BURNS

A SYMPOSIUM

GOLDMAN AND
GARDNER

BURNS

A Symposium

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PREFACE

THESE ARE THE proceedings of a symposium presented by the Department of Surgery and Continuing Education in Medicine and Health Sciences of the University of California School of Medicine, San Francisco. This was made possible through the financial support and cooperation of the Eaton Laboratories.

The program was arranged in four sections. The first section was devoted to the systemic effects of burns. The second section was directed toward the local effects and local therapy. At the third section, the more specific problems related to burns, as well as their complications were discussed. The last section was devoted to rehabilitation, healing, and skin grafting of burned patients. Each section was terminated with a panel which was an informal discussion by the participants of that particular section.

There have been many advances in the problem of burns during the last decade, some widely accepted and some still debatable and controversial. In order to attempt to crystallize the cogent current concepts, we have invited the outstanding contributors and authorities in this complex field of burns.

The presentations were recorded on tape, transcribed, and edited in a loose manner so as to preserve the informal and impromptu aspects of the symposium. The audience of practitioners sent in questions as part of the panel discussions.

We wish to acknowledge the contributions of our guest participants: Dr. E. Thomas Boles, Jr.; Dr. J. Barrett Brown; Dr. Nicholas G. Georgiade; Dr. Robert F. Hagerty, Sr.; Dr. Stephen R. Lewis; Lt. Col. John A. Moncrief; Dr. Carl A. Moyer; and Dr. Anne Wight Phillips.

We are indebted to Miss Julia Vault, Mrs. Judith MacMillan,

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LEON GOLDMAN, M.D.
RICHARD E. GARDNER, M.D.

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INTRODUCTION

Dr. Leon Goldman: It is my pleasure to introduce Dr. John B. deC. M. Saunders, Provost of the University of California, San Francisco, and Dean of the School of Medicine, who will welcome the audience to this medical center and introduce the symposium. Dr. Saunders.

Dr. John B. deC. M. Saunders: It is some ten years since a major symposium on the subject of burns has been carried out, and this is rather surprising in view of the very great importance of the subject. Perhaps our preoccupation with other more spectacular aspects of the development of medicine, and of surgery in particular, has been responsible for this neglect; yet I believe that when the history of this last fifty years in medicine is written, the subject of burns will occupy a very important, spectacular, and prominent place. I say this because I received a portion of my surgical training in the Royal Hospital for Sick Children in Edinburgh, where one of our major problems was the treatment of burns. At that time, in the late 1920's, the mortality in children from burns, usually from hot water burns, was perfectly frightful. I was engaged by the British Medical Research Council to assist in the development of a program related to the introduction and use of tannic acid. In one year's time, the use of this technic resulted in an eighty per cent lowering of the mortality in the children in that hospital. And yet, we had only attacked a very small fragment of the problem. The entire problem is one of tremendous scope, involving almost every phase of scientific knowledge: the problems of shock, of endocrine balance, of cross-infection and contamination, the age-old problem of the open versus the closed methods of therapy, the orthopedic problems related to contracture, the problems of grafting and of plastic surgery. Where, may I ask, does one find such a broad spectrum in any other aspect of surgical endeavor?

THE SERIOUSLY BURNED PATIENT

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BURN SHOCK: IS THIS A SPECIFIC ENTITY?

LT. COL. JOHN A. MONCRIEF

When Dr. Gardner and Dr. Goldman contacted me about the program and suggested the topic for this presentation, "Burn Shock: Is This a Specific Entity?" I had a mixed reaction. I felt that everyone knew that burn patients frequently develop shock, or shock syndrome, and why should this be a question? Yet, the way the question was posed made it more interesting—"Is this a specific entity?" Does the patient who has sustained a thermal injury have shock that is peculiar to the burn patient and different from the shock experienced by people who have sustained traumatic injuries from other causes; is it the same entity, or an essentially similar one? Secondly, just what is shock? I know that if we asked everyone in this room to give his definition of shock, and there were one hundred people here, we would have essentially one hundred different definitions. In fact, I just showed Dr. Moyer my definition of shock, and he has already disagreed with it; so if anyone else disagrees I will not feel hurt—I will expect it.

Thirdly, is burn shock due to circumstances which are seen in the patient who has sustained a thermal injury, and which are not seen in patients who have sustained traumatic injury from other causes?

And, fourth, how does one treat burn shock? I do not anticipate becoming involved in the latter aspects of the question, how does one treat burn shock, because I think this is fairly well known in general and would take a considerable period of time.

My definition of shock with which Dr. Moyer disagrees (and I think very properly so when one considers burn shock as opposed to hemorrhagic shock or hypovolemic shock from some other cause), is that shock is a clinicopathological condition character-

ized by a fallen cardiac output and persistent deficiency of peripheral flow. Bowing to Dr. Moyer, I will not say tissue perfusion as pertains to the burn patients, although in hemorrhagic shock or hypovolemic shock from other causes tissue perfusion certainly is deficient. In general, shock can be considered due primarily to two causes, and two causes alone. One is failure of the pump mechanism or, essentially, failure of the heart to produce and expel the amount of blood necessary for normal tissue perfusion. Secondly, shock can be due to disparity between blood volume and the volume of the vascular compartment.

I think it is important to realize that one does not necessarily have to have a deficiency in blood volume in order to have a shock state but merely a deficiency between the blood volume itself and the volume of the vascular compartment. If there is an intense peripheral vasodilatation, one can see shock in the presence of adequate blood volume. On the other hand, there may be a decreased blood volume (and sometimes decreased to a marked degree) in the young individual with marvelous powers of compensation, in which the vascular compartment has been decreased in volume to such an extent that there is no disparity between blood volume and the volume of the vascular compartment. Under such conditions, the shock syndrome would not necessarily exist in its full-blown state. When one considers burn shock, one must consider what signs are available that would allow him to determine whether or not the patient is in shock. I will mention a few signs here, and again I expect there will be many who might disagree: one, with the signs and, two, with the importance ascribed to each of these signs.

I will mention first the unreliable signs. One is a change in pulse rate. In many definitions of shock, tachycardia is given as one of the outstanding signs of shock. However, we all know that individuals may be in profound shock and not have a tachycardia. On the other hand, they may have a very rapid pulse rate and not be in shock.

A decrease in skin temperature is not a reliable sign of shock. It is a more reliable sign than some of the others, but a patient, particularly a burn patient, may very well be exposed without dressings, and thus be unable to regulate his temperature very