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Robert G. Addison, MD (1921-2012)

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Critical Review

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Challenges and Opportunities in Pain Management Disparities Research: Implications for Clinical Practice, Advocacy, and Policy

Lisa C. Campbell, Kristynia Robinson, Salimah H. Meghani, April Vallerand, Michael Schatman, and Nomita Sonty

Due to high profile initiatives at the national level, awareness of inadequate pain care affecting many groups in our society has never been greater. Yet increased awareness of disparities and the initiatives to address them has yielded modest progress, most notably in the form of growing appreciation that pain disparities likely result from multiple factors, including biological, psychological, environmental, health system, and cultural factors. This paper discusses ethical and methodological challenges undermining the ability to investigate and develop meaningful interventions to improved outcomes.

ON THE COVER

Pain is a multidimensional phenomenon. Previous psychological studies have shown that a person's subjective pain threshold can change when certain emotions are recognized. This association was studied using magnetoencephalography. Findings suggest that sadness can modulate neural responses to pain stimuli. See Yoshino, et al, page 628.

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Original Reports

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Awareness of Temperature and Pain Sensation

Josep Valls-Solé, Juan M. Castellote, Markus Kofler,
Jordi Casanova-Molla, Hatice Kumru,
and Pedro Schestatsky

Evoked potentials to radiant or contact heat pain stimuli reflect the synchronization of brain activity to noxious inputs. However, it is not known how they relate to conscious awareness of a sensation. This article presents a way to measure the subjective awareness of the sensation induced by a noxious heat stimulus, either radiant or contact, in healthy human subjects. This method could be used for the analysis of cognitive aspects of pain processing.

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Sadness Enhances the Experience of Pain and Affects Pain-Evoked Cortical Activities: An MEG Study

Atsuo Yoshino, Yasumasa Okamoto, Keiichi Onoda,
Kazuhiro Shishida, Shinpei Yoshimura, Yoshihiko Kunisato,
Yoshihiko Demoto, Go Okada, Shigeru Toki,
Hidehisa Yamashita, and Shigeto Yamawaki

Pain is a multidimensional phenomenon. Previous psychological studies have shown that a person's subjective pain threshold can change when certain emotions are recognized. These authors examined this association with magnetoencephalography, hypothesizing that pain stimuli were affected by sadness induced by facial recognition. These findings suggest that sadness can modulate neural responses to pain stimuli.

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Effects of Skin-to-Skin Contact on Autonomic Pain Responses in Preterm Infants

Xiaomei Cong, Regina M. Cusson, Stephen Walsh,
Naveed Hussain, Susan M. Ludington-Hoe, and Di Zhang

The purpose of this randomized cross-over trial was to determine the effects on autonomic responses in preterm infants of longer skin-to-skin Kangaroo Care (KC) for 30 minutes and 15 minutes before and throughout heel stick, compared with incubator care. Results indicate that long KC significantly affects pain responses compared to incubator care.

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The Influence of Menstrual Phases on Pain Modulation in Healthy Women

Taraneh Rezaii, Angelica Lindén Hirschberg, Kjell Carlström, and Malin Ernberg

Thirty-six normally menstruating women were tested during 3 phases of the menstrual cycle: early follicular, ovulatory, and midluteal, confirmed by hormone determinations. Mechanical pressure (test stimulus) was applied to the masseter muscle and the induced pain assessed before, during, and after immersion of the hand into ice water. Results show that sex hormones modulate conditioned pain regulation, since pain inhibition was more effective in the ovulatory phase of the menstrual cycle than in the early follicular phase.

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Sensitization to Acute Procedural Pain in Pediatric Sickle Cell Disease: Modulation by Painful Vaso-occlusive Episodes, Age, and Endothelin-1

Alyssa M. Schlenz, Catherine B. McClellan, Teresa R. M. Mark, Alvin D. McKelvy, Eve Puffer, Carla W. Roberts, Sarah M. Sweitzer, and Jeffrey C. Schatz

The impact of pain early in life is a salient issue for sickle cell disease (SCD), a genetic condition characterized by painful vaso-occlusive episodes (VOEs) that can begin in the first year of life and persist into adulthood. This study examined the effects of age and pain history (age of onset and frequency of recent VOEs) on acute procedural pain in children with SCD. Findings show that a child's age and recent pain history should be considered in procedural pain management for SCD patients. Additional research is needed to understand the role of endothelins in pain sensitization.

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Role of Allostatic Load in Sociodemographic Patterns of Pain Prevalence in the U.S. Population

Gary D. Slade, Anne E. Sanders, and Kunthel By

Persistent stressors associated with sociodemographic disadvantage exert a physiologic toll, labeled "allostatic load," that contributes to disparities in some health conditions. This report investigated the contribution of allostatic load to pain prevalence in US adults. More than 14,000 adults were surveyed about headache, pain that lasted more than 24 hours, and widespread pain. Findings suggest that pain occurs more frequently in lower income groups, though the relationship is not attributable to their experience of greater allostatic load. While allostatic load contributes to population variation in pain, other etiologic mechanisms contributing to pain are needed to account for income disparities in pain.

- 676** **Evidence of Spinal Cord Hyperexcitability as Measured With Nociceptive Flexion Reflex (NFR) Threshold in Chronic Lateral Epicondylalgia With or Without a Positive Neurodynamic Test**
Edwin Choon Wyn Lim, Michele Sterling, Ashley Pedler, Brooke K. Coombes, and Bill Vicenzino
- There is emerging evidence of altered pain signal processing as a likely underlying mechanism in chronic lateral epicondylalgia (LE), yet this remains to be assessed. It has also been proposed that neurodynamic tests reflect nociceptive withdrawal responses. This work sought to improve the understanding of spinal cord excitability as measured by nociceptive flexion reflex threshold in chronic LE with and without positive neurodynamic tests. The results suggest evidence of spinal cord hyperexcitability, particularly sensory hypersensitivity, in LE with or without positive neurodynamic test.
- 685** **Estrogen Receptor β Activation Is Antinociceptive in a Model of Visceral Pain in the Rat**
Dong-Yuan Cao, Yaping Ji, Bin Tang, and Richard J. Traub
- The mechanism underlying estrogen modulation of visceral pain remains unclear. The authors' previous studies indicate activation of estrogen receptor α (ER α) enhances visceral pain. This study aimed to investigate the role of estrogen receptor β (ER β) activation in spinal processing of visceral stimuli. The effects of selective ER β agonists on the visceromotor response and dorsal horn neuronal responses to colorectal distention (CRD) were tested in ovariectomized and intact female rats. Findings show that activation of ER β is antinociceptive in the CRD model of visceral pain, which may provide a therapeutic target to manage irritable bowel syndrome in the clinic.
- 695** **The Role of Gender in the Interaction Between Self-Pain and the Perception of Pain in Others**
Michel-Pierre Coll, Lesley Budell, Pierre Rainville, Jean Decety, and Philip L. Jackson
- While self-pain motivates protective behaviors and self-oriented feelings, the perception of others' pain often motivates concern and prosocial behaviors towards the person suffering. The conflicting consequences of these 2 states raise the question of how pain is perceived in others when one is actually in pain. By documenting the effects of self-pain on pain perception in others, this study provides a better understanding of the shared mechanisms between self and other pain processing. It could ultimately provide clues as to how the health status of healthcare professionals could affect their ability to assess their patients' pain.

Pain Among Ambulatory HIV/AIDS Patients: Multicenter Study of Prevalence, Intensity, Associated Factors, and Effect

Eve Namisango, Richard Harding, Leonard Atuhaire, Henry Ddungu, Elly Katabira, Fred Roland Muwanika, and Richard A. Powell

This report set out to determine the prevalence, intensity, associated factors, and effect of pain among ambulatory HIV/AIDS patients in East Africa. Patients were recruited from outpatient clinics at 2 teaching hospitals in Uganda. The presence and intensity of pain were self-reported using the Brief Pain Inventory. Pain is a common symptom among ambulatory HIV/AIDS patients and has a debilitating effect on quality of life. There is a significant unmet need for pain relief in this population.