FOCUSED REVIEW

Psychosomatic Concepts in Chronic Pain

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This self-directed learning module highlights the obstacles faced by physicians treating chronic pain, in particular, the occasional lack of correlation between test results and symptoms, and the treatment pitfalls that may occur. A review of psychosomatic pain disorders is presented along with a psychodynamically based diagnostic and management approach. Popular mind-body treatments for chronic pain are presented with pertinent references.

Overall Article Objectives: (a) To review the diagnostic and therapeutic limitations of conventional chronic pain management, (b) to explore a psychodynamically based psychosomatic chronic pain diagnostic and therapeutic construct, and (c) to examine several additional mind-body chronic pain treatments.

Key Words: Biofeedback; Cognition; Guided imagery; Hypnosis; Meditation; Mind-body and relaxation techniques; Music therapy; Pain; Psychosomatic disorders; Rehabilitation; Writing.

PHYSICIANS TREATING CHRONIC pain encounter unique challenges. Approximately 30% of people in economically developed countries have chronic pain.[1] Approximately 75,000,000 to 85,000,000 Americans report chronic pain, and more than 50,000,000 are partially or totally disabled.[1] Chronic pain is America's third greatest health care problem after heart disease and cancer, and it costs the economy about $65 to $79 billion annually in lost productivity, hospitalization, outpatient treatment, medication, surgery, disability payments, and litigation settlements.[2]

For patients with nonspecific low back pain (LBP), a precise pathoanatomic diagnosis is often impossible,[2] which leads to various imprecise diagnoses.[3] The same holds true for chronic pain. The association between symptoms and imaging results is weak.[3] Consequently, physicians should avoid the pitfall of attributing chronic pain symptoms to structural aberrations, even when detected on computed tomography (CT) and/or magnetic resonance imaging,[4-8] or electrodiagnostic studies.[9] In a study of lumbar diskography in asymptomatic individuals, false-positive results were common in subjects with abnormal psychometric testing and poor coping skills.[10]

Patients with chronic pain undergo various therapeutic procedures often with insufficient relief. One study demonstrated that 90% of patients with chronic pain in primary care stopped treatment within 3 months yet were experiencing chronic pain 1 year later,[11] suggesting therapeutic inefficacy. A prospective, 2-year cohort study[12] in 6 countries concluded that almost none of the commonly occurring and frequently practiced medical interventions in chronic low back pain (CLBP) had any positive effects. A prospective study[13] of patients undergoing lumbar fusion to treat CLBP revealed that only one sixth had an excellent result. The history of chronic pain therapy has been characterized by a succession of fads.[14] Such therapeutic eclecticism may indicate diagnostic uncertainty for chronic pain.[15]

Because conventional treatments for chronic pain often are unsuccessful, many patients seek other options, and this patient population is among the greatest users of alternative treatments.[3] Some physicians have questioned the dogma of Cartesian mind-body dualism and have pursued greater understanding of the mind-body connection in chronic pain.

Many cases of chronic pain begin with minor trauma and associated emotional factors.[16] A study[17] of 64 consecutive patients with CLBP demonstrated that stressful life events exacerbate symptoms. A study[18] of more than 5700 people found that those in their twenties under psychologic stress were 2.5 times as likely to have LBP in their thirties compared with unstressed individuals. Another study concluded that absence of stressful work predicted absence of back disorders in people between the ages of 25 to 34 years, and that back disorders were associated solely with lower work satisfaction in people age 54 to 59 years.[19] A literature review[20] of psychologic factors and back pain noted strong evidence that lower work satisfaction, monotonous tasks, unsatisfactory work relations, high work demands, and stress were related to future back problems. A prospective study concluded that psychologic distress and other somatic symptoms are important predictors of onset of forearm pain, suggesting that a single etiology for "repetitive strain injury" should be avoided.[21]

There is an evolving body of literature supporting the concept that chronic pain is not exclusively biologic, and that entities that are psychologic may influence, or can be associated with, chronic pain. Shorter[22] discussed the observation that, historically, psychosomatic disorders have spread in epidemic fashion, and medicine has failed to recognize their psychosomatic etiology. In historical terms, chronic pain is relatively new and may be based in part on what the culture considers to be a legitimate illness.[23]

In his article on the dilemma of fibromyalgia, Groopman[24] suggested that the contemporary epidemic of fibromyalgia was analogous to that of neurasthenia in the 19th century, and might be the modern counterpart of neurasthenia, with the Internet and mass media feeding the epidemic. This may be thought to be a radical interpretation to explain mechanism of disease, but it warrants some consideration when observing chronic pain disorders that have not been well explained biologically.

Fordyce[25] and others have proposed that chronic pain develops because patients derive secondary gain from thought to be symptoms—gains such as personal attention, monetary gain, disability benefits, and relief from onerous responsibilities.[16] Tertiary gain, introduced by Dansak,[26] refers to the advantages

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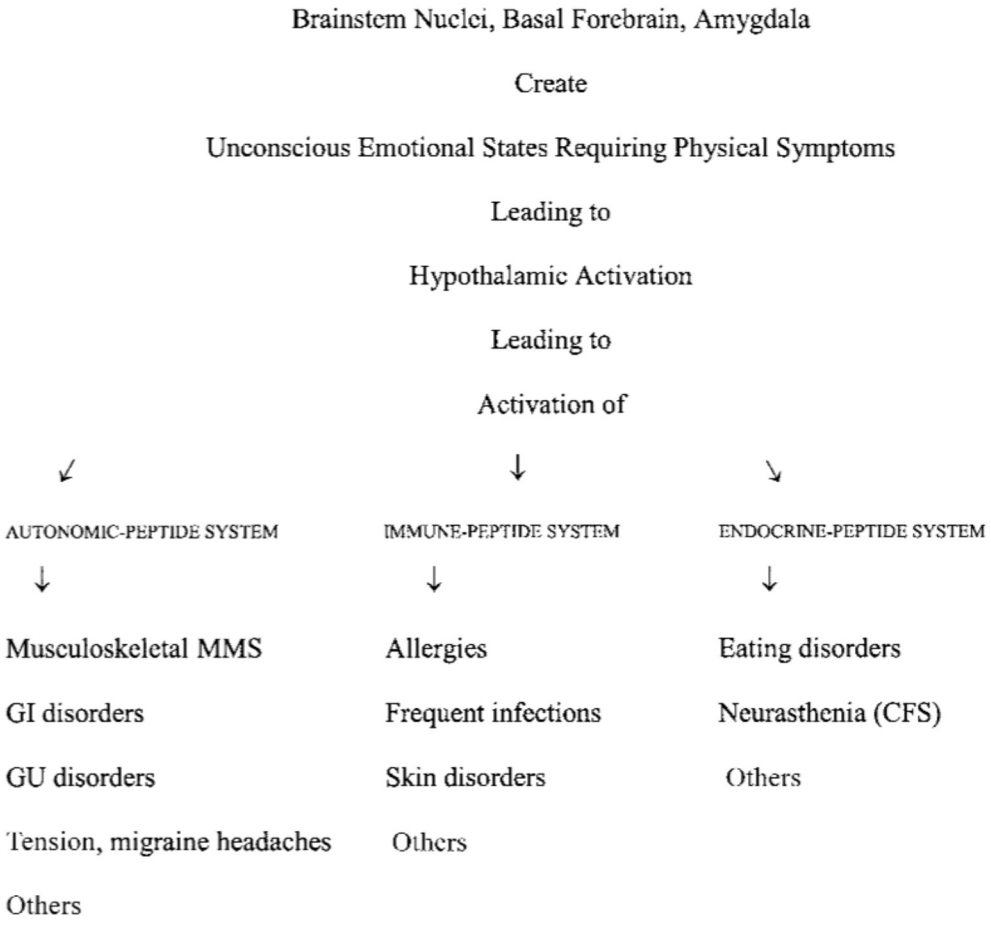

Fig 1. A model for the sequence of events in psychosomatic disorders. Abbreviations: GI, gastrointestinal; GU, genitourinary; CFS, chronic fatigue syndrome.

that accrue to persons other than the chronic pain patient, such as the care provider who sees patients with chronic pain and who derives financial gain by reinforcing chronic pain.

Sarno[27,28] proposed that most patients with chronic pain suffer from a psychosomatic disorder, in which emotional phenomena bring about real, not factitious, physical symptoms with suffering, that he originally called the "tension myositis syndrome." That diagnostic term became obsolete when it was observed that, in addition to muscle, peripheral nerves and tendons might be involved. Sarno now proposes that tension myositis syndrome be relabeled "the mind-body syndrome," which includes the musculoskeletal disorder now referred to as musculoskeletal mind-body syndrome (MMS), as well as a large variety of other psychophysiologic conditions involving other systems (fig 1). Figure 2 describes the pathophysiology of MMS. Sarno's model is one among many about which we can have a dialogue in physical medicine and rehabilitation on the psychologic underpinnings of chronic pain.

Sarno[27] characterizes fibromyalgia as a severe form of musculoskeletal mind-body syndrome with multiple ischemic foci involving muscle, nerve, and tendon, hence the idea advanced by the American College of Rheumatology[29] (ACR) that the diagnosis requires the identification of 11 of a potential 18 tender points in the trunk, arms, and legs. ACR does not go as far as Sarno in making the connection between the emotions and clinical findings.

Sarno proposes that musculoskeletal mind-body syndrome is not characterized by a conversion of psychic into somatic symptoms, or by the *reduction* of psychologic conflict (the traditional view of primary gain), but is, rather, the psychosomatic *avoidance* of psychic conflict.[27] The purpose of the pain is to distract attention from frightening, threatening emotions and to prevent their conscious expression. These emotions, mainly rage (termed "narcissistic rage" by Kohut[30]) arise from self-imposed internal pressures such as the need to be perfect and good, and external pressures that can be financial, job-, health-, and family-related, and developmental (aging, facing death), to name the most important. Some patients have psychic problems that require psychotherapy, but most merely react to the realities of life and personality. Physical symptoms occur when the mind senses that repression of emotions may fail and an emotional eruption is imminent. The conflict is between the reasonable, intelligent, moral, conscious mind and the childish, primitive, archaic mind that continues to have a strong influence in the unconscious.

Damasio[31] has suggested what subcortical structures are responsible for the elaboration of the emotions that require symptomatology. Figure 1 indicates that some of the most common physical responses and systems through which they are mediated. Pert[32] describes the biochemical network, the peptide network that establishes the brain-body link. The biologic underpinnings of Sarno's diagnostic and therapeutic approach have yet to be elucidated completely, yet they are evolving.

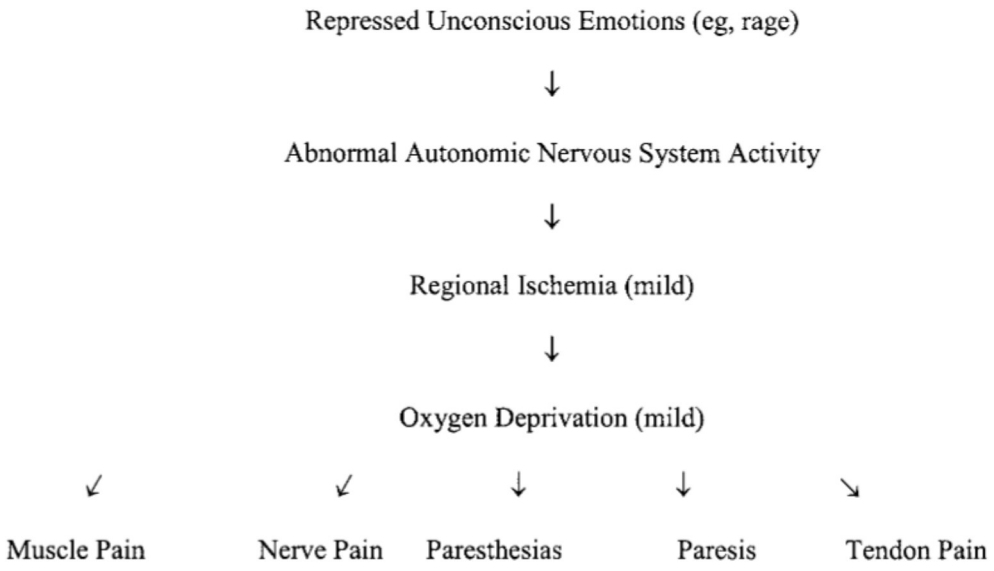

Fig 2. The pathophysiology of musculoskeletal mind-body syndrome.

PSYCHOGENIC PAIN PROCESSES

Sarno[27] classifies psychogenic pain processes into 5 groups. (1) In psychogenic regional disorders, emotional states bring about symptoms in the motor and sensory systems and organs of special senses without producing physiologic changes in the body.[27] (2) Psychosomatic disorders are now the commonest psychogenic disorders and many are of epidemic proportions. Unlike psychogenic regional disorders, they are characterized by physiologic changes in the periphery as seen in musculoskeletal mind-body syndrome, ulcers, irritable bowel syndrome, and tension headache. (3) In psychogenic intensification of symptoms, fear or anxiety can worsen chronic pain.[27] One study[33] determined that the terrorist attacks in New York City on September 11, 2001, led to a worsening in baseline pain scores for men and women, with women being slower to recover. (4) In psychogenic reduction or abolition of symptoms, the expected experience of symptoms does not occur, because a situational context redirects somatic perception. One classic example was described[34]—how severely wounded soldiers in World War II often required little or no morphine for pain control because they were glad to be alive and relieved of the horror of the battlefield. (5) In psychotic symptoms, these are elaborated entirely in the brain as a result of serious mental illness.[27]

PSYCHOEDUCATIONAL TREATMENT

Sarno's treatment approach for psychosomatic chronic pain is psychoeducational.[35,36] This includes patient education about the physiologic and psychologic components of the disorder. Patients are instructed to repudiate the structural explanation(s) for their pain and to acknowledge and accept the mind-body process.[27] Physical activity should be resumed as quickly as possible, and patients are advised to discontinue treatments such as spinal manipulation and physical therapy because they tend to reinforce erroneously a structural causation for the chronic pain.[35] Support meetings are conducted for patients who remain symptomatic to review concepts and express thoughts and feelings. About 20% of mind-body syndrome patients require short-term, dynamic, analytically oriented psychotherapy to understand fully the unconscious conflicts.[35,37]

Sarno[27] followed 109 consecutive patients from 1983 to 1986 who had at least 1 lumbosacral herniated disk confirmed by CT, 88% of whom were pain free and fully functional, 10% of whom reported some improvement in symptoms and function, and 2% of whom reported no improvement.

PLACEBO AND NOCEBO EFFECTS

Perhaps no topic in medicine is more controversial today than the placebo effect. Its importance in pain treatment and research[35] cannot be overstated. Placebo response rates vary greatly, are frequently higher than the often-cited one third; and have carry-over effects similar to active medications.[38] Surgery can produce substantial placebo effects, and this possibility is commonly overlooked in case series reports on back and knee surgery.[38-40] One must also consider the placebo effect's role in nonpharmacologic and nonsurgical chronic pain treatments. Models advanced to explain the placebo effect emphasize the role of anxiety, expectations, and learning.[38] A recent study[41] found little evidence that placebos had powerful clinical effects, except possibly for small benefits in pain treatment, questioning their overall justification. The editorials in response to the placebo article considered whether this conclusion was too sweeping, and raised the questions of whether the placebo effect was associated with the placebo itself or with natural fluctuations in the clinical condition, and/or patient reponse.[42]

The nocebo effect, in which placebos produce adverse side effects, is common, distressing, costly, rarely studied, and poorly understood.[43] Sarno[27] writes that the chronic pain epidemic is related to the nocebo effect, and that the nocebo effect is not limited to medication. For example, patients with mind-body syndrome have reported chronic pain exacerbation when practitioners attributed symptoms to imaging results.[27]

OTHER MIND-BODY TREATMENTS

Stress reduction techniques, including cognitive-behavior programs, meditation, progressive relaxation training, and biofeedback, are often incorporated into chronic pain rehabilitation programs.[44] The reader is directed to Study Guide, Activity 3.1[45] for a review of acupuncture, Study Guide, Activity 3.3,[45] for information about Tai Chi, the Alexander technique, the Feldenkrais method, and Pilates, and to Study Guide, Activity 5.2,[46] for a brief discussion of massage therapy.

The scope of this section is limited, and the treatment efficacy of these approaches has not been studied rigorously.

As an example of stress reduction and attention-giving, Adams[47] described the temporary cessation of symptoms in an 11-year-old girl who had been in the hospital for 3 years with chronic pain, using comedy, distraction, and attention to make her feel "as if she was the center of the universe."

Biofeedback typically uses a monitoring instrument to provide patients with physiologic information of which they are normally unaware.[1] Electromyography biofeedback is most commonly used in chronic pain treatment.[16] A chronic pain study[48] reported a significant advantage for electromyography biofeedback over cognitive behavioral therapy and conservative medical treatment. With few controlled studies, the efficacy of biofeedback for chronic pain is undetermined.[49]

Music therapy, which includes listening, playing, composing, singing, and chanting,[50] reduced chronic pain associated with spinal cord injury[51] and altered pain perception in women with rheumatoid arthritis,[52] yet practitioners should be aware of cultural differences in music preference.[53]

Hypnosis is a technique whereby a therapist suggests that a patient experience changes in sensation, perception, thought, or behavior.[49] Hypnosis for chronic pain usually follows a 4-step protocol: relaxation induction, deepening, test suggestions to assess degree of induction, and finally therapeutic suggestions.[16] Problems include duration of efficacy and different degrees of hypnotic susceptibility.[16] There is moderate evidence to support recommending hypnosis for chronic pain treatment.[49]

Guided imagery uses imagination to affect one's physical, emotional, or spiritual state.[49] Many senses are evoked through direct provocation such as requesting that the patient smell the salty air, feel the sun's warmth against their skin, and hear the sound of the calm waves splashing against the beach.[49] Guided imagery is related closely to hypnosis; both frequently have a presuggestion, a suggestion, and a postsuggestion reinforcement phase.[49] Several placebo-controlled trials have revealed a statistically significant benefit in chronic pain tolerance; however, there is insufficient evidence to determine guided imagery's effectiveness for chronic pain.[49]

In Jacobson's progressive relaxation technique, the subject systematically tenses then relaxes various muscle groups throughout the body, 1 group at a time, while paying close attention to the feelings associated with both tension and relaxation.[16,54] This reduces skeletal muscle tension while sensitizing the patient to the subtle differences in muscle tone that denote a tense or relaxed state as they appear in everyday situations, enabling release of tension where it is noted.[16] Although evidence is insufficient to confirm that progressive relaxation can reduce chronic pain, it is widely used by practitioners and has had considerable anecdotal success.[16,49]

Benson's concentration meditation method is a variant of transcendental meditation that elicits the relaxation response, a state of reduced sympathetic arousal.[49,55] An uncontrolled prospective study has shown a reduction in physician visits for patients with chronic pain.[49,56]

Mindfulness meditation, developed by Kabat-Zinn, is a nonjudgmental moment-to-moment awareness cultivated through sitting meditation, body scan, and mindful movement. It decreased chronic pain symptoms moderately or greatly in 60% to 72% of patients at 4-year follow-up.[49,57]

Writing therapy has emerged as a way to ease chronic pain symptoms by tapping into the healing power of the unconscious.[58] It has been associated with decreased Epstein-Barr virus titers and increased numbers of lymphocytes.[59]

The cognitive-behavioral model of chronic pain focuses on how maladaptive or faulty feelings, attitudes, and beliefs influence the perception of pain. It emphasizes identifying the irrational belief systems that may be exacerbating or maintaining the pain, challenging the validity of these beliefs, and replacing them with more adaptive attitudes and beliefs.[16] Techniques include correction, cognitive restructuring, problem solving, attention refocusing, interpersonal skills training, and stress management.[16] Prolonged stress can result in autonomic nervous system hyperactivity that causes chronic muscle tension and chronic pain,[16] and these techniques aim to interrupt the stress and related autonomic hyperactivity.

CONCLUSION

Psychosomatic and other mind-body diagnostic and therapeutic approaches may be gaining increasing acceptance, and seem to be attracting more attention from patients and physicians alike. Further exploration into, and understanding of, the complexities of the mind-body connection should lead to more successful interventions in chronic pain management. There is an evolving and important literature that suggests that one cannot make direct connections between structural pathology and chronic pain symptoms, and that there are nonbiologic factors influencing chronic pain. Sarno's approach is a mind-body diagnostic and therapeutic approach that, like those described in this review, warrants more rigorous study in the future.

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