C.P.

Consultant, Departments of Pathology and Medicine Mayo Clinic and Mayo Foundation Professor of Pathology and Medicine Mayo Medical School Rochester, Minnesota

WILLIAM SILEN, M.D.

Johnson & Johnson Professor of Surgery Harvard Medical School Surgeon-in-Chief Beth Israel Hospital Boston, Massachusetts

ROBERT J. SPENCER, M.D.

Associate Professor Section of Colon and Rectal Surgery Department of Surgery Mayo Clinic and Mayo Medical School Rochester, Minnesota

KEITH B. TAYLOR, D.M.

George de Forest Barnett Professor Stanford University Medical School Stanford, California

WALTER R. THAYER, JR., M.D.

Chief, Section of Gastroenterology Rhode Island Hospital Professor of Biological and Medical Sciences Brown University Providence, Rhode Island

SIDNEY C. TRUELOVE, M.D., F.R.C.P.

Consultant Physician Nuffield Department of Clinical Medicine Radcliffe Infirmary Oxford, England

RUPERT B. TURNBULL, JR., M.D., C.M., F.A.C.S., F.R.A.C.S.(H)

Staff Member
Department of Surgery
Santa Barbara Medical Foundation
Clinic
Santa Barbara, California

DAVID W. WATSON, M.D., F.A.C.P.

Clinical Associate Professor of Medicine Sacramento Medical Center University of California at Davis Davis, California

R. WHITEHEAD, M.D., F.R.C. PATH., F.R.C.P.A.

Professor of Pathology Flinders Medical School Director of Department of Histopathology Flinders Medical Centre Bedford Park, Australia

C. P. WILLOUGHBY, B.M., M.R.C.P.

Research Fellow in Gastroenterology Nuffield Department of Clinical Medicine Radcliffe Infirmary Oxford, England

LOUIS ZETZEL, M.D.

Clinical Professor of Medicine, Emeritus Harvard Medical School Chief, Gastrointestinal Unit, Emeritus Beth Israel Hospital Boston, Massachusetts

Contents

Section 1:	Epidemiology	
	1. The Epidemiology of Idiopathic Inflammatory Bowel Disease A. I. MENDELOFF	5
Section 2:	Etiology and Pathogenesis	
	2. Experimental Enteritis and Colitis CLIFFORD S. MELNYK	25
	3. Psychosocial Aspects of Chronic Ulcerative Colitis and Crohn's Disease THOMAS P. ALMY	44
	4. Intestinal Microflora in Inflammatory Bowel Disease—Implications for Etiology and Therapy SHERWOOD L. GORBACH	55
	5. The Gut-associated Lymphoid Tissue MARTIN F. KAGNOFF	71
	6. The Immunology of Ulcerative Colitis and Crohn's Disease: Clinical and Humoral Aspects SUMNER C. KRAFT AND JOSEPH B. KIRSNER	86
	7. Lymphocyte Function and Chronic Inflammatory Bowel Disease DAVID W. WATSON, WITOLD BARTNIK, AND ROY G. SHORTER	121
Section 3:	Clinical Features	
	8. Ulcerative Colitis and Crohn's Disease of the Colon: Symptoms, Signs, and Laboratory Aspects KEITH B. TAYLOR	141

	9. Clinical, Laboratory and Certain Differential Diagnostic Features of Noncolitic Crohn's Disease HENRY D. JANOWITZ AND DAVID B. SACHAR	150
	10. Diagnosis and Differential Diagnosis of Chronic Ulcerative Colitis and Crohn's Colitis JAMES L. A. ROTH	166
	11. Symptoms, Signs, and Pathophysiology of Bowel Complications of Ulcerative Colitis and Crohn's Disease KENNETH A. HUIZENGA	203
	12. Extraintestinal Complications FRED KERN, JR.	217
	13. Fertility, Pregnancy, and Idiopathic Inflammatory Bowel Disease LOUIS ZETZEL	241
EF.	14. Chronic Ulcerative Colitis and Crohn's Disease in the Pediatric Patient MURRAY DAVIDSON	254
	15. Malignancy in Inflammatory Bowel Disease WALTER R. THAYER, JR.	265
Section 4:	Pathology	
	16. Pathology of Ulcerative Colitis B. C. MORSON	281
	17. Pathology of Crohn's Disease R. WHITEHEAD	296
Section 5:	Endoscopy and Radiology	
	18. Gastrointestinal Endoscopy in Inflammatory Bowel Disease ROBERT J. SPENCER, JAMES R. McPHERSON AND ROLLIN W. HUGHES, JR.	311
	19. Radiologic Diagnosis of Chronic Ulcerative Colitis and Crohn's Disease RICHARD H. MARSHAK AND ARTHUR E. LINDNER	341

		Contents xiii	
Section 6:	Tł	nerapy	
	20.	The Medical Treatment of Inflammatory Bowel Disease JOSEPH B. KIRSNER AND MICHAEL J. GOODMAN	413
	21.	Use of Elemental Diet and Parenteral Nutrition in Patients with Inflammatory Bowel Disease DAVID H. LAW	447
	22.	Medical Treatment and Prognosis of Some Local Complications of Chronic Ulcerative Colitis and Crohn's Disease KENNETH A. HUIZENGA	465
	23.	Treatment of Extraintestinal Complications FRED KERN, JR.	470
	24.	Medical Therapy and Prognosis of Chronic Ulcerative Colitis and Crohn's Disease in Children MURRAY DAVIDSON	474
	25.	Indications for Operation in Inflammatory Bowel Disease DONALD J. GLOTZER AND WILLIAM SILEN	488
	26.	The Surgical Approach to the Treatment of Chronic Ulcerative Colitis and Crohn's Disease DONALD J. GLOTZER AND WILLIAM SILEN	518
	27.	Complications of the Surgical Treatment of Ulcerative Colitis and Crohn's Disease GEORGE E. BLOCK AND ARMANDO E. GIULIANO	577
į		The Patient with the Conventional Ileostomy RUPERT B. TURNBULL, JR.	605
	29.	The Continent Ileostomy	622

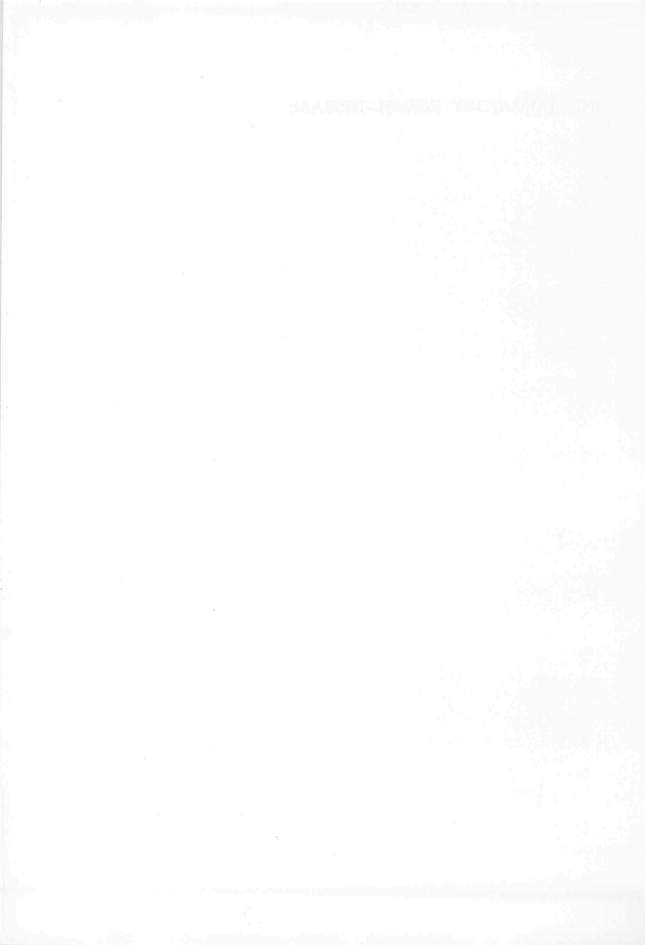
Section 7: Prognosis

30. Prognosis in Inflammatory Bowel Disease—a
North American View
BURTON I. KORELITZ
645

KEITH A. KELLY, SIDNEY F. PHILLIPS AND OLIVER H. BEAHRS

	31. Course and Prognosis of Ulcerative Colitis and Crohn's Colitis—A European View	661
	SIDNEY C. TRUELOVE AND C. P. WILLOUGHBY	
Index		675

INFLAMMATORY BOWEL DISEASE



Epidemiology

v pol ciambing ili.

ONE

The Epidemiology of Idiopathic Inflammatory Bowel Disease

Although there is little doubt that the forms of idiopathic inflammatory bowel disease considered in this book must have existed for centuries, the epidemiologist must look at their occurrence in various populations as if they are newly discovered entities. It is certain that the ability to recognize them as distinct inflammations of the intestine and colon was hampered formerly by inadequate instrumentation, by lack of pathologic specimens at various stages of their progression, and, most of all, by the overwhelming preponderance of bacterial infections and parasitic infestations which made the lot of earlier man miserable and caused the deaths of many infants, children, and debilitated and elderly persons through the losses of fluids and electrolytes accompanying the diarrheal phases of those disorders. In most parts of the world today where diarrheal diseases are still prevalent, there is a dearth of information about the chronic inflammations of the gut as to their frequency and the details of their course. It is the purpose of this chapter to ask questions about the distribution of these disorders in human populations throughout the world in a way to clarify the possible avenues of investigation which might cast light on their causes and management.

Serious Problems in Epidemiologic Approaches to Inflammatory Bowel Disease

The Problem of Diagnosis

The ability to differentiate ulcerative colitis and Crohn's disease from each other, and from other so-called etiologically specific inflammations of the gut, is not currently uniformly distributed among the health care personnel of the world. Since the proper diagnosis constitutes a prerequisite for the classifying of patients, this failure of agreement on diagnostic criteria is a serious obstacle for those who study the disease as it occurs in various parts of the world. Our experience with amebiasis, shigellosis, and lymphopathia venereum clearly indicates that each of these conditions can on occasion produce inflammatory reactions which may persist for some time after the initial inciting pathogen can no longer be isolated. At some point in this sequence of events it is possible to confuse the clinical, radiologic, proctoscopic, and perhaps even the biopsy appearance of the bowel with the types of