

American Academy
of
Orthopaedic Surgeons

Symposium on
Idiopathic
low back
pain

Edited by
Augustus A. White III
Stephen L. Gordon



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of
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Symposium on Idiopathic low back pain

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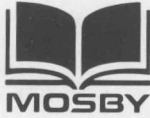
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Preface

It was a great pleasure and privilege to organize and chair this symposium to discover the cause of "man's most important non-life-threatening disease." The conference was more than an exciting academic exercise. We should be reminded that once the cause of back pain is known, more effective means of prevention and treatment are likely to be discovered.

The original development of the topics and framework for a conference on problems of spinal stability came about through the joint efforts of the American Academy of Orthopaedic Surgeons (AAOS), the National Institute of Arthritis, Diabetes, and Digestive and Kidney Diseases (NIADDK), the Orthopaedic Research Society (ORS), and the AAOS Advisory Committee on Research, chaired by Dr. Philip D. Wilson, Jr. At about the same time, Dr. Lawrence E. Shulman, Associate Director for NIADDK, identified low back pain as a significant clinical and scientific problem with far-reaching impact. With the assistance of Dr. Stephen L. Gordon,* he began the early planning of a multidisciplinary workshop of scientists and clinicians from broad areas of research to investigate the relevant data regarding the cause of back pain. The workshop format was selected for the purpose of tapping a large reservoir of expertise. One objective of the meeting was to identify knowns, unknowns, and exciting new research areas related to the back.

As a further detail, manuscripts were submitted in advance of the meeting and were distributed to all participants. The manuscripts became the focal point for short summaries, discussion periods, and for material in this text. The workshop was conducted through panels whose members were selected to provide a wide range of information on the subjects assigned to them. On the last day, the panels developed summaries of the information produced earlier in the meeting. Those summaries are part of this text.

On behalf of the sponsors and the steering committee, we wish to express deep thanks to all participants for their conscientious contributions to this text. We would also like to recognize a number of individuals who made important contributions through their activities on the steering committee or by serving as panelists. The steering committee included Drs. Ronald Dubner, Jennifer Kelsey, Henry La Rocca, Donlin Long, Richard Rothman, Albert Schultz, Lawrence Shulman, Leon Sokoloff,

*All editorial work done in Dr. Gordon's private capacity. No official support or endorsement by the National Institutes of Health is intended or should be inferred.

Richard Stauffer, and Fred Woessner. The panelists were Drs. G. Andersson, R. Beals, M. Brown, R. Burgess, W. Calvin, K. Casey, W. Collins, D. Eyre, W.C. Hayes, D. Long, J. Louks, S. Lipson, A. Maroudas, D. Mayer, A. Nachemson, M. Panjabi, M. Pope, K.P.H. Pritzker, L. Rosenberg, R. Rothman, S. Snook, R. Spilker, R. Stauffer, H. Valkenburg, and B. Wyke. Perhaps this text will be helpful in finding answers to "man's most important non-life-threatening disease."

Augustus A. White III
Stephen L. Gordon

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Introduction

Augustus A. White III

Some remarks are in order to introduce the subject of this text. A few powerful statistics provide some indication of the significance of low back pain in contemporary Western society^{3,4}:

1. Several studies have indicated that four out of five individuals will have a significant complaint of back pain at one time or another in their lives.
2. Impairments of the spine are the most frequent cause of time lost from work.
3. The most consuming problems brought to family general practitioners are "back pain and swelling injury."
4. Estimates for the cost of treatment and compensation for those suffering from back pain exceed 14 billion dollars per year. This figure does not include the loss of productivity estimated at 4 hours per year per worker.

A survey of the workshop participants showed that about 90% had in fact suffered from at least one episode of backache. Each back pain victim could recall vividly the pain, restriction of activity, and feelings of dependency and anxiety. *The key point is that low back pain affects the quality of life for just about everyone.*

Clearly, the medical and economic impacts of low back pain are enormous. It is somewhat surprising that neither the federal government nor industry has been seriously involved in the study of the cause, prevention, and management of back pain. We hope that one of the results of this book will be to stimulate research investigators and encourage additional research support.

The frequent reference to cause of back pain is a critical and central theme in this book. In some instances an etiology traceable to a diseased disc or some form of arthritis exists. However, in most cases, after a thorough evaluation of a patient by a capable clinician the exact cause of the patient's backache is not known. We have plenty of labels to put on the disorder. Names are used such as low back strain, lumbago, or mechanical low back pain, but the cause is not known. The pain that we speak of is not imagined; it can be effected by stress, but we do not presume it is purely psychogenic. It seems that an appropriate name for it is *idiopathic organic spine pain*. Clinically, the patient appears to be someone with an organic disease. However, though we use the best medical evaluation procedures available, we are unable to determine the cause. A study in 1966 by Dillane et al.¹ of patients of general practitioners in England showed that in 79% of first attacks of low back pain in men and in 89% of attacks in women the specific cause was unknown.

2 Introduction

One approach to evaluating the cause of low back pain is based on the classical concepts of infectious disease etiology that are credited to the work of Koch, the German bacteriologist who won the Nobel Prize for Medicine in 1905.⁵ Koch, drawing from the previous writings of Henle in 1840, articulated three conditions known as Koch's postulates, which are necessary to implicate a parasite as an etiological agent^{2,6}: (1) the parasite occurs in every case of the disease in question and under circumstances that can account for the pathological changes in the clinical course of the disease; (2) the parasite occurs in no other disease as fortuitous and nonpathogenic; and (3) after being isolated from the body and repeatedly grown in pure culture, the parasite can induce the disease anew.

I have sought to benefit from the wisdom of Koch and others, and I suggest four postulates to be used in determining the etiology of low back pain: (1) the condition or agent occurs in every case of idiopathic low back pain, or else its correlation with this disease is statistically significant; (2) the condition or agent occurs rarely or not at all in the absence of idiopathic low back pain; (3) experimental induction of the condition or agent can produce low back pain; and (4) experimental correction or treatment of the condition or agent can eliminate low back pain.

Having made these suggestions about a causative agent, let me now share with you a cautionary quote from Claude Bernard: "The greatest error in the advancement of medical science has been the search for a single cause for a single disease." The question of etiology is a formidable problem. The low back region is an extremely complex, multifunctional structure. Pain and pain behavior are difficult research problems in their own right. It may well be that idiopathic backache will be found to be caused by some condition that is a subtle variation from the normal. Otherwise, we probably would have found the cause already. If back pain were caused by a highly unusual condition, then fewer people would suffer from this disorder.

It is apparent that much work lies between the present state of knowledge and satisfactory answers to the etiology of idiopathic low back pain. However, a great Chinese philosopher has indicated that a thousand mile journey can only begin with the first step. Many steps have already been made, and we expect that in the near future more progress will be realized.

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SECTION ONE

Epidemiology: natural course of the disease

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