

# Brain May Hold Key to Chronic Low Back Pain

BY PATRICE WENDLING  
Chicago Bureau

CHICAGO — Spine specialists have traditionally focused on specific degenerative pathology in the spine as the main determinant of back pain, but science now suggests that the central nervous system ultimately modulates chronic low back pain.

Acceptance of the new evidence will require a fundamental shift in thinking by spine surgeons and could lessen the role of surgery and increase the role of exercise in the management of low back pain at a time when critics are assailing the overuse of spinal fusion surgery in the United States.

"We've been looking for decades for where the smoking gun is as to why these people are having back pain, and so far we haven't found it," James Rainville, M.D., said at the annual meeting of the North American Spine Society. "There is now some information coming out to show what is going on, and [pain processing] may not be where we thought it was. It may be happening in the central nervous system."

Less well known than the spinal cord's

role in pain production is the part the spinal cord plays in pain augmentation, said Dr. Rainville, chief of rehabilitation at New England Baptist Hospital, Boston.

Wide dynamic range neurons have been identified in the spine as responsible for "windup," or the accentuation of painful stimuli.

A recent study found evidence of central nervous system augmentation of pain processing in patients with chronic low back pain (*Arthritis Rheum.* 2004;50:613-23). Experimental pain testing at the thumb revealed hyperalgesia in patients with idiopathic chronic low back pain as well as in patients with fibromyalgia, compared with controls.

Moreover, functional magnetic resonance imaging detected five common regions of neuronal activation in pain-related cortical areas in the low back pain and fibromyalgia groups. The areas are responsible for the transmission of neurologic information into the conscious experience of pain and included the contralateral primary and secondary somatosensory cortices, inferior parietal lobule, cerebellum, and ipsilateral secondary somatosensory cortex. The

detected five common regions of neuronal activation in pain-related cortical areas in the low back pain and fibromyalgia groups. The areas are responsible for the transmission of neurologic information into the conscious experience of pain and included the contralateral primary and secondary somatosensory cortices, inferior parietal lobule, cerebellum, and ipsilateral secondary somatosensory cortex. The

same stimulus resulted in only a single activation in controls in the contralateral secondary somatosensory cortex.

Finally, these studies' findings are strengthened by research that suggests that thoughts can change brain activity induced by peripheral stimulation (*J. Neurosci.* 2004;24:7199-203).

"Could our thoughts, ideas, and feelings that we have all be acting through central mechanisms to change our central sensitization to pain? If that's the case, then we're in trouble if we're trying to treat it in the periphery always," observed Dr. Rainville, of Harvard Medical School.

This has important implications for understanding the successes and failures of spinal surgery. Spine surgeons came under fire recently in an editorial (*N. Engl. J. Med.* 2004;350:722-6) that charged fusion surgery was being overused in the United States. NASS fired back with an editorial of its own (*Spine J.* 2004;4[suppl. 5]:S129-38) and a high-profile panel discussion at the annual meeting.

Still, several studies presented at the same meeting validated a different approach. The rehabilitation model suggests that pain can be stopped by desensitizing the pain-producing tissue and improving central processing.

Exercise can improve muscle strength and flexibility, reduce disability, and even reduce pain intensity by 10%-50%. Exer-

cise also can alter a patient's pain attitudes and beliefs.

A recent study by Dr. Rainville and colleagues showed that exercise reduced both the pain anticipated before and induced with exercise.

Significant improvements were observed for global back pain, leg pain, disability, and performance on each physical testing in 70 patients with chronic low back pain who completed an intensive 2-hour exercise program delivered up to three times per week for 6 weeks.

Performances on all physical testing correlated with anticipated and induced pain for all tests at baseline, but only for measures of flexibility at discharge. The correlation between disability and pain attitudes and beliefs was extremely high, at 0.79.

"Something about the pain process has been changed," Dr. Rainville said. "What, I don't know. Where, I don't know. But it's a fascinating observation. In addition, people improved their strength. They have less pain with lifting a lot more. Something has been learned differently within the central nervous system, because we didn't change their anatomy in any positive way."

Finally, exercise may help wean patients with chronic low back pain from narcotics. After 6 weeks of exercise therapy, one-half of patients in the study who regularly used narcotics were able to stop taking them. ■

## FDA Approves New Drug For Postherpetic Neuralgia

BY ELIZABETH MEHCATIE  
Senior Writer

Pregabalin, a drug that binds to calcium channels in the central nervous system, was approved by the Food and Drug Administration for the management of pain associated with postherpetic neuralgia in late December 2004.

There are now three FDA-approved treatments for this indication; the others are gabapentin (Neurontin) and the 5% lidocaine patch. The FDA also approved pregabalin for the pain associated with diabetic neuropathy.

The approvals were based on six placebo-controlled, double-blind studies—three in patients with postherpetic neuralgia. The studies showed the drug provided quick and clinically meaningful reductions in pain in a significant proportion of patients, according to Pfizer, which will market pregabalin under the trade name Lyrica.

For postherpetic neuralgia, "the time course to pain relief will be much quicker" than with treatments such as tricyclic antidepressants. Pregabalin also has a narrow dose range, which will make it easier to prescribe than gabapentin, which has a "huge" dose range because of variable absorption across the GI tract, said Brett R. Stacey, M.D., one of the trial investigators.

Like gabapentin, pregabalin binds to

a specific subunit of one of the calcium channels, but pregabalin "appears to bind more avidly" than gabapentin, said Dr. Stacey, medical director of the comprehensive pain center at Oregon Health and Science University, Portland. The time to onset of pain relief can begin the day after treatment is started, he added.

Side effects have been tolerable and not hugely problematic and are the same as with other CNS drugs; sedation and dizziness are two of the most common ones reported by patients, Dr. Stacey said.

Pregabalin is not yet available. It is expected to be classified as a controlled substance in a category with lower potential for misuse or abuse, compared with other controlled substances, according to Pfizer. A company spokesperson said the Drug Enforcement Administration is reviewing the classification, and until that decision is made, pregabalin will not be available. But Pfizer expects it to become available "in the near future."

The recommended dosage for pain after shingles is 150-300 mg per day, given in two or three doses; the dosage can be increased up to 600 mg per day, based on tolerability, if patients do not experience sufficient reductions in pain, according to the spokesperson.

Dr. Stacey has done research for Pfizer and has been a consultant to the company for gabapentin and pregabalin. ■

## Study Probes Care of Chronic Pain Patients Among Emergency Physicians

BY SHERRY BOSCHERT  
San Francisco Bureau

SAN FRANCISCO — Emergency physicians seldom see eye to eye with patients who seek help for chronic pain, according to preliminary results from a small, ongoing study.

The emergency physicians end up frustrated, and the patients seldom get the help they need, Scott M. Fishman, M.D., said at the annual meeting of the American College of Emergency Physicians.

The study recruits patients seen in the ED with a history of pain lasting 6 months or longer who already have been prescribed schedule II medications and who present with a vague complaint of pain in a body part or the whole body. They answer up to 13 questionnaires (as many as possible) and are asked to return within 2 weeks to complete the Structured Clinical Interview for DSM-IV (SCID) with a psychologist. The study also surveys the ED physicians and nurses treating the patients.

A comparison of answers from 39 patients who have completed the study at the halfway point of its 2-year schedule (out of 77 recruited so far) and answers from 54 providers showed significant disagreements on most topics, said Dr. Fishman, professor of anesthesiology at the University of California, Davis, and chief of pain medicine at the university's medical center.

Patients were more likely than providers to believe that chronic pain has little chance of improving, and to think that providers don't believe pain complaints if they lack physical or objective findings. Patients strongly disagreed that they were addicted to their pain medications, and providers were more ambivalent about patients' potential addictions. Patients feared the risk of dependence on opioids more so than did the providers.

All of these differences were significant between patients and providers as a whole, and between patients and either physicians or nurses.

On the Screener and Opioid Assessment for Patients in Pain (SOAPP) survey, nearly every patient scored positive for addiction, "staggering but early data" that raise the question of whether the SOAPP is valid in the ED, Dr. Fishman said.

Nine physicians so far interviewed at length described an emotional toll from caring for these patients.

"The words they used most commonly were frustrated, stressed, overwhelmed, nervous, and angry," he said.

The physicians felt that chronic pain care is not appropriate for the ED. They were very concerned with differentiating "legitimate" pain from other complaints. Regardless, "almost everybody got a handful of Vicodin [hydrocodone] on the way out," Dr. Fishman said.

"Is this treating the patient, or treating the physician?" ■