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Cover: From Christopher T. Plastaras, Adrian Popescu, Coleen A. McLaughlin, Sean O. Sanderson, Andrew G. Biaesch, Justin C. Bosley, Benjamin Kaplan, and Bryan A. Pukenas. C-Arm Fluoroscope Angle Settings for Fluoroscopically Guided Lumbar Transforaminal Epidural Injections (pp. 832–838)

PERSPECTIVE & COMMENTARY

Commentary
799 Solomon Perlo, MD and Dmitry M. Davydov, PhD, MD
“Chronic Pain and the Brain” Impairment: Introducing a Translational Neuroscience-Based Metric

GENERAL SECTION

Original Research Articles
803 Xiangnan Li, MD, Haqin Yang, BS, Qing Ouyang, PhD, Fangting Liu, MD, Jian Li, MD, Zhenghua Xiang, PhD, and Hongbin Yuan, PhD
Enhanced RAGE Expression in the Dorsal Root Ganglion May Contribute to Neuropathic Pain Induced by Spinal Nerve Ligation in Rats
There is some evidence implicating a receptor for advanced glycation end products (RAGE) signaling in the pathogenesis of neuropathic pain (NP). This study investigated whether RAGE signaling in the dorsal root ganglion (DRG) might contribute to NP following peripheral nerve injury.

813 Michael Steven Swain, MPhil, Nicholas Henschke, PhD, Steven James Kamper, PhD, Inese Gobina, PhD, Veronika Ottová-Jordan, PhD, and Christopher Gerard Maher, PhD
Pain and Moderate to Vigorous Physical Activity in Adolescence: An International Population-Based Survey
In a large, representative and multi-national study of school-aged children, adolescents who experience pain typically have lower odds of meeting the WHO recommendation of 60 minutes of moderate to vigorous physical activity per day. This implies that pain may be a potential barrier to physical activity in adolescence. However, the association varies according to age, gender and type of pain experienced.

820 Stephen C. Harris, MD, Alessandra Cipriano, MSHS, Salvatore V. Colucci, MS, Ram P. Kapil, PhD, Pierre Geoffroy, MDCM, Talar Hopyan, PhD, and Naama Levy-Cooperman, PhD
Intranasal Abuse Potential, Pharmacokinetics, and Safety of Once-Daily, Single-Entity, Extended-Release Hydrocodone (HYD) in Recreational Opioid Users
Hysingla ER (HYD), a once-daily, extended-release hydrocodone bitartrate tablet with abuse-deterrent properties, is available for the treatment of chronic pain in appropriate patients. This study evaluated the intranasal abuse potential and pharmacokinetics of HYD coarse and fine particles vs hydrocodone powder or placebo. HYD demonstrated reduced intranasal abuse potential compared with hydrocodone powder.

SPINE SECTION

Original Research Articles
832 Christopher T. Plastaras, MD, Adrian Popescu, MD, Coleen A. McLaughlin, BS, Sean O. Sanderson, MD, Andrew G. Biaesch, BS, Justin C. Bosley, MD, Benjamin Kaplan, MD, and Bryan A. Pukenas, MD
C-Arm Fluoroscope Angle Settings for Fluoroscopically Guided Lumbar Transforaminal Epidural Injections
This manuscript describes the most common C-arm fluoroscopy angles encountered for lumbar transforaminal epidural injections in one academic clinical practice. The data from 246 consecutive subjects were analyzed. This retrospective descriptive study suggests fluoroscope angles for L4-S1 TFEI as a starting point before fine tuning views accounting for individual anatomy.
Contralateral Oblique View Is Superior to the Lateral View for Lumbar Epidural Access
The contralateral oblique view outperforms the lateral view for lumbar interlaminar epidural access on several clinically relevant grounds.

Deconstructing Chronic Low Back Pain in the Older Adult—Step by Step Evidence and Expert-Based Recommendations for Evaluation and Treatment: Part VII: Insomnia
A multidisciplinary expert panel, using a modified Delphi method evaluating evidence and clinical practice, created an algorithm and supportive materials to help guide primary care providers in planning treatment for older adults with insomnia, an important-and often overlooked-contributor to chronic low back pain (CLBP).

Chronic Pain in a Low Socioeconomic Status Population in Singapore: A Cross-Sectional Study
We sought to determine the prevalence of chronic pain in a low socioeconomic-status rental-flat community in Singapore and its associations. While there was no difference in the prevalence of chronic pain in this low-SES community compared against neighboring higher-SES enclaves, staying in the low-SES community was independently associated with higher prevalence of leg/ankle/foot pain. In the low-SES community, unemployment and functional limitation were associated with chronic pain.

Electrical Intramuscular Stimulation in Osteoarthritis Enhances the Inhibitory Systems in Pain Processing at Cortical and Cortical Spinal System
These findings highlight that for knee osteoarthritis (KOA) with severe pain and disability, the a-EIMS enhanced the corticospinal inhibitory systems in cortical and infra-cortical pain processing sites. Also, these results showed that serum BDNF had an inverse relationship with pain pressure threshold (PPT) independent of the treatment group.

Variability in Opioid Equivalence Calculations
Variability in equianalgesic conversion methods poses risks to patients who are being converted from one opioid to another, including undertreated pain or adverse events. The results of this survey elucidate significant variation in estimated morphine equivalents for five commonly-prescribed opioids, regardless of the type of clinician performing the conversion. A universal method to accurately and consistently convert one opioid to another simply does not exist.

Evaluation of the Tolerability of Switching Patients on Chronic Full μ-Opioid Agonist Therapy to Buccal Buprenorphine
Chronic pain patients treated with around-the-clock full μ-opioid agonist therapy can be switched to buccal buprenorphine (a partial μ-opioid agonist) at approximately 50% of the full μ-opioid agonist dose without an increased risk of opioid withdrawal or loss of pain control.
Differential Effects of Oxycodone, Hydrocodone, and Morphine on Activation Levels of Signaling Molecules

We previously observed that pretreatment with oxycodone, hydrocodone, and morphine results in differential effects on the behavioral (locomotor) responses to quinpirole, a D2/D3 receptor agonist. This study demonstrates that oxycodone, hydrocodone, and morphine differentially modulate the activation levels of signaling molecules Akt and ERK1/2 in the striatum. Additionally, pretreatment with oxycodone, hydrocodone, and morphine result in differential effects on the signaling responses to quinpirole. These findings provide further evidence supporting the notion that different opioids carry differential risks to the dopamine reward system. This information should be considered when prescribing opioid pain medication, in order to balance effectiveness with minimal risk.

Interface Pressure Behavior During Painful Cuff Algometry

In cuff algometry the homogeneity of interface pressure on the limb surface may affect the pain sensitivity assessment and potentially be improved by alternative cuff designs optimizing the pressure distribution. The implications of the current findings confirm that cuff systems with liquid medium improve distribution of interface pressure although the deviation of the magnitude of this pressure from cuff inflating pressure should be considered as one of the important characteristics of this type of algometry.

Prevalence and Time Course of Post-Stroke Pain: A Multicenter Prospective Hospital-Based Study

Time course of post stroke pain differs according to the various pain types. While headache manifests in the acute stage, the prevalence of musculoskeletal and shoulder pain and central post stroke pain is higher in the subacute and chronic stages; the prevalence of spasticity-related pain peaks in the chronic stage.

The Discriminatory Ability of the Fibromyalgia Rapid Screening Tool (FiRST): An International Study in Spain and Four Latin American Countries

The Spanish version of the FiRST is an appropriate screening tool for fibromyalgia in Latin American subsamples, including those patients with high scores on potential confounders.

Buprenorphine, Clonidine, Dexamethasone, and Ropivacaine for Interscalene Nerve Blockade: A Prospective, Randomized, Blinded, Ropivacaine Dose-Response Study

This prospective, double-blind, randomized controlled dose-response study used buprenorphine, clonidine, dexamethasone and ropivacaine for interscalene nerve blockade. Use of perineural additives with ropivacaine 0.2% was associated with reduced pain at 24 hours and reduced rebound pain. For maximum pain reduction, combining perineural additives with ropivacaine 0.375% or 0.2% is recommended. To minimize motor blockade, perineural additives can be combined with ropivacaine, 0.1%.
Headache & Facial Pain Section

Original Research Article

961 James M. Hawkins, DDS, John E. Schmidt, PhD, Istvan A. Hargitaı, DDS, John F. Johnson, DDS, Robin S. Howard, MS, and Peter M. Bertrand, DDS

Multimodal Assessment of Body Pain in Orofacial Pain Patients

Most orofacial pain patients have other body pain, yet many do not report these to their provider. This study utilized three modes of assessment to capture a patient's pain complaints. 60.5% of patients did not report all of their pain on initial assessment, and 30.5% did not report all pain after a secondary assessment. Overall, 91.5% of patients reported multiple pain regions.

Rehabilitation Section

Original Research Article

970 Julie K. Cremeans-Smith, PhD, Kenneth Greene, MD, and Douglas L. Delahanty, PhD

Physiological Indices of Stress Prior to and Following Total Knee Arthroplasty Predict the Occurrence of Severe Post-Operative Pain

Although severe pain and disability associated with osteoarthritis often motivate individuals to undergo arthroplastic surgery, a significant number of patients continue to experience pain following surgery. Prior research has implicated both the hypothalamic-pituitary-adrenal (HPA) axis and sympathetic nervous system (SNS) in the sensitization of pain receptors and chronic pain conditions. The present study suggests that indices of physiological stress before and after total knee arthroplasty (TKA) can predict post-operative pain severity.

Brief Research Report

980 Michael Skovdal Rathleff, PhD, Kristian Kjær Petersen, PhD, Lars Arendt-Nielsen, Dr med, Kristian Thorborg, PhD, and Thomas Graven-Nielsen, PhD

Impaired Conditioned Pain Modulation in Young Female Adults with Long-Standing Patellofemoral Pain: A Single Blinded Cross-Sectional Study

Patellofemoral pain affects 7% of the adolescent population. Despite long lasting pain for six years, young female adults do not have facilitated temporal summation. Young female adolescents with patellofemoral pain have an inefficient conditioned pain modulation which suggests altered central pain processing.

Letters to the Editor

989 Anuj Bhatia, MBBS, MD, FRCA, FFPMRCA, FIPP, FRCPC, EDRA, CIPS

Questions Regarding “Pulsed Radiofrequency for Chronic Intractable Lumbosacral Radicular Pain: A Six-Month Cohort Study”

990 Koen Van Boxem, MD, FIPP, PhD, Nelleke de Meij, MSC, Alfons Kessels, MD, MSC, Maarten Van Kleef, MD, PhD, FIPP, and Jan Van Zundert, MD, PhD, FIPP

Reply to Remarks on the Six-Month Cohort Study on PRF for Chronic Intractable Radicular Pain

991 Philip B. Cornish, BHB, MBCi-B, FANZCA, FFPMANZCA

Successful Peripheral Neuromodulation for Phantom Limb Pain: An Update

992 Pedro Tadao Hamamoto Filho, MD, Gianfeliêe Belini Poliseli, MD, Victor Azevedo Oliveira, MD, Roberto Bezerra Vital, MD, Márcia Maria Ferreira Lima, MD, Rodrigo Bazan, MD, PhD, and Marco Antônio Zanini, MD, PhD

Unusual Painful Trigeminal Neuropathy Caused by Racemose Neurocysticercosis

Erratum