An Osteopathic Approach to Chronic Pain Management

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Financial Disclosures: None reported.

Support: None reported.

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Submitted July 25, 2016; final revision received December 15, 2016; accepted December 28, 2016.

Chronic pain reduces quality of life and productivity, costing billions in health care dollars and lost revenue. Physicians routinely prescribe opioids, which has led to opioid addiction and overdose. The US surgeon general recommends nonpharmacologic treatment for patients with chronic pain. A paradigm shift is necessary for patients to partner with physicians to take control of their own health. This article outlines the cognitive behavioral approaches, nonopioid therapies, and nonpharmacologic therapies that osteopathic physicians can integrate in their treatment of patients with chronic pain.

J Am Osteopath Assoc. 2017;117(5);306-314
doi:10.7556/jaoa.2017.056

Keywords: addiction, chronic pain, cognitive behavioral therapy, opiate, opioid

Chronic pain lasts more than 3 months or past the time of normal healing, emphasizing the transition from acute-injury pain to a persistent chronic pain syndrome.[1] Changes in the peripheral and central nervous system[2] and biopsychosocial factors perpetuate chronic pain. The prevalence of chronic pain in developed countries is estimated at 41%.[3] In the United States, chronic pain affects 100 million adults and reduces their quality of life and productivity, which costs $600 billion annually.[4] From 1999 to 2010, prescriptions for opiates and opioids increased by 400%, accompanied by an increase in opioid use disorders and opioid overdose deaths.[5,6] Today, 1 in 4 people who receive prescription opioids long term in a primary care setting struggle with opioid addiction.[7,8] People who become dependent and tolerant to opioids are 40 times more likely to become addicted to heroin.[9] Overdoses from prescription drugs are a driving factor in the increase in opioid overdose deaths.[10]

The US surgeon general urges the 2.3 million US health care professionals to pledge to help end the opioid epidemic by educating themselves and managing chronic pain as an illness rather than as a moral failing.[11] Primary care physicians are also encouraged by the American Pain Society and the American Academy of Pain Medicine Opioids Guidelines Panel to integrate elements of a cognitive behavioral approach by providing education in pain-coping strategies.[12-15] The Centers for Disease Control and Prevention, the American College of Physicians, and the American Pain Society recommend a conservative approach to chronic pain management and provide supporting evidence for combination therapies, including nonopioid pharmaceuticals, cognitive behavioral therapy, and physical modalities such as exercise and spinal manipulation.[15-18]

Pathophysiology of Chronic Pain

Persistent nociception triggers a prolonged increase in synaptic excitability, creating pain hypersensitivity, allodynia, hyperalgesia, and receptor field expansion.[19,20] Often

Figure 1.
The pathophysiologic process of chronic pain, which is the result of a self-perpetuating cycle of musculoskeletal, immune, neurologic, and endocrine dysregulation.

occurring after musculoskeletal damage and healing, chronic pain is a redundant signal that serves no biologically useful purpose.[20]

Over time, chronic pain can set in motion a self-perpetuating chronic pain syndrome (*Figure 1*). Changes in the brain's perception and cortical

processing enhance signal amplitude, duration, and pain spatial expansion with recruitment of subliminal low-level threshold sensory inputs. Emotions are linked to musculoskeletal sensations, further dysregulating immune, neurologic, and endocrine systems.[21] This breakdown in homeostasis is seen psychologically as pain-related fear, depression, anxiety, and decreased quality of life.[22,23] Chronic pain eventually causes brain and nervous system reorganization and self-perpetuating neural activity.[24]

The person in pain responds as a unit (ie, body, mind, and spirit). According to osteopathic philosophy, sustained levels of pain or stress over time (ie, ≥3 months) upset the biopsychosocial balance.[25] Chronic pain is often maintained by noxious sensory input originating in the musculoskeletal system, making it a prime target for osteopathic practices. In addition, chronic pain creates a prolonged and eventually damaging activation of the hypothalamic-pituitary-adrenal access with sustained autonomic nervous system arousal, elevated cortisol levels, and a prolonged "fight or flight" response. Patients can eventually become exhausted and present symptoms of depression, insomnia, fatigue, guarding muscles, and fear of movement (kinestophobia).[21,25]

The Opioid Epidemic

In the 1990s, advocacy groups such as the Veterans Health Administration and the American Pain Society lobbied to give pain equal status with blood pressure, heart rate, respiration rate, and temperature as the "fifth vital sign."[26,27] Patients are asked to quantify the pain intensity on a scale of 0 (no pain) to 10 (worst possible pain). A score of 4 or greater requires a comprehensive pain assessment, immediate medical care, and prompt intervention, which most often is a prescription for an opioid. Physicians are also lobbied to prescribe opioids for pain management as a result of patient satisfaction questionnaires, hospital ratings, physician scorecards, direct-to-patient marketing of pharmaceuticals, and current societal beliefs that pain relief, possibly at any cost, is a universal right and a physician responsibility. In a busy health care practice with limited time and resources, physicians often prescribe opioids rather than expending the time necessary to develop a trusting patient-physician relationship. Ideally, explanations and education would be shared, and the physician would treat the whole person rather than simply addressing the pain symptoms.

The unanticipated opioid use epidemic has resulted in a backlash, and physicians are now severely cutting back or are no longer prescribing opioids. Patients who may feel like they have fewer options are securing and diverting prescription opioids, benzodiazepines, muscle relaxers, sleep medicines, or medical marijuana or are buying drugs on the open market. These patient strategies eventually fail, and, in desperation, some will turn to inexpensive, readily available heroin, resulting in an increase of accidental deaths.[6]

The physician's dilemma is that opioids, at least in the short run, work. For more than 2000 years, opiates have relieved pain, but they now have become a political target[28] and present a treatment dilemma. Opioids are effective and should be used for postsurgical pain, brief periods of acute pain, active cancer pain, and palliative and end-of-life care. However, overprescribing and creating an overreliance on opioids now requires a complete change in thinking about the management of chronic pain.

Paradigm Shift to Self-Management

Medical pain management traditionally places the responsibility for pain management on the physician, who is expected to solve the chronic pain conundrum, execute the treatment, and resolve the problem. The patient's job is to comply with the physician's instructions. By routinely prescribing opioids for chronic pain, the physician is put in charge of the symptoms, and the opioid becomes the agent of change.

Chronic pain self-management, on the other hand, is an active, collaborative patient-physician relationship with the shared goals of pain management. Patients counseled in pain self-management learn to trust

their own experience to become their own change agent. Rather than prescribing opioids as a first-line treatment for chronic pain, physicians should thoroughly assess the patient's pain and consider managing the pain's effect on the patient's mood, function, and quality of life.

Osteopathic Philosophy and Chronic Pain

Osteopathic physicians should encourage patients to be actively responsible for the day-to-day self-management of symptoms and look at all aspects of their lives (eg, their pain, feelings, beliefs, attitudes, social and emotional life, and social, cultural, or religious environments). Biopsychosocial forces challenge and dysregulate a person's homeostatic balance and inherent healing capacity, contributing to the onset and maintenance of chronic pain. Chronic pain syndrome is closely tied to somatic dysfunction. Although structure and function issues may trigger the initial report of pain, body unity issues, homeostatic dysfunctions, and dysregulation of autonomic nervous system worsen and perpetuate pain perception and distress.

Patient-Physician Communication

Physicians must continually talk to patients about the treatment plan for pain, the rationale behind it, and the benefits, potential side effects, and risks when prescribing opioids. They must also set criteria for stopping ongoing medications while continually evaluating the risk of harm or misuse and finally instituting "start low and go slow" prescribing practices.

Patients need to tell their story: who, what, where, and when.[29] Patients should explain when and where they sustained an injury and how long it lasted, and they should ask what the physician can do. At the start of treatment, patients and physicians should jointly set goals. It is effective to "begin at the end" when setting goals. Physicians should determine what success would mean for their patients and shape goals toward reducing pain to a tolerable level (not necessarily relief of all pain), reducing opioid use, and improving function and quality of life. Physicians should ask patients about stress, depression, anxiety, and substance use (*Figure 2*).

Patients often ask: "Why do I have this pain? Is this something that will harm me? What can you do to stop it?" Many patients also present with 2 basic fears: (1) the pain means malignancy, serious disease, impending disaster, or death; or (2) there is nothing wrong and they will live with pain the rest of their life, or the pain is "all in their head" and no one believes them. Patients need reassurance based on trust and science in terms they know, and they need to be able to explain it to someone else. Specifically, will the pain harm them (ie, the pain represents a tissue-damaging event), or does it just hurt (ie, unpleasant feelings and sensation that seem impossible to endure)?

Examination

Along with empathic communication, physicians should also conduct physical examinations, which begin with a complete neuromusculoskeletal palpatory examination and education about possible pain generators. When pain is acute, greater attention should be given to the sensory components of pain intensity, location, and temporal characteristics. With recurrent and chronic pain, more attention may be devoted to the range of biopsychosocial factors. This comprehensive pain assessment does not negate the physical basis for the pain. Whether psychosocial problems result from pain, the evaluation process should determine how these biopsychosocial factors are interacting to influence the nature, severity, and persistence of pain and disability.

Palpation and Communication

In my experience, the palpation examination and empathic communication allows a synchronicity to quickly and deeply occur within the patient-physician relationship. The analgesic effects of touch, the activation of supraspinal mechanisms, oxytocin release, and empathic communication are valuable assets to the

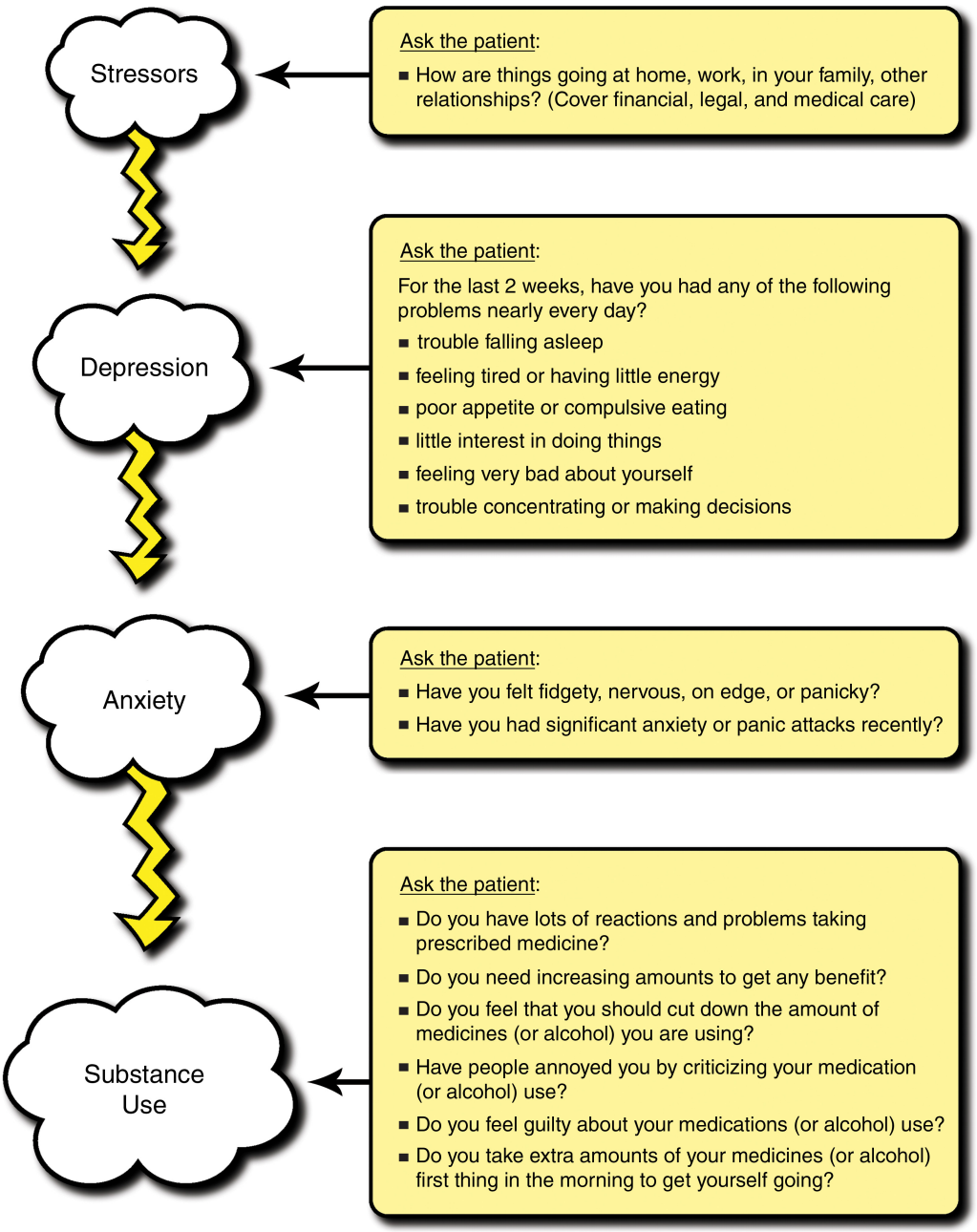

Figure 2.
Chronic pain assessment algorithm for biopsychosocial elements. Reprinted from Jerome JA, Osborn GG. Psychoneuroimmunology—stress management. In: Chila AG, executive ed. *Foundations of Osteopathic Medicine*. 3rd ed. Philadelphia, PA: Wolters Kluwer/Lippincott Williams & Wilkins; 2010:293. Used with permission of Wolters Kluwer Health.

mind-body connection, strengthening a partnership based on trust and built on a foundation of core osteopathic principles.[30,31] Chronic pain management often requires a lifetime patient-physician collaborative alliance focusing on health maintenance, evidence-based science, and trust.

My pain is real. It occurs in my body, and I have a reaction to it in my head.
I accept that I may need outside help to control my pain, and I refuse to quit or give into the pain and the deterioration it causes.
At times my pain has had an overwhelming influence on my life, but I believe that I can choose how I react to it.
My best efforts and those of the medical community have not stopped my pain. This is not necessarily a fault of mine or a shortcoming of medicine. I will no longer fight with myself about this or blame medicine. No fight, no blame.
I will recognize some aspects of my coping with pain that I am doing well, and I will admit to myself mistakes that I have made.
I will forgive myself unconditionally for any past mistakes and forgive others who I perceive are responsible for my pain and troubles.
I will fix any mistakes I've made struggling to live with pain.
I will go forward with hope that the pain will someday pass or be relieved and at the same time recognize that I have to cope with the pain that I have.
I will strive for higher goals, making pain a side issue, to be managed as necessary.
I now recognize that there is more to my life than struggling with pain.
With this knowledge, I will separate myself from my pain management program or physician, with the complete understanding that I may return at any time.
I understand that I have more important goals in my life than coping with pain and I will strive toward them as my mission.

Figure 3.
Cognitive behavioral strategies to help patients reconceptualize chronic pain symptoms. Adapted from Elkhiss and Jerome.[21]

Treatment

Cognitive Behavioral Approaches

Osteopathic physicians may use cognitive behavioral therapy, which consists of open-ended questions about fear of movement and ambivalence about discontinuing opioids.[32] In this approach, reflective listening and brief empathic responding focus on the patient's anxiety about change.[33] The emphasis then turns to the discrepancy between the patient's persistent medication use, lack of physical activity, and reported goals of improved function and quality of life.[34] Arguments and direct confrontation about discrepancies between stated goals and behavior are avoided because such negative discourse is counterproductive. The patient's resistance to physical activity or decreasing use of pain medication are directly addressed in a collaborative, nonjudgmental manner.[35,36] The patient's view is a valuable resource in generating novel solutions and new perspectives on his or her pain management plan. The patient realizes, and often quite quickly, that he or she is responsible for choosing and acting on his or her own change plan.

Cognitive behavioral approaches are strongly evidence-based, and research supports their effectiveness in treating patients with chronic pain.[33-35] These approaches expose patients to alternative thinking patterns for reconceptualizing their pain and symptoms (*Figure 3*). Patients are taught not to allow pain to take over their lives and instead strive for greater life goals outside of pain management. Patients who have to "live

with pain" are encouraged to think about and act on these pain-coping behaviors. Patients are taught diaphragmatic breathing, muscle relaxation, distraction techniques, activity pacing, problem solving, and sleep, hygiene, and stress management.[37] A Cochrane review of 40 trials concluded that cognitive behavioral approaches used for chronic pain management decrease overall pain score and improve mood and function.[38] Treatment gains can be maintained from 6 to 30 months.[38]

Cognitive behavioral therapy during palpatory examination is critical. The palpatory examination focuses on the worst pain first. The patient and physician engage in active dialogue, and the physician openly talks about examination findings, osteopathic philosophy on pain, and long-term health and healing. This conversation serves the dual role of educating patients and developing trust. Patients learn that they need to take active responsibility to improve their quality of life. Physicians systematically explain the evidence-based science and biology behind the pain management plan. For patients, this dialogue and examination further deepens trust and confidence in the physician.

Nonopioid Therapies

If, after assessing the situation, physicians do choose to prescribe medication, they should first consider nonopioid therapies such as acetaminophen, nonsteroidal anti-inflammatory drugs, tricyclic antidepressants, serotonin-norepinephrine reuptake inhibitors, anticonvulsants, physical treatments (eg, osteopathic manipulative medicine [OMM]), and psychological counseling. Concerted efforts are needed with nonopioid pharmaceuticals to minimize inappropriate medical expense, polypharmacy, potentially harmful drug interactions, and accidental death, particularly in elderly patients and those with comorbidities.[43]

Nonpharmacologic Therapies

Other nonpharmacologic therapies[39-42] with fair-to-good evidence for efficacy include exercise, weight loss, massage, yoga, acupuncture, tai chi, mindfulness meditation, certain interventional procedures, and transcutaneous nerve stimulation. Any of these strategies, alone or in combination, can be added to OMM and cognitive behavioral therapy to interrupt, at least temporarily, nociception and to reset feelings and behavioral reactions to chronic pain. These strategies are widely used, and patients are increasingly seeking them out in lieu of or to complement traditional medical care.[40-42] Alone, none is consistently documented as particularly more effective than another. The nonspecific effects of placebo, distraction and activation of the endogenous opioid inhibitory system, are considered the usual mechanisms of action.[44]

Limitations

Many potential limitations exist in the guidelines and meta-analyses discussed in the present article, especially where the interaction effect may arguably be the main treatment effect. The limitations include small numbers of eligible trials, unique trial settings, a patient's individual biopsychosocial makeup and characteristics, varying skill levels of physicians, and narrowly defined measurements. For the physician treating a patient with chronic pain syndrome, biopsychosocial interactions are the target of treatment. Treating the person in pain as a unit allows the opportunity for self-healing, self-regulation, and long-term health maintenance.

Conclusion

Nonopioid therapies are preferred for the management of chronic pain outside of active cancer, palliative, and end-of-life care. Cognitive behavioral therapy and physical strategies such as exercise and OMM can be front-line strategies. The paradigm shift to a pain self-management model begins with listening to patients' responses to inquiries about the effects pain has on mood function and quality of life. Physical examination is focused on somatic dysfunction, the biological pain generator and what, if necessary, can be

done to help the patient with pain-related stress, anxiety, depression, fatigue, insomnia, and substance use. Pain self-management uniquely addresses the dynamic interaction of biopsychosocial elements within a trusted patient-physician relationship to promote health, clearly reflecting the true art and science of medicine.

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