Overactive CNS Processing Tied to Fibromyalgia

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Neuroimaging studies, for instance, “are providing a consistent picture” when viewed together of strong neurobiologic underpinnings for FM, said Dr. Nancy Klimas, professor of medicine at the University of Miami. “But if you pull them apart, you can find faults with any one study in it having limited power, or some other limitation.”

“This is what the authors are saying—look at the whole picture, it’s impressive,” said Dr. Klimas. “There’s some real science to go behind the pain observation.”

Dr. Klimas said the review reminded her of a grand-rounds lecture she heard several years ago, in which a prominent department chair told students and faculty that fibromyalgia “is all in patients’ heads.”

“He essentially said, don’t let these patients talk to each other, don’t let them read anything, don’t let them have any support group meetings,” Dr. Klimas said. “I was livid. These patients [with FM] are often treated badly by their physicians. It’s bad enough leaving without any hope that something can be done, but it’s worse leaving a doctor’s office having been made to feel small or patronized.”

Dr. Laurence Bradley, professor of medicine in the division of clinical immunology, allergy, and infectious diseases at the University of Alabama, agreed that the literature is ripe for strong conclusions. “The [review authors] are correct. A lot of new findings have emerged in the last 5-8 years regarding gene variance that’s associated with FM itself or [related] disorders.”

“And a lot of the neuroimaging work that has been done has demonstrated very convincingly that people with FM have enhanced or abnormal transmission of sensory signals through the CNS,” he said.

“Behavioral studies—laboratory pain studies—also show consistent displays of abnormal pain responses in individuals with FM.”

Harris described functional imaging studies done with single-photon emission computer tomography (SPECT) and functional magnetic resonance imaging (fMRI) that show differences in neural activation between patients with FM and pain-free controls. The studies indicate that FM patients have abnormalities within their central brain structures, they said.

There is evidence in FM that an ‘increased gain’ in pain processing is driven by defects in both descending inhibitory pathways for pain processing and in spinal excitatory activity, the authors added.

Biochemical studies have supported the notion that the pathology might be a result of high levels of pronociceptive compounds (such as ‘substance P’), low levels of antinociceptive compounds, or both. Conversely “there is considerable evidence that increased gain could occur because of a deficiency in one of the major endogenous analgesic pathways, the descending antinociceptive serotoninergic-noradrenergic pathway” (Curr. Pain Headache Rep. 2006;10:403-7).

“The ultimate proof that defective central control mechanisms are playing a role in FM and overlapping pain conditions is that activated individuals could be identified because showing that nociceptive compounds that either increase inhibitory activity (such as serotonin-norepinephrine reuptake inhibitors) or decrease facilitatory activity (such as anti-epileptics) can be efficacious in treating FM as well as neuropathic pain, said Dr. Clauw and Dr. Harris.

Dr. Bradley said that one of the ‘missing pieces of information’ in the growing knowledge of pain transmission in FM is its original source.

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Fibromyalgia and Collisions Often Unrelated, Study Suggests

WASHINGTON — An association between a motor vehicle collision and the development of widespread body pain in some individuals was not supported by findings from an ongoing prospective study comparing two different cohorts.

However, the study of more than 8,000 people did suggest that such collisions may be associated with chronic widespread pain. An abstract presented at the annual meeting of the American College of Rheumatology.

Physical stressors have been implicated in the onset of widespread pain disorders; particularly, whiplash experienced during a motor vehicle collision has been associated with the etiology of fibromyalgia, said Dr. McBeth, senior lecturer in rheumatic disease epidemiology at the University of Miami (Fla.).

In the current study, a cohort of 1,499 patients aged 17-70 years who were involved in a motor vehicle collision (MVC) were compared with a control cohort of 6,792 individuals aged 18-70 years who participated in a large prospective study.

Among patients who did not have widespread pain at baseline, 661 of 951 MVC patients and 3,058 of 3,780 control subjects participated in a 15-month follow-up. The rate of new-onset widespread pain in these subjects was similar between the MVC (8.4%) and control groups (11.6%).

There also was no relationship between the severity of the collision and the development of widespread pain. These comparisons were adjusted for age, gender, pain at baseline, and psychological status. “This surprised us because we expected to see some kind of relationship between crash severity and the onset of widespread pain,” he said.

New-onset axial skeleton pain occurred at similar rates in the MVC (20%) and control cohorts (24%). But patients who had a severe collision were significantly more likely to report new-onset axial skeleton pain at the 15-month follow-up than were control patients.

This relationship persisted after adjustment for pain and psychological status at baseline.

The patients who developed axial skeleton pain may be on the ‘path’ to developing widespread pain. With longer follow-up, the rate of new-onset widespread pain may be higher, Dr. McBeth said.

Previous studies have found that physical and psychosocial stressors are associated with an increased risk of new-onset widespread pain. In one study of more than 3,000 people who were in MVCs, the rate of new-onset fibromyalgia after the accident was significantly greater among those patients who had a cervical spine injury than it was in those patients who had leg fractures (Arthritis Rheum. 1997;40:446-52).

A case-control study found about 40% of fibromyalgia patients could recall a stressful event that may have precipitated the onset of their symptoms: these patients were most likely to report that a fracture, surgery, or workplace injury preceded the symptoms. Fibromyalgia patients were not more likely than controls to recall an MVC as a precipitating factor (Rheumatology [Oxford] 2002;41:450-3).

But an abstract presented at the annual meeting of the American College of Rheumatology stated that among patients who had presented to an emergency department, the rate of new-onset fibromyalgia was significantly higher in those who had been in an MVC than in a control group of patients who had a minor laceration. The MVC patients who reported neck pain at the time of presentation had the highest risk for developing fibromyalgia.

However, those studies did not take the role of psychological factors into account in relation to the onset of widespread body pain. Dr. McBeth said.

When he and his colleagues conducted a population-based, prospective study of 1,658 adults who did not have widespread pain at baseline, they found that individuals who reported having low levels of somatic sensitivity, high levels of psychological distress, and fatigue at baseline had a significantly increased risk of developing chronic widespread pain after 1 year (Arthritis Rheum. 2001;44:940-6).