Chronification to Maldynia: Biopsychosocial Failure of Pain Homeostasis

The Decade of the Brain followed by the Decade of Pain [1] resulted in an extraordinary proliferation of research documenting the pathophysiologic processes underlying the development of chronic pain from both injury and disease. Dr. Perry Fine, President of American Academy of Pain Medicine (AAPM), succinctly and convincingly summarizes this literature in his article in this issue of Pain Medicine, “Long-term consequences of chronic pain: Mounting evidence for pain as a neurobiologic disease and parallels with other chronic disease states” [2].

As the concept of chronic pain as a chronic disease or illness gains saliency in our society, for example, in the house of medicine as broadly represented by the American Medical Association (AMA) [3], a new language must evolve that enables effective communication among patients, society, and the medical profession. In this issue of Pain Medicine, a letter to the editor by Dr. Quintner et al. [4] to the article by the AMA Council on Science and Public Health using the term “maldynia” [5,6] and the response by the authors, Dr. Dickinson et al. and by Dr. Lippe [4], usefully raise the time-honored scientific debate about “lumpers” and “splitters” in moving from the bench and bedside to a public health perspective. Is new language useful to medical science, practice, and policy? Medical terminologies that help us define the manifestations and pathophysiology of disease are often ineffective in connecting that disease to the minds and hearts of the public and policy makers. A lesson from cardiovascular medicine illustrates this point. Most people think of someone with “hypertension” as a very tense person; neither do most people understand the “myocardial infarction” nor the detailed pathophysiologic underlying each term. However, doctors, patients, and policy makers alike understand the terms “high blood pressure,” “heart attack,” and “heart failure”—all three imply a seriousness of disease requiring medical action, sanctioned by society, at different levels of urgency that all can understand, discuss, and agree on. High blood pressure is a harbinger of the other two conditions and other bad outcomes such as stroke (not right middle cerebral artery infarct). Heart attack can be immediately fatal, and heart failure can be ultimately fatal. A concerted societal health policy ensues, actualizing the concepts of primary, secondary, and tertiary prevention in health policy and education and training: primary prevention—lower salt intake and obesity to reduce the incidence of high blood pressure, stop smoking, lower fats, weight loss, and increase exercise to reduce heart attack risk; secondary prevention—treat high blood pressure aggressively and take aspirin when chest pain ensues on the way to hospital; tertiary prevention—cardiac interventions to reduce coronary artery blockage in heart attacks to reduce heart damage and incidence of heart failure. Health policy has evolved appropriately, rising to these challenges and radically changing the trajectory of heart disease in our society.

We need similar language about pain that helps us communicate to the public and policy makers about the seriousness of persistent pain as a scourge of society. The pain field first differentiated acute pain from chronic pain. But what does that tell us? Thirty to fifty percent of people over 65 years old have chronic or recurrent pain and most adapt well with occasional or even frequent use of over-the-counter medications and physical and mental self-management. “Eudynia” tells us that nociceptors in our aging, damaged joints are irritated—and they may respond to ice, NSAIDs, posture changes, and rest. Some people have constant annoying neuropathic pain—for many, very manageable with various medications. But when pain begins to “take over” the central nervous system, and its relief becomes the central focus of a person’s life, then it is always a bad thing that requires immediate attention to prevent further deterioration and to reverse the process.

The term “maldynia,” while dissatisfying from an analytical perspective, satisfies the imperative to communicate the potential serious of chronic pain by capturing the “badness” of this disease state when it progresses. It does not imply “badness” of the person with the disease, but rather that they have been overcome by a very bad disease that demands appropriate attention. This is similar to the words “cancer” or “malignancy,” neither which imply the fault of the patient, even when exposures to toxins, whether tobacco or sunshine, or non-adherence may have contributed causal risk—but we all know that the diagnosis of cancer (malignancy) is a life-changing event. Doctors and patients agree to treat it right away, and society and medicine go to great lengths to prevent it from occurring in the first place and, if it does, to prevent it from spreading, from “taking over.” For a patient suffering debilitating pain, nothing is more important than pain relief; the central importance of pain relief extends beyond the person—just ask their families, friends, and employers [7]. Although the health care system and medicine has to some extent prioritized acute and end-of-life pain treatment, chronic pain relief has never been afforded priority. The tendency has been to stigmatize the patient with chronic pain as being personally flawed, blaming him or her for their inability to cope, or to treat them as an...
economic opportunity to bill for many, and often ill-advised, medical procedures.

The term maldynia embodies the “badness” of chronic pain much like the word malignancy embodies the “badness” of cancer. It shifts the burden of action from the patient back to where it belongs—the health system and physicians and other clinicians. It rightly calls for action, in addition to armchair, clinical and investigational analysis. By establishing with one word that there is a large class of patients who as a population contribute an important health care burden to our society, maldynia also generates the need to prevent the process in the first place and once the process starts, to identify its perpetuating, biopsychosocial factors and processes and to address these as soon as possible.

What about the pathophysiologic process leading from acute pain to chronic pain, outlined by Dr. Fine in his review? This is a very complex process, not a simple switch being thrown that converts someone from the status of “acute” to the status of “chronic” by the virtue of time (e.g., 1, 3, or 6 months) or persistence. Various interacting biopsychosocial elements mark the complex pathophysiological and phenomenological course from acute to chronic pain in an individual [8] and the biopsychosocial “failure” of pain homeostasis. Once again, a new term is needed—this time to communicate the pathological disease processes leading from acute to chronic pain.

The word “chronification” has begun to appear, mostly in the European literature, to denote this process, which was the focus of a recent symposium of leading pain scientists in Copenhagen [9]. The fact that Europeans are comfortable in using this term is understandable. They function in capitated health care systems that fully recognize the societal economic burden, and consequently conduct most of the research that is being done to understand this process, chronification, in humans. Once chronification is identified as the problem, management approaches can be developed to interrupt and reverse its biopsychosocial trajectory toward maldynia. Whereas in the United States, most National Institutes of Health (NIH) funding supports research in animal models, and industry funds the development of new drugs or technologies that demonstrate short-term pain relief to obtain US Food and Drug Administration (FDA) approval for a specific indication. Neither of these strategies focuses on returning patients to functional status.

Medical education has not helped medicine orient to chronification and maldynia. Only a few medical schools have accomplished curricular changes, pain training in residencies is woefully inadequate, and now even specialty organizations acknowledge the inadequacy of subspecialty training in pain medicine [3,10]. The major strides in policy have not come from medicine or health policy responding to the clear evidence of societal burden but rather from grass roots organizations applying public pressure. The synergy of a consortia of patient and public advocacy organizations and professional pain organizations and of world events—9/11 and the War on Terror—pressed congress to pass the military and veterans pain care acts and keep a portion of the NIH consortium in the recent National Health Care Bill.

In response to these laws and subsequent health policy changes, systematic reorganization of the care of pain is being implemented in controlled, capitated settings like the VA and military; the pain field needs language that enables all sectors of society to understand and mobilize appropriately effective action. Maldynia indicates the failure of the human organism’s homeostatic pain modulation system [11] as opposed to a technical term such as allodynia or a specific disease such as spondylolisthesis, and it denotes a need for action—for societal resources to be brought to bear on the diseases of pain to change their downward trajectory toward maldynia, and the negative trajectory of the life of the person so afflicted. Health care must be reorganized by society to achieve this approach in a population.

If chronification denotes the complex pathophysiology to maldynia, moral considerations ensue. For example, we have observed a small minority of specialists keeping patients with disastrous conditions such as early Complex Regional Pain Syndrome (CPRS) on a waiting list for 6 months, allowing progression by chronification to mal-dynia. Length of time out of work is a powerful, independent predictor of return-to-work outcome [12] and the likelihood of maldynia. This fact and the success of integrated, multimodal care suggested the need for a new model of care that brought forward integrated, rehabilitative care earlier in the disease process. Hence, proposals such as, the “Pain Medicine and Primary Care Community Rehabilitation Model” (PMPCCR), advocate for timely intervention at the level of need to obtain rapid control of pain and restore functioning as soon as possible [13,14]. In the face of the loss of pain rehabilitation programs and access to integrated pain care due to managed care organizations, the PMPCCR model was not implemented until recently because the reimbursement system favored “piecework” (reimbursement by numbers of patients seen and particularly by procedures), not by the outcomes, such as return to work that not only benefit patients and their families, but also society. PMPCCR is presently being implemented in two large capitated health systems including the Veterans Health System, which is the nation’s largest with 153 hospitals [15], and the military health system [16]. Both systems have recognized the need for a continuum of effective pain management starting in the primary care office or on the battlefield and extending through functional recovery. They have changed their policies to adopt a tiered, stepped approach to pain care [17,18] and to train up their clinical systems and health administrators to assure capacity for effective pain management.

Unlike other chronic diseases such as diabetes and cardiovascular disease, such progress in pain basic science has not been made because of a concerted effort by the leaders of our medical institutions to address the problem...
of pain. The intellectual curiosity and passion of neuroscientists and epidemiologists have pointed the way forward, supported by a grass roots campaign for a societal response by organizations such as the American Pain Foundation, the National Pain Foundation, and the Pain Forum, resulting in congressional action. While we await the outcome of the recently convened Institute of Medicine's study on pain education and research, it remains to be seen how the language of pain will evolve with the science of pain medicine to help bring bench to the bedside in this long-underfunded field of clinical research.

Note

1. This tendency complexly intertwines physician denial and/or medical ignorance about pain with the natural desire for economic prosperity and self-preservation within the fertile sociocultural milieu of Americans' boundless faith in technology. All back pain should be curable with the correctly chosen and executed surgery, procedure or device. Although each of these are important tools in our pain medicine toolbox, all evidence points to their limited use by careful case selection supported by medically pluralistic and coordinated rehabilitation and that most cases should be managed by more inexpensive and patient-centered biopsychosocial approaches.

ROLLIN M. GALLAGHER, MD, MPH
Editor-in-Chief, Pain Medicine
Philadelphia, PA, USA

References