

The Journal of Pain

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Volume 19, Number 4, April 2018

Critical Review

341 Altered Primary Motor Cortex Structure, Organization, and Function in Chronic Pain: A Systematic Review and Meta-Analysis

Wei-Ju Chang, Neil E. O'Connell, Paula R. Beckenkamp, Ghufuran Alhassani, Matthew B. Liston, and Siobhan M. Schabrun

Chronic pain can be associated with movement abnormalities. The primary motor cortex (M1) has an essential role in the formulation and execution of movement. A number of changes in M1 function have been reported in studies of people with chronic pain. This systematic review article evaluated the evidence for altered M1 structure, organization and function in people with chronic pain of neuropathic and non-neuropathic origin. M1 changes are inconsistent between studies and more research with larger samples and rigorous methodology is required to elucidate M1 changes in chronic pain populations.

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The Journal of Pain (ISSN 1526-5900) is published monthly by Elsevier Inc., 230 Park Avenue, Suite 800, New York, NY 10169-0901, USA. POSTMASTER: Send address changes to Elsevier, Journal Returns, 1799 Highway 50 East, Linn, MO 65051.

ON THE COVER

Complex Regional Pain Syndrome (CRPS) is an unexplained chronic, debilitating pain condition that is characterized by disproportionate pain, swelling, vasomotor, sudomotor, trophic and motor changes. Observations of tactile misperceptions in patients with CRPS have prompted investigation of somatosensory neuroplasticity as a putative mechanism in CRPS pain. In a case-control design, the authors compared middle and late-latency somatosensory-evoked potentials in response to pseudo-randomised mechanical stimulation of the digits of both hands (including CRPS-affected and non-affected sides) between 13 CRPS patients and 13 matched healthy controls. See Kuttikat et al, page 395.

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Opposite Effects of Stress on Pain Modulation Depend on the Magnitude of Individual Stress Response

Nirit Geva and Ruth Defrin

The effect of acute stress on pain threshold and intolerance threshold are reported as producing either hypoalgesia or hyperalgesia. Yet, the contribution of individual stress reactivity in this respect has not been established. The aim of this report was to test two pain modulation paradigms under acute stress manipulation in order to study whether stress differentially affects pain modulation, and whether the effect is related to individual stress response. The authors report that pain modulation under stress is affected by individual stress responsiveness. Identification of high-stress responders may promote better pain management.

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Pain and Fatigue Variability Patterns Distinguish Subgroups of Fibromyalgia Patients

Emily J. Bartley, Michael E. Robinson, and Roland Staud

This research examined between- and within-subject variability in pain-related symptoms as predictors of pain and fatigue, and identified patient subgroups based upon symptom variability characteristics. Fibromyalgia patients completed daily diaries and reported on symptoms of pain intensity, pain unpleasantness, fatigue, anxiety, and depressed mood. Measures of health status, quality of life, and somatic symptoms were obtained. Higher levels of pain were associated with greater fluctuations in pain unpleasantness, fatigue, and depressed mood. Subgroups in mood and pain-related variability emerged, with phenotypic clusters differing across levels of pain intensity and social functioning.

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Self-Guided Online Cognitive Behavioral Strategies for Chemotherapy-Induced Peripheral Neuropathy: A Multicenter, Pilot, Randomized, Wait-List Controlled Trial

Robert Knoerl, Ellen M.L. Smith, Debra L. Barton, David A. Williams, Janean E. Holden, John C. Krauss, and Beth LaVasseur

The purpose of this trial was to examine the efficacy of a self-guided online cognitive and behaviorally-based pain management intervention (PROSPECT) to reduce "worst" pain for individuals with chronic painful chemotherapy-induced peripheral neuropathy (CIPN). Sixty patients with chronic painful CIPN were recruited from five outpatient academic and community cancer centers. Patients were randomized in a 1:1 ratio to receive either eight weeks of PROSPECT or usual care. Individuals who received the PROSPECT intervention (n=19) had significantly greater improvements in "worst pain" in comparison to individuals receiving usual care. The authors note that a larger study is needed but report that these findings provide preliminary support for the efficacy of a non-pharmacological intervention.

395 **Altered Neurocognitive Processing of Tactile Stimuli in Patients with Complex Regional Pain Syndrome**

Anoop Kuttikat, Valdas Noreika, Srivas Chennu, Nicholas Shenker, Tristan Bekinschtein, and Christopher A. Brown

Complex Regional Pain Syndrome (CRPS) is an unexplained chronic, debilitating pain condition that is characterized by disproportionate pain, swelling, vasomotor, sudomotor, trophic and motor changes. Observations of tactile misperceptions in patients with CRPS have prompted investigation of somatosensory neuroplasticity as a putative mechanism in CRPS pain. In a case-control design, the authors compared middle and late-latency somatosensory-evoked potentials in response to pseudo-randomized mechanical stimulation of the digits of both hands (including CRPS-affected and non-affected sides) between 13 CRPS patients and 13 matched healthy controls.

410 **Daily Fluctuations of Progesterone and Testosterone Are Associated With Fibromyalgia Pain Severity**

Meredith Schertzing, Kate Wesson-Sides, Luke Parkitny, and Jarred Younger

Fibromyalgia, a chronic pain disorder of unknown etiology, disproportionately affects women over men. One notable feature of fibromyalgia is that the symptom severity can vary markedly over short periods of time, with severity on any particular day being largely unpredictable. This study examined relationships between sex hormones and fibromyalgia (FM) pain. Eight women meeting case definition criteria for FM provided venous blood samples and reported their FM pain severity over 25 consecutive days. A linear mixed model was used to determine if fluctuations of hormones were associated with changes in pain severity. Results suggest that sex and other hormones may serve to both increase and decrease fibromyalgia pain severity. Hormones fluctuate normally in women with FM, but may still contribute to pain severity.

418 **Feeling the Pressure to Be Perfect: Effect on Pain-Related Distress and Dysfunction in Youth With Chronic Pain**

Edin T. Randall, Kelly R. Smith, Corey A. Kronman, Caitlin Conroy, Allison M. Smith, and Laura E. Simons

Despite clinical observation of perfectionistic tendencies among youth with chronic pain and their parents, as well as established relationships between perfectionism and functional somatic symptoms in adults and youth, no research in the pediatric pain literature has examined perfectionism. This study explored the role of various types of youth and parent perfectionism on pain-related distress and behavior, and on youth pain-related dysfunction. Perfectionism was indirectly linked to youth dysfunction through its impact on youth pain-related catastrophizing and fear. Findings suggest that parent and youth perfectionism is a psychosocial factor that should be targeted in pediatric chronic pain treatment.

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The Effect of a Statewide Mandatory Prescription Drug Monitoring Program on Opioid Prescribing by Emergency Medicine Providers Across 15 Hospitals in a Single Health System

Brian Suffoletto, Michael Lynch, Charissa B. Pacella, Donald M. Yealy, and Clifton W. Callaway

In the United States, prescription opioid misuse is a major and urgent public health concern. Prescription drug monitoring programs (PDMP) enable registered prescribers to obtain real-time information on patients' prescription history of controlled medications. This study sought to describe the impact of a state-mandated PDMP on opioid prescribing by emergency medicine providers, retrospectively analyzing electronic medical records of 122,732 adult patients discharged with an opioid prescription. Findings support current PDMP mandates in reducing opioid prescriptions which could curb the prescription opioid epidemic and may ultimately reduce abuse, misuse, and overdose death.

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Assessment of Tapentadol API Abuse Liability With the Researched Abuse, Diversion and Addiction-Related Surveillance System

Suzanne K. Vosburg, S. Geoffrey Severtson, Richard C. Dart, Theodore J. Cicero, Steven P. Kurtz, Mark W. Parrino, and Jody L. Green

Tapentadol, a Schedule II opioid with a combination of μ -opioid activity and norepinephrine reuptake inhibition, is used for the management of moderate to severe acute and chronic pain. Its dual mechanism of action is thought to reduce opioid-related side effects that can complicate pain management. Since approval, tapentadol has been tracked across multiple outcomes suggesting abuse liability, and a pattern of relatively low, although not absent, abuse liability has been found. This retrospective cohort study further details the abuse liability of tapentadol as an Active Pharmaceutical Ingredient when both immediate-release and extended-release formulations were on the market together. Findings suggest the public health burden related to tapentadol to date is low, but present.

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Errata

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