

*Spinal Cord Injury Pain: Assessment, Mechanisms, Management. Progress in Pain Research and Management. Volume 23.* Robert P. Yezierski & Kim J. Burchiel, eds, pp. 440, 2002. Price \$67.00. ISBN 0 931092 43 4. IASP Press, Seattle.

This book is a result of the 3rd IASP Research Symposium on Spinal Cord Injury Pain: Clinical Characteristics and Experimental Studies, held in Phoenix, Arizona, USA in April 2001.

Due to the fact that pain following spinal cord injury (SCI) has been reported to compromise the quality of life in nearly 70% of individuals with SCI, it is important that steps are taken to propose a taxonomy for SCI pain. This taxonomy is described and includes primarily a division into nociceptive and neuropathic pain. Secondly, nociceptive pain is divided into musculoskeletal and visceral pain, and neuropathic pain into above-level, at-level, and below-level pain. Regarding specific structures and pathology, musculoskeletal pain includes mechanical instability, muscle spasm, secondary overuse syndromes, etc. Visceral pain includes renal calculus, sphincter dysfunction, etc. and autonomic dysreflexic headache. Above-level neuropathic pain includes compressive mono-neuropathies and complex regional pain syndromes. At-level neuropathic pain includes nerve root compression, syringomyelia, spinal cord trauma/ischaemia (transitional zone, etc.), while below-level neuropathic pain includes spinal cord trauma/ischaemia (central dysesthesia syndrome, etc.). It would be a major step forward if this taxonomy is used in future studies to provide a more uniform classification of SCI pain conditions. This taxonomy will certainly undergo refinement as efforts continue toward understanding the clinical characteristics and mechanisms of different SCI pain syndromes. The use of quantitative sensory testing and a comprehensive pain history in combination with a neurological examination defining the extent of neurological deficit to determine whether the pain is nociceptive or neuropathic is described very well.

A comprehensive insight into the animal models used in SCI pain research is given, and in addition how studies for possible pain mechanisms are performed, with assessment, pathophysiological studies, pharmacological characterization, intervention strategies, etc. There are reasons to expect that alterations of neurones at the thalamic and central cortical levels are found secondary to injury of spinothalamic neurones or the dorsal column. Traumatic or ischaemic injury to the spinal cord initiates cellular, molecular, biochemical, anatomical and, ultimately, functional changes that are believed to be important components of an injury cascade responsible for the onset and progression of SCI pain. Mechanisms proposed to explain central neuropathic pain include: sensitization – enhanced excitability of neurones in the pain transmission system; disinhibition of pain transmission; substitution of alternative pain pathways; plasticity – reorganization of neural circuits. These mechanisms are not exclusive, and they probably occur to some degree following any damage to the spinal cord or central nervous system.

We are brought up to date regarding imaging, with the possibilities of using positron emission tomography and functional magnetic resonance imaging. Results indicate that it is possible to differentiate and relate cortical regions to the subjective conscious perception of pain. Magnetic resonance spectroscopy (MRS) can be used to measure the chemical concentrations of different compounds in the living brain. Differences in metabolites between SCI individuals with and without pain suggest that injury-induced functional changes may contribute to the central mechanism of chronic pain following SCI. Therefore MRS may be one method that can be used to assess the effectiveness of potential neurochemical therapeutic targets developed for SCI patients with chronic neuropathic pain.

Important recommendations are given for future clinical trials for SCI pain. This is necessary not least due to the lack of large randomized controlled trials. Antidepressants, sodium channel blockers, antiepileptic drugs, including gabapentin, lamotrigine and topiramate hydrochloride, opioids, NMDA-receptor antagonists, clonidine, and GABA-receptor agonists are reviewed. Because of different pain mechanisms that seem to be involved in SCI pain, a combination of drugs with different profiles may improve treatment efficacy. Patients failing to respond to oral

medication should be considered for intrathecal treatment. Pharmacological treatment will probably provide only partial pain relief, so it seems rational to combine drug therapy with non-pharmacological approaches such as physical therapy and cognitive-behavioural therapy. Dorsal root entry zone operation is reviewed and its future possibility should be investigated further.

Future suggestions for directions for the study of treatment of SCI pain is given and one of the most significant advances in understanding the secondary events associated with SCI has been the application of molecular biology to identify changes in gene expression that may affect the functional properties of spinal and supraspinal neurones.

This book will certainly be of interest to all those working with individuals with SCI.

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*Spinal Cord Medicine: Principles and Practice*, Vernon W. Lin, ed., pp. 1085, 2003. Price \$225.00. ISBN: 1 888799 61 7. Demos Medical Publishing, NY.

The book comprises more than 1000 pages divided into 74 chapters in 10 sections. A total of 130 authors, representing more than 20 medical specialities and subspecialties, have shared their expertise. The text is comprehensive, covering topics from acute medical and surgical management to cutting-edge research, rehabilitation and psychosocial care. This is a practical guide for all physicians, but also for nurses and therapists who are interested in various issues important for patients with spinal cord injury.

The book covers not only issues of spinal cord injury, but also spinal cord-related disorders. The topics present a wide variety of medical aspects of spinal cord medicine to the reader, for example, epidemiology, surgical management, bladder, bowel, and sexual dysfunction, spasticity and pain management, autonomic dysfunction, pressure ulcer, syringomyelia, heterotopic ossification, osteoporosis, wheelchair and seating assessment, orthotics, activities of daily living training, vocational and driving training. The specific chapters on and discussions of functional electrical and magnetic stimulation, body weight supported ambulation, architectural accessibility, women's issues, paediatric care, ageing, etc. give the impression that the reader will be convinced about the benefits of recent advances in spinal cord medicine delivered with an interdisciplinary approach. When planning some of the complex and challenging details of rehabilitation it is valuable to consider the possibility of concomitant spinal cord injury and traumatic brain injury. The issue of primary prevention is raised very clearly and it deserves more attention amongst the medical profession. The bottom line of the book is that to avoid complication, the treatment and rehabilitation process must be customized to the individual needs of each patient.

The book has few weak points. However, and perhaps because of its comprehensive nature, the book is heavy and difficult to handle manually. It would also have been made more attractive by the use of colour in the layout.

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