

# CNS SPECTRUMS<sup>®</sup>

THE INTERNATIONAL JOURNAL OF NEUROPSYCHIATRIC MEDICINE

**ADVANCES IN THE DIAGNOSIS, PATHOGENESIS,  
AND MANAGEMENT OF FIBROMYALGIA SYNDROME**

**CME PSYCHCAST™**

## ***PSYCHOPHYSICAL AND NEUROCHEMICAL ABNORMALITIES OF PAIN PROCESSING IN FIBROMYALGIA***

### **AUTHORS**

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CME .5

### **ABSTRACT**

Fibromyalgia pain is frequent in the general population, but its pathogenesis is only partially understood. Patients with fibromyalgia lack consistent tissue abnormalities but display features of hyperalgesia (increased sensitivity to painful stimuli) and allodynia (lowered pain threshold). Many recent fibromyalgia studies have demonstrated central nervous system (CNS) pain processing abnormalities, including abnormal temporal summation of pain. In the CNS, persistent nociceptive input from peripheral tissues can lead to neuroplastic changes resulting in central sensitization and pain. This mechanism appears to represent a hallmark of fibromyalgia and many other chronic pain syndromes, including irritable bowel syndrome, temporomandibular disorder, migraine, and low back pain. Importantly, after central sensitization has been established, only minimal peripheral input is required for the maintenance of the chronic pain state. Additional factors, including pain-related negative affect and poor sleep have been shown to significantly contribute to clinical fibromyalgia pain. Better understanding of these mechanisms and their relationship to central sensitization and clinical pain will provide new approaches for the prevention and treatment of fibromyalgia and other chronic pain syndromes.



This activity is jointly sponsored by the Mount Sinai School of Medicine and MBL Communications, Inc.



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Release Date: May 1, 2008

Termination Date: May 31, 2010

## Acknowledgment of Commercial Support

Funding for this activity has been provided by educational grants from Eli Lilly and Company and Pfizer Inc.

## Faculty Affiliation and Disclosures

Dr. Staud is professor of medicine in the Division of Rheumatology and Clinical Immunology, McKnight Brain Institute, at the University of Florida in Gainesville. Dr. Spaeth is medical director of the Center for Clinical Rheumatology Research in Graefelfing/Munich, Germany.

Dr. Staud is a consultant to Eli Lilly, Jazz, and Pfizer; is on the speaker's bureau of Merck; and is supported by National Institutes of Health grants NS-38767 and AR053541. Dr. Spaeth is a consultant to Allergan, Eli Lilly, Jazz, and Pierre Fabre Medicament; and is on the speaker's bureaus of Eli Lilly and Pierre Fabre Medicament.

## Peer Reviewer

Eric Hollander, MD, reports no affiliation with or financial interest in any organization that may pose a conflict of interest.

This activity has been peer reviewed and approved by Eric Hollander, MD, Professor of Psychiatry and Chair at Mount Sinai School of Medicine. Review Date: February 15, 2008.

## Learning Objectives

At the end of this activity, the participant should be able to:

- Recognize the pain processing abnormalities in fibromyalgia and their peripheral and central components.
- Review new approaches for the prevention and treatment of fibromyalgia and other chronic pain syndromes.

## Needs Assessment

Fibromyalgia pain is one of the most frequent reasons for office visits to general medicine and rheumatology practices. Although the assessment of fibromyalgia is focused on musculoskeletal pain, other frequent symptoms contribute to patients' suffering and dysfunction, including fatigue, depressed mood, anxiety, and insomnia. Despite our better understanding of fibromyalgia's pathogenesis, many questions still remain. For example, it is unclear whether the increased pain sensitivity of fibromyalgia patients is related to specific receptor signaling abnormalities, including the neurokinin, serotonin, and dopamine receptors. However, there is increasing evidence that alterations of the serotonin, norepinephrine, and other neurotransmitter systems and their interactions play an important role in fibromyalgia as suggested by the co-aggregation of fibromyalgia with mood disorders. These results provide the rationale for several therapeutic approaches: Clinical trials have shown that antidepressants, particularly combined serotonin norepinephrine reuptake inhibitors, are efficacious in fibromyalgia pain. Recently, pregabalin, an antiepileptic that acts as a  $\alpha 2\delta$  ligand, received Food and Drug Administration approval for the treatment of fibromyalgia.

## Target Audience

This activity is designed to meet the educational needs of psychiatrists.

## Accreditation Statement

This activity has been planned and implemented in accordance with the Essentials and Standards of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of the Mount Sinai School of Medicine and MBL Communications, Inc. The Mount Sinai School of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

## Credit Designation

The Mount Sinai School of Medicine designates this educational activity for a maximum of 0.5 *AMA PRA Category 1 Credit(s)*™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

## Faculty Disclosure Policy Statement

It is the policy of the Mount Sinai School of Medicine to ensure objectivity, balance, independence, transparency, and scientific rigor in all CME-sponsored educational activities. All faculty participating in the planning or implementation of a sponsored activity are expected to disclose to the audience any relevant financial relationships and to assist in resolving any conflict of interest that may arise from the relationship. Presenters must also make a meaningful disclosure to the audience of their discussions of unlabeled or unapproved drugs or devices.

## To Receive Credit for this Activity

Listen to the Psychcast™, reflect on the information presented, and complete the CME posttest and evaluation form. To obtain credit, you should score 70% or better. Early submission of this posttest is encouraged to measure outcomes for this CME activity. Please submit this posttest by May 1, 2010 to be eligible for credit.

The estimated time to complete this activity is .5 hour.

## Related CME PsychCasts™

### **Fibromyalgia Syndrome: Presentation, Diagnosis, Differential Diagnosis, and Vulnerability**

By I. Jon Russell, MD, PhD, and Karen G. Raphael, PhD

### **Fibromyalgia Syndrome: Approach to Management**

By I. Jon Russell, MD, PhD

### **Social Influences on the Concept of Fibromyalgia**

By Harold Merskey, DM, FRCP, FRCPC, FRCPsych

### **The Significance, Assessment, and Management of Nonrestorative Sleep in Fibromyalgia Syndrome**

By Harvey Moldofsky, MD, Dip Psych, FRCPC, FAPA

## ADVANCES IN THE DIAGNOSIS, PATHOGENESIS, AND MANAGEMENT OF FIBROMYALGIA SYNDROME

### PSYCHOPHYSICAL AND NEUROCHEMICAL ABNORMALITIES OF PAIN PROCESSING IN FIBROMYALGIA

#### CME QUESTIONS

##### 1. Which statement is correct?

- A. Low cerebrospinal fluid (CSF) concentrations of substance P (SP) represent the most prominent neurochemical abnormality in fibromyalgia patients
- B. Significant negative correlations exist between levels of SP and serotonin (5-HT), its precursor tryptophan (TRP), and its primary metabolite 5-HIAA in the serum of patients with fibromyalgia
- C. Nerve growth factor, which stimulates the production of SP in small afferent unmyelinated neurons, was found to be low in the CSF of patients with primary fibromyalgia
- D. Elevations of SP in the CSF are specific for fibromyalgia

##### 2. Which statement is correct?

- A. Increasing evidence supports the crucial role of 5-HT for hypothalamic-pituitary-adrenal axis function
- B. Low corticotrophin releasing hormone concentrations have been measured in the CSF of fibromyalgia patients
- C. High serum concentrations of 5-HIAA and TRP show a significant relation with high pain scores
- D. None of the above

3. **Low levels of 5-HIAA and high concentrations of SP are both positively correlated with severe sleep disturbances.**

- A. True
- B. False

4. **SP de-sensitizes dorsal horn neurons to the effects of other neuromodulators.**

- A. True
- B. False

5. **Glutamate acts as an excitatory amino acid.**

- A. True
- B. False

6. **Functional magnetic resonance imaging studies can be used to “prove” fibromyalgia.**

- A. True
- B. False



# REGISTRATION

MAY 2008 CME QUIZ

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**ANSWER FORM**

CME PsychCast™ – Fibromyalgia Syndrome: *Psychophysical and Neurochemical Abnormalities of Pain Processing in Fibromyalgia*

**TERMINATION DATE:** May 31, 2010

To receive credit, you should score 70% or better (participants will receive certification for their records in approximately 4–6 weeks). Early submission of this posttest is encouraged. Please submit this test by May 1, 2010, to be eligible for credit. If you have any questions about this, or any of our other CME materials, please e-mail CME@mblcommunications.com.

*Please circle your answers*

1. A B C D    2. A B C D    3. A B    4. A B    5. A B    6. A B

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