Drug Dosage

The authors and publisher have exerted every effort to ensure that drug selection and dosage set forth in this text are in accord with current recommendations and practice at the time of publication. However, in view of ongoing research, changes in government regulations, and the constant flow of information relating to drug therapy and drug reactions, the reader is urged to check the package insert for each drug for any change in indications and dosage and for added warnings and precautions. This is particularly
important when the recommended agent is a new and/or infrequently employed drug

All rights reserved
No part of this publication may be translated into other languages, reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, microcopying, or by any information storage and retrieval system, without permission in writing from the publisher

© Copyright 1985 by S Karger AG, P.O Box, CH–4009 Basel (Switzerland)
Printed in Switzerland by Boehm-Hutter AG, Reinach BL

Contents

List of Contributors ...................................... VIII
Preface ................................................ XI
Foreword by J.A. Boswick, Jr................................. XIII

I. Infection Control

Masellis, M. (Palermo): Association of Salicylic Vaseline with Antiseptics or Antibiotics in Topical Treatment of Burns .................. 1
Sowemimo, G.O.A.; Coker, A.O.; Abiodun-Wright, O.M. (Lagos): Bacteriology of Burn Wounds in Lagos................................. 23
Pegg, S.P. (Brisbane): Problems of Multiple-Resistant Staphylococcus aureus in a Burns Unit.............................. 28
Polk, R.E.; Mayhall, C.G.; Smith, J.; Hall, G.; Kline, B.J.; Swensson, E.; Haynes, B.W. (Richmond, Va.): Gentamicin and Tobramycin Penetration into Burn Eschar. Pharmacokinetics and Microbiological Effects................. 34

II. Topical Wound Healing Agents

Arturson, G. (Uppsala): Anti-Inflammatory Drugs and Burn Edema Formation . . 49
Klein, P. (Ravensburg): Local Treatment of Burns with Wound Solution and Epithelial Culturing (with Color Plates I and II).................. 63

Contents VI

Jöchle, W.; Hamm, D. (Denville, N.J.): Effects of Topical Treatment with Solcoseryl and Its Fraction 3 on Wound Healing after Burns and Surgical Lesions in Horses.............................................. 84
Klein, G.K.V. (Brunswick, Me.): Historical Development of Bromelain in the Treatment of Burn Wounds........................................... 90
Boswick, J., Jr. (Denver, Colo.): Clinical Experience with a New Enzymatic Debrid ing Agent .................................................. 97
Leb, J.; Fenyvesi, C. (Budapest): Local Treatment of Burns with a New Herbal Extract: Naksol................................................. 101

III. Evaluation and Treatment Techniques

Aisbjörn, F.; Micheels, J.; Sorensen, B. (Hvidovre): Burn Depth Established by a Laser Doppler Flowmeter ............................................. 106
Meredith, P.; Montandon, D. (Geneva): Primary Care of the Burned Hand .... 117
Montandon, D.; Maillard, G.F. (Geneva): Reconstruction of the Burned Face ... 125
Al-Baker, A.A.; El-Ekiabi, S.A.; Ghanem, ; Al-Ghoul, A. (Doha): The Qatari Method for Treatment of Burn Wounds: Review of 1400 Cases (with Color Plate III) ............................................. 137

IV. Skin Transplantation

Kiene, S. (Greifswald): Split Skin Transplantation Using the Reese Dermatome . . 140
Smahel, J. (Zürich): Replantation of Thermally Damaged Tissue................. 157
Teich-Alasia, S.; Magliacani, G. (Turin): The Late Results of Mesh Grafts..... 162
Campbell, G. (Durban): Biostim®: Preliminary Report ......................... 169

V. Biologic Dressings and Skin Banking

Dioguardi, D.; Laurentaci, G.; Favino, B. (Bari): Residual Antigenicity of Lyophilized Porcine Skin Shown in vitro by Immunological Methods............. 171
May, S.R. (Augusta, Ga.): Recent Developments in Skin Banking ........... 175
Stevenson, R.E. (Rockville, Md.): If Nothing Else Works, Read the Instructions: A Plea for Standards in Skin Banking ...................... 192

Contents VII

VI. Synthetic Skin Substitutes

Steinmann, R. (Ulm): Advantages, Scope and Results in the Treatment of Burn Patients with Metalline® and Opragen® ...................... 195
May, S.R. (Augusta, Ga.): Properties of an Adherent Polyurethane Wound Dressing, Op-Site® ........................................ 204
Woodroof, E.A. (Santa Ana, Calif.): Biobrane®: A New Biosynthetic Skin Substitute ............................................. 218
Moserová, J.; Houšková, E. (Prague): Temporary Skin Substitutes and Evaporative Water Loss ................................. 233

Subject Index .............................................................................. 237

List of Contributors

Abiodun-Wright, O.M., Department of Surgery, College of Medicine, University of Lagos, Lagos, Nigeria
Aisbjörn, F., Department of Plastic Surgery and Burns Unit, Kbenhavns Kømmuners Hvidovre Hospital, University of Copenhagen, Hvidovre, Denmark
Arturson, G., Institute for Plastic Surgery, Uppsala University, Burn Center, University Hospital, Uppsala, Sweden
Al-Baker, A.A., Surgical Departments, Hamad General Hospital, Doha, State of Qatar
Boswick, J., Jr., University of Colorado School of Medicine, Denver, Colo. USA
Brudzynska-Charewicz, S., Faculty of Medicine, Warsaw University, Warsaw, Poland
Bunyan, J., Walmer, Deal, Kent, England
Campbell, G., Chelmsford Medical Centre, St. Augustines Hospital, Durban, Republic of South Africa
Clumeck, N., Infectious Disease Unit, Saint-Pierre University Hospital, University of Brussels, Brussels, Belgium
Coker, A.O., Department of Microbiology, College of Medicine, University of Lagos, Lagos, Nigeria
Cran, S., Infectious Disease Unit, Saint-Pierre University Hospital, University of Brussels, Brussels, Belgium
Cuzzell, J., The New York Firefighters Skin Bank, The New York Hospital, New York,
N.Y., USA

Dioguardi, D., Department of Plastic and Reconstructive Surgery, Polyclinic University Hospital, University of Bari, Bari, Italy

El-Ekiabi, S., Surgical Departments, Hamad General Hospital, Doha, State of Qatar

Favoino, B., Department of Plastic and Reconstructive Surgery, Polyclinic University Hospital, University of Bari, Bari, Italy

Fenyvesi, C, MAV Hospital, Budapest, Hungary

Fraefel, W., Research Department, Solco Basel Ltd., Birsfelden, Switzerland

Gabbiani, G., Department of Pathology, University of Geneva, Geneva, Switzerland

Ghanem, ., Surgical Departments, Hamad General Hospital, Doha, State of Qatar

Al-Ghoul, ., Surgical Departments, Hamad General Hospital, Doha, State of Qatar

Haigis, E.M., Medical Division, Solco Basel Ltd., Birsfelden, Switzerland

List of Contributors IX

Hall, G., Division of Infectious Diseases, Department of Medicine, Medical College of Virginia, Virginia Commonwealth University, Richmond, Va., USA

Hamm, D., Research for Animal Health, Inc., Fayetteville, Ark., USA

Haynes, B.W., Jr., Division of General and Trauma Surgery, Department of Surgery, Medical College of Virginia, Virginia Commonwealth University, Richmond, Va., USA

Hestermans, Y., Department of Surgery, Saint-Pierre University Hospital, University of Brussels, Brussels, Belgium

Housková, E., Department of Plastic Surgery, Burn Center, Charles University, Prague, Czechoslovakia

Jaspar, N., Surgical Intensive Care Unit, Saint-Pierre University Hospital, University of Brussels, Brussels, Belgium

Jöchle, W., Wolfgang Jöchle Associates, Inc., Denville, N.J., USA

Kiene, S., University Surgery Clinic, Ernst-Moritz-Arndt University, Greifswald, GDR

Klein, G.K.V., Department of Surgery, Parkview Memorial Hospital, Brunswick, Me., USA

Klein, P., St. Elisabeth Hospital, Ravensburg, FRG

Kline, B.J., Squibb Institute for Medical Research, New Brunswick, N.J., USA

Klucinski, W., Faculty of Medicine, Warsaw University, Warsaw, Poland

Kopec, J., Faculty of Medicine, Warsaw University, Warsaw, Poland

Krupp, S., Plastic and Reconstructive Surgery Service, Vaudois University Hospital Center, Lausanne, Switzerland

Laurentaci, G., Department of Plastic and Reconstructive Surgery, Polyclinic University Hospital, University of Bari, Bari, Italy

Leb, J., Department of Pediatric Surgery, Peterfy S. u. Hospital, Budapest, Hungary

Ley, R., Department of Plastic and Reconstructive Surgery, Saint-Pierre University Hospital, University of Brussels, Brussels, Belgium

Magliacani, G., Division of Plastic Surgery and Burns Unit, Traumatological Center, Turin, Italy
Maillard, G.F., Plastic and Reconstructive Surgery, University of Lausanne, Lausanne, Switzerland
Masellis, M., Burn and Plastic Surgery Department, Civic Hospital, Palermo, Italy
May, S.R., Southeastern Burn Research Institute; Humana Hospital Augusta Burn Center; Department of Surgery, Medical College of Georgia, Augusta, Ga., USA
Mayhall, C.G., Division of Infectious Diseases, Department of Medicine, Medical College of Virginia, Virginia Commonwealth University, Richmond, Va., USA
Menier, M., Department of Surgery, Saint-Pierre University Hospital, University of Brussels, Brussels, Belgium
Meredith, P., Plastic and Reconstructive Surgery Unit, Cantonal Hospital, Geneva, Switzerland
Micheels, J., Department of Plastic Surgery and Burns Unit, Københavns Kommunes Hvidovre Hospital, University of Copenhagen, Hvidovre, Denmark
Montandon, D., Plastic and Reconstructive Surgery Unit, Cantonal Hospital, University of Geneva, Geneva, Switzerland
Moserevá, J., Department of Plastic Surgery, Burn Center, Charles University, Prague, Czechoslovakia
Nasilowski, W., Faculty of Medicine, Warsaw University, Warsaw, Poland
Nasrin-Monfared, H., Solco Basel Ltd., Birsfelden, Switzerland
Pegg, S.P., Surgery and Burns Unit, Royal Brisbane Hospital, Brisbane, Australia

List of Contributors

Polk, R.E., School of Pharmacy, Medical College of Virginia, Virginia Commonwealth University, Richmond, Va., USA
Remagen, W., Department of Pathology, University of Basel, Basel, Switzerland
Rudowski, W.J., Department of Surgery, Institute of Hematology, Faculty of Medicine, Warsaw University, Warsaw, Poland
Rusiniak, L., Department of Surgery, Institute of Hematology, Faculty of Medicine, Warsaw University, Warsaw, Poland
Sitarska, E., Faculty of Medicine, Warsaw University, Warsaw, Poland
Smahel, J., Research Laboratory, Surgical Clinic B, University Hospital, Zurich, Switzerland
Smith, J., School of Pharmacy, Medical College of Virginia, Virginia Commonwealth University, Richmond, Va., USA
Sorensen, B., Department of Plastic Surgery and Burns Unit, Københavns Kommunes Hvidovre Hospital, University of Copenhagen, Hvidovre, Denmark
Sowemimo, G.O.A., Department of Surgery, College of Medicine, University of Lagos, Lagos, Nigeria
Steinmann, R., Division of General Surgery, German Military Forces Hospital, Ulm, FRG
Stevenson, R.E., American Type Culture Collection, Rockville, Md., USA
Swensson, E., Division of General and Trauma Surgery, Department of Surgery, Medical College of Virginia, Virginia Commonwealth University, Richmond, Va., USA
Teich-Alasia, S., Division of Plastic Surgery and Burns Unit, Traumatological Center,
Preface

During the past decade, important advances have been made in the care of the burned patient, and now hundreds of papers are published annually on different aspects of this speciality field. Developments in treatment techniques have resulted in the control of the acute physiological problems of burn victims, so that many more are now being saved from death than was possible in the past. However, recent meetings on burn care have emphasized two points. First, more than half of all mortalities experienced in burn treatment centers are the result of infection. Second, new knowledge of the mechanisms of wound healing are beginning to have practical results in the development of new wound dressings. These developments have focused the attention of burn care providers on the burn wound itself, and especially on the areas of infection control and wound coverage.

The congress, 'Care of the Burn Wound', was held on May 4–6, 1983 in Geneva, Switzerland, under the joint sponsorship of the International Society for Burn Injuries and the World Health Organization. This congress was the first of these annual meetings of the International Society to focus solely on infection control, grafts and transplantation, and synthetic skin substitutes. The purpose of the meeting was to bring together the 66 participating burn clinicians and researchers from around the world who presented recent developments relating to the care of the burn wound itself. Based upon the papers submitted, the congress was organized into six sections, which included: infection control, topical wound healing agents, evaluation and treatment techniques, skin transplantation, biologic dressings and skin banking, and synthetic skin substitutes. Each section was composed of four to eight papers which presented recent developments in the area. All presentations reported clinical experience as well as the results of scientific experiments, and many of the new techniques enumerated by the participants are suitable for immediate application in the care of burn wounds. The work presented will be most useful to burn clinicians, burn researchers, plastic surgeons, trauma surgeons, professionals involved in wound healing research and the development of wound dressings, surgical nurses and technicians, skin bankers, and professionals interested
in infection control.
It is the hope of the editors that the publication of this congress will encourage increased participation in future congress sponsored by the International Society for Burn Injuries and the World Health Organization. These meetings provide a forum for the critical interchange of ideas and goals throughout the world community of burn care specialists. Such an interchange is particularly important in this time of rapid development of new technological solutions to the vexing medical problems of burn injury.

S. Randolph May, PhD,
Director,
Southeastern Burn Research Institute,
Humana Hospital Augusta Burn Center;
and Clinical Associate Professor,
Department of Surgery,
Medical College of Georgia,
Augusta, Ga., USA

Giovanni Dogo, MD,
Director,
Institute of Plastic Surgery; and
Professor,
University of Padua, Padua, Italy

Foreword

The editors of 'Care of the Burn', Drs. S. Randolph May and Giovanni Dogo, and assembled a distinguished group of individuals with extensive experience in burn prevention, care, teaching, and research for a three-day congress on six major areas of burn work. In the section on infection control, papers were presented by six different groups representing six countries and four different continents. The geographic diversity of this material signifies the international importance of this problem and the attempts at better understanding and management. In the eight presentations on 'Topical Wound Healing Agents', new drugs to reduce edema, stimulate cell proliferation, increase metabolism, and debride devitalized tissue were discussed. Much of this work was basic investigation that should promote further research and the development of clinical applications in many areas of wound care.

New and unusual problems were presented in the papers on 'Evaluation and Treatment Techniques'. Some of this material was original work being presented for the first time, and others covered years of treatment
of specific techniques and large numbers of patients. The three sessions on 'Skin Transplantation', 'Biological Dressings and Skin Banking', and 'Synthetic Skin Substitutes' focused on the issue of the major problem that we have in caring for burn patients and the attainment of wound closure. The presentations in these sections ranged from topics of basic immunology to the care of extensive burns and the latest developments in skin substitutes.

The editors, who were the congress planners, are to be congratulated on organizing this comprehensive conference on an important problem and the arrangement for publication of the edited presentation. Their efforts are a tribute to the International Society of Burn Injuries and the World Health Organization, which sponsored the meeting.

John A. Boswick, Jr., MD, FACS, Secretary General, The International Society for Burn Injuries, Professor of Surgery, The University of Colorado, Denver, Colo., USA