PAIN IN OSTEOARTHRITIS

Edited by

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Published by John Wiley & Sons, Inc., Hoboken, New Jersey
Published simultaneously in Canada

Wiley-Blackwell is an imprint of John Wiley & Sons, formed by the merger of Wiley's global Scientific, Technical, and Medical business with Blackwell Publishing.

Library of Congress Cataloging-in-Publication Data:

Pain in osteoarthritis / [edited by] David T. Felson, Hans-Georg Schaible.
p. ; cm.
Includes bibliographical references.
ISBN 978-0-470-40388-4 (cloth)
1. Osteoarthritis–Complications. 2. Pain. I. Felson, David T. II. Schaible, H. -G.
[DNLM: 1. Osteoarthritis–physiopathology. 2. Pain–therapy. WE 348 P144 2008]
RC931.O67P35 2008
616.7′223–dc22

2008049891

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

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PREFACE

In patients with osteoarthritis, pain is the key determinant of the decision to seek care, and the central symptom of their illness affecting their quality of life and ability to carry out their daily tasks. Pain and its relief are also the main focus of treatment, especially given the absence of structure modifying therapy for osteoarthritis. Given the centrality of pain to both the therapeutic contract between the clinician and the patient and as the patient's overriding symptom, it is surprising that previous books on osteoarthritis have not focused more prominently on this aspect of disease.

Perhaps one reason for the avoidance of a focus on pain might be the belief that pain originates in a diseased joint and that understanding the causes of disease and correcting the pathology would naturally result in alleviating the pain. For example, in rheumatoid arthritis the success in targeting the underlying inflammatory process has genuinely stabilized disease or even placed it in remission with attendant pain reduction. Why should osteoarthritis be any different?

By the time a person has clinical osteoarthritis, his/her joint has probably experienced longstanding cartilage wear, bony remodeling, perhaps modest synovial inflammation, and a weakness in bridging muscles. The structure of the joint may well have been remodeled. Many of the changes visible on MRI in patients even with early symptoms are impressive and suggest that pathology is extensive and has existed for some time prior to the development of symptoms. Our ability to reverse this pathology and create a healthier painless joint may be limited. Our attempts at pharmacologically protecting cartilage to prevent from further wearing away have not been successful, and it is arguable whether protecting 'cartilage in the face of extensive pathology involving structures outside, of cartilage is likely to be effective. Thus, new ideas in terms of treating the joint and alleviating pain in patients with osteoarthritis are needed.

In persons without disease, pain is a sensory experience that tells the body to avoid particular activities and motivates the person to avoid exposing the body to painful stimuli. During acute and chronic joint disease, the peripheral and central nociceptive system is often in a state of sensitization, forcing the patient to restrict movements of the afflicted joint and to avoid loading of the joint. In the long term, this, protective reaction may change and turn into a maladaptive state in which protective mechanisms may not operate in their normal way. Evidence, much of it summarized in this book, suggests that the mechanisms of pain in osteoarthritis may extend beyond the normal protective functioning of pain. It is thus likely that nervous system changes and pathological pain

processes may, for many patients with osteoarthritis, be the source of their most severe, troublesome pain, pain that is the most disabling and causes the most problems with their daily functioning. Providing an understanding of this dysfunctional pain is a major goal of this book.

Understanding the pain of osteoarthritis involves a new multidisciplinary approach that combines insights from neuroscience with expertise in joint anatomy and physiology. It requires an understanding of how the peripheral nervous system works to transmit pain impulses to the central nervous system and when those messages become pathologically augmented. It also requires an understanding of how excess focal loading across a joint might cause damage to joint structures stimulating nociceptive fibers. Both the neuron and articular pathologies combine to provide a comprehensive picture of what causes pain in osteoarthritis.

In this book, the initial chapters describe the pathophysiology of the articular nervous system pathology of this system in states like osteoarthritis. In the second part, we cover the pain experience in osteoarthritis and clinical factors that contribute to that experience. Lastly, we provide for the clinician caring for patients with osteoarthritis a new paradigm about how to approach treatment, orienting treatment toward the different types of pathophysiology that pain may represent. On the one hand, pain may arise from the inflammatory changes that occur in joints with osteoarthritis. On the other hand, it may arise because of pathologic modifications of the peripheral nervous system, which enhance pain experience. Lastly, pain may arise from abnormal mechanical loading that targeted treatment may correct. We hope that this book provides clinicians who are caring for osteoarthritis patients with an appreciation, for the complexity of their pain and some creative approaches to diagnosing and treating their symptoms.

David T. Felson
Hans-Georg Schaible

ACKNOWLEDGMENTS

For DTF: I appreciate the forebearance and support of my wife, Elaine, and daughter, Rachel, and my father who taught me to welcome and be excited by new approaches to difficult problems.

For H-GS: I thank my family for great support and patience, and I appreciate the enthusiasm and input of all my colleagues who share with me the interest and work on neurobiological mechanisms of pain.

I thank Mrs. Sabine Oppermann for her help with the book.

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PART I

THE NEUROSCIENCE OF ARTICULAR PAIN