THE LUMBAR SPINE AND BACK PAIN

Edited by
Malcolm Jayson

With a foreword by
Allan St.J Dixon

THE LUMBAR SPINE AND BACK PAIN

Edited by

Dr Malcolm Jayson

Department of Medicine, University of Bristol, Royal National Hospital for Rheumatic Diseases, Bath, and Winford Orthopaedic Hospital

With a Foreword by

Dr Allan St. J. Dixon

Royal National Hospital for Rheumatic Diseases, Bath

GRUNE & STRATTON, INC.
A subsidiary of Harcourt Brace Jovanovich, Publishers
New York San Francisco

Grune & Stratton, Inc., 111 Fifth Avenue, New York, N.Y. 10003
First published 1976 in Great Britain by
Pitman Medical Publishing Company Limited

Printed in Great Britain at The Pitman Press, Bath

Library of Congress Catalog Card Number 76-11276
International Standard Book Number 0-8089-0959-2

CONTENTS

THE LUMBAR SPINE AND BACK PAIN

Edited by

Dr Malcolm Jayson

Department of Medicine, University of Bristol, Royal National Hospital for Rheumatic Diseases, Bath, and Winford Orthopaedic Hospital

With a Foreword by

Dr Allan St. J. Dixon

Royal National Hospital for Rheumatic Diseases, Bath

GRUNE & STRATTON, INC.
A subsidiary of Harcourt Brace Jovanovich, Publishers
New York San Francisco

Grune & Stratton, Inc., 111 Fifth Avenue, New York, N.Y. 10003
First published 1976 in Great Britain by
Pitman Medical Publishing Company Limited

Printed in Great Britain at The Pitman Press, Bath

Library of Congress Catalog Card Number 76-11276
International Standard Book Number 0-8089-0959-2

CONTENTS

FOREWORD

It would be a tactical error in the introduction to a book such as this to adopt an attitude somewhat patronising to the reader and start by lecturing him about the importance of back pain as judged by its extreme frequency and almost universal distribution.

After all, if back troubles are so common the reader is likely to be well aware of them. And if they are so common he will probably from his own very subjective and unpleasant experience know just what back pain feels like. It is a doubtful compliment to point out that he is in interesting, if somewhat dubious, company. The skeleton of the 30-foot-long Gigantosaurus on show at the British Museum (Natural History) clearly reveals that spinal disease existed all those million of years ago. But what of it?—he shares our common vertebrate inheritance. It is no compensation to the reader that modern as well as prehistoric vertebrates may suffer more than he does. Those low-slung achondroplasic dogs, the bulldog, the dachshund and the like, when elderly, do not just get back pain. They may, in fact, die of paralysis because the degenerative changes in their spines impinge upon their spinal cords. It is not of much comfort to anyone laid up and off work because of a painful back, to know that of all rheumatic complaints back troubles are the greatest cause of lost time in industry. It suggests that he is only a single statistic in the sum total of a condition so widespread that by implication he must accept it. Nor does it help to be told that many students of back pain think that degenerative changes of spinal ageing are so inevitable as to be regarded as normal and by implication, unpreventable.

If in his role as sufferer or potential sufferer from back pain the reader has got this far with the introduction he will want evidence of a more positive and optimistic attitude. And indeed, such an attitude is not hard to justify. After all, death itself is a normal and natural association of ageing. Human science may not be able to prevent human death but in the past half century at least, death has been delayed and postponed for up to 20 years for most of us. So why not postpone and delay back disease? Surely this, too, is conceptually possible.

One can point to those few lucky people who live to vigorous old age without any spinal problems at all. If nature can do this for the few why not for the many? Can research really be powerless in the face of so apparently simple and definable a problem as "how can

one prevent or delay degenerative disease of the spine? '. Put like this the task becomes familiar. Well-tried methods of tackling it are to hand and the usual "mix" of technical competence, scientific training, purposeful determination, together with enough people and resources to do the job is a recipe which could hardly fail. It is a truism of today, as we enter the last quarter of the 20th century, that modern science is such that if a question can be clearly put science/technology can almost certainly answer it.

To advance in new territories one may need to spend time clearing the undergrowth of pre-existing misconceptions and doubtless this will be true of advances in the study of back pain. To start with, back pain is not caused by one disease but by many and however popular one single simple explanation of back pain is in terms such as "slipped disc", so simple a concept will not explain all cases. Indeed, the whole myth of the "slipped disc" is one of the deep-rooted weeds that have sprung up in this area. Discs do not "slip" in the way which most laymen and not a few doctors imagine. Discs cannot even hurt since they contain no nerve endings capable of registering pain. Only the surrounding structures can hurt; however, because the parts of the spine deep inside us are what the neurologists call "outside the body image" it is impossible to locate exactly which structure is painful purely from the distribution of the area of painful sensations. Because the vast majority of painful spinal conditions are never operated on (and do not cause death) the source and site of pain usually cannot be verified by direct observation.

In these circumstances theories about back pain spring up like thistles in neglected fields. They send down deep roots and become firmly believed in. Thus in a recent conference between orthopaedic surgeons and medical osteopaths communication was impeded, to say the least, because of a lack of common ground or common theory. The osteopaths were talking about displacements and pressures between moving parts of the spine which had never been anatomically defined, let alone measured, or, for that matter, shown to be abnormal. This flight from anatomy in heterodox systems of treatment reaches its peak in acupuncture where a wholly imaginary system of anatomy is adopted. This has nothing to do with the question of whether or not acupuncture "works", for that is a question which the reader must judge for himself.

Back pain is as much a problem of pain as a problem of the back. So any scientific study of the causes of back pain must be firmly rooted not only in the anatomy of the back—a job for an anatomist—but also in the anatomy and physiology of pain nerve fibres in the back—a job for the neurophysiologist. And because the normal anatomy can become diseased and the diseased state can often heal, the anatomist and neurophysiologist must also be concerned with the remarkable powers of healing, repair, regeneration, and

compensatory overgrowth which the body can deploy in order to restore reasonable function. Each of these topics can in turn be sub-divided and sub-divided again in order to get to points on the frontiers of our knowledge where research can win advances. Many of these are dealt with in this book.

But pause for a moment and consider a list of all the branches of medical scientific endeavour which might be invoked in the study of the back pain problem. The biochemistry of the disc, the ultramicroscopic study of its structure, the embryology of spinal development, the neurology of pain nerve findings, the physiological assessment of pressures and stresses, the mechansim of spinal movement, the study of ageing, the study of engineering simulations: these and many other lines of inquiry are essential to form a base from which to judge the abnormal. When back pain does occur, the study of the normal can be turned to the study of the morbid. Back sufferers, because of their complaint, present themselves to doctors and this, in turn, leads to further opportunities for research in the clinical field—opportunities both medical and surgical. Vast numbers of new technical methods can be used to probe aspects of the problem. Techniques from fields as varied as textile fibre science, leather chemistry, and polarographic stress analysis can be recruited. On the level of social science, the interactions of back pain in workers can be correlated with the industry in which they work. The problems of pre-employment screening can be defined (but we still await solutions), and finally science meets politics in such questions as: Should people with unilateral sacralisation be denied access to work in the docks? Can an equitable system of compensation for job-related back injury be worked out?

The study of the treatment of back pain has, paradoxically, been retarded by the relatively benign nature of most instances of back pain and their tendency to spontaneous recovery. Perhaps not more than one or two in every thousand incidents of back pain that occur in the population become so severe, so chronic and so complicated that they lead to hospital-style investigation or to operation. Because of this tendency to recover, heterodox treatments of all sorts have flourished. All kinds of uncritical but apparently successful methods have been used in treatment, not solely by non-medically qualified therapists. Each therapist has his own theory, ranging from those which seem plausible and rational at one end of the scale, to theories which can only be described as systematised delusions, at the other. Such dubious company has tended to frighten off workers capable of applying the strict disciplines and critical attitudes of scientific research.

Luckily these attitudes are changing. The need for change has become apparent from various sources but primarily from the statisticians and epidemiologists who have counted the costs and

numbers of the people who lose time from work because of episodes of back pain and the consequential loss to the economy. At the same time, it is possible to contrast this loss of money caused by back pain with the very small investment into back pain research. Meanwhile the past two decades have seen a great growth of techniques which could be used (and increasingly are being used) to attack the problem. However, it is not enough to invoke new techniques. It is necessary to synthesise the many disciplines and to get research workers of whatever discipline to identify themselves with this area. This, of course, is the normal function of a learned scientific society. This has now been achieved. A few years ago I suggested that such a society be formed for back pain research. There is now a vigorous and flourishing group under the name of "The Society for Back Pain Research" with more than 100 members which enjoys an international reputation. The support organisations are moving along the same lines. Thus, the Arthritis and Rheumatism Council, so far the major charitable foundation operating in this area in Great Britain, has nominated back pain research as one of the fields of research needing special support and has backed up this with finance. The Back Pain Association, another support organisation, although lying fallow for some years, is now actively funding research into problems of back pain and raising money to this end. Abroad, one can discern the same signs of increasing interest; thus there is a growing number of research papers dealing with aspects of this topic at international congresses and, in some countries, special issues of scientific journals have been devoted to back pain and its problems. Yet there is still much to do. There is no evidence that back pain is a rare rheumatic complaint in the United States of America, for example, but one would look in vain for any paper devoted to this problem in the official journal of the American Rheumatism Association in the past five years.

This introduces another phenomenon which has hampered back pain research in the past. The various known causes and diagnoses of back pain are listed with other rheumatic conditions in the International Classification of Diseases. A working group of the World Health Organisation recommended in 1970 the following definition of rheumatology:

> "Rheumatology is that branch of Medicine concerned with rheumatic complaints. This term includes systemic disorders of connective tissue, inflammatory arthritis (osteo) arthrosis, back troubles and soft tissue (nonarticular) rheumatism. Rheumatic pain and disability can be produced by disorders of other systems and complaints shown to be due to disease of other systems would not normally be included".

Note that rheumatoid arthritis is not specifically mentioned in this WHO definition but back troubles are. Despite this, in many countries rheumatologists continue to think and act as though back pain were not their problem. In some countries back pain is the province

of the orthopaedic surgeon, in others there are two sorts of rheumatologists—the classical, rheumatoid-arthritis-centred rheumatologists and the backs-necks-and-shoulders rheumatologists. Elsewhere the latter are more or less synonymous with physical medicine specialists. It seems the association of back pain with orthopaedics is commonest in Europe—an association now historically strange in that back pain is relatively rarely operated upon and by far the majority of treatments are medical. Yet this association continues, despite the fact that scarce orthopaedic skills need to be retained for the increasing amount of reconstructive bone and joint surgery caused by rheumatic diseases and also for the ever-increasing problems of road traffic trauma.

And what will happen to rheumatologists once rheumatoid arthritis is preventable, like rheumatic fever, and becomes yet another of the dinosaurs of disease which used to plague the Earth but do so no longer? Surely that day is not far off. The pace of, and investment into, research into rheumatoid arthritis is now so vast that it is difficult to conceive of anything less than total victory in 10 years and the beginnings of that victory in five. When the time comes that rheumatoid arthritis is of historical interest only, it must surely be to the back pain problem that rheumatologists will turn their attention.

The role of a book such as this is therefore clear. It and the many others which one hopes will follow in the same field will help in the inevitable change. On a small national scale it will help to bring together old and new ideas grouped around the back pain problem and on a longer, larger international scale it is a small part of the movement to marshall the dispersed forces of those who begin to see the problem of back pain for what it is—one of the biggest challenges in rheumatology.

ALLAN ST. J. DIXON

Royal National Hospital
for Rheumatic Diseases,
Bath.

EDITOR'S PREFACE

Low back pain is among the commonest of human disabilities. Indeed, at some time in our lives most of us suffer from at least minor spinal symptoms. Nevertheless, our understanding of the problem is extremely limited. In the past, the subject was neglected by the medical profession—so allowing scope for non-orthodox practitioners. This lack of interest was partly due to the very considerable difficulties, if not impossibilities, of achieving a precise diagnosis in many instances and to the feeling that often there is little constructive help to offer. It is fortunate that, in the past few years, enthusiasts have appreciated the importance of the problem.

In this volume I have concentrated on the structure and function of the spine and the commonest problems that cause back pain. I have specifically excluded well-defined conditions such as ankylosing spondylitis, neoplasia, etc. for which there are not the same difficulties in understanding the disease processes. Experts in epidemiology, neurology, pathology, biochemistry, radiology, and clinical assessment and treatment have contributed accounts of their work and I thank them for these. I hope that this volume will stimulate new interest and original thoughts on this complex problem.

My thanks go to Richard Fifield for his very considerable help and advice in publishing this volume and to my wife, Judi, for her help in the preparation of the manuscripts.

Bristol 1976 MALCOLM I. V. JAYSON